

**Three Phase  
Synchronous Generators**

# INDUSTRIAL APPLICATION



**MarelliGenerators®**

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# **Company Profile**







## the company

**MarelliMotori** manufacturing facility and worldwide headquarters is located in Arzignano, city of Vicenza, Italy.

**MarelliMotori** has a tradition dating back to 1891 when Ercole Marelli founded the company. Today **MarelliMotori** is recognised internationally as a leading supplier of Generators and Electric Motors.

These quality products are backed by an organisation of skilled people providing sales, service, parts and technical support.



## the products

**MarelliMotori** designs and manufactures a wide range of generators and electric motors to meet customers special applications. Some of the various configurations include:

- Low Voltage and High Voltage
- Horizontal and Vertical Mounting
- Polarity from 2 to 24
- Heat Exchangers, Air and Water
- Degrees of Protection
- Explosion Proof (ATEX)

## market sectors

**MarelliMotori** applications include:



### **Conventional Power**

Gensets, Cogeneration, Combined Heat & Power, Turbines



### **Renewable Power**

Hydro Electric Generators, Wind Generators



### **Oil & Gas**

Petrochemical Refineries, Oil Production, Mines



### **Marine**

Main Propulsion, Bow Thrusters, Power Generation, Auxiliaries



### **Industrial Power**

Pumps, Compressors, Fans, Agitators, Mixers, Conveyors



## the customers

**MarelliMotori** recognises that its **customer** base is its greatest asset.

**Continued Customer Satisfaction** remains the **Number 1 Priority** of **MarelliMotori**.

So too is the ability to provide products to suit diverse applications and market sectors. **MarelliMotori** has over 100 years of experience in the design and manufacture of specialised generators and electric motors to meet the needs of an ever changing market.





The most advanced automatic winding machines.

Superior laser engraving technology.

## global support

As part of its commitment to its customers **MarelliMotori** has in place a global support structure through the **MarelliMotori** sales, service and distribution offices located in:

**Italy, Great Britain, Germany, Malaysia, U.S.A., and South Africa.**

From these international locations **MarelliMotori** qualified personnel can travel to all parts of the world in response to its customers' needs.

## the production

**MarelliMotori** Arzignano is a modern, sophisticated, manufacturing and testing facility respecting the high expectations of its customers and industry standards through its **ISO 9001:2000** "Certificate of Quality System".

At the same time **MarelliMotori** is committed to respect the environment and is accredited with the **ISO 14001** "Certificate of Environmental Management System".

VPI systems for the highest reliability.

High precision NC work centres.



### ASYNCHRONOUS MOTORS T.E.F.C.

L.V. Range: 0.12 to 2800 kW

M.V. Range: 110 to 2000 kW



### DRIP PROOF MOTORS

L.V. Range: 90 to 4000 kW

M.V. Range: 150 to 3500 kW



### WATER JACKET MOTORS

L.V. Range: 230 to 3200 kW



### FLAMEPROOF MOTORS

*In compliance with ATEX Directive 94/9/EC*



L.V. Range: 0.12 to 560 kW

M.V. Range: 110 to 500 kW



### SYNCHRONOUS GENERATORS

L.V. Range: 10 to 5000 kVA

M.V. and H.V. Range: 500 to 8000 kVA



### GENERATORS FOR HYDROPOWER APPLICATIONS

L.V., M.V. and H.V. Range: 500 to 8000 kVA



**L.V.** Low Voltage up to 690 V  
**M.V.** Medium Voltage up to 6,6 kV  
**H.V.** High Voltage up to 13,8 kV





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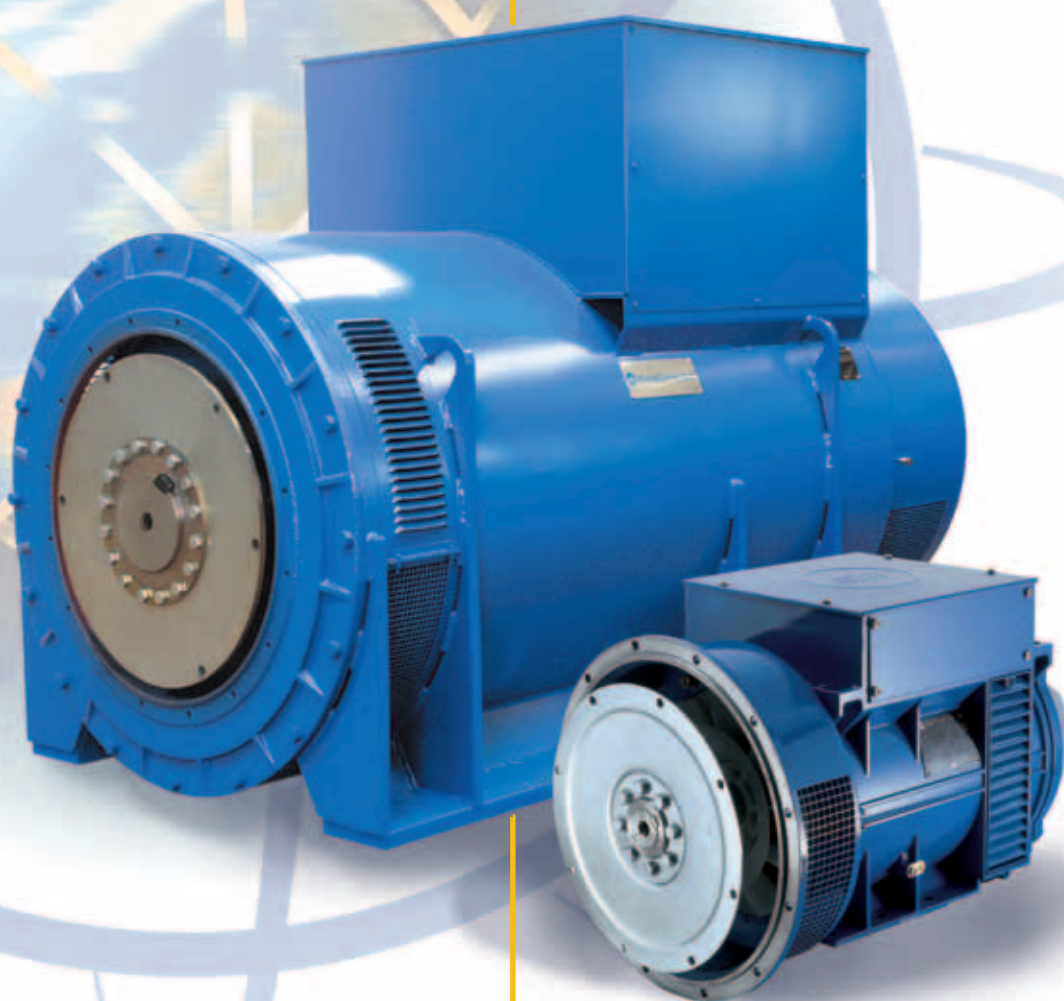
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# **Generators catalogue Industrial & Marine**

# Three Phase Synchronous Generators

160 - 710 FRAME SIZES  
INDUSTRIAL / MARINE APPLICATIONS





## GENERATING SATISFACTION

MarelliGenerators is a division of Marelli Motori SpA, an international manufacturer of electrical machines.

MarelliGenerators offers a complete selection of low and medium voltage three-phase synchronous generators for continuous prime power and stand-by power applications. Whatever your needs, our qualified engineers will offer the best solutions to suit your requirements. High efficiency, life-long reliability and in compliance with the international standards give MarelliGenerators the right to be a worldwide leader.

## APPLICATION FIELDS

MarelliGenerators offers the best technical solutions for the applications you need.

The main application fields are: general industry, prime power, cogeneration, UPS, marine, petrochemical and hydroelectric.

## RELIABILITY

- Long life endurance of electrical components and housing.
- Generators are impregnated with high-grade resin by a VPI process and an additional protection against tough environmental conditions.
- Generous design allowances to ensure reliability under difficult operating conditions.

## PERFORMANCE

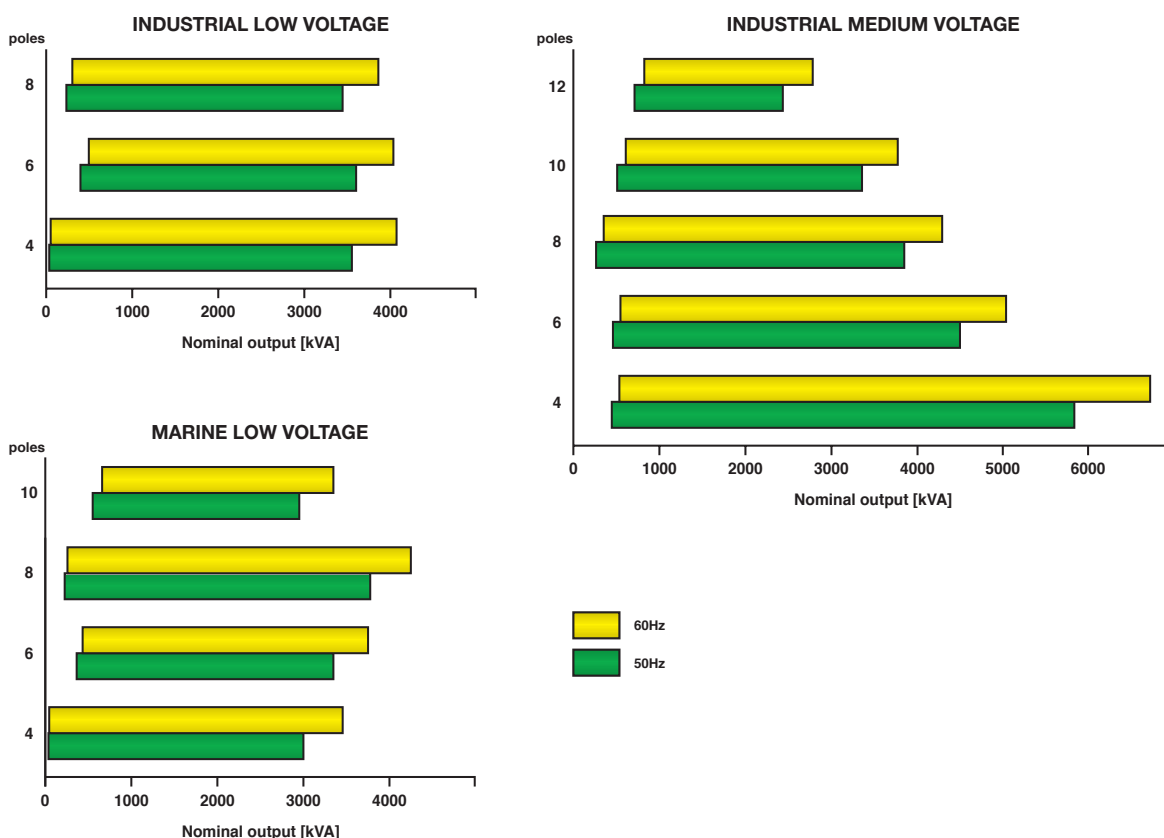
- Active parts are designed by using the latest technologies and the best materials available to guarantee high efficiency values.

## TOTALLY CUSTOMISABLE

All generators are completely customisable.

- Nominal voltage from 380 to 13.800 Volts.
- Polarities not mentioned in the following pages are available on request.
- Degree of protection up to IP 55.
- Auxiliary and neutral point terminal boxes.
- Single and double bearings solutions.
- Ball, roller or sleeve bearings are available.
- Equipped for vibration sensors.
- Three on-board neutral point current transformers (CT) are available both with either single or double core.
- Anti-condensation heaters are available for all frame sizes.
- Wide range of sensors to monitor the temperature of the stator winding and the bearings.

## PERFORMANCE ENVELOPE



## TECHNICAL INFORMATION

### STANDARDS

The generators are designed in compliance with: IEC 60034-1; CEI EN 60034-1; BS 4999-5000; VDE 0530, NF 51-100, 111; OVE M-10; NEMA MG 1.22; UL 1446, and UL1004B is available on request. MarelliGenerators bear the "CE" mark for all generators. Vibration level in accordance to IEC 60034-14.

### VOLTAGE AND FREQUENCY

The generators can operate at 50 and 60 Hz.

| Frame Size    | Connection            | Voltage at 50 Hz [V] | Voltage at 60 Hz [V] |
|---------------|-----------------------|----------------------|----------------------|
| 160 ÷ 355 MA  | Series star           | 380 - 440            | 380 - 480            |
|               | Parallel star         | 190 - 220            | 190 - 240            |
|               | Series delta          | 220 - 254            | 220 - 277            |
| 355 MB ÷ 500* | Star                  | 380 - 415            | 416 - 480            |
|               | Delta                 | 220 - 240            | 240 - 277            |
|               | Star (medium voltage) | 3.000 - 11.000       | 3.000 - 13.800       |
| 630 ÷ 710     | Star                  | 380 - 415            | 440 - 480            |
|               | Star (medium voltage) | 3.000 - 11.000       | 3.000 - 13.800       |

\*: medium voltage 400 ÷ 500 Frame size

### EXCITATION SYSTEM

The generators are self-exciting, by means of a brushless type excitation system.

The voltage is maintained within  $\pm 0,5\%$  of the nominal value in steady state condition with a balanced and non distorting load.

#### Auxiliary winding

The excitation system of generators from frame sizes 200 to 450 are fed by an auxiliary winding which gives a better response to the variation in loads and sustains the power supply in the case of a short-circuit. Auxiliary winding on the 160 frame is available on request.

#### Permanent Magnet Generators (PMG)

Generators from frame sizes 225 to 560 can be supplied with a Permanent Magnet Generator (PMG) if required, which gives an independent supply to the excitation system. PMG is advisable for use with generators in particular applications such as unbalanced loads and distorting loads.

#### Manual voltage regulation

Available within  $\pm 5\%$  of the rated value by means of a potentiometer placed inside the voltage regulator. A remote voltage setting is possible by means of an external potentiometer, which can be supplied on request.

#### Over-excitation protection

Generators from frame sizes 160 to 450 are supplied with adjustable over-excitation protection which will protect the alternator in the event of over-excitation when combined with an external protection system.

| Automatic Voltage Regulator (AVR)          |            | ANALOGUE                 |                                 |                   |                    |                    | DIGITAL*                                                                                                              |                               |
|--------------------------------------------|------------|--------------------------|---------------------------------|-------------------|--------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------|
|                                            |            | M16FA655A - MARK V       | M40FA640A - MARK I              | M40FA610A - MGC I | M63FA310A - MGC II | M40FA644A - MARK X | M71FA300 - MEC 100                                                                                                    |                               |
| Generator frame size                       | Standard   | 160 ÷ 225                | 250 ÷ 450                       | 500 ÷ 560         | 630 ÷ 710          |                    |                                                                                                                       |                               |
|                                            | On request | 250                      | 160 ÷ 225 and 500 ÷ 630         |                   |                    | 225 ÷ 560          | 400 ÷ 710                                                                                                             |                               |
| AVR supply                                 |            | Auxiliary winding, mains |                                 |                   |                    |                    | PMG                                                                                                                   | Auxiliary winding, mains, PMG |
| Voltage sensing                            |            | Single phase             | Three phase                     | Single phase      |                    | Three phase        |                                                                                                                       |                               |
| Voltage remote control                     |            | Arrangement              |                                 |                   |                    |                    |                                                                                                                       |                               |
| Radio interference suppressor              |            | Internal                 |                                 |                   |                    |                    | Arrangement for external filter                                                                                       |                               |
| Over-excitation device                     |            |                          | Arrangement for VARICOMP        |                   |                    |                    |                                                                                                                       |                               |
| Parallel operation with the mains          |            |                          | Arrangement for external device |                   |                    |                    | Internal                                                                                                              |                               |
| Parallel operation with similar generators |            |                          | Arrangement                     |                   |                    |                    | Internal                                                                                                              |                               |
| Standard protections                       |            | Over-excitation          |                                 |                   | Over-excitation    |                    | Field over-current<br>Field over-voltage<br>Generator over/under voltage<br>Generator over-current<br>Loss of sensing |                               |
| Limiters                                   |            | Underfrequency           |                                 |                   |                    |                    | Underfrequency<br>Over/under-excitation                                                                               |                               |
| Functions                                  |            |                          | Auxiliary inputs                |                   |                    |                    | PC interface<br>Soft start<br>Auxiliary inputs<br>Contact inputs                                                      |                               |

## WINDINGS

Generators from frame sizes 160 to 500 for industrial application are supplied with 2/3 pitch winding to reduce the voltage harmonic content in applications with non-linear loads. The no-load voltage waveform is sinusoidal with a residual harmonic  $\leq 2\%$ . Total Harmonic Distortion (THD)  $\leq 2\%$ .

## TELEPHONE INTERFERENCE

The Telephonic Harmonic Factor (THF) is less than 2% as defined by IEC 60034-1.

## RADIO INTERFERENCE

Radio interference conforms to Class B Group 1 as defined by EN55011.

## THREE PHASE SHORT CIRCUIT CURRENT

Generators with auxiliary windings or PMG ensure a three phase short-circuit current ( $I_{cc}$ ) higher than 3 times the rated current ( $I_n$ ):  $I_{cc} > 3 I_n$ . Generators from 500 to 710 frame size are supplied with an overexcitation device VARICOMP which ensures a three phase short circuit current higher than 3 times the rated current.

## OVERLOADS

The following overloads are allowed (only for continuous duty): 10% for 1 hour, 15% for 10 minutes, 30% for 4 minutes, 50% for 2 minutes. These overloads must be occasional and followed by at least one hour of running at nominal load or less.

## OPERATING CONDITIONS

### Single phase operation

Three phase (12-wire) wound generators can be reconnected and de-rated to 66% for single phase operation (with a zig-zag connection). Otherwise generators with dedicated (4-wire) single phase windings can be supplied on request.

### Parallel operation

All generators are provided with a largely sized damper cage and are suitable for parallel operation with other generators, when equipped with the paralleling unit. A power factor regulator is available on request.

### No-load operation at reduced speed

All regulators work to reduce the excitation current in order to protect the excitation system when the generator is being used at reduced speed.

### Transient ratings

The voltage drop due to the application of full load at 0,8 power factor inductive on industrial 160 - 400 frame size generators varies between 16 and 20% of the rated voltage: the output voltage recovers to within 3% of the rated value in less than 0,3 seconds.

### Altitude

The rated outputs refer to installation up to 1.000 m a.s.l.  
Above this level the following derating factors must be applied.

| Altitude (m asl) | < 1.000 | < 1.500 | < 2.000 | < 2.500 | < 3.000 |
|------------------|---------|---------|---------|---------|---------|
| K Factor         | 1,00    | 0,96    | 0,93    | 0,90    | 0,86    |

### Ambient temperature

The rated outputs given in this catalogue are based on a maximum ambient temperature of 40°C.  
When operating at different ambient temperatures the output rating can be obtained by applying the factors as in the following table.

| Ambient Temperature [°C] | 30   | 35   | 40   | 45   | 50   | 55   |
|--------------------------|------|------|------|------|------|------|
| K Factor                 | 1,04 | 1,00 | 1,00 | 0,96 | 0,93 | 0,90 |

### Power factor

The nominal power factor 0,8 lagging.  
For different power factor values the following derating factors must be applied.

| Power Factor | 1,0  | 0,8  | 0,7  | 0,6  | 0,5  | 0,3  | 0    |
|--------------|------|------|------|------|------|------|------|
| K Factor     | 1,00 | 1,00 | 0,93 | 0,88 | 0,84 | 0,82 | 0,80 |



### INSULATION, IMPREGNATION AND PROTECTIVE TREATMENT OF WINDING

Class H insulation system. The generators are impregnated with high grade resin, using the latest technologies (VPI). A further protective treatment is applied on the whole range, making the generators suitable for tough environmental conditions. Special degrees of protection and tropicalisation are available on request.

### PROTECTION DEGREE

The standard protection degree is IP 23. Generators can be supplied with protection degree IP 55 on request. Higher protection degrees are available for frame sizes 250 to 710 through the application of air-to-air or air-to-water heat exchangers.

### VENTILATION AND DIRECTION OF ROTATION

Generators are axially self-cooled and can run in both directions of rotation.

Air inlet is:

- Radial - Frame size 160.
- Advanced axial + radial - Frame sizes 200 ÷ 355.
- Axial + radial - Frame radial sizes 400 ÷ 710.

### ROTOR BALANCING

Rotors are dynamically balanced with a half key applied to the shaft extension in accordance with IEC 60034 - 14 to vibration grade normal (N) in standard configuration. Generators can be supplied with reduced (R) or special (S) vibration levels on request.

### BEARINGS AND OVERSPEED

Generously oversized roller bearings. The permissible overspeed is 1,5 times the rated speed (referred to 50 Hz). Sleeve bearings from 400 to 710 frame sizes are available on request.

### SPECIFICATION

All specifications are correct at time of publication and are subject to change without notice.



# INDUSTRIAL APPLICATION / LOW VOLTAGE - 50/60Hz

| Type | Leads | kVA rating @ Temperature rise / Ambient temp. [°C] |                      |          |          | Efficiency<br>125 / 40<br>pf = 0,8<br>4/4<br>[%] | kVA rating @ Temperature rise / Ambient temp. [°C] |                      |          |          | Efficiency<br>125 / 40<br>pf = 0,8<br>4/4<br>[%] | Inertia<br>B3<br>Approx.<br>[kgm <sup>2</sup> ] | Weight<br>Approx.<br>[kg] |
|------|-------|----------------------------------------------------|----------------------|----------|----------|--------------------------------------------------|----------------------------------------------------|----------------------|----------|----------|--------------------------------------------------|-------------------------------------------------|---------------------------|
|      |       | Continuous duty                                    |                      | Stand-by |          |                                                  | Continuous duty                                    |                      | Stand-by |          |                                                  |                                                 |                           |
|      |       | 125 / 40<br>ΔT cl. H                               | 105 / 40<br>ΔT cl. F | 163 / 27 | 150 / 40 |                                                  | 125 / 40<br>ΔT cl. H                               | 105 / 40<br>ΔT cl. F | 163 / 27 | 150 / 40 |                                                  |                                                 |                           |

## 4 pole

## 400V @ 50Hz - 1.500 min<sup>-1</sup>

## 480V @ 60Hz - 1.800 min<sup>-1</sup>

|             |    |      |      |            |      |      |      |      |            |      |      |            |      |
|-------------|----|------|------|------------|------|------|------|------|------------|------|------|------------|------|
| MJB 160 SA4 | 12 | 17,0 | 15,6 | 18,7       | 18,0 | 85,6 | 21,4 | 19,7 | 23,5       | 22,7 | 86,4 | 0,109      | 120  |
| 160 SB4     | 12 | 20,0 | 18,4 | 22,0       | 21,2 | 87,4 | 24,7 | 22,7 | 27,2       | 26,2 | 88,2 | 0,124      | 130  |
| 160 SC4     | 12 | 23,0 | 21,1 | 25,3       | 24,4 | 87,5 | 29,9 | 27,5 | 32,9       | 31,7 | 88,3 | 0,135      | 140  |
| 160 MA4     | 12 | 28,0 | 25,7 | 30,8       | 29,7 | 88,2 | 34,2 | 31,4 | 37,6       | 36,3 | 89,2 | 0,160      | 165  |
| 160 MB4     | 12 | 32,0 | 29,4 | 35,2       | 33,9 | 88,3 | 40,0 | 36,7 | 44,0       | 42,4 | 89,1 | 0,170      | 175  |
| 200 SA4     | 12 | 42,0 | 38,5 | 46,0       | 44,5 | 88,5 | 51,0 | 46,8 | 56,0       | 54,0 | 89,5 | 0,275      | 215  |
| 200 SB4     | 12 | 48,0 | 44,0 | 53,0       | 51,0 | 88,7 | 59,5 | 54,6 | 65,5       | 63,0 | 89,3 | 0,301      | 220  |
| 200 MA4     | 12 | 62,0 | 57,0 | 68,0       | 65,5 | 90,1 | 76,0 | 69,7 | 83,5       | 80,5 | 90,7 | 0,361      | 260  |
| 200 MB4     | 12 | 72,0 | 66,0 | 80,0       | 76,5 | 90,5 | 87,0 | 79,8 | 95,5       | 92,0 | 90,9 | 0,426      | 300  |
| 225 SA4     | 12 | 85   | 78   | 94         | 90   | 91,0 | 108  | 99   | 118        | 114  | 91,5 | 0,632      | 345  |
| 225 SB4     | 12 | 92   | 84   | 101        | 98   | 91,5 | 114  | 104  | 125        | 120  | 92,0 | 0,698      | 350  |
| 225 MA4     | 12 | 105  | 96   | 116        | 111  | 91,8 | 131  | 120  | 144        | 139  | 92,6 | 0,789      | 390  |
| 225 LA4     | 12 | 132  | 121  | 145        | 140  | 92,2 | 158  | 145  | 174        | 168  | 93,0 | 0,924      | 420  |
| 250 MA4     | 12 | 165  | 150  | 180        | 175  | 92,9 | 205  | 190  | 225        | 215  | 93,6 | 1,41       | 530  |
| 250 MB4     | 12 | 185  | 170  | 205        | 195  | 93,0 | 230  | 215  | 255        | 245  | 93,6 | 1,66       | 590  |
| 250 LA4     | 12 | 220  | 200  | 240        | 235  | 93,2 | 270  | 250  | 295        | 285  | 93,9 | 1,89       | 660  |
| 250 LB4     | 12 | 250  | 230  | 275        | 265  | 93,4 | 300  | 275  | 330        | 320  | 93,9 | 2,06       | 710  |
| 315 SA4     | 12 | 300  | 275  | 330        | 320  | 93,1 | 370  | 340  | 405        | 390  | 93,8 | 3,66       | 830  |
| 315 SB4     | 12 | 350  | 320  | 385        | 370  | 93,4 | 425  | 390  | 470        | 450  | 94,0 | 4,25       | 920  |
| 315 MA4     | 12 | 410  | 375  | 450        | 435  | 93,7 | 500  | 460  | 550        | 530  | 94,2 | 4,80       | 1060 |
| 315 MB4     | 12 | 450  | 415  | 495        | 475  | 94,0 | 550  | 505  | 605        | 585  | 94,8 | 5,68       | 1200 |
| 355 SA4     | 12 | 510  | 470  | 560        | 540  | 94,0 | 625  | 575  | 690        | 665  | 94,5 | 7,97       | 1250 |
| 355 SB4     | 12 | 570  | 520  | 625        | 605  | 94,6 | 695  | 640  | 765        | 735  | 95,1 | 9,29       | 1550 |
| 355 MA4     | 12 | 680  | 625  | 750        | 720  | 94,7 | 825  | 760  | 910        | 875  | 95,1 | 11,69      | 1800 |
| 355 MB4     | 6  | 800  | 730  | 880        | 850  | 95,0 | 960  | 880  | 1055       | 1020 | 95,3 | 13,12      | 2050 |
| 400 MA4     | 6  | 930  | 850  | 1025       | 985  | 95,2 | 1175 | 1080 | 1295       | 1245 | 95,7 | 16,3       | 2250 |
| 400 MB4     | 6  | 1050 | 960  | 1155       | 1115 | 95,3 | 1320 | 1210 | 1450       | 1400 | 95,7 | 17,0       | 2300 |
| 400 LA4     | 6  | 1150 | 1055 | 1265       | 1220 | 95,6 | 1420 | 1305 | 1560       | 1505 | 96,0 | 19,3       | 2550 |
| 400 LB4     | 6  | 1300 | 1190 | 1430       | 1380 | 95,8 | 1625 | 1490 | 1790       | 1725 | 96,3 | 22,5       | 2800 |
| 450 MB4     | 6  | 1500 | 1375 | 1650       | 1590 | 95,9 | 1800 | 1650 | 1980       | 1910 | 96,3 | 29,0       | 3200 |
| 450 LA4     | 6  | 1650 | 1510 | 1815       | 1750 | 96,0 | 1980 | 1815 | 2180       | 2100 | 96,3 | 34,0       | 3600 |
| 450 LB4     | 6  | 1875 | 1720 | 2065       | 1990 | 96,2 | 2250 | 2065 | 2470       | 2380 | 96,4 | 38,0       | 4000 |
| 500 SC4     | 6  | 2000 | 1835 | 2200       | 2110 | 96,1 | 2400 | 2200 | 2640       | 2540 | 96,5 | 46,7       | 4000 |
| 500 MB4     | 6  | 2200 | 2020 | 2420       | 2330 | 96,2 | 2640 | 2420 | 2900       | 2795 | 96,5 | 52,5       | 4400 |
| 500 LA4     | 6  | 2500 | 2290 | 2750       | 2650 | 96,4 | 3000 | 2750 | 3300       | 3180 | 96,7 | 61,5       | 5100 |
| 560 MA4*    | 6  | 2650 | 2430 | on request |      | 96,4 | 3050 | 2800 | on request |      | 96,5 | 83         | 5200 |
| 560 LA4*    | 6  | 3200 | 2935 | on request |      | 96,5 | 3680 | 3375 | on request |      | 96,6 | 95         | 5700 |
| 630 SA4*    | 6  | 3000 | 2750 | on request |      | 96,2 | 3450 | 3165 | on request |      | 96,5 | 117        | 6350 |
| 630 MB4*    | 6  | 3300 | 3025 | on request |      | 96,4 | 3795 | 3480 | on request |      | 96,7 | 140        | 7000 |
| 630 LA4*    | 6  | 3600 | 3300 | on request |      | 96,5 | 4140 | 3795 | on request |      | 96,8 | 158        | 7800 |
| 710 SC4**   | 6  | 4000 | 3670 | on request |      | 96,2 | 4400 | 4035 | on request |      | 96,5 | on request |      |
| 710 MB4**   | 6  | 4300 | 3940 | on request |      | 96,4 | 4730 | 4340 | on request |      | 96,7 | on request |      |

\*: 690 V recommended

\*\*\*: 690 V only. For different voltages please contact MarelliMotori.

Ratings refer to following conditions: balanced non-deforming load, altitude below 1.000 m asl, minimum power factor 0,8.

# INDUSTRIAL APPLICATION / LOW VOLTAGE - 50/60Hz

| Type | Leads | kVA rating @ Temp. Rise / Ambient temp. [°C] |                      | Efficiency<br>125 / 40<br>pf = 0,8<br>4/4<br>[%] | kVA rating @ Temp. Rise / Ambient temp. [°C] |  | Efficiency<br>125 / 40<br>pf = 0,8<br>4/4<br>[%] | Inertia<br>B3<br>Approx.<br>[kgm <sup>2</sup> ] | Weight<br>Approx.<br>[kg] |
|------|-------|----------------------------------------------|----------------------|--------------------------------------------------|----------------------------------------------|--|--------------------------------------------------|-------------------------------------------------|---------------------------|
|      |       | Continuous duty                              |                      |                                                  | Continuous duty                              |  |                                                  |                                                 |                           |
|      |       | 125 / 40<br>ΔT cl. H                         | 105 / 40<br>ΔT cl. F | 125 / 40<br>ΔT cl. H                             | 105 / 40<br>ΔT cl. F                         |  |                                                  |                                                 |                           |

| 6 pole      |   | 400V @ 50Hz - 1.000 min <sup>-1</sup> |      |            | 480V @ 60Hz - 1.200 min <sup>-1</sup> |      |            |      |      |
|-------------|---|---------------------------------------|------|------------|---------------------------------------|------|------------|------|------|
| MJB 400 SA6 | 6 | 400                                   | 365  | 92,6       | 500                                   | 460  | 93,0       | 11,8 | 1450 |
| 400 SB6     | 6 | 450                                   | 410  | 92,9       | 565                                   | 520  | 93,4       | 14,1 | 1600 |
| 400 SC6     | 6 | 500                                   | 460  | 93,6       | 625                                   | 575  | 94,0       | 16,8 | 1800 |
| 400 MA6     | 6 | 620                                   | 570  | 94,0       | 775                                   | 710  | 94,4       | 17,9 | 2000 |
| 400 MB6     | 6 | 700                                   | 640  | 94,2       | 875                                   | 800  | 94,6       | 19,4 | 2260 |
| 400 LA6     | 6 | 800                                   | 735  | 94,5       | 1000                                  | 915  | 94,9       | 20,9 | 2530 |
| 400 LB6     | 6 | 970                                   | 890  | 94,7       | 1215                                  | 1115 | 95,1       | 24,2 | 2750 |
| 450 MB6     | 6 | 1040                                  | 950  | 94,8       | 1300                                  | 1190 | 95,5       | 49,9 | 3200 |
| 450 LA6     | 6 | 1200                                  | 1100 | 95,0       | 1500                                  | 1375 | 95,7       | 55,0 | 3600 |
| 450 LB6     | 6 | 1360                                  | 1250 | 94,9       | 1700                                  | 1560 | 95,6       | 61,4 | 3900 |
| 500 SC6     | 6 | 1330                                  | 1220 | 94,9       | 1665                                  | 1525 | 95,6       | 64,7 | 3800 |
| 500 MB6     | 6 | 1600                                  | 1465 | 95,1       | 2000                                  | 1835 | 95,8       | 73,6 | 4400 |
| 500 LA6     | 6 | 1870                                  | 1715 | 95,3       | 2340                                  | 2145 | 96,0       | 88,9 | 5100 |
| 560 MA6     | 6 | 1930                                  | 1770 | 96,0       | 2220                                  | 2035 | 96,0       | 115  | 5000 |
| 560 LA6     | 6 | 2300                                  | 2110 | 96,2       | 2645                                  | 2425 | 96,2       | 135  | 5700 |
| 630 SC6     | 6 | 2300                                  | 2110 | 95,5       | 2580                                  | 2365 | 96,0       | 170  | 6200 |
| 630 MA6*    | 6 | 2750                                  | 2525 | 95,8       | 3080                                  | 2825 | 96,2       | 190  | 6900 |
| 630 LA6*    | 6 | 3000                                  | 2750 | 96,0       | 3360                                  | 3080 | 96,4       | 230  | 7500 |
| 710 SC6*    | 6 | 3400                                  | 3120 | on request | 3740                                  | 3430 | on request |      |      |
| 710 MA6*    | 6 | 3800                                  | 3485 | on request | 4180                                  | 3835 | on request |      |      |

| 8 pole      |   | 400V @ 50Hz - 750 min <sup>-1</sup> |      |            | 480V @ 60Hz - 900 min <sup>-1</sup> |      |            |      |      |
|-------------|---|-------------------------------------|------|------------|-------------------------------------|------|------------|------|------|
| MJB 400 SA8 | 6 | 240                                 | 220  | 91,5       | 300                                 | 275  | 92,0       | 13,5 | 1450 |
| 400 SB8     | 6 | 310                                 | 285  | 92,0       | 400                                 | 365  | 92,5       | 16,2 | 1600 |
| 400 SC8     | 6 | 360                                 | 330  | 92,3       | 450                                 | 410  | 92,8       | 19,1 | 1800 |
| 400 MA8     | 6 | 430                                 | 395  | 92,5       | 540                                 | 495  | 93,0       | 20,6 | 2000 |
| 400 MB8     | 6 | 510                                 | 465  | 93,0       | 640                                 | 585  | 93,5       | 22,4 | 2260 |
| 400 LA8     | 6 | 600                                 | 550  | 93,2       | 750                                 | 685  | 93,7       | 24,1 | 2530 |
| 400 LB8     | 6 | 740                                 | 680  | 93,5       | 925                                 | 850  | 94,0       | 25,4 | 2750 |
| 500 SA8     | 6 | 820                                 | 750  | 94,5       | 1025                                | 940  | 95,1       | 55,1 | 3200 |
| 500 SC8     | 6 | 1020                                | 935  | 95,0       | 1275                                | 1170 | 95,5       | 74,2 | 3800 |
| 500 MB8     | 6 | 1270                                | 1165 | 95,1       | 1590                                | 1455 | 95,6       | 82,2 | 4400 |
| 500 LA8     | 6 | 1500                                | 1375 | 95,2       | 1875                                | 1720 | 95,9       | 95,0 | 5100 |
| 560 MA8     | 6 | 1510                                | 1385 | 95,6       | 1735                                | 1590 | 95,6       | 130  | 5000 |
| 560 LA8     | 6 | 1800                                | 1650 | 95,9       | 2070                                | 1895 | 95,9       | 155  | 5700 |
| 630 SC8     | 6 | 1850                                | 1700 | 95,1       | 2035                                | 1870 | 95,9       | 150  | 6500 |
| 630 MA8     | 6 | 2000                                | 1835 | 95,4       | 2250                                | 2065 | 96,2       | 190  | 6900 |
| 630 LA8     | 6 | 2450                                | 2250 | 96,1       | 2760                                | 2530 | 96,5       | 240  | 7600 |
| 710 SA8*    | 6 | 2650                                | 2430 | on request | 2940                                | 2695 | on request |      |      |
| 710 SC8*    | 6 | 3000                                | 2750 | on request | 3300                                | 3025 | on request |      |      |
| 710 MA8*    | 6 | 3400                                | 3120 | on request | 3740                                | 3430 | on request |      |      |
| 710 MB8*    | 6 | 3800                                | 3485 | on request | 4180                                | 3835 | on request |      |      |

| 10 pole      |   | 400V @ 50Hz - 600 min <sup>-1</sup> |      |            | 480V @ 60Hz - 720 min <sup>-1</sup> |      |            |      |      |
|--------------|---|-------------------------------------|------|------------|-------------------------------------|------|------------|------|------|
| MJB 500 SA10 | 6 | 595                                 | 550  | 93,9       | 740                                 | 680  | 94,4       | 63,8 | 3300 |
| 500 SC10     | 6 | 745                                 | 685  | 94,2       | 935                                 | 860  | 94,7       | 81,6 | 3800 |
| 500 MB10     | 6 | 870                                 | 800  | 94,7       | 1050                                | 965  | 95,2       | 89,7 | 4500 |
| 500 LA10     | 6 | 965                                 | 885  | 95,0       | 1210                                | 1110 | 95,5       | 106  | 4900 |
| 630 SC10     | 6 | 1200                                | 1100 | 95,0       | 1380                                | 1265 | 95,5       | 180  | 7300 |
| 630 MA10     | 6 | 1435                                | 1320 | 95,4       | 1650                                | 1515 | 95,9       | 200  | 7700 |
| 630 MB10     | 6 | 1690                                | 1550 | 95,5       | 1945                                | 1785 | 96,0       | 230  | 7900 |
| 630 LA10     | 6 | 1750                                | 1605 | 95,7       | 2010                                | 1845 | 96,2       | 260  | 8200 |
| 710 SC10     | 6 | 2470                                | 2265 | on request | 2765                                | 2535 | on request |      |      |
| 710 MA10*    | 6 | 2960                                | 2715 | on request | 3315                                | 3040 | on request |      |      |
| 710 MB10*    | 6 | 3160                                | 2900 | on request | 3540                                | 3245 | on request |      |      |
| 710 LB10*    | 6 | 3415                                | 3130 | on request | 3825                                | 3510 | on request |      |      |

| 12 pole      |   | 400V @ 50Hz - 500 min <sup>-1</sup> |      |            | 480V @ 60Hz - 600 min <sup>-1</sup> |      |            |     |      |
|--------------|---|-------------------------------------|------|------------|-------------------------------------|------|------------|-----|------|
| MJB 630 SC12 | 6 | 920                                 | 845  | 95,0       | 1050                                | 965  | 95,5       | 220 | 7600 |
| 630 MA12     | 6 | 1140                                | 1045 | 95,4       | 1300                                | 1195 | 95,9       | 260 | 8000 |
| 630 MB12     | 6 | 1530                                | 1405 | 95,5       | 1760                                | 1615 | 96,0       | 290 | 8200 |
| 630 LB12     | 6 | 1880                                | 1725 | 95,6       | 2150                                | 1975 | 96,1       | 320 | 8600 |
| 710 SA12     | 6 | 2000                                | 1835 | on request | 2300                                | 2110 | on request |     |      |
| 710 MA12     | 6 | 2180                                | 2000 | on request | 2500                                | 2295 | on request |     |      |
| 710 LA12*    | 6 | 2700                                | 2475 | on request | 3100                                | 2845 | on request |     |      |

\*: 690 V recommended

Ratings refer to the following conditions: balanced non-deforming load, altitude below 1.000 m asl, minimum power factor 0,8.



## MARINE APPLICATION / LOW VOLTAGE - 50/60Hz

| Type | Leads | kVA rating @ Temp. Rise / Ambient temp. [°C] |                     |                                               | Efficiency                        | kVA rating @ Temp. Rise / Ambient temp. [°C] |                     |                                               | Efficiency                        | Inertia                              | Weight          |
|------|-------|----------------------------------------------|---------------------|-----------------------------------------------|-----------------------------------|----------------------------------------------|---------------------|-----------------------------------------------|-----------------------------------|--------------------------------------|-----------------|
|      |       | Continuous duty                              |                     |                                               |                                   | Continuous duty                              |                     |                                               |                                   |                                      |                 |
|      |       | 95 / 50<br>ΔT cl. F                          | 70 / 50<br>ΔT cl. B | Air-to-water exchanger<br>95 / 50<br>ΔT cl. F |                                   | 95 / 50<br>ΔT cl. F                          | 70 / 50<br>ΔT cl. B | Air-to-water exchanger<br>95 / 50<br>ΔT cl. F |                                   |                                      |                 |
|      |       |                                              |                     |                                               | 95 / 50<br>pf = 0,8<br>4/4<br>[%] |                                              |                     |                                               | 95 / 50<br>pf = 0,8<br>4/4<br>[%] | B3<br>Approx.<br>[kgm <sup>2</sup> ] | Approx.<br>[kg] |

| 4 pole       |    | 400V @ 50Hz - 1.500 min <sup>-1</sup> |      |      |      | 450V @ 60Hz - 1.800 min <sup>-1</sup> |      |      |      |            |      |
|--------------|----|---------------------------------------|------|------|------|---------------------------------------|------|------|------|------------|------|
| MJBM 160 SA4 | 12 | 14,8                                  | 12,7 | -    | 80,9 | 17,6                                  | 15,1 | -    | 81,4 | 0,109      | 120  |
| 160 SB4      | 12 | 17,4                                  | 14,9 | -    | 82,3 | 20,5                                  | 17,6 | -    | 82,5 | 0,124      | 130  |
| 160 SC4      | 12 | 20,1                                  | 17,3 | -    | 83,9 | 24,1                                  | 20,7 | -    | 83,9 | 0,135      | 140  |
| 160 MA4      | 12 | 24,4                                  | 20,9 | -    | 85,5 | 28,9                                  | 24,8 | -    | 86,0 | 0,160      | 165  |
| 160 MB4      | 12 | 27,9                                  | 23,9 | -    | 86,1 | 33,5                                  | 28,7 | -    | 86,7 | 0,170      | 175  |
| 200 SA4      | 12 | 36,5                                  | 31,3 | -    | 86,0 | 44,5                                  | 38,2 | -    | 86,7 | 0,275      | 215  |
| 200 SB4      | 12 | 42,0                                  | 36,1 | -    | 87,2 | 52,0                                  | 44,6 | -    | 87,3 | 0,301      | 220  |
| 200 MA4      | 12 | 54,0                                  | 46,4 | -    | 88,3 | 64,0                                  | 54,9 | -    | 88,4 | 0,361      | 260  |
| 200 MB4      | 12 | 63,0                                  | 54,1 | -    | 89,5 | 76,0                                  | 65,2 | -    | 89,6 | 0,426      | 300  |
| 225 SA4      | 12 | 74                                    | 64   | -    | 89,0 | 91                                    | 78   | -    | 89,2 | 0,632      | 345  |
| 225 SB4      | 12 | 80                                    | 69   | -    | 89,4 | 99                                    | 85   | -    | 89,5 | 0,698      | 350  |
| 225 MA4      | 12 | 92                                    | 79   | -    | 90,2 | 112                                   | 96   | -    | 90,4 | 0,802      | 390  |
| 225 LA4      | 12 | 115                                   | 99   | -    | 91,2 | 136                                   | 117  | -    | 91,3 | 0,924      | 420  |
| 250 MA4      | 12 | 145                                   | 125  | 130  | 91,8 | 165                                   | 145  | 150  | 92,3 | 1,13       | 530  |
| 250 MB4      | 12 | 160                                   | 140  | 145  | 92,1 | 190                                   | 165  | 170  | 92,5 | 1,30       | 590  |
| 250 LA4      | 12 | 190                                   | 165  | 170  | 92,3 | 220                                   | 190  | 200  | 92,7 | 1,47       | 660  |
| 200 LB4      | 12 | 220                                   | 190  | 200  | 92,6 | 245                                   | 215  | 220  | 92,8 | 1,77       | 710  |
| 315 SA4      | 12 | 260                                   | 225  | 230  | 92,0 | 310                                   | 270  | 280  | 92,6 | 3,66       | 830  |
| 315 SB4      | 12 | 305                                   | 265  | 270  | 92,5 | 355                                   | 305  | 320  | 93,2 | 4,25       | 920  |
| 315 MA4      | 12 | 355                                   | 305  | 320  | 93,1 | 420                                   | 365  | 380  | 93,7 | 4,80       | 1060 |
| 315 MB4      | 12 | 390                                   | 335  | 350  | 93,5 | 460                                   | 395  | 410  | 94,2 | 5,68       | 1200 |
| 355 SA4      | 12 | 445                                   | 385  | 400  | 93,6 | 515                                   | 445  | 460  | 94,0 | 7,97       | 1250 |
| 355 SB4      | 12 | 495                                   | 425  | 450  | 93,9 | 590                                   | 510  | 530  | 94,5 | 9,29       | 1550 |
| 355 MA4      | 12 | 595                                   | 515  | 540  | 94,5 | 690                                   | 595  | 620  | 94,9 | 11,69      | 1800 |
| 355 MB4      | 6  | 695                                   | 600  | 630  | 94,8 | 815                                   | 700  | 730  | 95,1 | 13,12      | 2050 |
| 400 MA4      | 6  | 810                                   | 700  | 730  | 94,8 | 975                                   | 840  | 880  | 95,0 | 16,3       | 2250 |
| 400 MB4      | 6  | 915                                   | 790  | 820  | 95,2 | 1090                                  | 940  | 980  | 95,4 | 17,0       | 2300 |
| 400 LA4      | 6  | 1005                                  | 865  | 900  | 95,3 | 1205                                  | 1035 | 1080 | 95,6 | 19,3       | 2550 |
| 400 LB4      | 6  | 1135                                  | 975  | 1020 | 95,6 | 1345                                  | 1155 | 1210 | 95,8 | 22,5       | 2800 |
| 450 MB4      | 6  | 1310                                  | 1125 | 1180 | 95,6 | 1510                                  | 1300 | 1360 | 96,4 | 29,0       | 3200 |
| 450 LA4      | 6  | 1440                                  | 1240 | 1300 | 96,6 | 1655                                  | 1425 | 1490 | 96,4 | 34,0       | 3600 |
| 450 LB4      | 6  | 1635                                  | 1405 | 1470 | 97,6 | 1875                                  | 1610 | 1690 | 96,5 | 38,0       | 4000 |
| 500 SC4      | 6  | 1740                                  | 1495 | 1570 | 95,7 | 2000                                  | 1720 | 1800 | 95,9 | 46,7       | 4100 |
| 500 MB4      | 6  | 1930                                  | 1660 | 1740 | 95,9 | 2220                                  | 1910 | 2000 | 96,1 | 52,5       | 4400 |
| 500 LA4      | 6  | 2200                                  | 1890 | 1980 | 96,1 | 2580                                  | 2215 | 2320 | 96,3 | 61,5       | 5100 |
| 560 MA4      | 6  | 2450                                  | 2105 | 2210 | 96,3 | 2750                                  | 2365 | 2480 | 96,3 | 83         | 5200 |
| 560 LA4*     | 6  | 2950                                  | 2535 | 2660 | 96,5 | 3300                                  | 2835 | 2970 | 96,5 | 95         | 5700 |
| 630 SA4*     | 6  | 2780                                  | 2390 | 2500 | 96,3 | 3200                                  | 2750 | 2880 | 96,4 | 117        | 6350 |
| 630 MB4*     | 6  | 3050                                  | 2620 | 2750 | 96,5 | 3500                                  | 3005 | 3150 | 96,6 | 140        | 7000 |
| 630 LA4*     | 6  | 3320                                  | 2850 | 2990 | 96,6 | 3810                                  | 3275 | 3430 | 96,7 | 158        | 7800 |
| 710 SC4**    | 6  | 3680                                  | 3160 | 3310 | 96,3 | 4050                                  | 3480 | 3650 | 96,4 | on request |      |
| 710 MB4**    | 6  | 3950                                  | 3395 | 3560 | 96,5 | 4350                                  | 3735 | 3920 | 96,6 | on request |      |

| 6 pole       |   | 400V @ 50Hz - 1.000 min <sup>-1</sup> |      |      |      | 450V @ 60Hz - 1.200 min <sup>-1</sup> |      |      |      |            |      |
|--------------|---|---------------------------------------|------|------|------|---------------------------------------|------|------|------|------------|------|
| MJBM 400 SA6 | 6 | 350                                   | 305  | 320  | 92,7 | 415                                   | 360  | 370  | 92,9 | 11,8       | 1450 |
| 400 SB6      | 6 | 390                                   | 335  | 350  | 93,0 | 465                                   | 400  | 420  | 93,3 | 14,1       | 1600 |
| 400 SC6      | 6 | 435                                   | 375  | 390  | 93,7 | 515                                   | 445  | 460  | 93,9 | 16,8       | 1800 |
| 400 MA6      | 6 | 540                                   | 465  | 490  | 94,1 | 640                                   | 550  | 580  | 94,3 | 17,9       | 2000 |
| 400 MB6      | 6 | 610                                   | 525  | 550  | 94,3 | 725                                   | 625  | 650  | 94,5 | 19,4       | 2260 |
| 400 LA6      | 6 | 695                                   | 600  | 630  | 94,6 | 825                                   | 710  | 740  | 94,8 | 20,9       | 2530 |
| 400 LB6      | 6 | 845                                   | 730  | 760  | 94,8 | 1000                                  | 860  | 900  | 95,0 | 24,2       | 2750 |
| 450 MB6      | 6 | 890                                   | 765  | 800  | 94,6 | 1050                                  | 905  | 950  | 95,1 | 49,9       | 3200 |
| 450 LA6      | 6 | 1040                                  | 895  | 940  | 95,2 | 1230                                  | 1060 | 1110 | 95,7 | 55,0       | 3600 |
| 450 LB6      | 6 | 1180                                  | 1015 | 1060 | 95,4 | 1395                                  | 1200 | 1260 | 95,9 | 61,4       | 3900 |
| 500 SC6      | 6 | 1160                                  | 1000 | 1040 | 95,0 | 1375                                  | 1185 | 1240 | 95,5 | 64,7       | 3800 |
| 500 MB6      | 6 | 1395                                  | 1200 | 1260 | 95,2 | 1655                                  | 1425 | 1490 | 95,7 | 73,6       | 4400 |
| 500 LA6      | 6 | 1630                                  | 1400 | 1470 | 95,4 | 1930                                  | 1660 | 1740 | 95,9 | 88,9       | 5100 |
| 560 MA6      | 6 | 1785                                  | 1535 | 1610 | 96,0 | 2035                                  | 1750 | 1830 | 96,0 | 115        | 5000 |
| 560 LA6      | 6 | 2125                                  | 1825 | 1910 | 96,2 | 2450                                  | 2105 | 2210 | 96,2 | 135        | 5700 |
| 630 SC6*     | 6 | 2120                                  | 1820 | 1910 | 95,7 | 2420                                  | 2080 | 2180 | 96,3 | 170        | 7000 |
| 630 MA6*     | 6 | 2525                                  | 2170 | 2270 | 95,7 | 2880                                  | 2475 | 2590 | 96,3 | 190        | 7500 |
| 630 LA6*     | 6 | 2750                                  | 2365 | 2480 | 96,5 | 3150                                  | 2705 | 2840 | 96,8 | 230        | 8100 |
| 710 SC6*     | 6 | 3120                                  | 2680 | 2810 | 96,0 | 3450                                  | 2965 | 3110 | 96,3 | on request |      |
| 710 MA6*     | 6 | 3485                                  | 2995 | 3140 | 96,7 | 3830                                  | 3290 | 3450 | 96,7 | on request |      |

:- Not available

\*: 690 V recommended

\*\* 690 V only. For different voltages please contact MarelliMotori.

Ratings refer to the following conditions: balanced non-deforming load, altitude below 1.000 m asl, minimum power factor 0,8.

## MARINE APPLICATION / LOW VOLTAGE - 50/60Hz

| Type | Leads | kVA rating @ Temp. Rise / Ambient temp. [°C] |                     |                                               | Efficiency<br>95 / 50<br>pf = 0,8<br>4/4<br>[%] | kVA rating @ Temp. Rise / Ambient temp. [°C] |                     |                                               | Efficiency<br>95 / 50<br>pf = 0,8<br>4/4<br>[%] | Inertia<br>B3<br>Approx.<br>[kgm <sup>2</sup> ] | Weight<br>Approx.<br>[kg] |
|------|-------|----------------------------------------------|---------------------|-----------------------------------------------|-------------------------------------------------|----------------------------------------------|---------------------|-----------------------------------------------|-------------------------------------------------|-------------------------------------------------|---------------------------|
|      |       | Continuous duty                              |                     |                                               |                                                 | Continuous duty                              |                     |                                               |                                                 |                                                 |                           |
|      |       | 95 / 50<br>ΔT cl. F                          | 70 / 50<br>ΔT cl. B | Air-to-water exchanger<br>95 / 50<br>ΔT cl. F |                                                 | 95 / 50<br>ΔT cl. F                          | 70 / 50<br>ΔT cl. B | Air-to-water exchanger<br>95 / 50<br>ΔT cl. F |                                                 |                                                 |                           |

### 8 pole

400V @ 50Hz - 750 min<sup>-1</sup>

450V @ 60Hz - 900 min<sup>-1</sup>

|              |   |      |      |      |      |      |      |      |      |            |      |
|--------------|---|------|------|------|------|------|------|------|------|------------|------|
| MJBM 400 SA8 | 6 | 210  | 185  | 190  | 91,6 | 250  | 215  | 230  | 91,9 | 13,5       | 1450 |
| 400 SB8      | 6 | 270  | 235  | 240  | 92,1 | 330  | 285  | 300  | 92,4 | 16,2       | 1600 |
| 400 SC8      | 6 | 315  | 275  | 280  | 92,4 | 370  | 320  | 330  | 92,7 | 19,1       | 1800 |
| 400 MA8      | 6 | 375  | 325  | 340  | 92,6 | 445  | 385  | 400  | 92,9 | 20,6       | 2000 |
| 400 MB8      | 6 | 445  | 385  | 400  | 93,1 | 525  | 455  | 470  | 93,4 | 22,4       | 2260 |
| 400 LA8      | 6 | 525  | 455  | 470  | 93,3 | 620  | 535  | 560  | 93,6 | 24,1       | 2530 |
| 400 LB8      | 6 | 645  | 555  | 580  | 93,6 | 765  | 660  | 690  | 93,9 | 25,4       | 2750 |
| 500 SA8      | 6 | 715  | 615  | 640  | 94,6 | 845  | 730  | 760  | 95,0 | 55,1       | 3200 |
| 500 SC8      | 6 | 890  | 765  | 800  | 95,1 | 1055 | 910  | 950  | 95,4 | 74,2       | 3800 |
| 500 MB8      | 6 | 1105 | 950  | 990  | 95,2 | 1310 | 1125 | 1180 | 95,5 | 82,2       | 4400 |
| 500 LA8      | 6 | 1310 | 1125 | 1180 | 95,3 | 1550 | 1335 | 1400 | 95,8 | 95,0       | 5100 |
| 560 MA8      | 6 | 1395 | 1200 | 1260 | 95,6 | 1605 | 1380 | 1440 | 95,6 | 130        | 5000 |
| 560 LA8      | 6 | 1665 | 1430 | 1500 | 95,9 | 1915 | 1645 | 1720 | 95,9 | 155        | 5700 |
| 630 SC8      | 6 | 1620 | 1395 | 1460 | 95,4 | 1860 | 1600 | 1670 | 96,2 | 170        | 7100 |
| 630 MA8      | 6 | 1835 | 1580 | 1650 | 95,9 | 2130 | 1830 | 1920 | 96,4 | 200        | 7500 |
| 630 LA8*     | 6 | 2250 | 1935 | 2030 | 96,1 | 2650 | 2275 | 2390 | 96,5 | 240        | 8200 |
| 710 SA8*     | 6 | 2430 | 2090 | 2190 | 96,3 | 2750 | 2365 | 2480 | 96,5 | on request |      |
| 710 SC8*     | 6 | 2620 | 2250 | 2360 | 96,5 | 2950 | 2535 | 2660 | 96,7 | on request |      |
| 710 MA8*     | 6 | 3100 | 2665 | 2790 | 96,6 | 3470 | 2980 | 3120 | 96,8 | on request |      |
| 710 MB8*     | 6 | 3350 | 2880 | 3020 | 96,7 | 3750 | 3220 | 3380 | 96,9 | on request |      |

### 10 pole

400V @ 50Hz - 600 min<sup>-1</sup>

450V @ 60Hz - 720 min<sup>-1</sup>

|               |   |      |      |      |      |      |      |      |      |            |      |
|---------------|---|------|------|------|------|------|------|------|------|------------|------|
| MJBM 500 SA10 | 6 | 520  | 450  | 470  | 94,0 | 645  | 555  | 580  | 94,5 | 63,8       | 3300 |
| 500 SC10      | 6 | 650  | 560  | 590  | 94,3 | 815  | 700  | 730  | 94,7 | 81,6       | 3800 |
| 500 MB10      | 6 | 760  | 655  | 680  | 94,8 | 915  | 790  | 820  | 95,2 | 89,7       | 4500 |
| 500 LA10      | 6 | 840  | 725  | 760  | 95,1 | 1055 | 910  | 950  | 95,5 | 106,0      | 4900 |
| 630 SC10      | 6 | 1060 | 910  | 950  | 95,1 | 1220 | 1050 | 1100 | 95,4 | 180        | 7300 |
| 630 MA10      | 6 | 1320 | 1135 | 1190 | 95,5 | 1510 | 1300 | 1360 | 95,8 | 200        | 7700 |
| 630 MB10      | 6 | 1480 | 1275 | 1330 | 95,6 | 1700 | 1460 | 1530 | 95,9 | 230        | 7900 |
| 630 LA10      | 6 | 1530 | 1315 | 1380 | 95,8 | 1780 | 1530 | 1600 | 96,1 | 260        | 8200 |
| 710 SC10      | 6 | 2150 | 1850 | 1940 | 95,9 | 2410 | 2070 | 2170 | 96,3 | on request |      |
| 710 MA10*     | 6 | 2590 | 2225 | 2330 | 95,9 | 2900 | 2490 | 2610 | 96,3 | on request |      |
| 710 MB10*     | 6 | 2760 | 2370 | 2480 | 96,4 | 3100 | 2665 | 2790 | 96,7 | on request |      |
| 710 LB10*     | 6 | 3000 | 2580 | 2700 | 96,4 | 3360 | 2885 | 3020 | 96,7 | on request |      |

### 12 pole

400V @ 50Hz - 500 min<sup>-1</sup>

450V @ 60Hz - 600 min<sup>-1</sup>

|               |   |      |      |      |      |      |      |      |      |            |      |
|---------------|---|------|------|------|------|------|------|------|------|------------|------|
| MJBM 630 SC12 | 6 | 810  | 700  | 730  | 95,1 | 930  | 800  | 840  | 95,4 | 220        | 8200 |
| 630 MA12      | 6 | 995  | 855  | 900  | 95,4 | 1150 | 990  | 1040 | 95,7 | 260        | 8600 |
| 630 MB12      | 6 | 1320 | 1135 | 1190 | 95,5 | 1520 | 1305 | 1370 | 95,8 | 290        | 8800 |
| 630 LA12      | 6 | 1400 | 1205 | 1260 | 95,7 | 1620 | 1395 | 1460 | 96,0 | 320        | 9200 |
| 710 SC12*     | 6 | 1750 | 1505 | 1580 | 95,8 | 1960 | 1685 | 1760 | 96,2 | on request |      |
| 710 MA12*     | 6 | 1900 | 1635 | 1710 | 95,9 | 2130 | 1830 | 1920 | 96,4 | on request |      |
| 710 LB12*     | 6 | 2360 | 2030 | 2120 | 96,3 | 2640 | 2270 | 2380 | 96,7 | on request |      |

\*: 690 V recommended

Ratings refer to the following conditions: balanced non-deforming load, altitude below 1.000 m asl, minimum power factor 0,8.

## INDUSTRIAL APPLICATION / MEDIUM AND HIGH VOLTAGE - 50Hz

| Type | Leads | kVA rating @ Temperature rise / Ambient temp. [°C] - Continuous duty |                     |                      |                     |                      |                     |
|------|-------|----------------------------------------------------------------------|---------------------|----------------------|---------------------|----------------------|---------------------|
|      |       | 3.000 V                                                              |                     | 6.000 V              |                     | 11.000 V             |                     |
|      |       | 105 / 40<br>ΔT cl. F                                                 | 80 / 40<br>ΔT cl. B | 105 / 40<br>ΔT cl. F | 80 / 40<br>ΔT cl. B | 105 / 40<br>ΔT cl. F | 80 / 40<br>ΔT cl. B |

### 4 pole 50Hz - 1.500 min<sup>-1</sup>

|     |         |   |      |      |      |      |      |      |
|-----|---------|---|------|------|------|------|------|------|
| MJH | 400 MA4 | 6 | 600  | 525  | 555  | 485  | 475  | 415  |
|     | 400 LA4 | 6 | 835  | 730  | 740  | 650  | 630  | 550  |
|     | 400 LB4 | 6 | 1020 | 895  | 925  | 810  | 790  | 690  |
|     | 450 MB4 | 6 | 960  | 840  | 895  | 785  | 765  | 670  |
|     | 450 LA4 | 6 | 1060 | 930  | 985  | 860  | 840  | 735  |
|     | 450 LB4 | 6 | 1185 | 1035 | 1105 | 965  | 940  | 825  |
|     | 500 MA4 | 6 | 1435 | 1255 | 1225 | 1070 | 1045 | 915  |
|     | 500 MB4 | 6 | 1710 | 1495 | 1435 | 1255 | 1220 | 1065 |
|     | 500 LA4 | 6 | 1850 | 1615 | 1700 | 1485 | 1445 | 1265 |
|     | 560 MA4 | 6 | 2200 | 1925 | 2000 | 1750 | 1700 | 1485 |
|     | 560 LA4 | 6 | 2500 | 2185 | 2270 | 1985 | 1930 | 1685 |
|     | 630 SA4 | 6 | 2000 | 1750 | 1815 | 1585 | 1545 | 1350 |
|     | 630 MA4 | 6 | 2270 | 1985 | 2060 | 1800 | 1755 | 1535 |
|     | 630 MB4 | 6 | 2560 | 2235 | 2330 | 2035 | 1985 | 1735 |
|     | 630 LA4 | 6 | 2930 | 2560 | 2660 | 2325 | 2265 | 1980 |
|     | 630 LB4 | 6 | 3440 | 3005 | 3120 | 2725 | 2655 | 2320 |
|     | 710 SC4 | 6 | 4200 | 3670 | 3780 | 3300 | 3215 | 2810 |
|     | 710 MB4 | 6 | 4800 | 4190 | 4320 | 3775 | 3675 | 3210 |
|     | 710 LB4 | 6 | 5500 | 4820 | 4970 | 4340 | 4220 | 3690 |

### 6 pole 50Hz - 1.000 min<sup>-1</sup>

|     |         |   |      |      |      |      |      |      |
|-----|---------|---|------|------|------|------|------|------|
| MJH | 400 LA6 | 6 | 615  | 540  | 540  | 475  | 460  | 405  |
|     | 400 LB6 | 6 | 660  | 580  | 575  | 505  | 490  | 430  |
|     | 450 MB6 | 6 | 675  | 590  | 590  | 515  | 500  | 440  |
|     | 450 LA6 | 6 | 750  | 655  | 655  | 575  | 560  | 490  |
|     | 450 LB6 | 6 | 840  | 735  | 730  | 640  | 625  | 550  |
|     | 500 MA6 | 6 | 925  | 810  | 805  | 705  | 685  | 600  |
|     | 500 MB6 | 6 | 1100 | 965  | 960  | 840  | 820  | 720  |
|     | 500 LA6 | 6 | 1235 | 1080 | 1100 | 965  | 935  | 820  |
|     | 560 MA6 | 6 | 1900 | 1660 | 1750 | 1530 | 1490 | 1305 |
|     | 560 LA6 | 6 | 2100 | 1835 | 1930 | 1685 | 1645 | 1440 |
|     | 630 SA6 | 6 | 1700 | 1485 | 1550 | 1355 | 1320 | 1155 |
|     | 630 MA6 | 6 | 1850 | 1615 | 1700 | 1485 | 1445 | 1265 |
|     | 630 MB6 | 6 | 2100 | 1835 | 1900 | 1660 | 1615 | 1410 |
|     | 630 LA6 | 6 | 2300 | 2010 | 2050 | 1790 | 1745 | 1525 |
|     | 630 LB6 | 6 | 2500 | 2185 | 2200 | 1925 | 1870 | 1635 |
|     | 710 SA6 | 6 | 3300 | 2885 | 3000 | 2620 | 2550 | 2230 |
|     | 710 MA6 | 6 | 4000 | 3495 | 3500 | 3060 | 2975 | 2600 |
|     | 710 LA6 | 6 | 4700 | 4105 | 4200 | 3670 | 3570 | 3120 |
|     | 710 LB6 | 6 | 5400 | 4720 | 4600 | 4020 | 3910 | 3415 |

Ratings refer to the following conditions: balanced non-deforming load, altitude below 1.000 m asl, minimum power factor 0,8.  
High voltage generators (11.000 V) will have initial MJJ

## INDUSTRIAL APPLICATION / MEDIUM AND HIGH VOLTAGE - 50Hz

| Type | Leads | kVA rating @ Temperature rise / Ambient temp. [°C] - Continuous duty |                     |                      |                     |                      |                     |
|------|-------|----------------------------------------------------------------------|---------------------|----------------------|---------------------|----------------------|---------------------|
|      |       | 3.000 V                                                              |                     | 6.000 V              |                     | 11.000 V             |                     |
|      |       | 105 / 40<br>ΔT cl. F                                                 | 80 / 40<br>ΔT cl. B | 105 / 40<br>ΔT cl. F | 80 / 40<br>ΔT cl. B | 105 / 40<br>ΔT cl. F | 80 / 40<br>ΔT cl. B |

### 8 pole 50Hz - 750 min<sup>-1</sup>

|             |   |      |      |      |      |      |      |
|-------------|---|------|------|------|------|------|------|
| MJH 400 LA8 | 6 | 440  | 385  | 380  | 335  | 325  | 285  |
| 400 LB8     | 6 | 505  | 445  | 440  | 385  | 375  | 330  |
| 500 SA8     | 6 | 640  | 560  | 560  | 490  | 480  | 420  |
| 500 MA8     | 6 | 780  | 685  | 680  | 595  | 580  | 510  |
| 500 MB8     | 6 | 915  | 800  | 795  | 695  | 680  | 595  |
| 500 LA8     | 6 | 1055 | 925  | 915  | 800  | 780  | 685  |
| 560 MA8     | 6 | 1400 | 1225 | 1300 | 1135 | 1105 | 965  |
| 560 LA8     | 6 | 1550 | 1355 | 1440 | 1260 | 1225 | 1070 |
| 630 SA8     | 6 | 1300 | 1135 | 1200 | 1050 | 1020 | 895  |
| 630 MA8     | 6 | 1450 | 1270 | 1400 | 1225 | 1190 | 1040 |
| 630 MB8     | 6 | 1700 | 1485 | 1600 | 1400 | 1360 | 1190 |
| 630 LA8     | 6 | 1850 | 1615 | 1680 | 1470 | 1430 | 1250 |
| 630 LB8     | 6 | 2000 | 1750 | 1750 | 1530 | 1490 | 1305 |
| 710 SA8     | 6 | 2600 | 2270 | 2400 | 2095 | 2040 | 1785 |
| 710 MA8     | 6 | 3200 | 2795 | 3000 | 2620 | 2550 | 2230 |
| 710 LA8     | 6 | 3700 | 3230 | 3500 | 3060 | 2975 | 2600 |
| 710 LB8     | 6 | 4100 | 3580 | 3800 | 3320 | 3230 | 2820 |

### 10 pole 50Hz - 600 min<sup>-1</sup>

|              |   |      |      |      |      |      |      |
|--------------|---|------|------|------|------|------|------|
| MJH 500 SA10 | 6 | 460  | 405  | 400  | 350  | 340  | 300  |
| 500 MA10     | 6 | 560  | 490  | 485  | 425  | 415  | 365  |
| 500 MB10     | 6 | 660  | 580  | 575  | 505  | 490  | 430  |
| 500 LA10     | 6 | 735  | 645  | 640  | 560  | 545  | 480  |
| 630 SA10     | 6 | 950  | 830  | 900  | 790  | 765  | 670  |
| 630 MA10     | 6 | 1100 | 965  | 1000 | 875  | 850  | 745  |
| 630 MB10     | 6 | 1300 | 1135 | 1200 | 1050 | 1020 | 895  |
| 630 LA10     | 6 | 1500 | 1310 | 1330 | 1165 | 1135 | 995  |
| 630 LB10     | 6 | 1700 | 1485 | 1450 | 1270 | 1235 | 1080 |
| 710 SA10     | 6 | 2000 | 1750 | 1800 | 1575 | 1530 | 1340 |
| 710 MA10     | 6 | 2400 | 2095 | 2200 | 1925 | 1870 | 1635 |
| 710 LA10     | 6 | 2700 | 2360 | 2400 | 2095 | 2040 | 1785 |
| 710 LB10     | 6 | 3400 | 2970 | 3200 | 2795 | 2720 | 2375 |

### 12 pole 50Hz - 500 min<sup>-1</sup>

|              |   |      |      |      |      |      |      |
|--------------|---|------|------|------|------|------|------|
| MJH 630 SA12 | 6 | 700  | 615  | 700  | 615  | 595  | 520  |
| 630 MA12     | 6 | 800  | 700  | 750  | 655  | 640  | 560  |
| 630 MB12     | 6 | 950  | 830  | 900  | 790  | 765  | 670  |
| 630 LA12     | 6 | 1100 | 965  | 1000 | 875  | 850  | 745  |
| 630 LB12     | 6 | 1250 | 1095 | 1150 | 1005 | 980  | 860  |
| 710 SA12     | 6 | 1500 | 1310 | 1400 | 1225 | 1190 | 1040 |
| 710 MA12     | 6 | 1800 | 1575 | 1650 | 1445 | 1405 | 1230 |
| 710 LA12     | 6 | 2250 | 1965 | 2050 | 1790 | 1745 | 1525 |
| 710 LB12     | 6 | 2500 | 2185 | 2300 | 2010 | 1955 | 1710 |

Ratings refer to the following conditions: balanced non-deforming load, altitude below 1.000 m asl, minimum power factor 0,8.  
High voltage generators (11.000 V) will have initial MJJ



## INDUSTRIAL APPLICATION / MEDIUM AND HIGH VOLTAGE - 60Hz

| Type | Leads | kVA rating @ Temperature rise / Ambient temp. [°C] - Continuous duty |                     |                      |                     |                      |                     |
|------|-------|----------------------------------------------------------------------|---------------------|----------------------|---------------------|----------------------|---------------------|
|      |       | 4.160 V                                                              |                     | 6.000 V              |                     | 13.800 V             |                     |
|      |       | 105 / 40<br>ΔT cl. F                                                 | 80 / 40<br>ΔT cl. B | 105 / 40<br>ΔT cl. F | 80 / 40<br>ΔT cl. B | 105 / 40<br>ΔT cl. F | 80 / 40<br>ΔT cl. B |

### 4 pole 60Hz - 1.800 min<sup>-1</sup>

|             |   |      |      |      |      |      |      |
|-------------|---|------|------|------|------|------|------|
| MJH 400 MA4 | 6 | 695  | 610  | 665  | 585  | 565  | 495  |
| 400 LA4     | 6 | 965  | 845  | 895  | 785  | 760  | 665  |
| 400 LB4     | 6 | 1180 | 1030 | 1120 | 980  | 950  | 835  |
| 450 MB4     | 6 | 1125 | 935  | 1070 | 935  | 910  | 795  |
| 450 LA4     | 6 | 1240 | 1085 | 1180 | 1030 | 1005 | 880  |
| 450 LB4     | 6 | 1390 | 1215 | 1325 | 1160 | 1125 | 985  |
| 500 MA4     | 6 | 1660 | 1450 | 1500 | 1310 | 1275 | 1115 |
| 500 MB4     | 6 | 1980 | 1730 | 1750 | 1530 | 1490 | 1300 |
| 500 LA4     | 6 | 2135 | 1865 | 2000 | 1750 | 1700 | 1485 |
| 560 MA4     | 6 | 2440 | 2130 | 2320 | 2030 | 1970 | 1725 |
| 560 LA4     | 6 | 2770 | 2420 | 2620 | 2290 | 2225 | 1945 |
| 630 SA4     | 6 | 2135 | 1865 | 2025 | 1770 | 1720 | 1505 |
| 630 MA4     | 6 | 2430 | 2125 | 2305 | 2015 | 1960 | 1710 |
| 630 MB4     | 6 | 2740 | 2395 | 2595 | 2270 | 2205 | 1930 |
| 630 LA4     | 6 | 3125 | 2730 | 2960 | 2585 | 2515 | 2200 |
| 630 LB4     | 6 | 3645 | 3185 | 3445 | 3010 | 2930 | 2560 |
| 710 SC4     | 6 | 4385 | 3830 | 4140 | 3615 | 3520 | 3075 |
| 710 MB4     | 6 | 4980 | 4350 | 4735 | 4135 | 4025 | 3515 |
| 710 LB4     | 6 | 5580 | 4870 | 5030 | 4630 | 4500 | 3940 |

### 6 pole 60Hz -1.200 min<sup>-1</sup>

|             |   |      |      |      |      |      |      |
|-------------|---|------|------|------|------|------|------|
| MJH 400 LA6 | 6 | 710  | 620  | 650  | 570  | 550  | 485  |
| 400 LB6     | 6 | 760  | 665  | 700  | 615  | 595  | 520  |
| 450 MB6     | 6 | 775  | 680  | 715  | 625  | 605  | 535  |
| 450 LA6     | 6 | 860  | 755  | 795  | 695  | 675  | 595  |
| 450 LB6     | 6 | 965  | 845  | 890  | 780  | 755  | 665  |
| 500 MA6     | 6 | 1070 | 935  | 970  | 850  | 825  | 725  |
| 500 MB6     | 6 | 1270 | 1110 | 1160 | 1015 | 985  | 865  |
| 500 LA6     | 6 | 1430 | 1250 | 1330 | 1165 | 1130 | 990  |
| 550 MA6     | 6 | 2100 | 1835 | 2020 | 1765 | 1720 | 1500 |
| 560 LA6     | 6 | 2330 | 2035 | 2240 | 1960 | 1905 | 1665 |
| 630 SA6     | 6 | 1830 | 1600 | 1740 | 1520 | 1480 | 1295 |
| 630 MA6     | 6 | 2000 | 1750 | 1900 | 1660 | 1615 | 1410 |
| 630 MB6     | 6 | 2270 | 1985 | 2160 | 1890 | 1835 | 1605 |
| 630 LA6     | 6 | 2430 | 2125 | 2310 | 2020 | 1965 | 1715 |
| 630 LB6     | 6 | 2650 | 2315 | 2520 | 2200 | 2145 | 1870 |
| 710 SA6     | 6 | 3445 | 3010 | 3260 | 2850 | 2770 | 2420 |
| 710 MA6     | 6 | 4150 | 3625 | 3925 | 3430 | 3340 | 2915 |
| 710 LA6     | 6 | 4880 | 4260 | 4615 | 4030 | 3925 | 3425 |
| 710 LB6     | 6 | 5340 | 4665 | 5050 | 4410 | 4295 | 3750 |

Ratings refer to the following conditions: balanced non-deforming load, altitude below 1.000 m asl, minimum power factor 0,8.  
High voltage generators (13.800 V) will have initial MJJ

## INDUSTRIAL APPLICATION / MEDIUM AND HIGH VOLTAGE - 60Hz

| Type | Leads | kVA rating @ Temperature rise / Ambient temp. [°C] - Continuous duty |                     |                      |                     |                      |                     |
|------|-------|----------------------------------------------------------------------|---------------------|----------------------|---------------------|----------------------|---------------------|
|      |       | 4.160 V                                                              |                     | 6.000 V              |                     | 13.800 V             |                     |
|      |       | 105 / 40<br>ΔT cl. F                                                 | 80 / 40<br>ΔT cl. B | 105 / 40<br>ΔT cl. F | 80 / 40<br>ΔT cl. B | 105 / 40<br>ΔT cl. F | 80 / 40<br>ΔT cl. B |

### 8 pole 60Hz - 900 min<sup>-1</sup>

|             |   |      |      |      |      |      |      |
|-------------|---|------|------|------|------|------|------|
| MJH 400 LA8 | 6 | 510  | 450  | 470  | 415  | 400  | 350  |
| 400 LB8     | 6 | 585  | 515  | 540  | 475  | 460  | 405  |
| 500 SA8     | 6 | 740  | 650  | 670  | 585  | 570  | 500  |
| 500 MA8     | 6 | 905  | 790  | 820  | 720  | 695  | 610  |
| 500 MB8     | 6 | 1060 | 930  | 970  | 850  | 825  | 725  |
| 500 LA8     | 6 | 1220 | 1065 | 1100 | 965  | 935  | 820  |
| 560 MA8     | 6 | 1550 | 1355 | 1500 | 1310 | 1275 | 1115 |
| 560 LA8     | 6 | 1720 | 1505 | 1655 | 1445 | 1405 | 1230 |
| 630 SA8     | 6 | 1405 | 1230 | 1335 | 1170 | 1135 | 995  |
| 630 MA8     | 6 | 1565 | 1370 | 1490 | 1305 | 1270 | 1110 |
| 630 MB8     | 6 | 1835 | 1605 | 1745 | 1525 | 1485 | 1295 |
| 630 LA8     | 6 | 1955 | 1710 | 1860 | 1625 | 1580 | 1385 |
| 630 LB8     | 6 | 2120 | 1855 | 2015 | 1760 | 1715 | 1500 |
| 710 SA8     | 6 | 2715 | 2370 | 2570 | 2245 | 2185 | 1910 |
| 710 MA8     | 6 | 3325 | 2905 | 3145 | 2750 | 2675 | 2335 |
| 710 LA8     | 6 | 3840 | 3355 | 3630 | 3170 | 3085 | 2695 |
| 710 LB8     | 6 | 4165 | 3640 | 3940 | 3440 | 3350 | 2925 |

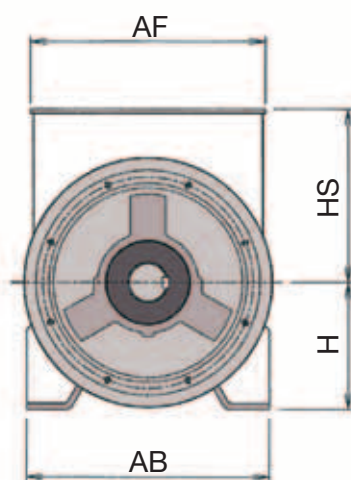
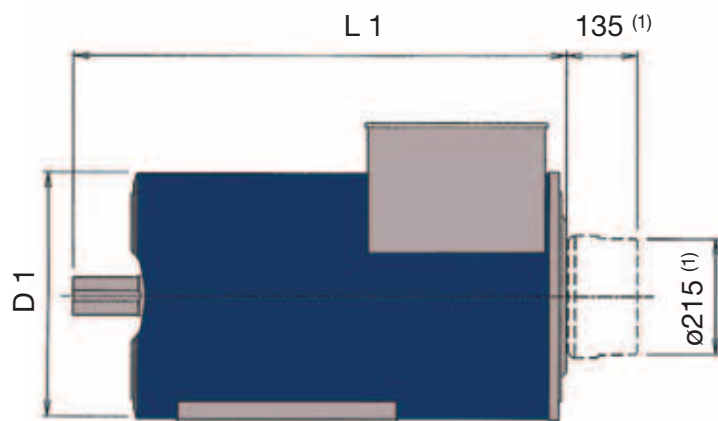
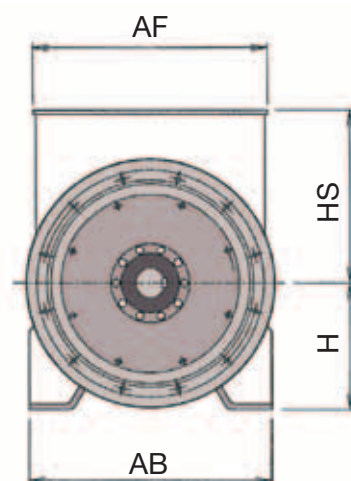
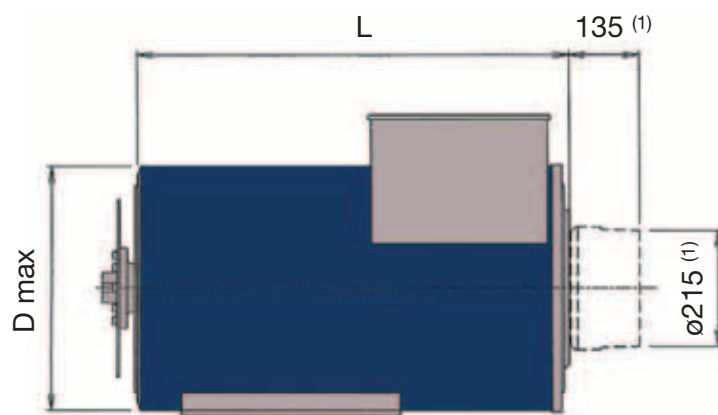
### 10 pole 60Hz - 720 min<sup>-1</sup>

|              |   |      |      |      |      |      |      |
|--------------|---|------|------|------|------|------|------|
| MJH 500 SA10 | 6 | 530  | 465  | 470  | 415  | 400  | 350  |
| 500 MA10     | 6 | 650  | 570  | 585  | 515  | 495  | 435  |
| 500 MB10     | 6 | 765  | 670  | 690  | 605  | 585  | 515  |
| 500 LA10     | 6 | 850  | 745  | 765  | 670  | 650  | 570  |
| 630 SA10     | 6 | 1025 | 895  | 975  | 855  | 830  | 725  |
| 630 MA10     | 6 | 1190 | 1040 | 1135 | 995  | 965  | 845  |
| 630 MB10     | 6 | 1410 | 1235 | 1340 | 1170 | 1140 | 995  |
| 630 LA10     | 6 | 1585 | 1385 | 1510 | 1320 | 1285 | 1125 |
| 630 LB10     | 6 | 1800 | 1575 | 1710 | 1495 | 1454 | 1270 |
| 710 SA10     | 6 | 2085 | 1820 | 1960 | 1715 | 1665 | 1455 |
| 710 MA10     | 6 | 2495 | 2180 | 2350 | 2055 | 2000 | 1745 |
| 710 LA10     | 6 | 2805 | 2450 | 2640 | 2305 | 2245 | 1960 |
| 710 LB10     | 6 | 3740 | 3265 | 3520 | 3075 | 2990 | 2615 |

### 12 pole 60Hz - 500 min<sup>-1</sup>

|              |   |      |      |      |      |      |      |
|--------------|---|------|------|------|------|------|------|
| MJH 630 SA12 | 6 | 755  | 660  | 720  | 630  | 615  | 535  |
| 630 MA12     | 6 | 870  | 760  | 830  | 725  | 705  | 620  |
| 630 MB12     | 6 | 1030 | 900  | 980  | 860  | 835  | 730  |
| 630 LA12     | 6 | 1165 | 1020 | 1110 | 970  | 945  | 825  |
| 630 LB12     | 6 | 1325 | 1160 | 1260 | 1100 | 1070 | 935  |
| 710 SA12     | 6 | 1565 | 1370 | 1475 | 1290 | 1255 | 1095 |
| 710 MA12     | 6 | 1870 | 1635 | 1760 | 1540 | 1500 | 1310 |
| 710 LA12     | 6 | 2335 | 2040 | 2195 | 1920 | 1865 | 1630 |
| 710 LB12     | 6 | 2615 | 2285 | 2460 | 2150 | 2090 | 1830 |

Ratings refer to the following conditions: balanced non-deforming load, altitude below 1.000 m asl, minimum power factor 0,8.  
High voltage generators (13.800 V) will have initial MJJ



#### STANDARD TYPE OF CONSTRUCTION

| Series | Construction |     |     |         |     |      |
|--------|--------------|-----|-----|---------|-----|------|
|        | B3           | B34 | B35 | B20/B14 | B2* | B16* |
| MJB    | ●            | ●   | ●   | ●       | ●   | ●    |
| MJH    | ●            | ●   | ●   | ●       | ●   | ●    |
| MJBM   | ●            | ●   | ●   | ●       | ●   | ●    |
| MJR    | ●            | ●   | ●   | ●       | ●   | ●    |

\* Single bearing configuration.

Special configuration and shaft extensions are available on request.

#### COUPLING

| COUPLING | Coupling |   |   |         |   |   |   |         |   |   |         |   |   |         |   |   |     |   |         |     |   |         |     |   |    |         |    |         |    |         |   |
|----------|----------|---|---|---------|---|---|---|---------|---|---|---------|---|---|---------|---|---|-----|---|---------|-----|---|---------|-----|---|----|---------|----|---------|----|---------|---|
|          | MJB 160  |   |   | MJB 200 |   |   |   | MJB 225 |   |   | MJB 250 |   |   | MJB 315 |   |   |     |   | MJB 355 |     |   | MJB 400 |     |   |    | MJB 450 |    | MJB 500 |    | MJB 560 |   |
| Adaptor  | 5        | 4 | 3 | 4       | 3 | 2 | 1 | 4       | 3 | 2 | 3       | 2 | 1 | 3       | 2 | 1 | 1/2 | 0 | 1       | 1/2 | 0 | 1       | 1/2 | 0 | 00 | 0       | 00 | 0       | 00 | 00      |   |
| 6 1/2    | ●        | ● |   |         |   |   |   |         |   |   |         |   |   |         |   |   |     |   |         |     |   |         |     |   |    |         |    |         |    |         |   |
| 7 1/2    | ●        | ● |   |         |   |   |   |         |   |   |         |   |   |         |   |   |     |   |         |     |   |         |     |   |    |         |    |         |    |         |   |
| 8        | ●        | ● | ● | ●       | ● | ● |   |         |   |   |         |   |   |         |   |   |     |   |         |     |   |         |     |   |    |         |    |         |    |         |   |
| 10       |          | ● | ● | ●       | ● | ● |   | ●       |   |   |         |   |   |         |   |   |     |   |         |     |   |         |     |   |    |         |    |         |    |         |   |
| 11 1/2   |          |   | ⊙ |         | ⊙ | ● |   |         | ⊙ | ● | ⊙       | ● | ● | ●       | ● | ● |     |   |         |     |   |         |     |   |    |         |    |         |    |         |   |
| 14       |          |   |   |         |   |   | ● |         |   |   |         |   | ⊙ |         | ● | ● | ●   | ● | ⊙       | ●   | ● | ●       | ●   | ● |    | ●       |    | ●       |    |         |   |
| 16       |          |   |   |         |   |   |   |         |   |   |         |   |   |         |   | ● | ●   |   |         | ●   |   |         |     | ● | ●  | ●       | ●  | ●       | ●  |         |   |
| 18       |          |   |   |         |   |   |   |         |   |   |         |   |   |         |   |   |     | ● |         |     | ● |         |     | ⊙ | ●  | ●       | ●  | ●       | ●  |         | ● |
| 21       |          |   |   |         |   |   |   |         |   |   |         |   |   |         |   |   |     |   |         |     |   |         |     |   |    | ●       |    | ●       |    | ●       | ⊙ |

● Available ● Most common

(1) Dimensions for optional PMG

OVERALL DIMENSIONS [mm]

| Dimension | MJB 160 COMPACT |    |     |    |    | MJB 160 |    |     |    |    | MJB 200 |    |     |    |
|-----------|-----------------|----|-----|----|----|---------|----|-----|----|----|---------|----|-----|----|
|           | SA              | SB | SC  | MA | MB | SA      | SB | SC  | MA | MB | SA      | SB | MA  | MB |
| H         | 160             |    |     |    |    | 160     |    |     |    |    | 200     |    |     |    |
| HS        | 257             |    |     |    |    | 257     |    |     |    |    | 323     |    |     |    |
| AB        | 300             |    |     |    |    | 300     |    |     |    |    | 405     |    |     |    |
| AF        | 328             |    |     |    |    | 328     |    |     |    |    | 410     |    |     |    |
| L         | 547             |    | 592 |    |    | 587     |    | 632 |    |    | 615     |    | 710 |    |
| D (MAX)   | 451             |    |     |    |    | 451     |    |     |    |    | 552     |    |     |    |
| L1        | 627             |    | 672 |    |    | 627     |    | 672 |    |    | 685     |    | 780 |    |
| D1        | 354             |    |     |    |    | 354     |    |     |    |    | 432     |    |     |    |

| Dimension | MJB 225 |    |     |     | MJB 250 |    |      |    | MJB 315 |    |      |    |
|-----------|---------|----|-----|-----|---------|----|------|----|---------|----|------|----|
|           | SA      | SB | MA  | LA  | MA      | MB | LA   | LB | SA      | SB | MA   | MB |
| H         | 225     |    |     |     | 250     |    |      |    | 315     |    |      |    |
| HS        | 412     |    |     |     | 468     |    |      |    | 555     |    |      |    |
| AB        | 446     |    |     |     | 505     |    |      |    | 600     |    |      |    |
| AF        | 460     |    |     |     | 502     |    |      |    | 632     |    |      |    |
| L         | 645     |    | 790 | 845 | 858     |    | 998  |    | 945     |    | 1105 |    |
| D (MAX)   | 492     |    |     |     | 552     |    |      |    | 711     |    |      |    |
| L1        | 805     |    | 850 | 905 | 918     |    | 1050 |    | 1052    |    | 1212 |    |
| D1        | 492     |    |     |     | 532     |    |      |    | 624     |    |      |    |

| Dimension | MJB 355 |      |    |    | MJB 400 |      |    |      |    |      | MJB 450 |    |    |
|-----------|---------|------|----|----|---------|------|----|------|----|------|---------|----|----|
|           | SA      | SB   | MA | MB | SA      | SB   | MA | MB   | LA | LB   | MB      | LA | LB |
| H         | 355     |      |    |    | 400     |      |    |      |    |      | 450     |    |    |
| HS        | 620     |      |    |    | 675     |      |    |      |    |      | 740     |    |    |
| AB        | 670     |      |    |    | 800     |      |    |      |    |      | 900     |    |    |
| AF        | 700     |      |    |    | 800     |      |    |      |    |      | 800     |    |    |
| L         | 1136    | 1366 |    |    | 1200    | 1400 |    | 1600 |    | 1517 | 1777    |    |    |
| D (MAX)   | 711     |      |    |    | 883     |      |    |      |    |      | 883     |    |    |
| L1        | 1298    | 1528 |    |    | 1370    | 1570 |    | 1770 |    | 1807 | 1987    |    |    |
| D1        | 690     |      |    |    | 780     |      |    |      |    |      | 882     |    |    |

| Dimension | MJB 500 |    |      |    |      | MJB 560 |      | MJB 630                            |    |      |    |      | MJB 710                            |    |      |    |      |
|-----------|---------|----|------|----|------|---------|------|------------------------------------|----|------|----|------|------------------------------------|----|------|----|------|
|           | SA      | SC | MA   | MB | LA   | MA      | LA   | SA                                 | SB | MA   | MB | LA   | SA                                 | SC | MA   | MB | LA   |
| H         | 500     |    |      |    |      | 560     |      | 630                                |    |      |    |      | 710                                |    |      |    |      |
| HS        | 867     |    |      |    |      | 870     |      | 948                                |    |      |    |      | 1170                               |    |      |    |      |
| AB        | 1000    |    |      |    |      | 1100    |      | 1280                               |    |      |    |      | 1500                               |    |      |    |      |
| AF        | 900     |    |      |    |      | 900     |      | Dimensions available<br>on request |    |      |    |      | Dimensions available<br>on request |    |      |    |      |
| L         | 1720    |    | 1920 |    | 2020 | 2035    | 2135 |                                    |    |      |    |      |                                    |    |      |    |      |
| D (MAX)   | 970     |    |      |    |      | 1070    |      |                                    |    |      |    |      |                                    |    |      |    |      |
| L1        | 1970    |    | 2170 |    | 2270 | 2035    | 2405 | 2160                               |    | 2360 |    | 2460 | 2450                               |    | 2650 |    | 2900 |
| D1        | 970     |    |      |    |      | 1070    |      | 1200                               |    |      |    |      | 1413                               |    |      |    |      |

D (max) dimensions shown refers to biggest adaptor/coupling





**MarelliMotori®** S.p.A.

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# **Certifications**





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www.rina.org

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www.iqnet-certification.com

*IQNet, the association of the world's first class certification bodies, is the largest provider of management System Certification in the world.*

*IQNet is composed of more than 30 bodies and counts over 150 subsidiaries all over the globe.*

# **CERTIFICATO N. 250/95/S** **CERTIFICATE No**

SI CERTIFICA CHE IL SISTEMA DI GESTIONE PER LA QUALITÀ DI  
IT IS HEREBY CERTIFIED THAT THE QUALITY MANAGEMENT SYSTEM OF

**MARELLI MOTORI S.p.a.**

VIA SABBIONARA 1 36071 ARZIGNANO VI ITALIA

NELLE SEGUENTI UNITA' OPERATIVE / IN THE FOLLOWING OPERATIONAL UNITS

VIA SABBIONARA 1  
36071 ARZIGNANO VI ITALIA

E' CONFORME ALLA NORMA  
IS IN COMPLIANCE WITH THE STANDARD

**ISO 9001:2000**

PER I SEGUENTI CAMPI DI ATTIVITÀ / FOR THE FOLLOWING FIELD(S) OF ACTIVITIES EA: 18

PROGETTAZIONE E PRODUZIONE DI MOTORI ASINCRONI TRIFASI E SERIE DERIVATE - GENERATORI SINCRONI ED ASINCRONI - MOTORI A CORRENTE CONTINUA E SERIE DERIVATE.

DESIGN AND MANUFACTURE OF THREE-PHASE ASYNCHRONOUS MOTORS AND THEIR DERIVATIVES - SYNCHRONOUS AND ASYNCHRONOUS GENERATORS - DIRECT CURRENT MOTORS AND THEIR DERIVATIVES.

Riferirsi al Manuale della Qualità per i dettagli delle esclusioni ai requisiti della norma

Reference is to be made to the Quality Manual for details regarding the exemptions from the requirements of the standard

L'uso e la validità del presente certificato sono soggetti al rispetto del documento RINA: Regolamento per la certificazione di Sistemi Qualità

The use and validity of this certificate are subject to compliance with the RINA document: Rules for the certification of Quality Systems

Prima Emissione 02.10.1995  
First Issue  
Emissione corrente 10.07.2003  
Current Issue

Dott. Ing. Domenico Andreis  
(Direttore Certificazione e Servizi Industriali)

**RINA SpA**

Via Corsica 12 - 16128 Genova Italy

Per informazioni sulla validità del certificato, visitare il sito [www.rina.org](http://www.rina.org)

For information concerning validity of the certificate, you can visit the site [www.rina.org](http://www.rina.org)



CISQ è la Federazione Italiana di Organismi di Certificazione dei sistemi di gestione aziendale

CISQ is the Italian Federation of management system Certification Bodies

**SINCERT**

ACCREDITAMENTO ORGANISMI DI CERTIFICAZIONE E ISPEZIONE

SGQ N° 002A - SGA N° 002D  
PRD N° 002B - PRS N° 006C  
SCR N° 003F - SSI N° 001G

Memoria degli Accordi di Mutuo Riconoscimento EA e IAF  
Signatory of EA and IAF Mutual Recognition Agreements

La validità del presente certificato è subordinata a sorveglianza periodica annuale / semestrale ed al riesame completo del sistema di gestione con periodicità triennale

The validity of this certificate is dependent on an annual/six monthly audit and on a complete review, every three years, of the management system

FEDERAZIONE

**CISQ**

www.cisq.com

Form CERSISGE-10/02





THE INTERNATIONAL CERTIFICATION NETWORK<sup>®</sup>

# CERTIFICATE

IQNet and its partner  
**CISQ/RINA**  
hereby certify that the organization  
**MARELLI MOTORI S.p.a.**

VIA SABBIONARA 1 36071 ARZIGNANO VI ITALIA

in the following operative units  
VIA SABBIONARA 1 36071 ARZIGNANO VI ITALIA

for the following field of activities

DESIGN AND MANUFACTURE OF THREE-PHASE ASYNCHRONOUS MOTORS AND THEIR DERIVATIVES - SYNCHRONOUS AND ASYNCHRONOUS GENERATORS - DIRECT CURRENT MOTORS AND THEIR DERIVATIVES.

has implemented and maintains a

## Quality Management System

which fulfills the requirements of the following standard

### ISO 9001:2000

Registration Number: **IT-2774**

First Issue : 1995-10-02

Current issue : 2003-07-10

E



*Fabio Roversi*  
President of IQNet



*Gianrenzo Prati*  
President of CISQ

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# RINA

www.rina.org

## CERTIFICATO N. CERTIFICATE No

### EMS-4/S

SI CERTIFICA CHE IL SISTEMA DI GESTIONE AMBIENTALE DI  
WE HEREBY CERTIFY THAT THE ENVIRONMENTAL MANAGEMENT SYSTEM OPERATED BY

### MARELLI MOTORI S.p.a.

VIA SABBIONARA 1 36071 ARZIGNANO VI ITALIA

NELLE SEGUENTI UNITA' OPERATIVE / IN THE FOLLOWING OPERATIONAL UNITS

VIA SABBIONARA 1

36071 ARZIGNANO VI ITALIA

E' CONFORME ALLA NORMA  
IS IN COMPLIANCE WITH THE STANDARD

### ISO 14001:1996

PER I SEGUENTI CAMPI DI ATTIVITA' / FOR THE FOLLOWING FIELD(S) OF ACTIVITIES  
PROGETTAZIONE E PRODUZIONE DI MOTORI ASINCRONI TRIFASI E SERIE DERIVATE - GENERATORI  
SINCRONI ED ASINCRONI - MOTORI A CORRENTE CONTINUA E SERIE DERIVATE MEDIANTE LE FASI  
DI FUSIONE E PRESSO-FUSIONE, LAVORAZIONI MECCANICHE, TRANCIATURA, ASSEMBLAGGIO E  
VERNICIATURA.

DESIGN AND MANUFACTURE OF THREE-PHASE ASYNCHRONOUS MOTORS AND THEIR  
DERIVATIVES-SYNCHRONOUS AND ASYNCHRONOUS GENERATORS - DIRECT CURRENT MOTORS  
AND THEIR DERIVATES THROUGH THE PHASES OF CASTING AND PRESSURE DIE-CASTING,  
MECHANICAL WORKING, BLANKING, ASSEMBLY AND PAINTING.

L'uso e la validità del presente certificato sono soggetti al rispetto del documento RINA: Regolamento per la certificazione di sistemi di gestione ambientale

The use and validity of this certificate are subject to compliance with the RINA document: Rules for the certification of environmental management systems

|                                     |            |
|-------------------------------------|------------|
| Prima Emissione<br>First Issue      | 13.06.1997 |
| Emissione corrente<br>Current Issue | 04.07.2003 |

Dott. Ing. Domenico Andreis  
(Direttore Certificazione e Servizi Industriali)

**RINA SpA**

Via Corsica 12 - 16128 Genova Italy

## SINCERT

ACCREDITAMENTO ORGANISMI DI CERTIFICAZIONE E SPEZIONE

SGO N° 002A - SGA N° 002D  
PRD N° 002B - PRS N° 006C  
SCR N° 003F - SSI N° 001G

Membro degli Accordi di Mutuo  
Riconoscimento EA e IAF  
Signatory of EA and IAF Mutual  
Recognition Agreements

La validità del presente certificato è subordinata a sorveglianza periodica annuale /  
semestrale ed al riesame completo del sistema di gestione con periodicità triennale

The validity of this certificate is dependent on an annual/six monthly audit and on a  
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For information concerning  
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hereby certify that the organization  
**MARELLI MOTORI S.p.a.**

VIA SABBIONARA 1 36071 ARZIGNANO VI ITALIA

in the following operative units  
VIA SABBIONARA 1 36071 ARZIGNANO VI ITALIA

for the following field of activities

DESIGN AND MANUFACTURE OF THREE-PHASE ASYNCHRONOUS MOTORS AND THEIR DERIVATIVES-SYNCHRONOUS AND ASYNCHRONOUS GENERATORS - DIRECT CURRENT MOTORS AND THEIR DERIVATES THROUGH THE PHASES OF CASTING AND PRESSURE DIE-CASTING, MECHANICAL WORKING, BLANKING, ASSEMBLY AND PAINTING.

has implemented and maintains a

## Environment Management System

which fulfills the requirements of the following standard

### ISO 14001:1996

Registration Number: **IT-6004**

First Issue : 1997-06-13

Current issue : 2003-07-04

E



*Fabio Roversi*  
President of IQNet



*Gianrenzo Prati*  
President of CISQ

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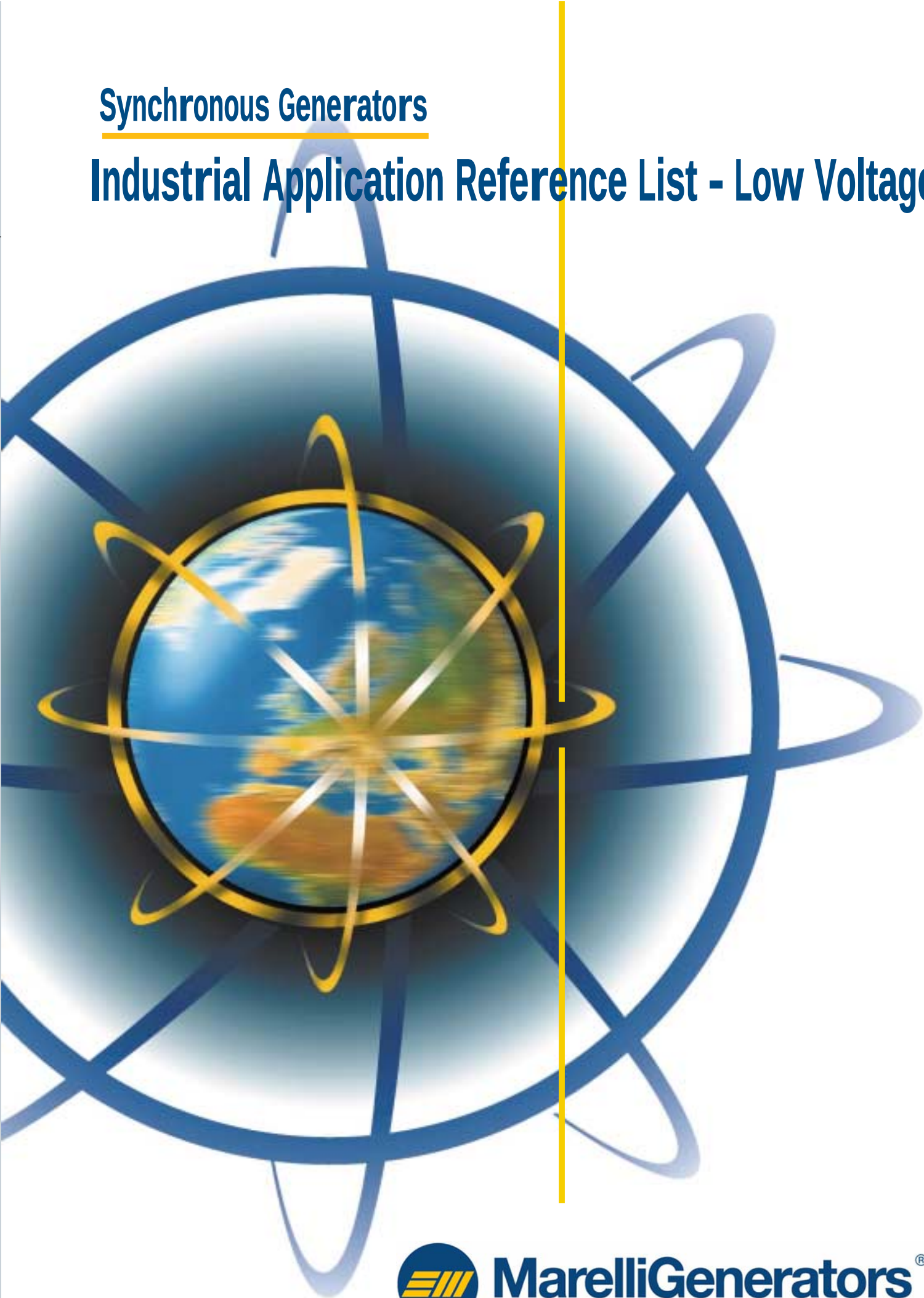
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# **Reference List**

Synchronous Generators

# Industrial Application Reference List - Low Voltage



**MarelliGenerators®**



# **INDUSTRIAL APPLICATION**



# DAEWOO(DOOSAN) with MARELLI



Output up to 624kW



# VOLVO PENTA with MARELLI



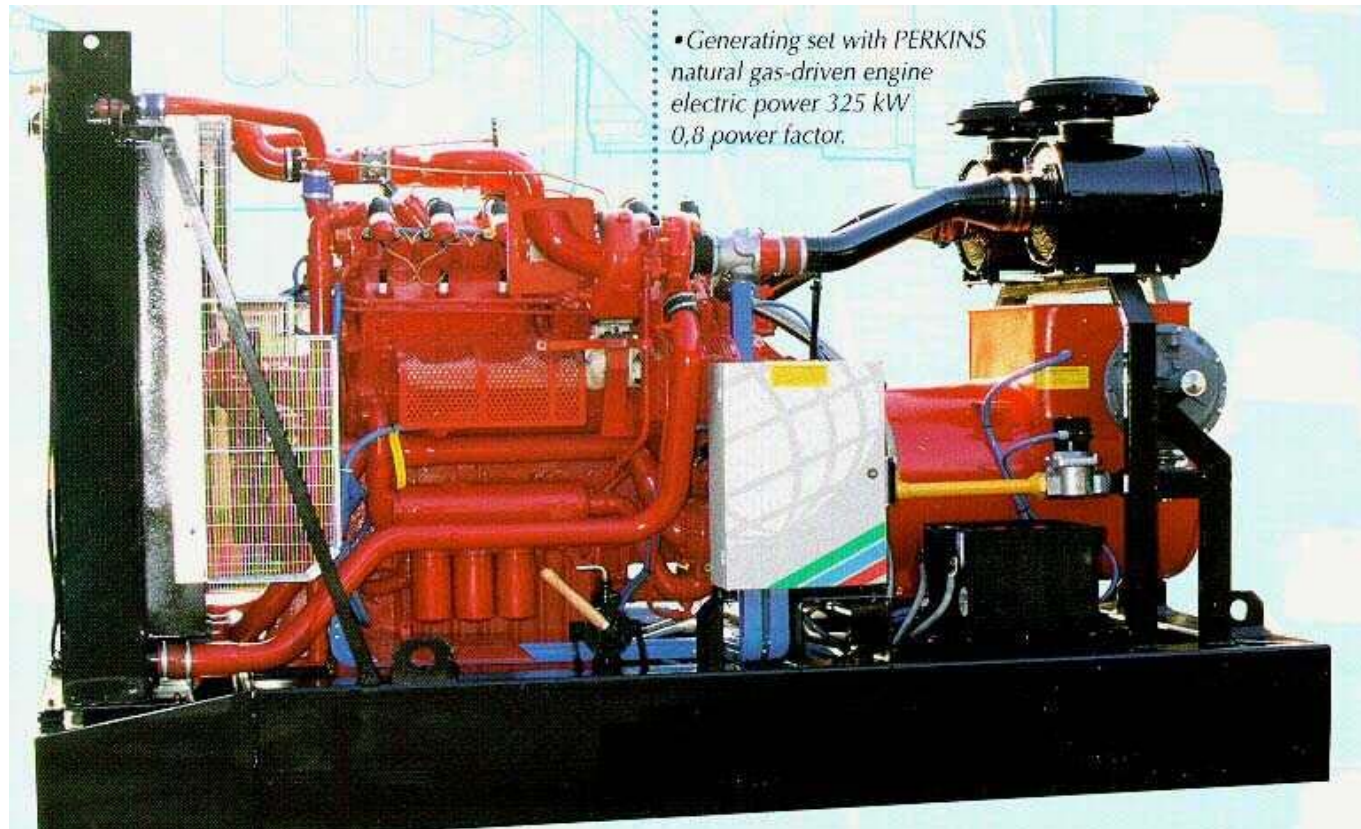
Output up to 500kW

## MAN-MARELLI





# PERKINS - MARELLI



## IVECO AIFO - MARELLI



## IFM - MARELLI





# **MITSUBISHI with MARELLI**



**Output up to 5000kVA**



**Re-condition Engine with  
Marelli Up to 400kVA**

## **12VP185 PAXMAN with Marelli 2500kVA**





# AUSTRALIA



**> 10 Power Stations  
powered by  
MARELLI  
Generators**

**Gold Mines  
Western Australia  
Since 1990**



# Marelli lights up the De Ferraris Stadium at Genova with 720 kVA Power



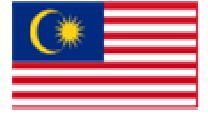
## Marelli Asia Pacific – Domestic References



**MALAYSIA KLIA EXPRESS RAIL LINK  
EMERGENCY SERVICE LOCOMOTIVE  
POWER BY: MARELLI – M8B 400 MB4 - 1000KVA**



**Marelli Asia Pacific – Domestic References (Telecom Application)**



| No. | Date    | Quantity | Type           | Power (kVA) | Technical Specifications   | Destination | Plant Name                         |
|-----|---------|----------|----------------|-------------|----------------------------|-------------|------------------------------------|
| 1   | 1990-91 | 500      | MX-M7B 160-315 | 12.5-550    | 380/220V 60Hz 1800RPM IP23 | Taiwan      | GenSets                            |
| 2   | 1990-91 | 300      | M7B 160-250    | 12.5-225    | 400/230V 50Hz 1500RPM IP23 | Indonesia   | GenSet                             |
| 3   | 1990-91 | 1        | M7B 500 SA 4   | 1500        | 400/230V 50Hz 1500RPM IP23 | Singapore   | CHANGI-PRISON                      |
| 4   | 1990-91 | 3        | M7B 400 MA 4   | 1000        | 400/230V 50Hz 1500RPM IP23 | Singapore   | CHANGI-PRISON                      |
| 5   | 1990-91 | 1        | M7R 400 SA 4   | 600         | 400/230V 50Hz 1500RPM IP23 | Singapore   | PWD                                |
| 6   | 1990-91 | 3        | M7B 500 MA 4   | 2000        | 400/230V 50Hz 1500RPM IP23 | Australia   | UPS-(MELBOURNE)                    |
| 7   | 1990-91 | 80       | M7B 200 SB 4   | 50          | 400/230V 50Hz 1500RPM IP23 | India       | MINI-HYDRO                         |
| 8   | 1990    | 4        | M7B 315 SB4    | 330         | 400V 50Hz IP23 B20 4P      | Germany     | Ansaldo D.(German Postal Services) |
| 9   | 1991    | 1        | M7B 250 SA4    | 90          | 231/400V 50Hz IP23 B2 4P   | Greece      | GEMO (Greek Postal Services)       |
| 10  | 1991    | 14       | M7B 250 MB4    | 180         | 231/400V 50Hz IP23 B34 4P  | Germany     | Ansaldo D.(German Postal Services) |
| 11  | 1991    | 1        | M7B 250 MC4    | 200         | 231/400V 50Hz IP23 B34 4P  | Germany     | Ansaldo D.(German Postal Services) |
| 12  | 1991    | 2        | M7B 500 SA4    | 1500        | 400V 50Hz IP23 B2 4P       | Greece      | GEMO (Greek Postal Services)       |
| 13  | 1991    | 2        | M7B 500 LA4    | 1780        | 415V 50Hz IP23 B35 4P      | England     | AMCO M.(British Telecom)           |
| 14  | 1992    | 4        | M7B 500 SB8    | 700         | 400V 50Hz IP23 B34 8P      | Italy       | Alcatel Italie (British Telecom)   |
| 15  | 1992    | 1        | M7B 250 MD4    | 135         | 231/400V 50Hz IP23 B20 4P  | Germany     | Ansaldo D.(German Postal Services) |
| 16  | 1993    | 2        | M7B 250 Sc4    | 100         | 231/400V 50Hz IP23 B20 4P  | Germany     | Ansaldo D.(German Postal Services) |
| 17  | 1994    | 1        | M7B 250 MC4    | 200         | 231/400V 50Hz IP23 B2 4P   | Germany     | Ansaldo D.(German Postal Services) |
| 18  | 1994    | 3        | M7B 250 SB4    | 100         | 231/400V 50Hz IP23 B2 4P   | Germany     | Ansaldo D.(German Postal Services) |
| 19  | 1994    | 1        | M7B 500 LA4    | 2500        | 500V 50Hz IP23 B2 4P       | Italy       | Auonia                             |
| 20  | 1992-94 | 1800     | M7B 160-315    | 12.5-500    | 380/220V 60Hz 1800RPM IP23 | Taiwan      | GenSets                            |
| 21  | 1992-94 | 1500     | M7B 160-250    | 12.5-250    | 400/230V 50Hz 1500RPM IP23 | Indonesia   | GenSets                            |
| 22  | 1992-94 | 800      | M7B 160-250    | 12.5-225    | 380/220V 60Hz 1800RPM IP23 | Korea       | GenSets                            |
| 23  | 1992-94 | 2        | M7H 500 SA 4   | 1250        | 400/230V 50Hz 1500RPM IP23 | Indonesia   | STEEL-MILL                         |
| 24  | 1992-94 | 6        | M7B 400 SD 6   | 600         | 400/230V 50Hz 1500RPM IP23 | China       | Textile Factory                    |
| 25  | 1992-94 | 8        | M7B 400 MC 4   | 1000        | 400/230V 50Hz 1500RPM IP23 | China       | Textile Factory                    |
| 26  | 1995-97 | 2200     | M7B 160-400    | 12.5-1600   | 380/220V 60Hz 1800RPM IP23 | Taiwan      | GenSets                            |
| 27  | 1995-97 | 1800     | M7B 160-250    | 12.5-225    | 400/230V 50Hz 1500RPM IP23 | Indonesia   | GenSets                            |
| 28  | 1995-97 | 1200     | M7B 160-250    | 12.5-225    | 380/220V 60Hz 1800RPM IP23 | Korea       | GenSets                            |
| 29  | 1995-97 | 100      | M7B 160-250    | 12.5-225    | 400/230V 50Hz 1500RPM IP23 | Philippines | GenSets                            |
| 30  | 1995-97 | 80       | M7B 160-250    | 12.5-225    | 400/230V 50Hz 1500RPM IP23 | Thailand    | GenSets                            |
| 31  | 1995-97 | 6        | M7H 500 SB 4   | 1250        | 3.3kV                      | Australia   | Gold Mine                          |
| 32  | 1995-97 | 7        | M7H 500 SB 4   | 1250        | 3.3kV                      | Australia   | Gold Mine                          |
| 33  | 1995-97 | 2        | M7B 400 SC 4   | 825         | 400/230V 50Hz 1500RPM IP23 | Vietnam     | NEW WORLD HOTEL                    |
| 34  | 1995-97 | 1        | M7B 500 MC 4   | 2500        | 400/230V 50Hz 1500RPM IP23 | Hong Kong   | TELFORD GARDEN                     |
| 35  | 1995-97 | 1        | M7B 500 MC 4   | 2000        | 400/230V 50Hz 1500RPM IP23 | Hong Kong   | TELFORD GARDEN                     |
| 36  | 1995-97 | 1        | M7B 500 MC 4   | 1500        | 400/230V 50Hz 1500RPM IP23 | Hong Kong   | TELFORD GARDEN                     |
| 37  | 1995-97 | 2        | M7B 500 MC 4   | 2500        | 400/230V 50Hz 1500RPM IP23 | Hong Kong   | HKCEC EXTENTION                    |
| 38  | 1995-97 | 2        | M7B 400 MC 4   | 1300        | 400/230V 50Hz 1500RPM IP23 | China       | SHUI ON PLAZA                      |
| 39  | 1995-97 | 1        | M7B 400 MA 4   | 1000        | 400/230V 50Hz 1500RPM IP23 | Hong Kong   | CHINA MERCH.BLDG                   |
| 40  | 1995-97 | 1        | M7B 400 SB 4   | 750         | 400/230V 50Hz 1500RPM IP23 | Hong Kong   | DORSET HOUSE                       |
| 41  | 1995-97 | 2        | M7B 400 MC 4   | 1350        | 400/230V 50Hz 1500RPM IP23 | Hong Kong   | DORSET HOUSE                       |
| 42  | 1995-97 | 1        | M7B 500 SA 4   | 1500        | 400/230V 50Hz 1500RPM IP23 | Hong Kong   | DORSET HOUSE                       |
| 43  | 1995-97 | 1        | M7B 400 MC 4   | 1350        | 400/230V 50Hz 1500RPM IP23 | China       | New World Centre                   |
| 44  | 1998    | 50       | M8B 200 MB4    | 30          | 231/400V 50Hz IP21 B2 4P   | Greece      | GEMO (Greek Postal Services)       |
| 45  | 1998    | 40       | M8B 200 LB4    | 45          | 231/400V 50Hz IP21 B2 4P   | Greece      | GEMO (Greek Postal Services)       |

| No. | Date          | Quantity | Type                                | Power (kVA) | Technical Specifications   | Destination | Plant Name                     |
|-----|---------------|----------|-------------------------------------|-------------|----------------------------|-------------|--------------------------------|
| 46  | 1998          | 1        | MBB 200 MA4                         | 20          | 231/400V 50Hz IP21 B2 4P   | Italy       | CO.ME.PO.                      |
| 47  | 1998          | 15       | M7B 315 MC 4                        | 500         | 400/230V 50Hz 1500RPM IP23 | Philippines | CP Casecnan Consortium         |
| 48  | 1998          | 4        | M7H 630 SC 8                        | 1250        | 3.3kV                      | Taiwan      | KIM MEN Island                 |
| 49  | 1998          | 9        | M7H 500 SB 4                        | 1250        | 3.3kV                      | Australia   | Gold Mine W.A.                 |
| 50  | 1998          | 1050     | M7B 160-400                         | 12.5-1600   | 380/220V 60Hz 1800RPM IP23 | Taiwan      | GenSets                        |
| 51  | 1998          | 89       | M7B 160-250                         | 12.5-225    | 400/230V 50Hz 1500RPM IP23 | Philippines | GenSets                        |
| 52  | 1998-         | 2        | M7B 500 MC 4                        | 2500        | 400/230V 50Hz 1500RPM IP23 | Malaysia    | LRT Phase 2                    |
| 53  | 1998-         | 12       | M7BM 315MB                          | 350         | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Royal Malaysian Navy, Lumut    |
| 54  | 1998-         | 1        | M7B 160 SC 4                        | 20kVA       | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Balai Polis Bandar Baru        |
| 55  | 1998-         | 1        | M7B 200 SB 4                        | 40(Canopy)  | 400/230V 50Hz 1500RPM IP23 | Malaysia    | TUDM/SUBANG                    |
| 56  | 1998-         | 1        | M7B 200 SB 4                        | 50          | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Balai Polis, Johor Bahru       |
| 57  | 1998-         | 1        | M7B 200 SB 4                        | 50          | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Penjara, Johor Bahru           |
| 58  | 1998-         | 1        | M7B 200 SC 4                        | 50          | 400/230V 50Hz 1500RPM IP23 | Malaysia    | LKIM, Kuantan                  |
| 59  | 1998-         | 15       | M8B 200 M/L 4                       | 50/80       | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Scott & English (M)            |
| 60  | 1998-         | 1        | M7B 250 MA 4                        | 125         | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Sekolah Menengah Tek. K.L.     |
| 61  | 1998-         | 1        | M7B 250 MA 4                        | 150         | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Jim Shop Bldg Jln Pencala P.J. |
| 62  | 1998-         | 1        | M7B 250 MA 4                        | 150(Canopy) | 400/230V 50Hz 1500RPM IP23 | Malaysia    | LKIM, Lumut                    |
| 63  | 1998-         | 1        | M7B 250 MC 4                        | 150         | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Poliklinik, Joa Gombak         |
| 64  | 1998-         | 1        | M7B 250 MC 4                        | 200         | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Jabatan Pertanian, Tawau       |
| 65  | 1998-         | 1        | M7B 250 MC 4                        | 200         | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Hostel Jururawat, Tawau        |
| 66  | 1998-         | 1        | M7B 315 SB 4                        | 200         | 400/230V 50Hz 1500RPM IP23 | Malaysia    | University Malaya Medical C.   |
| 67  | 1998-         | 1        | M7B 315 MA 4                        | 350         | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Kelana Jaya Medical Centre     |
| 68  | 1998-         | 1        | M7B 315 MB 4                        | 380         | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Club Damansara                 |
| 69  | 1998-         | 6        | M8B 200 MA4                         | 50          | 400/230V 50Hz 1500RPM IP23 | Malaysia    | CELCOM Malaysia                |
| 70  | 1998-         | 42       | M8B 200 LB4                         | 82          | 400/230V 50Hz 1500RPM IP23 | Malaysia    | Lumut Naval Base (M)           |
| 71  | 1998-         | 1        | M8B 160 MB4                         | 30          | 400/230V 50Hz 1500RPM IP23 | Malaysia    | IWK Sewage Plant Kedah         |
| 72  | 1999          | 2        | M7B 500 MC4                         | 2000        | 400V 50Hz IP23 B23 4P      | Italy       | Italtel Sistemi                |
| 73  | 1999          | 2        | M7B 630 SC4                         | 2500        | 400V 50Hz IP23 B23 4P      | Italy       | Italtel Sistemi                |
| 74  | Dec-99        | 1        | M7B 250 MC4                         | 150         | 1500rpm Class B            | Malaysia    | Telekom                        |
| 75  | Dec-99        | 1        | M7B 315 SB4                         | 250         | 1500rpm Class B            | Malaysia    | Telekom                        |
| 76  | Dec-99        | 1        | M7B 315 MB4                         | 350         | 1500rpm Class B            | Malaysia    | Telekom                        |
| 77  | Dec-99        | 1        | M8B 400 SB4                         | 500         | 1500rpm Class B            | Malaysia    | Telekom                        |
| 78  | Dec-99        | 1        | M8B 400 MB4                         | 750         | 1500rpm Class B            | Malaysia    | Telekom                        |
| 79  | Dec-99        | 1        | M8B 400 LB4                         | 1000        | 1500rpm Class B            | Malaysia    | Telekom                        |
| 80  | Dec-99        | 1        | M8B 200 LB4                         | 60          | 1500rpm Class B            | Malaysia    | Telekom                        |
| 81  | Apr-01/Mar-02 | 22       | M8B 200/250                         | 35-250      | 400/230V 50Hz 1500RPM IP23 | AUSTRALIA   | GenSets                        |
| 82  | Apr-01/Mar-02 | 5        | M8B 315                             | 300-550     | 400/230V 50Hz 1500RPM IP23 | CHINA       | GenSets                        |
| 83  | Apr-01/Mar-02 | 240      | M8B 160/200/250/315                 | 13.5-550    | 400/230V 50Hz 1500RPM IP23 | INDONESIA   | GenSets                        |
| 84  | Apr-01/Mar-02 | 82       | M8B 160/200/250/315/400             | 13.5-1300   | 400/230V 50Hz 1500RPM IP23 | MALAYSIA    | GenSets                        |
| 85  | Apr-01/Mar-02 | 4        | M8B 160/315                         | 13.5-350    | 400/230V 50Hz 1500RPM IP23 | NEW ZEALAND | GenSets                        |
| 86  | Apr-01/Mar-02 | 16       | M8B 200                             | 35-82       | 400/230V 50Hz 1500RPM IP23 | PHILIPPINES | GenSets                        |
| 87  | Apr-01/Mar-02 | 70       | M7B 250,<br>M8B 160/200/250/315/400 | 13.5-1300   | 400/230V 50Hz 1500RPM IP23 | SINGAPORE   | GenSets                        |
| 88  | Apr-01/Mar-02 | 73       | M7B 315,<br>M8B 160/200/250/315/400 | 13.5-1300   | 380/220V 60Hz 1800RPM IP23 | TAIWAN      | GenSets                        |



| No. | Date          | Quantity | Type                                                                   | Power (kVA) | Technical Specifications   | Destination | Plant Name |
|-----|---------------|----------|------------------------------------------------------------------------|-------------|----------------------------|-------------|------------|
| 89  | Apr-01/Mar-02 | 6        | M7B 315, M8B 315/400                                                   | 290-1300    | 400/230V 50Hz 1500RPM IP23 | THAILAND    | GenSets    |
| 90  | Apr-01/Mar-02 | 38       | M7B 250, M8B 160/200/250                                               | 13.5-250    | 400/230V 50Hz 1500RPM IP23 | VIETNAM     | GenSets    |
| 91  | Apr-02/Mar-03 | 1        | M8B 315                                                                | 300-550     | 400/230V 50Hz 1500RPM IP23 | AUSTRALIA   | GenSets    |
| 92  | Apr-02/Mar-03 | 383      | M8B 160/200/250/315                                                    | 13.5-550    | 400/230V 50Hz 1500RPM IP23 | INDONESIA   | GenSets    |
| 93  | Apr-02/Mar-03 | 2        | M8B 315                                                                | 300-550     | 380/220V 60Hz 1800RPM IP23 | KOREA       | GenSets    |
| 94  | Apr-02/Mar-03 | 259      | M7B 315,<br>M8B 160/200/250/315/400                                    | 13.5-1300   | 400/230V 50Hz 1500RPM IP23 | MALAYSIA    | GenSets    |
| 95  | Apr-02/Mar-03 | 22       | M8B 200/250/315                                                        | 35-550      | 400/230V 50Hz 1500RPM IP23 | NEW ZEALAND | GenSets    |
| 96  | Apr-02/Mar-03 | 64       | M8B 160/200/250                                                        | 13.5-250    | 400/230V 50Hz 1500RPM IP23 | PHILIPPINES | GenSets    |
| 97  | Apr-02/Mar-03 | 125      | M8B 160/200/250/315                                                    | 13.5-550    | 400/230V 50Hz 1500RPM IP23 | SINGAPORE   | GenSets    |
| 98  | Apr-02/Mar-03 | 413      | M7B 250/315,<br>M8B 160/200/250/315/400                                | 13.5-1300   | 380/220V 60Hz 1800RPM IP23 | TAIWAN      | GenSets    |
| 99  | Apr-02/Mar-03 | 18       | M7B 400,<br>M8B 200/250/315/400                                        | 35-1300     | 400/230V 50Hz 1500RPM IP23 | THAILAND    | GenSets    |
| 100 | Apr-02/Mar-03 | 26       | M8B 200/250/315                                                        | 35-550      | 400/230V 50Hz 1500RPM IP23 | VIETNAM     | GenSets    |
| 101 | Apr-03/Mar-04 | 1        | MJB 200                                                                | 35-82       | 400/230V 50Hz 1500RPM IP23 | AUSTRALIA   | GenSets    |
| 102 | Apr-03/Mar-04 | 628      | M8B 160/200/250/315<br>MJB 200                                         | 13.5-550    | 400/230V 50Hz 1500RPM IP23 | INDONESIA   | GenSets    |
| 103 | Apr-03/Mar-04 | 28       | M8B 160/200/250/315/400                                                | 13.5-1300   | 380/220V 60Hz 1800RPM IP23 | KOREA       | GenSets    |
| 104 | Apr-03/Mar-04 | 429      | M7B 160/200<br>M8B 160/200/250/315/400/500<br>MJB 160/200              | 13.5-2500   | 400/230V 50Hz 1500RPM IP23 | MALAYSIA    | GenSets    |
| 105 | Apr-03/Mar-04 | 20       | M8B 160/200/250/315<br>MJB 200                                         | 13.5-550    | 400/230V 50Hz 1500RPM IP23 | NEW ZEALAND | GenSets    |
| 106 | Apr-03/Mar-04 | 41       | M8B 160/200/250                                                        | 13.5-250    | 400/230V 50Hz 1500RPM IP23 | PHILIPPINES | GenSets    |
| 107 | Apr-03/Mar-04 | 145      | M7B 250<br>M8B 160/200/250/315/400                                     | 13.5-1300   | 400/230V 50Hz 1500RPM IP23 | SINGAPORE   | GenSets    |
| 108 | Apr-03/Mar-04 | 330      | M7B 400<br>M8B 200/250/315/400/500<br>MJB 160                          | 17-2500     | 380/220V 60Hz 1800RPM IP23 | TAIWAN      | GenSets    |
| 109 | Apr-03/Mar-04 | 10       | M8B 200/315/400/500                                                    | 35-2500     | 400/230V 50Hz 1500RPM IP23 | THAILAND    | GenSets    |
| 110 | Apr-03/Mar-04 | 87       | M8B 160/200/250/315/400<br>MJB 200                                     | 13.5-1300   | 400/230V 50Hz 1500RPM IP23 | VIETNAM     | GenSets    |
| 111 | Apr-04/Mar-05 | 92       | M8B 250/315<br>MJB 250/315                                             | 100-550     | 400/230V 50Hz 1500RPM IP23 | CHINA       | GenSets    |
| 112 | Apr-04/Mar-05 | 1        | /MJB 500                                                               | 1930-2500   | 400/230V 50Hz 1500RPM IP23 | INDIA       | GenSets    |
| 113 | Apr-04/Mar-05 | 604      | M8B 200/250/315/400<br>MJB 160/200/225/250/315/355                     | 17-1300     | 400/230V 50Hz 1500RPM IP23 | INDONESIA   | GenSets    |
| 114 | Apr-04/Mar-05 | 1        | MJB 315                                                                | 300-450     | 400/230V 50Hz 1500RPM IP23 | ITALY       | GenSets    |
| 115 | Apr-04/Mar-05 | 65       | M8B 250/315<br>MJB 200/225/250/<br>315/355/400/500                     | 42-2500     | 380/220V 60Hz 1800RPM IP23 | KOREA       | GenSets    |
| 116 | Apr-04/Mar-05 | 696      | M8B 160/200/250/315/400/500<br>MJB 160/200/225/250/315/<br>355/400/500 | 13.5-2500   | 400/230V 50Hz 1500RPM IP23 | MALAYSIA    | GenSets    |

| No. | Date          | Quantity | Type                                                                   | Power (kVA) | Technical Specifications   | Destination | Plant Name |
|-----|---------------|----------|------------------------------------------------------------------------|-------------|----------------------------|-------------|------------|
| 117 | Apr-04/Mar-05 | 20       | M8B 200/315<br>MJB 160/200/225/250                                     | 17-550      | 400/230V 50Hz 1500RPM IP23 | NEW ZEALAND | GenSets    |
| 118 | Apr-04/Mar-05 | 20       | M8B 160/200/250<br>MJB 225/250                                         | 13.5-250    | 400/230V 50Hz 1500RPM IP23 | PAKISTAN    | GenSets    |
| 119 | Apr-04/Mar-05 | 20       | M8B 160/315<br>MJB 160/225                                             | 13.5-550    | 400/230V 50Hz 1500RPM IP23 | PHILIPPINES | GenSets    |
| 120 | Apr-04/Mar-05 | 226      | M8B 200/250/315/400/500<br>MJB 200/225/250/315/355/<br>400/500         | 35-2500     | 400/230V 50Hz 1500RPM IP23 | SINGAPORE   | GenSets    |
| 121 | Apr-04/Mar-05 | 552      | M8B 160/200/250/315/400/500<br>MJB 160/200/225/250/315/<br>355/400/500 | 13.5-2500   | 380/220V 60Hz 1800RPM IP23 | TAIWAN      | GenSets    |
| 123 | Apr-04/Mar-05 | 45       | M8B 200/250/315<br>MJB 200/225/250/315/355/400                         | 37.5-1300   | 400/230V 50Hz 1500RPM IP23 | THAILAND    | GenSets    |
| 124 | Apr-04/Mar-05 | 46       | M8B 200/250<br>MJB 160/200/225/250/315                                 | 17-450      | 400/230V 50Hz 1500RPM IP23 | VIETNAM     | GenSets    |
| 125 | Apr-05/Mar-06 | 6        | MJB 200/500                                                            | 42-2500     | 400/230V 50Hz 1500RPM IP23 | AUSTRALIA   | GenSets    |
| 126 | Apr-05/Mar-06 | 1        | MJB 630                                                                | 3000-3550   | 400/230V 50Hz 1500RPM IP23 | BANGLADESH  | GenSets    |
| 127 | Apr-05/Mar-06 | 18       | MJB 200/225/250/355                                                    | 42-800      | 400/230V 50Hz 1500RPM IP23 | CHINA       | GenSets    |
| 128 | Apr-05/Mar-06 | 1        | MJB 500                                                                | 1930-2500   | 400/230V 50Hz 1500RPM IP23 | INDIA       | GenSets    |
| 129 | Apr-05/Mar-06 | 791      | MJB 160/200/225/250/315/<br>355/400/500                                | 17-2500     | 400/230V 50Hz 1500RPM IP23 | INDONESIA   | GenSets    |
| 130 | Apr-05/Mar-06 | 11       | MJB 200/400                                                            | 42-1300     | 400/230V 50Hz 1500RPM IP23 | ITALY       | GenSets    |
| 131 | Apr-05/Mar-06 | 344      | MJB 160/200/225/250/315/<br>355/400/500                                | 17-2500     | 380/220V 60Hz 1800RPM IP23 | KOREA       | GenSets    |
| 132 | Apr-05/Mar-06 | 3        | MJB 500                                                                | 1930-2500   | 400/230V 50Hz 1500RPM IP23 | SRI LANKA   | GenSets    |
| 133 | Apr-05/Mar-06 | 573      | M8B 160/250/315/500<br>MJB 160/200/225/250/<br>315/355/400/500         | 13.5-2500   | 400/230V 50Hz 1500RPM IP23 | MALAYSIA    | GenSets    |
| 134 | Apr-05/Mar-06 | 17       | MJB 200/225/250/315/355                                                | 42-800      | 400/230V 50Hz 1500RPM IP23 | NEW ZEALAND | GenSets    |
| 135 | Apr-05/Mar-06 | 35       | MJB 160/200/225/250/315                                                | 17-450      | 400/230V 50Hz 1500RPM IP23 | PHILIPPINES | GenSets    |
| 136 | Apr-05/Mar-06 | 88       | MJB 160/200/225/250/315/<br>355/400/500                                | 17-2500     | 400/230V 50Hz 1500RPM IP23 | SINGAPORE   | GenSets    |
| 137 | Apr-05/Mar-06 | 273      | M8B 200/250/315<br>MJB 160/200/225/250/315/<br>350/400/500             | 17-2500     | 380/220V 60Hz 1800RPM IP23 | TAIWAN      | GenSets    |
| 138 | Apr-05/Mar-06 | 49       | MJB 160/200/225/250/315/<br>355/400/500                                | 17-2500     | 400/230V 50Hz 1500RPM IP23 | THAILAND    | GenSets    |
| 139 | Apr-05/Mar-06 | 56       | MJB 160/200/225/250/315/<br>355/400                                    | 17-1300     | 400/230V 50Hz 1500RPM IP23 | VIETNAM     | GenSets    |
| 140 | Apr-06/Mar-07 | 20       | MJB 200/225/315/355/400/500                                            | 42-2500     | 400/230V 50Hz 1500RPM IP23 | CHINA       | GenSets    |
| 141 | Apr-06/Mar-07 | 782      | MJB 160/200/225/250/315/<br>355/400                                    | 17-1300     | 400/230V 50Hz 1500RPM IP23 | INDONESIA   | GenSets    |

| No. | Date          | Quantity | Type                                                           | Power (kVA) | Technical Specifications   | Destination | Plant Name |
|-----|---------------|----------|----------------------------------------------------------------|-------------|----------------------------|-------------|------------|
| 142 | Apr-06/Mar-07 | 343      | M8B 315/400<br>MJB 160/200/225/250/315/<br>355/400             | 17-1300     | 380/220V 60Hz 1800RPM IP23 | KOREA       | GenSets    |
| 143 | Apr-06/Mar-07 | 605      | M8B 160/250/315<br>MJB 160/200/225/250/315/<br>355/400/450/500 | 17-2500     | 400/230V 50Hz 1500RPM IP23 | MALAYSIA    | GenSets    |
| 144 | Apr-06/Mar-07 | 46       | MJB 160/200/225/250/315/<br>355/400                            | 17-1300     | 400/230V 50Hz 1500RPM IP23 | NEW ZEALAND | GenSets    |
| 145 | Apr-06/Mar-07 | 25       | MJB 200                                                        | 42-72       | 400/230V 50Hz 1500RPM IP23 | PAKISTAN    | GenSets    |
| 146 | Apr-06/Mar-07 | 73       | MJB 160/200/225/250/315/355                                    | 17-800      | 400/230V 50Hz 1500RPM IP23 | PHILIPPINES | GenSets    |
| 147 | Apr-06/Mar-07 | 65       | MJB 225/250/315/355/400/<br>450/500                            | 85-2500     | 400/230V 50Hz 1500RPM IP23 | SINGAPORE   | GenSets    |
| 148 | Apr-06/Mar-07 | 253      | M8B 250/315<br>MJB 160/200/225/250/315/<br>355/400/450/500     | 17-2500     | 380/220V 60Hz 1800RPM IP23 | TAIWAN      | GenSets    |
| 149 | Apr-06/Mar-07 | 21       | MJB 160/200/225/250/315                                        | 17-450      | 400/230V 50Hz 1500RPM IP23 | THAILAND    | GenSets    |
| 150 | Apr-06/Mar-07 | 99       | MJB 160/200/225/250/315                                        | 17-450      | 400/230V 50Hz 1500RPM IP23 | VIETNAM     | GenSets    |
| 151 | Apr-07/Mar-08 | 23       | MJB 225/315/400<br>MJB 225/315                                 | 85-1300     | 400/230V 50Hz 1500RPM IP23 | CHINA       | GenSets    |
| 152 | Apr-07/Mar-08 | 794      | MJB 160/200/225/250/<br>315/355/500                            | 17-2500     | 400/230V 50Hz 1500RPM IP23 | INDONESIA   | GenSets    |
| 153 | Apr-07/Mar-08 | 39       | MJB 160/200/225/250/315/<br>355/400/450                        | 17-1850     | 380/220V 60Hz 1800RPM IP23 | KOREA       | GenSets    |
| 154 | Apr-07/Mar-08 | 1        | MJB 355                                                        | 510-800     | 400/230V 50Hz 1500RPM IP23 | SRI LANKA   | GenSets    |
| 155 | Apr-07/Mar-08 | 817      | MJB 160/200/225/250/315/<br>355/400/450/500/560/630            | 17-5830     | 400/230V 50Hz 1500RPM IP23 | MALAYSIA    | GenSets    |
| 156 | Apr-07/Mar-08 | 4        | MJB 160/225/315                                                | 17-450      | 400/230V 50Hz 1500RPM IP23 | NEW ZEALAND | GenSets    |
| 157 | Apr-07/Mar-08 | 4        | MJB 160/225/315                                                | 17-450      | 400/230V 50Hz 1500RPM IP23 | PAKISTAN    | GenSets    |
| 158 | Apr-07/Mar-08 | 10       | MJB 160/200/225/250/315/355                                    | 17-800      | 400/230V 50Hz 1500RPM IP23 | PHILIPPINES | GenSets    |
| 159 | Apr-07/Mar-08 | 63       | MJB 160/225/250/315/355/<br>400/450/500                        | 17-2500     | 400/230V 50Hz 1500RPM IP23 | SINGAPORE   | GenSets    |
| 160 | Apr-07/Mar-08 | 228      | MJB 160/200/225/250/315/<br>355/400/450/500                    | 17-2500     | 380/220V 60Hz 1800RPM IP23 | TAIWAN      | GenSets    |
| 161 | Apr-07/Mar-08 | 19       | MJB 160/200/250/315/355/450                                    | 17-1850     | 400/230V 50Hz 1500RPM IP23 | THAILAND    | GenSets    |
| 162 | Apr-07/Mar-08 | 53       | MJB 160/200/225/250/315                                        | 17-450      | 400/230V 50Hz 1500RPM IP23 | VIETNAM     | GenSets    |



# **STEAM TURBINE APPLICATION**



## STEAM TURBINE APPLICATION

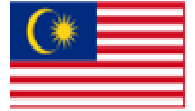


**ELLIOT - MARELLI**

**J. NADROWSKI - MARELLI**



## Marelli Asia Pacific – Domestic References (Steam Turbine Application)



***Guthrie Industries  
Malaysia Sdn. Bhd. (2548 U)***



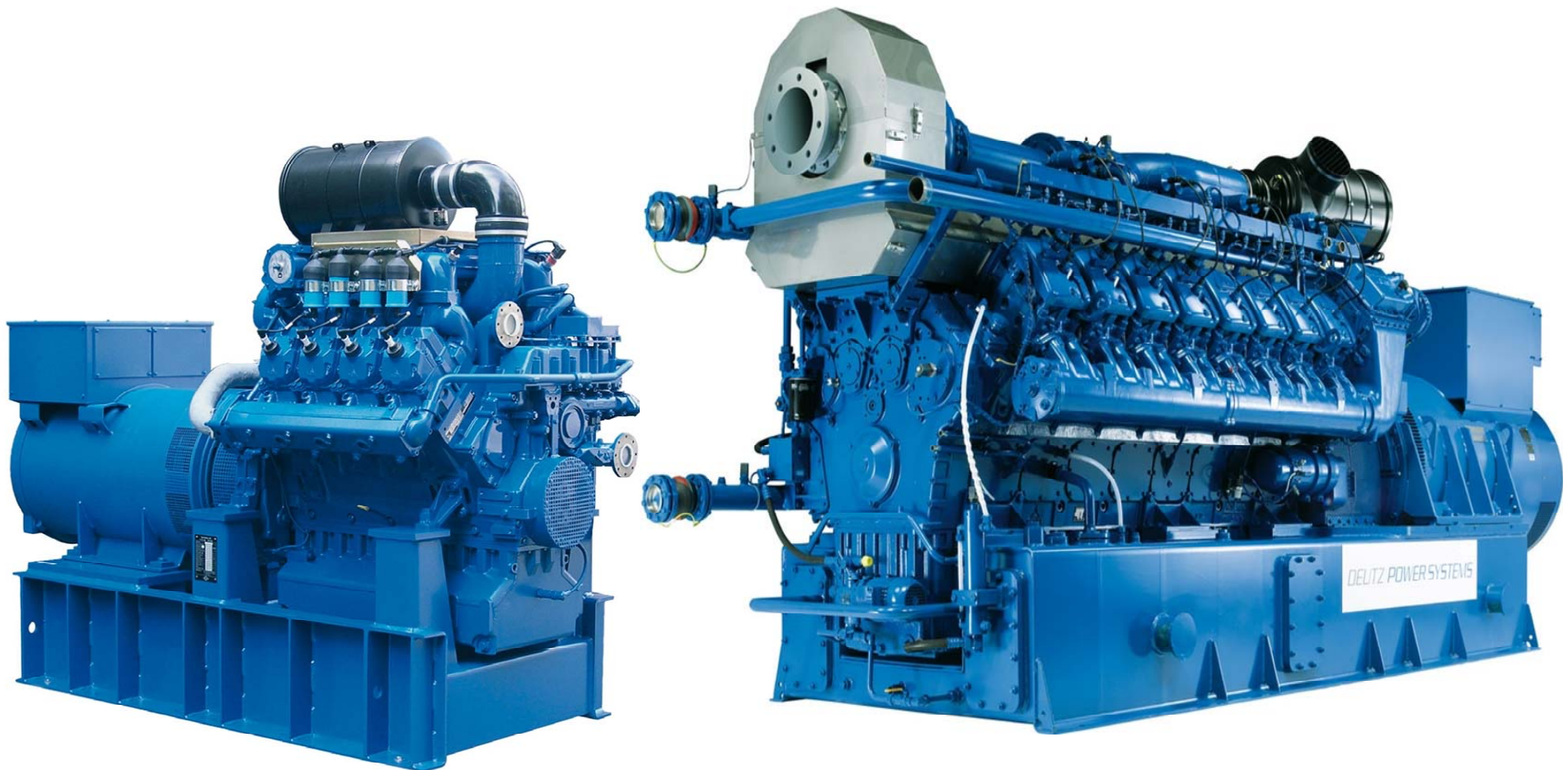
**Boustead Holdings Berhad**



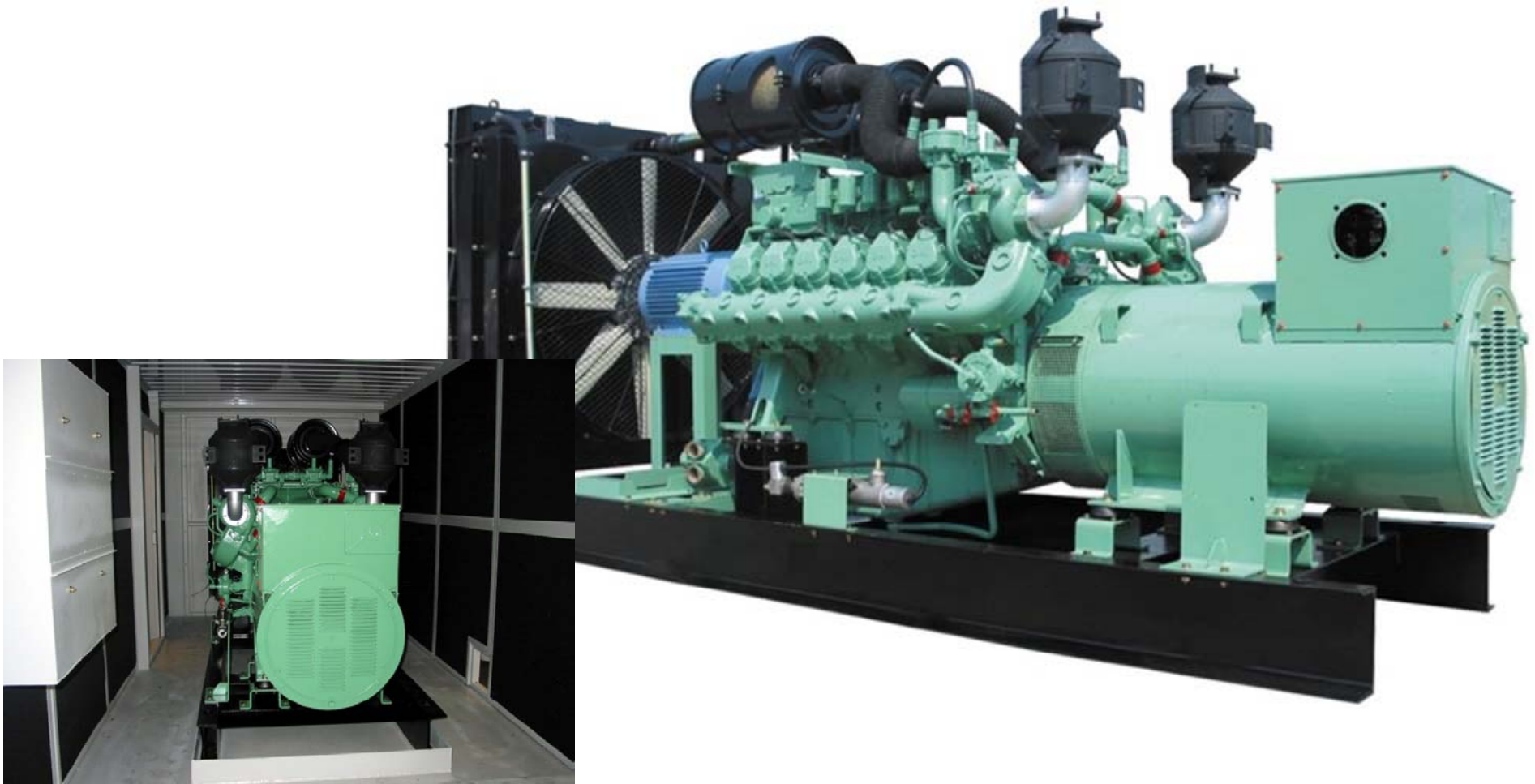


| No. | Quantity | Type         | Power(kVA) | Client                                 | Location                               |
|-----|----------|--------------|------------|----------------------------------------|----------------------------------------|
| 1   | 1        | M7B 500 SA 4 | 1500       | K.K.K. Steam Turbine                   | Malaysia                               |
| 2   | 1        | M7B 400 MC 4 | 1250       | J.NADROWSKI Steam Turbine              | Malaysia                               |
| 3   | 1        | M8B 400 MB 4 | 1050       | J.NADROWSKI Steam Turbine              | Indonesia                              |
| 4   | 1        | M7B 500 MC 4 | 2500       | DRESSER-RAND Steam Turbine             | Malaysia                               |
| 5   | 1        | M8B 400 MB 4 | 1000       | J.NADROWSKI Steam Turbine              | Malaysia                               |
| 6   | 1        | M8B 400 LA 4 | 1100       | TUTHILL Steam Turbine                  | Malaysia                               |
| 7   | 2        | M8B 500 SA 4 | 1500       | ELLIOT Steam Turbine                   | Malaysia                               |
| 8   | 1        | M8B 500 LA 4 | 2500       | ELLIOT Steam Turbine                   | Malaysia                               |
| 9   | 1        | M8B 400 MA 4 | 870        | ELLIOT Steam Turbine                   | Malaysia                               |
| 10  | 1        | M8B 400 MB 4 | 1050       | ELLIOT Steam Turbine                   | Malaysia                               |
| 11  | 7        | M8B 500 MB 4 | 2150       | K.K.K. Steam Turbine                   | Malaysia                               |
| 12  | 1        | M8B 500 SC 4 | 1875       | ELLIOT Steam Turbine                   | Malaysia                               |
| 13  | 1        | M8B 315 MB 4 | 438        | ELLIOT Steam Turbine                   | Malaysia                               |
| 14  | 1        | M8B 500 SC 4 | 1875       | K.K.K. Steam Turbine                   | Malaysia                               |
| 15  | 1        | M8B 400 SB 4 | 750        | ELLIOT Steam Turbine                   | Malaysia                               |
| 16  | 1        | M8B 500 SA 4 | 1600       | J.NADROWSKI Steam Turbine              | Thailand                               |
| 17  | 1        | M8B 500 MB 4 | 2150       | DRESSER-RAND Steam Turbine             | Malaysia                               |
| 18  | 1        | M8B 400 LA 4 | 1200       | K.K.K. Steam Turbine                   | Malaysia                               |
| 19  | 1        | M8B 400 SB 4 | 750        | K.K.K. Steam Turbine                   | Thailand                               |
| 20  | 1        | M8B 500 LA 4 | 2300       | K.K.K. Steam Turbine                   | Malaysia                               |
| 21  | 2        | M8B 500 SA 4 | 1600       | K.K.K. Steam Turbine                   | Malaysia                               |
| 22  | 1        | M8B 500 LA 4 | 2500       | K.K.K. Steam Turbine                   | Malaysia                               |
| 23  | 4        | M8B 500 MB 4 | 2000       | K.K.K. Steam Turbine                   | Indonesia                              |
| 24  | 2        | M8B 500 SA 4 | 1600       | K.K.K. Steam Turbine                   | Indonesia                              |
| 25  | 1        | M8B 400 SB 4 | 750        | K.K.K. Steam Turbine                   | Singapore                              |
| 26  | 1        | M8B 400 LA 4 | 1200       | SHINKO Steam Turbine                   | Thailand                               |
| 27  | 1        | M8B 500 LA 4 | 2500       | ELLIOT Steam Turbine                   | Malaysia                               |
| 28  | 1        | M8B 500 LA 4 | 2500       | ELLIOT Steam Turbine                   | Malaysia                               |
| 29  | 1        | M8B 500 SA4  | 1500       | Elliot                                 | Lebuk Antu P.O.M Malaysia              |
| 30  | 1        | M8B 500 SA4  | 1500       | Elliot                                 | Bau P.O.M. Malaysia                    |
| 31  | 1        | M8B 500 LA4  | 2500       | Elliot                                 | Pontian Fico P.O.M Malaysia            |
| 32  | 1        | M8B 500 SC4  | 1875       | Elliot                                 | Mukah P.O.M Malaysia                   |
| 33  | 1        | M8B 315 MB4  | 438        | Elliot                                 | Sabah P.O.M Malaysia                   |
| 34  | 3        | M8B 500 MB4  | 2150       | K.K.K(Golden Hope Plantation Berhard)  | Lavang Mill Malaysia                   |
| 35  | 2        | M8B 500 MB4  | 2150       | K.K.K(Golden Hope Plantation Berhard)  | Flemington Mill Malaysia               |
| 36  | 2        | M8B 500 SC4  | 1875       | K.K.K(Golden Hope Plantation Berhard)  | Chersonese Mill Malaysia               |
| 37  | 1        | M8B 400 SB4  | 750        | Elliot (Bukit Rotan Palm Oild Sdn Bhd) | Bukit Rotan, Kuala Selangor            |
| 38  | 1        | M7B 400 MC4  | 1250       | J. Nadrowski(Southern Palm Oil Co Ltd) | Southern Thailand                      |
| 39  | 1        | M8B 500 SA4  | 1600       | J. Nadrowski(Southern Palm Oil Co Ltd) | Southern Thailand                      |
| 40  | 1        | M8B 500 MB4  | 2150       | Dresser-Rand(Turbo Turbine Services)   | Pahang Malaysia                        |
| 41  | 1        | M8B 400 LA4  | 1200       | K.K.K(FELCRA Berhard)                  | Bukit Kepong, Labis, Johor             |
| 42  | 1        | M8B 400 SB4  | 750        | K.K.K(Chan Charem Bangsai Co Ltd)      | Bangsai, Ayudhaya Thailand             |
| 43  | 1        | M8B 500 LA4  | 2300       | K.K.K(Felda Engineering Services)      | Bukit Penggali P.O.M Johor             |
| 44  | 1        | M8B 500 SA4  | 1600       | K.K.K(Felda Engineering Services)      | Trolak P.O.M Malaysia                  |
| 45  | 1        | M8B 500 SA4  | 1600       | K.K.K(Felda Engineering Services)      | Kulai P.O.M Johor                      |
| 46  | 1        | MJB 500 LA4  | 2500       | K.K.K(Felda Engineering Services)      | Jenka 8 P.O.M Malaysia                 |
| 47  | 1        | M8B 500 MB4  | 2000       | K.K.K(Guthrie Industries Malaysia)     | PKS Angsana, South Kalimantan          |
| 48  | 1        | M8B 500 MB4  | 2000       | K.K.K(Guthrie Industries Malaysia)     | PKS Angsana, South Kalimantan          |
| 49  | 1        | M8B 500 MB4  | 2000       | K.K.K(Guthrie Industries Malaysia)     | PKS Pondok Labu, South Kalimantan      |
| 50  | 1        | M8B 500 MB4  | 2000       | K.K.K(Guthrie Industries Malaysia)     | PKS Pondok Labu, South Kalimantan      |
| 51  | 2        | M8B 500 SA4  | 1600       | K.K.K(Guthrie Industries Malaysia)     | Jambi P.O.M Indonesia                  |
| 52  | 1        | M8B 400 SB4  | 750        | K.K.K(ECO Ind Envirion Eng Pte Ltd)    | ECO Ind Envirion Eng Pte Ltd Singapore |
| 53  | 1        | M8B 400 LA4  | 1200       | Shinko(S.P.O Agro Industries Co Ltd)   | Suratthani Thailand                    |
| 54  | 1        | M8B 500 LA4  | 2500       | Elliot(IOI Plantation)                 | Mayvin P.O.M Sabah                     |
| 55  | 1        | M8B 500 LA4  | 2500       | Elliot(IOI Plantation)                 | Pamol P.O.M Kluang                     |
| 56  | 1        | M8B 400 MA4  | 870        | IOI Plantation                         |                                        |
| 57  | 1        | M8B 400 MB4  | 1050       | Dalex Engineering Sdn Bhd              | PT Tales Intisawit Indonesia           |

# MWM (Gas Engines) with MARELLI



# DEAWOO (DOOSAN) ENGINE with MARELLI





# MWM GAS ENGINE with Marelli by Kaltimex

| S/N | Customer's Name                       | Engine Model | Engine Serial No. | Kwe Rating | Marelli Alternator Model | Alternator Serial No. | KVA Rating |
|-----|---------------------------------------|--------------|-------------------|------------|--------------------------|-----------------------|------------|
| 1   | RUBAYA VGETABLE OIL MILLS             | TCG 2016V16  | 220 5328          | 768        | M8B 400 LC4              | MP 16383              | 1300       |
| 2   | SILVERLINE COMPOSITE TEXTILE MILLS    | TBG 620V16K  | 220 5445          | 1344       | M8B 500 MB4              | MP 30954              | 2150       |
| 3   | RISING SPINNING MILLS                 | TBG 620V16K  | 220 5887          | 1344       | M8B 500 MB4              | MR 22856              | 2150       |
| 4   | RISING SPINNING MILLS                 | TBG 620V16K  | 220 5891          | 1344       | M8B 500 MB4              | MR 22867              | 2150       |
| 5   | SUPER STEELS                          | TBG 620V16K  | 220 5416          | 1344       | M8B 500 MB4              | MP 30953              | 2150       |
| 6   | SUPER STEELS                          | TBG 620V16K  | 220 5427          | 1344       | M8B 500 MB4              | MP 30955              | 2150       |
| 7   | SUPER STEELS                          | TBG 616V16K  | 220 5403          | 671        | M8B 400 LC4              | MP 29446              | 1300       |
| 8   | S. S. STEELS                          | TBG 620V16K  | 220 5588          | 1344       | M8B 500 MB4              | MP 33532              | 2150       |
| 9   | S. S. STEELS                          | TBG 620V16K  | 220 5592          | 1344       | M8B 500 MB4              | MS 17668              | 2150       |
| 10  | SUN SHINE FASHION KNITTING INDUSTRIES | TBG 616V16K  | 220 6194          | 668        | M8B 400 LC4              | MS 15232              | 1300       |
| 11  | EPYLLION FABRICS                      | TCG 2020V16K | 220 6218          | 1344       | M8B 500 MB4              | MS 17222              | 2150       |
| 12  | EPYLLION STYLES                       | TCG 2020V16K | 220 6219          | 1344       | M8B 500 MB4              | MS 17223              | 2150       |
| 13  | APPARELS VILLAGE                      | TCG 2016V16K | 220 6450          | 668        | M8B 400 LC4              | MS 24501              | 1300       |
| 14  | RISING SPINNING MILLS EXTENSION       | TCG 2020V16K | 220 6382          | 1344       | M8B 500 MB4              | MS 18445              | 2150       |
| 15  | EDGE DENIM                            | TCG 2020V16K | 220 6335          | 1344       | M8B 500 MB4              | MS 17666              | 2150       |
| 16  | EDGE DENIM                            | TCG 2020V16K | 220 6342          | 1344       | M8B 500 MB4              | MS 19036              | 2150       |
| 23  | ENVOY TEXTILES                        | TCG 2020V16K | 220 6432          | 1344       | MJB 500 MB4              | MS 22777              | 2150       |
| 17  | R N SPINNING MILLS / 60Hz             | TCG 2016V16K | 220 6567          | 672        | MJB 400 LC4              | MS 28047              | 1300       |
| 18  | R N SPINNING MILLS / 60Hz             | TCG 2016V16K | 220 6575          | 672        | MJB 400 LC4              | MS 29142              | 1300       |
| 19  | R N SPINNING MILLS / 60Hz             | TCG 2016V16K | 220 6577          | 672        | MJB 400 LC4              | MS 28093              | 1300       |
| 20  | R N SPINNING MILLS / 60Hz             | TCG 2016V16K | 220 6578          | 672        | MJB 400 LC4              | MS 29094              | 1300       |
| 21  | R N SPINNING MILLS / 60Hz             | TCG 2016V16K | 220 6579          | 672        | MJB 400 LC4              | MS 29140              | 1300       |
| 22  | R N SPINNING MILLS / 60Hz             | TCG 2016V16K | 220 6580          | 672        | MJB 400 LC4              | MS 29141              | 1300       |
| 23  | JM FABRICS                            | TCG 2020V16K | 220 6820          | 1344       | MJB 500 MB4              | MS 30252              | 2150       |
| 24  | VINTAGE DENIM                         | TCG 2016V16  | 220 7142          | 774        | MJB 400 LC4              | MT 28102              | 1300       |
| 25  | BEST WOOL SWEATERS                    | TCG 2016V12K | 220 7514          | 508        | MJB 400 LA4              | MV 19808              | 1200       |

# MWM GAS ENGINE with Marelli by Kaltimex

| S/N | Customer's Name                 | Engine Model  | Engine Serial No. | Kwe Rating | Marelli Alternator Model | Alternator Serial No. | KVA Rating |
|-----|---------------------------------|---------------|-------------------|------------|--------------------------|-----------------------|------------|
| 26  | ZONG SINE TEXTILES              | TCG 2020 V16K | 220 7075          | 1344       | MJB 500 MB4              | MT 20547              | 2150       |
| 27  | SIRAJ ANO ISPATH / S.S. STEELS  | TCG 2020 V16K | 220 7083          | 1344       | MJB 500 MB4              | MT 27287              | 2150       |
| 28  | SIRAJ ANO ISPATH / S.S. STEELS  | TCG 2020 V16K | 220 7085          | 1344       | MJB 500 MB4              | MT 27288              | 2150       |
| 29  | SIRAJ ANO ISPATH / S.S. STEELS  | TCG 2020 V16K | 220 7093          | 1344       | MJB 500 MB4              | MT 25976              | 2150       |
| 30  | NORTH SOUTH UNIVERSITY          | TCG 2020 V16K | 220 7101          | 1364       | MJB 500 MB4              | MT 23333              | 2150       |
| 31  | NORTH SOUTH UNIVERSITY          | TCG 2020 V16K | 220 7107          | 1364       | MJB 500 MB4              | MT 28521              | 2150       |
| 32  | NORTH SOUTH UNIVERSITY          | TCG 2020 V16K | 220 7117          | 1364       | MJB 500 MB4              | MT 23336              | 2150       |
| 33  | GRAPHICS TEXTILES               | TCG 2020 V16K | 220 7139          | 1344       | MJB 500 MB4              | MT 30009              | 2150       |
| 34  | SAKURA STEEL                    | TCG 2020 V16K | 220 7155          | 1364       | MJB 500 MB4              | MT 30010              | 2150       |
| 35  | SAKURA STEEL                    | TCG 2020 V16K | 220 7157          | 1364       | MJB 500 MB4              | MT 30011              | 2150       |
| 36  | SAKURA STEEL                    | TCG 2020 V16K | 220 7161          | 1364       | MJB 500 MB4              | MT 31670              | 2150       |
| 37  | UNITED LEASING / GENERAL PHARMA | TCG 2016 V16K | 220 7179          | 678        | MJB 400 LC4              | MT 28076              | 1300       |
| 38  | SHARIJA OIL REFINERY            | TCG 2020 V16K | 220 7131          | 1364       | MJB 500 MB4              | MT 23335              | 2150       |
| 39  | RING SHINE TEXTILES             | TCG 2020 V16K | 220 7129          | 1364       | MJB 500 MB4              | MT 28876              | 2150       |
| 40  | ECHOTEX LTD.                    | TCG 2020 V16K | 220 7141          | 1364       | MJB 500 MB4              | MT 23332              | 2150       |
| 41  | BINIMOY STEEL MILLS             | TCG 2020 V16K | 220 7203          | 1364       | MJB 500 MB4              | MT 30278              | 2150       |
| 42  | BINIMOY STEEL MILLS             | TCG 2020 V16K | 220 7204          | 1364       | MJB 500 MB4              | MT 30277              | 2150       |
| 43  | HAZRAT AMANAT SHAH SPINNING     | TCG 2020 V16K | 220 7244          | 1364       | M8B 500 MB4              | MT 31675              | 2150       |
| 44  | HAZRAT AMANAT SHAH SPINNING     | TCG 2020 V16K | 220 7250          | 1364       | M8B 500 MB4              | MT 31676              | 2150       |
| 45  | RAHIMA ISPAT                    | TCG 2020 V16K | 220 7258          | 1364       | M8B 500 MB4              | MT 31673              | 2150       |
| 46  | RAHIMA ISPAT                    | TCG 2020 V16K | 220 7259          | 1364       | M8B 500 MB4              | MT 31674              | 2150       |

# SPECIAL APPLICATION





## VARIOUS APPLICATION



**The most unusual has been made for amusement park of Gardaland the largest in Italy, located near the Garda lake.**



**Motors make the installed attraction moving, while generators supply auxiliary energy in case of block-out.**

## **SPECIAL APPLICATION**



**Oil & Gas Application**

## **SPECIAL APPLICATION**



**400 Hz Application**



## SPECIAL APPLICATIONS

| No. | Date   | Quantity | Type         | Power (kVA) | Technical Specifications  | Destination        | Plant Name                                                      |
|-----|--------|----------|--------------|-------------|---------------------------|--------------------|-----------------------------------------------------------------|
| 1   | Feb-99 | 2        | M8V 400 MB4  | 500         | 400V 50Hz IP50 4P B3/B14  | IRAN               | SNAM (BANDAR IMAM)                                              |
| 2   | Mar-99 | 2        | M7HV 630 SC4 | 1500        | 5000V 50Hz IP44 4P B3/B14 | ITALY              | PRIME POWER PLANT (ENEL)                                        |
| 3   | Mar-99 | 1        | M8N 160 SB4  | 16          | 400V 50Hz IP21 4P B34     | ITALY              | EMERGENCY GEN SET                                               |
| 4   | May-99 | 1        | M7V 250 MA4  | 100         | 415V 50Hz IP54 4P B3/B14  | ROMANIA            | EMERGENCY GEN SET                                               |
| 5   | May-99 | 15       | M7T 250 SC4  | 100         | 475V 60Hz IP23 4P B2      | ITALY              | CARROZZE FS                                                     |
| 6   | Jul-99 | 1        | M7V 500 SA4  | 1250        | 480V 60Hz IP44 4P B3/B14  | IRAN               | EMERGENCY GEN SET                                               |
| 7   | Sep-99 | 1        | M7V 315 SA4  | 120         | 415V 50Hz IP54 4P B3/B14  | LYBIA              | PRIME POWER PLANT (SNAM)                                        |
| 8   | Sep-99 | 1        | M7V 315 SA4  | 156         | 415V 50Hz IP55 4P B3/B14  | NIGERIA            | EMERGENCY GEN SET                                               |
| 9   | Jan-00 | 6        | M7T 250 SA4  | 75          | 480V 60Hz IP23 4P B2      | ITALY              | CARROZZE FS                                                     |
| 10  | Feb-00 | 1        | M7V 500 SA4  | 800         | 690V 50Hz IP55 4P B3/B14  | QATAR              | EMERGENCY GEN SET                                               |
| 11  | Mar-00 | 1        | M2X 315 MC4  | 350         | 380V 50Hz IP44 4P B3      | RUSSIA             | EMERGENCY GEN SET (EEXE)<br>(GAS PUMPING STATION)               |
| 12  | Mar-00 | 1        | M7R 500 MA6  | 1000        | 690V 50Hz IP44 6P B3/B14  | VALGIUDICARIE (TN) | PRIME POWER PLANT                                               |
| 13  | Apr-00 | 7        | M7T 250 MA4  | 150         | 560V 60Hz IP23 4P B16     | ITALY              | CARROZZE FS                                                     |
| 14  | Mar-01 | 1        | M2X 400 MC4  | 800         | 440V 60Hz IP44 4P B3      | MEXICO             | EMERGENCY GEN SET (EEXE)<br>(GAS PUMPING STATION_ATASTA)        |
| 15  | Nov-01 | 2        | M2X 315 MC4  | 250         | 480V 60Hz IP44 4P B3      | RUSSIA             | EMERGENCY GEN SET (EEXE)<br>(GAS PUMPING SYSTEM)                |
| 16  | Dec-01 | 2        | M2X 315 MC4  | 250         | 480V 60Hz IP44 4P B34     | SAUDI ARABIA       | EMERGENCY GEN SET (EEXE)<br>(GAS PUMPING STATION_ARAMCO)        |
| 17  | Dec-01 | 1        | M8V 400 LB4  | 700         | 400V 50Hz IP55 4P B2 0/18 | IRAN               | SNAM (BANDAR IMAM)                                              |
| 18  | Apr-02 | 1        | M6X 250 SC4  | 70          | 380V 50Hz IP44 4P B34     | IRAN               | AUX GEN SET GAS TURBINE (NIOC)                                  |
| 19  | May-02 | 2        | M8V 400 SB4  | 375         | 400V 50Hz IP54 4P B3/B14  | GERMANY            | EMERGENCY GEN SET                                               |
| 20  | Jun-02 | 1        | M8V 400 SB4  | 1150        | 480V 60Hz IP55 4P B3/B14  | SAUDI ARABIA       | PRIME POWER PLANT (ARAMCO/SNAM)                                 |
| 21  | Sep-02 | 3        | M2W 315 MC4  | 150         | 480V 50Hz IP23 4P B3      | ALGERIA            | EMERGENCY GENERATING SET (EEXE)<br>(GAS PUMPING STATION_SKIKDA) |
| 22  | Nov-02 | 2        | M8V 400 LA4  | 650         | 400V 50Hz IP54 4P B3/B14  | ITALY              | EMERGENCY GEN SET                                               |
| 23  | Nov-02 | 1        | M8B 630 MC6  | 2500        | 400V 50Hz IP23 6P B20/B14 | JAPAN              | STAND BY POWER PLANT                                            |

## GAS TURBINE

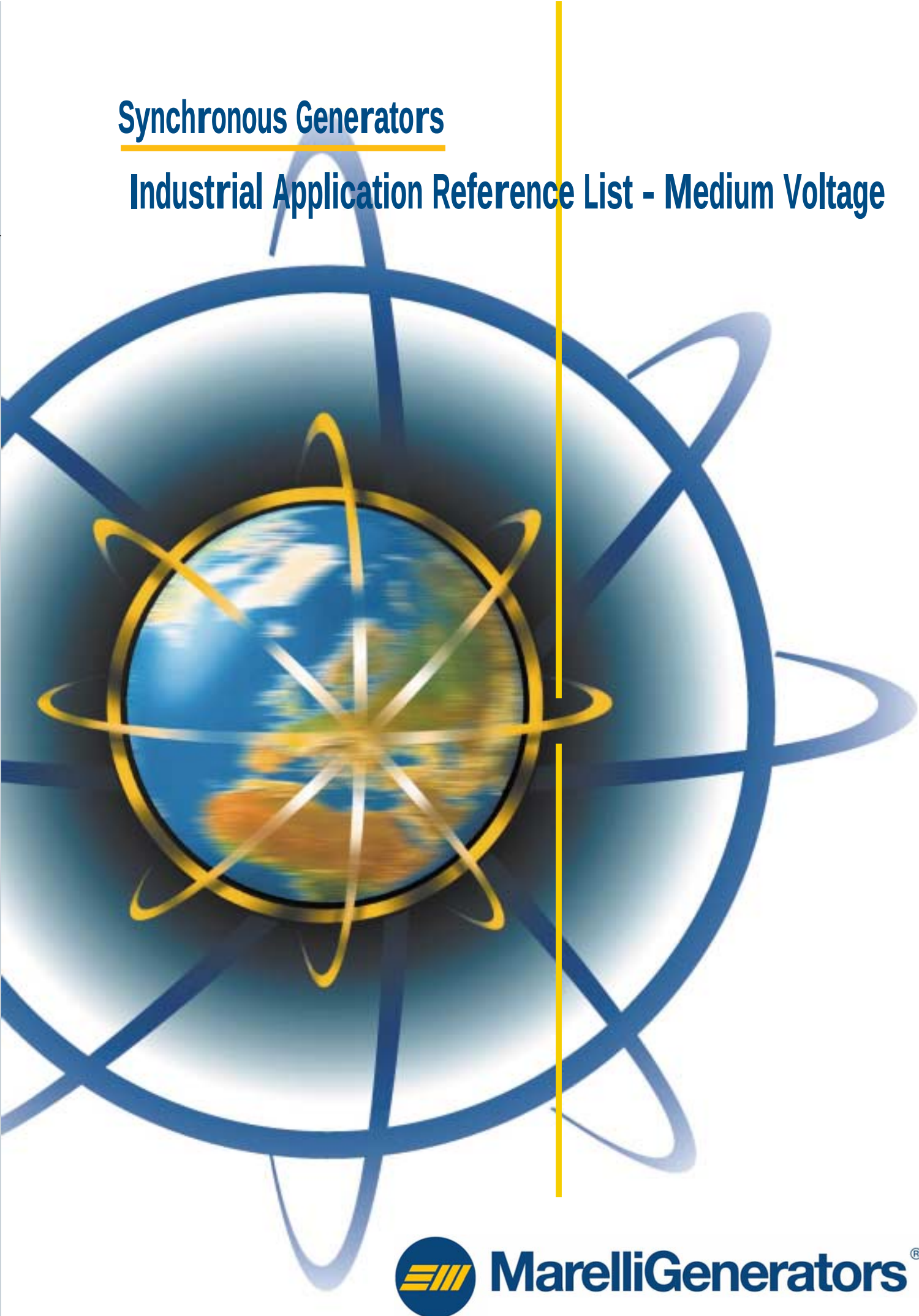
| No. | Quantity | Type         | Power (kVA) | Destination           | Plant Name                                          |
|-----|----------|--------------|-------------|-----------------------|-----------------------------------------------------|
| 1   | 6        | M7H 630 LB 4 | 2500        | Russia                | General Electric / Co-generation Plant-Turbine PGT2 |
| 2   | 4        | M7H 630 SC4  | 2000        | Italy                 | Depretto-Escher Wyss/Incinerator Plant              |
| 3   | 4        | M7H 630 SC4  | 2000        | Italy                 | Top Gen/Incinerator Plant                           |
| 4   | 8        | -            | 400         | Russian Gas Pipeline  | John Brown Eng.                                     |
| 5   | 10       | -            | 360         | Russian Gas Pipeline  | Various customers                                   |
| 6   | 6        | -            | 600         | Algerian Gas Pipeline | CAPOBON Plant                                       |

## 400 Hz APPLICATIONS

| No. | Date   | Quantity | Type         | Power (kVA) | Technical Specifications   | Destination | Plant Name                               |
|-----|--------|----------|--------------|-------------|----------------------------|-------------|------------------------------------------|
| 1   | 1995   | 5        | M7F 250 MA24 | 90          | 400Hz                      | Germany     | Frankfurt Airport                        |
| 2   | 1995   | 5        | M7F 315 S28  | 140         | 400Hz                      | Germany     | Frankfurt Airport                        |
| 3   | 1996   | 5        | M7F 250 MA24 | 90          | 400Hz                      | Luxemburg   | Luxembourg Airport                       |
| 4   | 1996   | 5        | M7F 250 MA24 | 90          | 400Hz                      | Germany     | Frankfurt Airport                        |
| 5   | 1997   | 5        | M7F 250 MA24 | 90          | 400Hz                      | Germany     | Frankfurt Airport                        |
| 6   | 1997   | 5        | M7F 315 S28  | 140         | 400Hz                      | Germany     | Frankfurt Airport                        |
| 7   | 1998   | 5        | M7F 315 S28  | 140         | 400Hz                      | Germany     | Frankfurt Airport                        |
| 8   | 1998   | 5        | M7F 250 MA24 | 90          | 400Hz                      | Luxemburg   | Luxembourg Airport                       |
| 9   | May-01 | 5        | M8F 250 L24  | 90          | 200V 400Hz IP23 4P B3/B14  | FRANCE      | AIRCRAFT TURBINE ENERGY SUPPLY           |
| 10  | May-01 | 5        | M8F 315/28   | 140         | 200V 400Hz IP23 4P B3/B14  | GERMANY     | AIRCRAFT TURBINE ENERGY SUPPLY           |
| 11  | Jul-00 | 11       | M7F 315 M28  | 140         | 200V 400Hz IP23 28P B3/B14 | GERMANY     | AIRCRAFT TURBINE ENERGY SUPPLY           |
| 12  | Aug-00 | 16       | M7F 250 MA24 | 90          | 220V 400Hz IP23 24P B3/B14 | FRANCE      | AIRCRAFT TURBINE ENERGY SUPPLY           |
| 13  | Jan-00 | 2        | M7T 250 MA24 | 90          | 200V 400Hz IP23 24P B3/B14 | GERMANY     | EMERGENCY FRANCUFURTH AIRPORT            |
| 14  | Mar-02 | 1        | M8F 315/28   | 90          | 200V 400Hz IP23 B3/B14     | GERMANY     | EMERGENCY GEN SET<br>FRANCUFURTH AIRPORT |

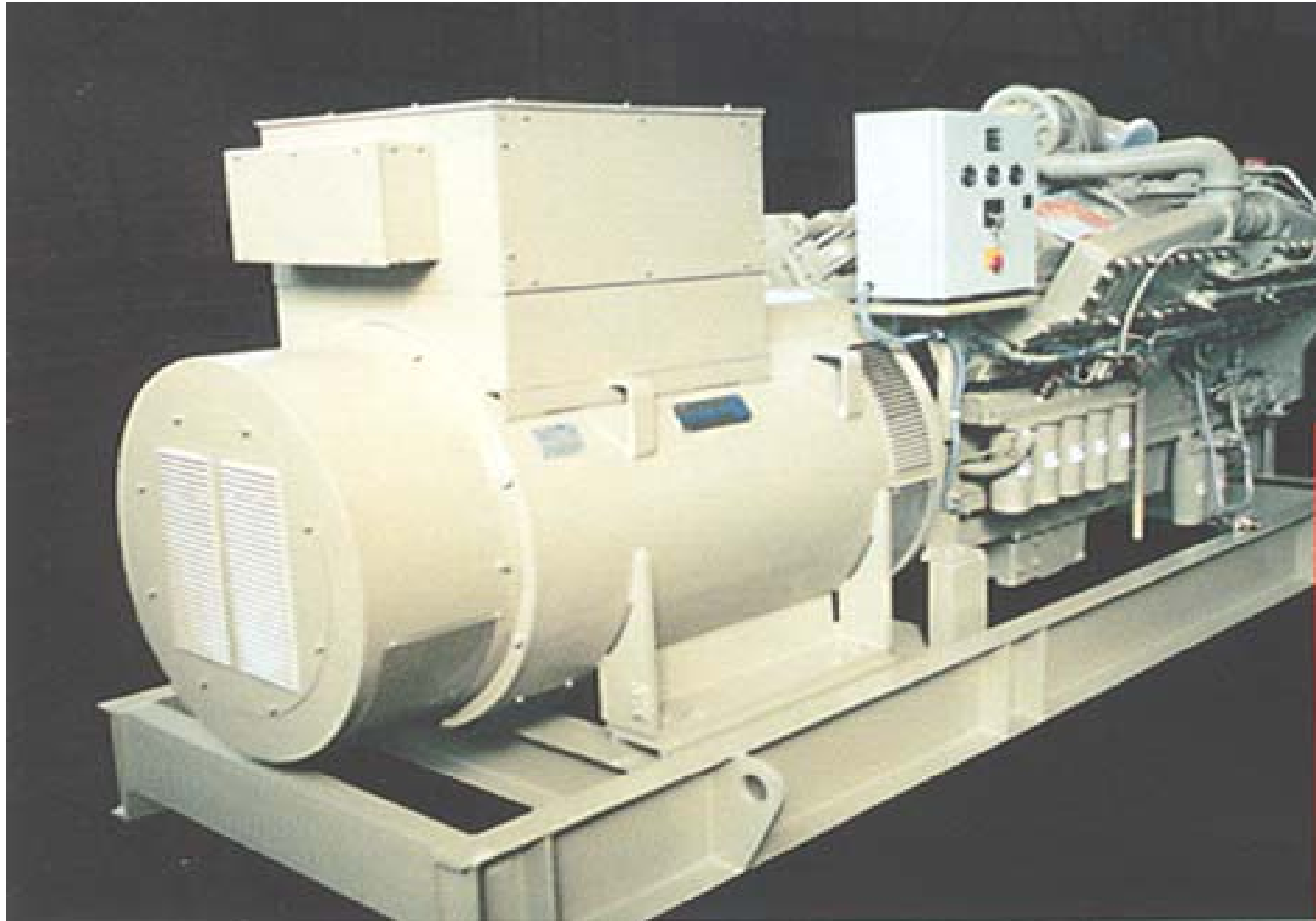
# Synchronous Generators

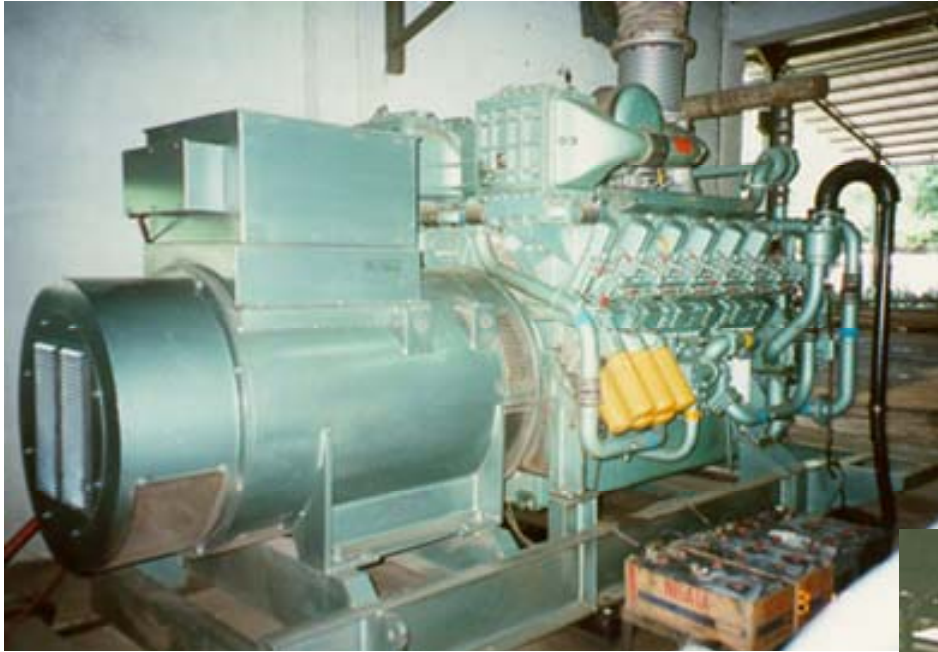
## Industrial Application Reference List - Medium Voltage





## CUMMINS - MARELLI 1250kVA - 3.3kV





**YANMAR - MARELLI**  
**1500kVA - 3.3kV**

**Steel Mill -**  
**INDONESIA 1994**



| No. | Date   | Quantity | Type          | Power (kVA) | Technical Specifications   | Destination   | Plant Name                  |
|-----|--------|----------|---------------|-------------|----------------------------|---------------|-----------------------------|
| 1   | Mar-99 | 2        | M7H 630 SC4   | 2500        | 4160V 60Hz IP23 4P B2      | UNITED STATES | PRIME POWER PLANT (YALE)    |
| 2   | Jul-99 | 1        | M7H 500 LA4   | 1563        | 6600V 50Hz IP23 4P B3/B14  | ITALY         | STAND BY POWER PLANT        |
| 3   | Oct-99 | 2        | M7H 500 SC4   | 1562        | 995V 60Hz IP23 4P B2 0/18  | BELGIUM       | PRIME POWER PLANT           |
| 4   | Nov-99 | 1        | M8H 400 LB4   | 1000        | 3300V 50Hz IP23 4P B2 0/18 | TURKEY        | PRIME POWER PLANT           |
| 5   | Mar-00 | 4        | M8H 500 SC4   | 1562        | 995V 60Hz IP23 4P B2 0/18  | NETHERLAND    | PRIME POWER PLANT           |
| 6   | Mar-00 | 40       | M8H 400 SA4   | 500         | 1500V 50Hz IP23 4P B3/B5   | IRAQ          | RAILWAY POWER GEN EQUIPMENT |
| 7   | Sep-00 | 4        | M8H 500 LA4   | 2000        | 6600V 60Hz IP23 4P B35     | UK            | PRIME POWER PLANT           |
| 8   | Dec-00 | 4        | M8H 500 SA4   | 1562        | 995V 60Hz IP23 4P B2 0/18  | NETHERLAND    | PRIME POWER PLANT           |
| 9   | Mar-01 | 1        | M8H 400 MB4   | 800         | 1000V 50Hz IP23 4P B2 0/18 | ITALY         | PRIME POWER PLANT           |
| 10  | Jul-01 | 8        | M8H 500 MA4   | 1250        | 6300V 50Hz IP23 4P B2 0/18 | UK            | PRIME POWER PLANT           |
| 11  | Sep-01 | 1        | M8H 630 LB4   | 3670        | 5500V 60Hz IP23 4P B3      | PHILIPINES    | STEAM TURBINE               |
| 12  | Nov-01 | 1        | M8VH 630 MB4  | 2000        | 6000V 50Hz IP55 4P B3/B14  | ITAY          | PRIME POWER PLANT           |
| 13  | Nov-01 | 12       | M8H 500 MA4   | 1320        | 6600V 50Hz IP23 4P B2 0/18 | TANZANIA      | PRIME POWER PLANT           |
| 14  | Feb-02 | 5        | M8H 500 SC4   | 1750        | 995V 60Hz IP23 4P B2 0/18  | BELGIUM       | PRIME POWER PLANT           |
| 15  | Mar-02 | 1        | M8H 500 LA4   | 2230        | 995V 60Hz IP23 4P B2 00/21 | NETHERLAND    | PRIME POWER PLANT           |
| 16  | Mar-02 | 2        | M8H 400 LA4   | 750         | 3300V 50Hz IP23 4P B2 0/18 | IRAQ          | PRIME POWER PLANT           |
| 17  | Mar-02 | 2        | M8H 500 SA4   | 1000        | 3300V 50Hz IP23 4P B2 0/18 | ITAQ          | PRIME POWER PLANT           |
| 18  | Mar-02 | 1        | M8H 500 MA4   | 1500        | 3300V 50Hz IP23 4P B34     | GERMANY       | PRIME POWER PLANT           |
| 19  | Mar-02 | 3        | M8H 500 LA4   | 1500        | 3300V 50Hz IP23 4P B35     | IRAQ          | PRIME POWER PLANT           |
| 20  | Jun-02 | 1        | M8H 599 LA4   | 2500        | 995V 60Hz IP23 4P B34      | BELGIUM       | PRIME POWER PLANT           |
| 21  | Aug-02 | 2        | M8H 500 MA4   | 2270        | 3300V 50Hz IP23 4P B34     | ONU           | PRIME POWER PLANT           |
| 22  | Oct-02 | 3        | M8H 630 LB4   | 2800        | 6600V 50Hz IP31 4P B3/B14  | LIBYA         | PRIME POWER PLANT           |
| 23  | 2003   | 2        | M8H 500 SC4   | 1750        | 1000V 60Hz IP23 4P B2      | GERMANY       |                             |
| 24  | 2003   | 2        | M8HT 630 MB4  | 1250        | 6600V 50Hz IP23 8P V10     | INDIA         | CHAKBHAI                    |
| 25  | 2003   | 6        | M8H 500 MA4   | 1320        | 6600V 50Hz IP23 4P B2 0/18 | AUSTRALIA     |                             |
| 26  | 2003   | 3        | M8H 400 LB4   | 1000        | 6600V 50Hz IP23 4P B2      | KOREA         |                             |
| 27  | 2003   | 1        | M8HRT 710 MA8 | 2800        | 6000V 50Hz IP44 8P V10     | ITALY         |                             |
| 28  | 2003   | 2        | M8H 400 MA4   | 650         | 3000V 60Hz IP23 4P B3/B14  | ITALY         |                             |
| 29  | 2003   | 2        | M8H 500 SC4   | 1750        | 1000V 60Hz IP23 4P B2      | NETHERLAND    |                             |
| 30  | 2003   | 1        | MJHT 710 MB8  | 2400        | 3300V 50Hz IP23 8P B3      | ITALY         | SANT'ANNA                   |
| 31  | 2004   | 1        | MJH 400 LC4   | 1200        | 6600V 60Hz IP23 4P B2      | MALAYSIA      |                             |
| 32  | 2004   | 1        | MJH 560 MA4   | 2300        | 3300V 60Hz IP23 4P B2      | TAIWAN        |                             |
| 33  | 2004   | 1        | MJHR 630 LB4  | 2875        | 6600V 60Hz IP54 4P B2      | KOREA         |                             |
| 34  | 2004   | 5        | M8H 500 SC4   | 1750        | 1000V 60Hz IP23 4P B2      | GERMANY       |                             |
| 35  | 2004   | 2        | M8HT 630 MA4  | 1312        | 6600V 50Hz IP23 8P V10     | INDIA         | KILLA                       |
| 36  | 2004   | 1        | MJH 500 MA4   | 1250        | 6300V 50Hz IP23 4P B20/B14 | GERMANY       |                             |
| 37  | 2004   | 3        | M8HT 630 MB8  | 1500        | 6600V 50Hz IP23 8P V10     | INDIA         | SAHORE                      |
| 38  | 2004   | 2        | MJHT 560 MA4  | 1555        | 6600V 50Hz IP23 4P B34     | SRILANKA      | KUMBURUTENIW                |
| 39  | 2004   | 1        | MJHT 710 SC8  | 1815        | 6600V 50Hz IP23 8P V10     | INDIA         | SIDHANA                     |
| 40  | 2004   | 2        | MJHT 710 LB12 | 2160        | 3300V 50Hz IP23 12P B3     | INDIA         | MANAI                       |
| 41  | 2004   | 1        | M8HT 630 LB4  | 1630        | 6000V 50Hz IP23 8P B3      | FRANCE        | ARBEOST                     |



| No. | Date | Quantity | Type           | Power (kVA) | Technical Specifications   | Destination | Plant Name |
|-----|------|----------|----------------|-------------|----------------------------|-------------|------------|
| 42  | 2004 | 2        | MJHT 710 MA6   | 2950        | 6600V 50Hz IP23 6P B3      | FRANCE      | LACOMBE    |
| 43  | 2004 | 2        | MJHT 710 MB6   | 1900        | 6300 50Hz IP23 6P B3       | IRAN        |            |
| 44  | 2004 | 8        | MJH 500 SC4    | 1750        | 1000V 60Hz IP23 4P B2      | GERMANY     |            |
| 45  | 2005 | 1        | MJHRT 630 MA8  | 1100        | 3000V 60Hz IP44 8P V10     | ITALY       |            |
| 46  | 2004 | 1        | MJHT 710 LA6   | 3500        | 6600V 50Hz IP23 6P B3      | FRANCE      | VORZ       |
| 47  | 2004 | 3        | MJHT 710 LB8   | 2500        | 66000V 50Hz IP23 8P V10    | INDIA       | PUSULA     |
| 48  | 2004 | 2        | MJHT 710 SC6   | 2220        | 6300V 50Hz IP23 6P B3      | IRAN        |            |
| 49  | 2004 | 2        | MJHV 710 LB6   | 3150        | 6600V 50Hz IP55 6P B16     | ITALY       |            |
| 50  | 2004 | 1        | MJHT 710 SC12  | 1360        | 6000V 50Hz IP23 12P V10    | FRANCE      | CESANA     |
| 51  | 2004 | 4        | M8HRT 710 LB6  | 3125        | 6000V 50Hz IP44 8P V10     | ITALY       |            |
| 52  | 2004 | 1        | MJHT 630 SA6   | 1150        | 5200V 50Hz IP23 6P B3      | ITALY       |            |
| 53  | 2004 | 2        | MJHT 710 MB8   | 2200        | 6600V 50Hz IP23 8P V10     | INDIA       | HEMAGIRI   |
| 54  | 2004 | 2        | MJHRT 710 SC12 | 1150        | 6000V 50Hz IP54 12P V10    | ITALY       |            |
| 55  | 2004 | 2        | MJHT 710 LB10  | 2600        | 6000V 50Hz IP54 10P B3     | ITALY       | BOLZANO    |
| 56  | 2004 | 2        | MJHT 500 SA6   | 550         | 2200V 50Hz IP23 8P B34     | ITALY       |            |
| 57  | 2004 | 1        | MJHRT 630 SB8  | 800         | 3000V 60Hz IP44 8P V10     | ITALY       |            |
| 58  | 2004 | 1        | MJHRT 630 MB8  | 1600        | 3000V 60Hz IP44 8P V10     | ITALY       | VERDUNO    |
| 59  | 2004 | 1        | MJHT 630 SB4   | 2150        | 3000V 60Hz IP23 4P B3/B14  | ITALY       |            |
| 60  | 2005 | 8        | MJH 500 MB4    | 1250        | 6300V 50Hz IP23 4P B35     | ENGLAND     |            |
| 61  | 2005 | 3        | MJH 500 SB4    | 1350        | 6000V 50Hz IP23 4P B20/B14 | GERMANY     |            |
| 62  | 2005 | 4        | MJH 630 MB4    | 2000        | 6600V 50Hz IP23 4P B20/B14 | GERMANY     |            |
| 63  | 2005 | 1        | MJH 630 MB4    | 2750        | 6300V 50Hz IP23 4P B2/B14  | GERMANY     |            |
| 64  | 2005 | 1        | MJH 560 LA4    | 2500        | 6000V 50Hz IP23 4P B20/B14 | ITALY       |            |
| 65  | 2005 | 2        | MJHT 710 MB10  | 2250        | 3000V 60Hz IP23 10P V10    | ITALY       |            |
| 66  | 2005 | 1        | MJHV 630 LB4   | 2000        | 6300V 50Hz IP54 4P B34     | ITALY       |            |
| 67  | 2005 | 2        | MJH 630 LB4    | 2620        | 6300V 50Hz IP23 4P B34     | ITALY       |            |
| 68  | 2005 | 9        | MJH 500 SC4    | 1560        | 1000V 60Hz IP23 4P B2      | GERMANY     |            |
| 69  | 2005 | 2        | MJH 500 MB4    | 1500        | 6000V 50Hz IP23 4P B34     | GERMANY     |            |
| 70  | 2005 | 1        | MJHT 710 MA10  | 1700        | 6000V 50Hz IP23 10P V10    | ITALY       |            |
| 71  | 2005 | 2        | MJHT 710 MA 16 | 1100        | 3000V 60Hz IP23 16P B3     | ITALY       |            |
| 72  | 2005 | 1        | MJHT 710 LB4   | 1700        | 6000V 50Hz IP23 14P V10    | ITALY       |            |
| 73  | 2005 | 7        | MJH 500 MA4    | 1320        | 6600V 50Hz IP23 4P B2      | MALAYSIA    |            |
| 74  | 2005 | 1        | MJHT 500 SB4   | 540         | 5200V 50Hz IP23 4P B3      | ITALY       |            |
| 75  | 2005 | 1        | MJHT 630 SC12  | 800         | 3000V 60Hz IP23 12P V10    | ITALY       |            |
| 76  | 2005 | 1        | MJHT 710 LB14  | 1500        | 3000V 60Hz IP23 14P V10    | ITALY       |            |
| 77  | 2005 | 1        | MJHRT 710 LB19 | 1400        | 3000V 60Hz IP23 18P B3     | ITALY       | SUSA       |