



Smart solutions.  
Strong relationships.



# Large Rotating **Machines**





# C O N T E N T S



1

Introduction



2

Energy Efficient  
Motors - **N** Series



3

Totally Enclosed  
Air Cooled - TP Series



4

Totally Enclosed Water  
Cooled - UW Series



5

Screen Protected Drip  
Proof Motor - UD Series



6

Totally Enclosed Tube  
Ventilated Motor - TV Series



7

Re - rolling Mill Duty Motor  
- KMR Series



8

Slip Ring Induction Motors



9

Motors for Hazardous Area



10

CG Electric Systems Hungary Zrt.



11

Standards / Applications

**r**eference  
list

12

Reference List



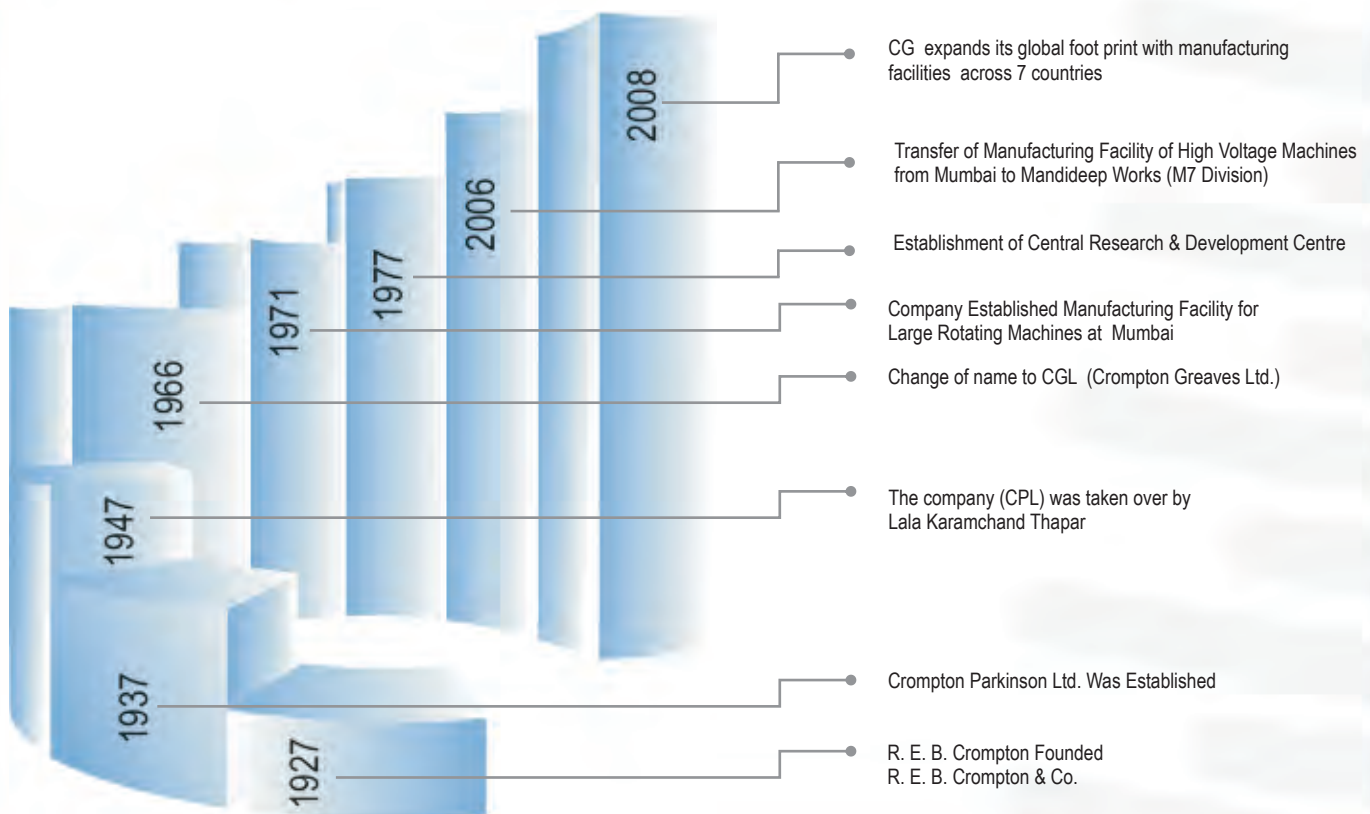
Smart solutions.  
Strong relationships.



# Introduction

Crompton Greaves Ltd., a member of the Avantha Group, is India's largest private sector enterprise in the business of electrical engineering. The company is pioneer in the field for more than 83 years and has vast experience and expertise in the management and application of electric energy.

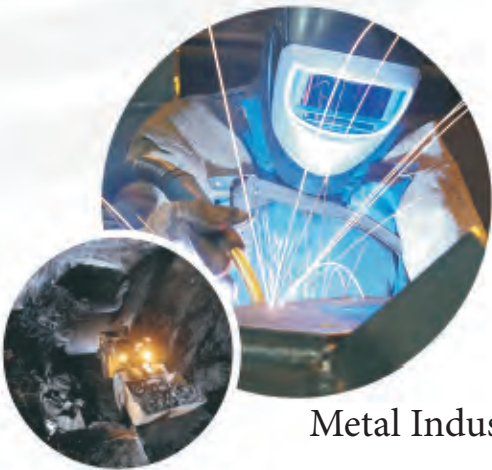
Crompton Greaves enjoys leadership position in most of its product lines with strong manufacturing base located all over India and abroad, a wide distribution network, commitment to quality and constant improvement in processes and products, technology up-gradation through a well established in-house R&D facility, joint ventures with foreign collaborators backed by a workforce of dedicated managers, engineers and technicians.







# a p p l i c a t i o n s



Mining

Metal Industry



Steel



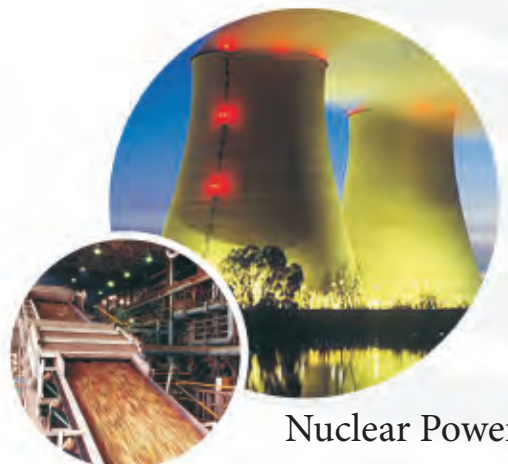
Transportation



Cement Industry



Wind Mill  
Generator



Nuclear Power



Sugar



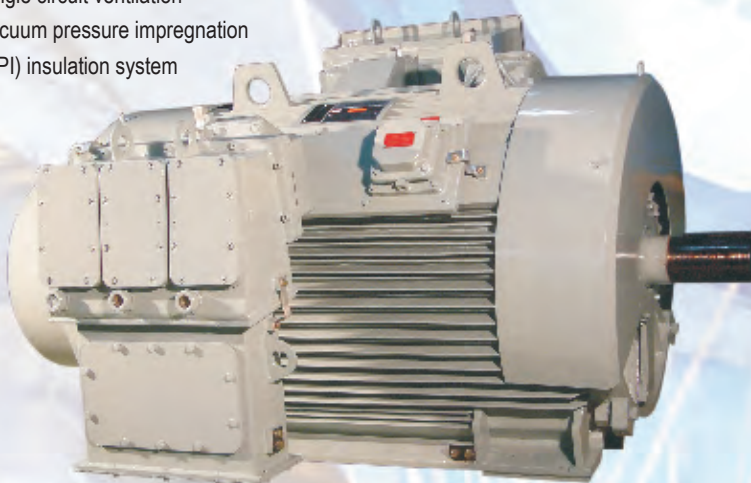
## Global Series Energy Efficient Motors

Crompton Greaves G-Series (Global Series) Motors belong to family of energy efficient, Totally enclosed fan cooled (TEFC) state-of-art, squirrel cage motors. These motors are extremely efficient, even at partial load, and they have very low noise level. Efficiency is maximized by effectively utilizing materials, minimizing losses and optimized fin design. Further more, due to reduced fan and core losses, there is no sharp drop in the efficiency curve at partial load.

The components are designed using finite element analysis of electromagnetic, structural, thermal and air flow, which ensures better stress distribution and high structural rigidity. Adequate steps have been taken in the electrical design process to make sure the natural frequencies of stator teeth and core remain well away from the field forcing frequency. Appropriate selection of tolerances and fits in addition to good manufacturing processes facilitates maintaining high level of quality. The rotor and fans are separately balanced on precision balancing machine to very stringent grades. All these put together, results in extremely low vibration levels.

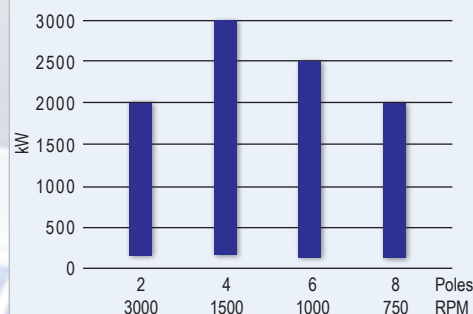
The motors are totally enclosed (IP55) surface cooled through a fan mounted on the shaft (IC4A1A1) or separately mounted (IC4A1A6) along with the following features

- Axial ventilation rotor design
- Machined stator
- Single circuit ventilation
- Vacuum pressure impregnation (VPI) insulation system

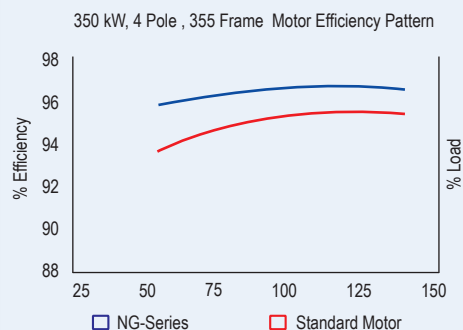


NG-Series Foot Mounted, 400M Frame Motor

NG-Series Output Chart, 3300-6600 V, 50Hz



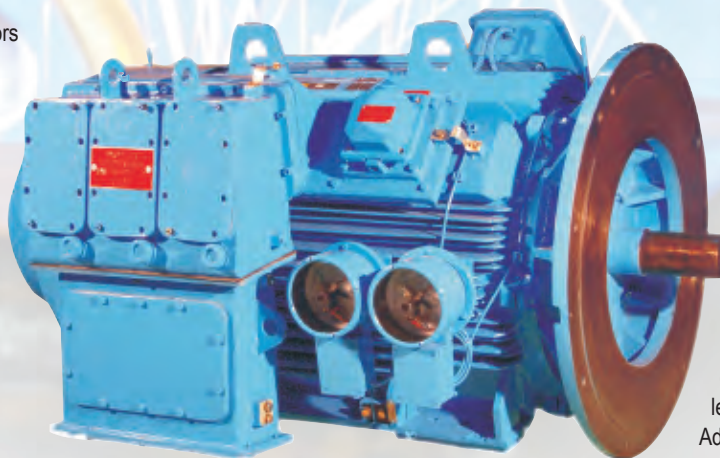
Value For Money



The efficiency curve of standard motor is dropping in nature i.e. there is a sharp fall in efficiency at part loads. But NG-series motors have an almost flat efficiency curve. Hence fall in efficiency is marginal. Thus energy saving is significant even at part loads.

### Salient Features

- Energy efficient surface cooled motors
- Robust steel frame
- Solid deep rotor bars in single cage
- Special double cage as per driven equipment requirement
- Antifriction bearings
- Dynamically balanced rotors
- Stringent quality checks
- Class 'F' insulation with class 'B' temperature rise
- High efficiency
- Low noise levels
- Low vibration levels
- Ease of maintenance



NG-Series Foot and Flange Mounted, 315M Frame Motor

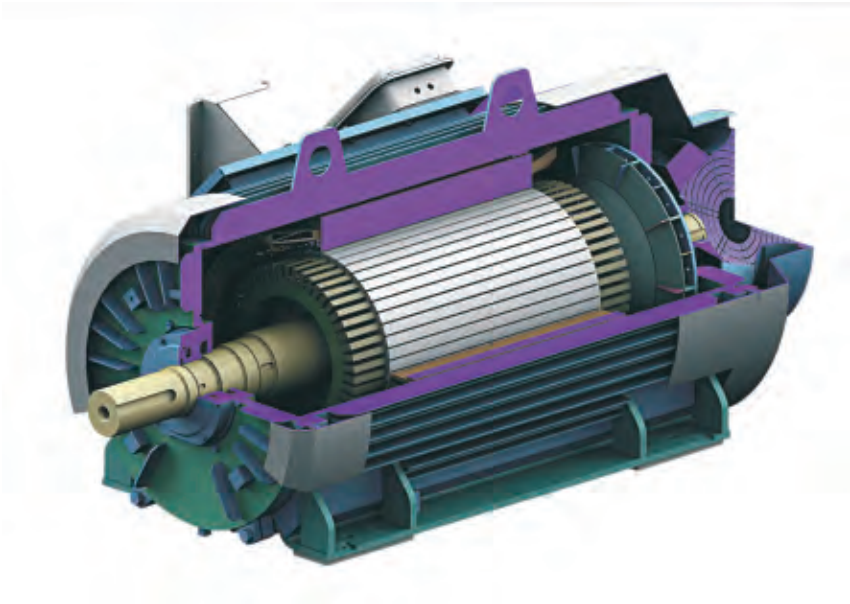
### CGL's Motor Solutions

CG deliver variants of the NG-Series motor (with 13.2kV 60Hz, higher poles/low speed). Special mounting arrangement can also be built as per customer requirement. CG also supply configurations of G-Series motors with sleeve bearings, double shaft extension, low vibration, low noise levels, motors for hazardous areas. Additional sensors (vibration sensors, speed sensor, contact thermometer) can be provided to compliment motor monitoring and fault protection units.

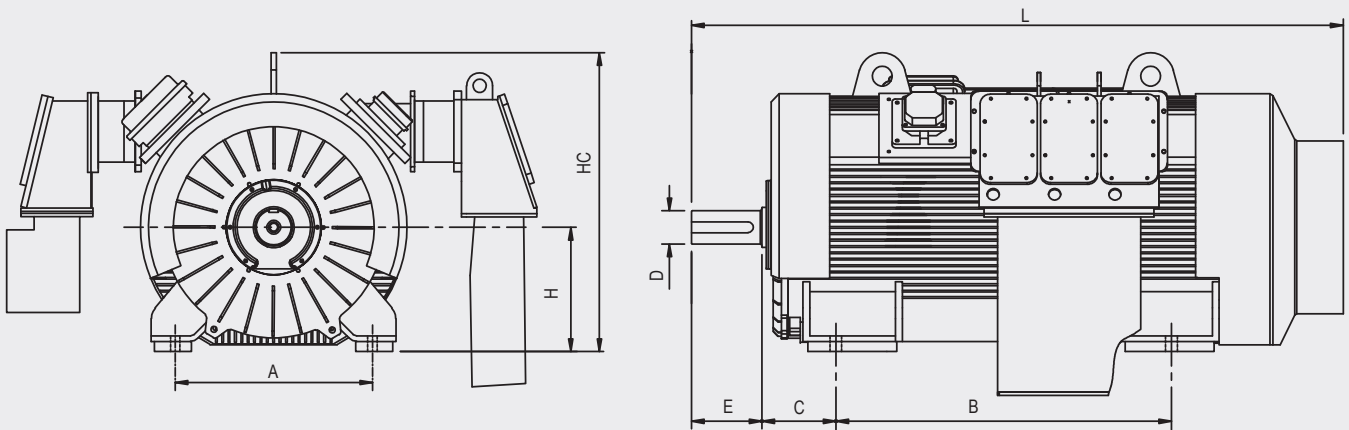
For optimum performance and maximum life NG-Series motors are built with axial ventilation rotor design with machined stator core that improves heat transfer thereby giving excellent thermal performance. This is further aided by streamlined internal air circuit design & vacuum pressure impregnation (VPI) insulation scheme which meets the requirement of Thermal class F (temperature limit 155°C) though the motors are rated for class B temperature rise operation.

Standard Range

- Totally enclosed fan cooled (TEFC)
- 100 to 3000kW at 50 Hz
- 150 to 4000HP at 60 Hz
- Voltages from 380 V to 13200 V
- Shaft heights 315 - 630mm  
12.4 - 22.0 inches
- Horizontal or vertical
- IP55/IP56, IC4A1A1 / IC4A1A6
- 2 Pole to 12 Pole
- Standards IEC60034 / IS325
- Motors for hazardous areas
- Motors for VFD application



General Arrangement Drawing



Overall Dimensions of Motor

Type	Poles	A	B	C	ØD	E	H	HC	L
NG 315 S	2 - 6	508	800	216	70 - 95	140 - 170	315	790	1700
NG 315 M	2 - 6	508	900	216	70 - 95	140 - 170	315	790	1800
NG 315 L	2 - 6	508	1000	216	70 - 95	140 - 170	315	790	1900
NG 355 S	2 - 6	610	900	250	85 - 110	170 - 210	355	900	1845
NG 355 M	2 - 6	610	1000	250	85 - 110	170 - 210	355	900	1945
NG 355 L	2 - 6	610	1120	250	85 - 110	170 - 210	355	900	2065
NG 400 S	2 - 8	686	900	280	85 - 120	170 - 210	400	1000	1980
NG 400 M	2 - 8	686	1000	280	85 - 120	170 - 210	400	1000	2080
NG 400 L	2 - 8	686	1120	280	85 - 120	170 - 210	400	1000	2220
NG 450 S	2 - 8	750	1000	315	85 - 125	170 - 210	450	1100	2150
NG 450 M	2 - 8	750	1120	315	85 - 125	170 - 210	450	1100	2325
NG 450 L	2 - 8	750	1250	315	85 - 125	170 - 210	450	1100	2525

All dimensions are in mm  
† GD500, GD560 are also available on request

Note : Due to continuous improvements and developments, the above data is likely to be changed without prior notice.



# High Voltage Closed Air Circuit Air Cooled (CACA) TP Series Induction motors

The TPC range of induction motors comes under the offerings in squirrel cage rotor (SCR) design. These motors belong to TP range general purpose motors having totally enclosed construction. TPC range consist of foot mounted IMB3 IS 2253 / IEC 60034-7 totally enclosed IP55 IS4691 / IEC 60034-5 cooled with air to air IEC 60034-6 heat exchangers. VTPC range is a variant of the TPC range modular design with IMV1 flange mounted construction. CGL also offers robust design when used with variable voltage variable frequency drives, the BTPC range have blower mounted heat exchanger for most stringent applications and high output low speed designs. Heat exchangers for the BTPC range are built with IC6A1A6 or IC6A6A6 primary and secondary air circuits have either shaft mounted fans or separately mounted blowers.

The TP range of motors has been designed to meet varying application demands while maintaining the performance and high level of quality. TP range meets requirement of various Industrial Sectors namely power, irrigation, oil & gas, cement, sugar, textile, steel, mining, chemical Industries.

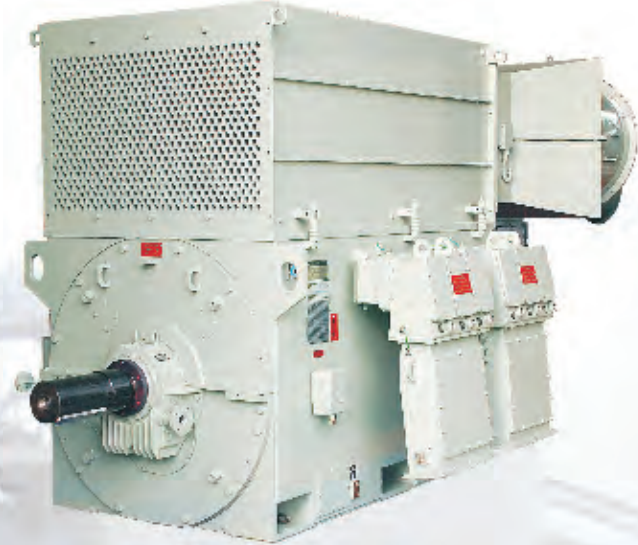
## Low Vibration, Less Noise.....More Peace

CG TP series motors has been engineered using the latest technologies to achieve effective utilization of material for optimal performance. The heat exchangers have been thoroughly analyzed using advanced computational fluid dynamics ensuring better heat transfer for higher power output. The fan duct covers are internally lined with noise absorbing material to achieve lowest noise levels. TP range comply to IEC 60034-9 for noise and IEC 60034-14 for vibration standards.

Rotors are generally designed as rigid however flexible rotors are also offered depending on the applications. Rotor reliability is ensured by the use of latest design tools. Fabricated mild steel body structure ensures low vibration characteristics for longer life and maintenance free operations. TP range of CACA motors lends itself to highly versatile modular concept. Its heat exchangers can be easily switched over from Closed Air Circuit Air Cooled (CACA ) to Closed Air Circuit water Cooled (CACW) enclosure to enhance the output of motor.

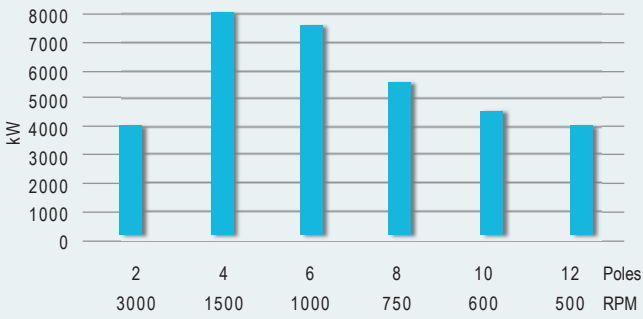
## Motor of Choice

Crompton Greaves CACA range of motors are designed to deliver and perform in most demanding & strenuous operations. CG engineers use the latest technologies that help to build the motors with high commitment to performance, reliability and quality.

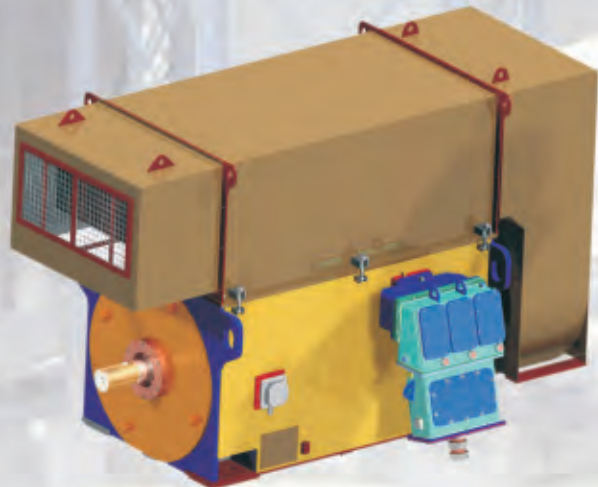


IC6A1A6 Cooling Type, Oil Lubricated 630G Frame CACA Motor

TP Series Output Chart, 3300-6600 V, 50Hz



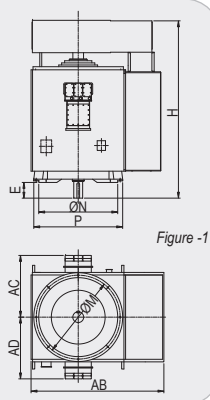
I6A1A1 Cooling Type, TPC 500 Frame with Silencer



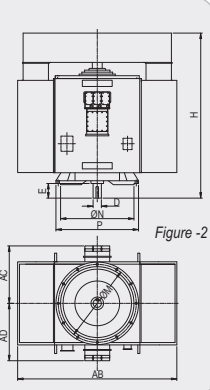
## CGL's Motor Solutions

CG deliver variants of the TP-Series motor (with 13.8kV 60Hz. higher poles/low speed). Special mounting arrangement can also be built as per customer requirement. CG also supply configurations of TP-Series motors with sleeve bearings, double shaft extension, low vibration, low noise levels & motors for hazardous areas. Additional sensors (vibration sensors, speed sensor, contact thermometer) can be provided to compliment motor monitoring and fault protection units.

General Arrangement Drawing



General Arrangement Drawing



## Overall Dimensions of Motor

Type	Poles	D	E	ØM	ØN	P	H	AB	AC	AD
VTPC 740 C	4 - 6	100	210	740	680	800	2200	1500*	925	925
VTPC 740 D	4 - 6	100	210	740	680	800	2400	1500*	925	925
VTPC 940 D	4 - 10	125	210	940	880	1000	2550	2050*	1000	1000
VTPC 940 E	4 - 10	125	210	940	880	1000	2750	2050*	1000	1000
VTPC 1080 D	4 - 10	125	210	1080	1000	1150	2550	2350*	1000	1000
VTPC 1080 E	4 - 10	125	210	1080	1000	1150	2750	2350*	1000	1000
VTPC 1080 F	4 - 10	125	210	1080	1000	1150	2950	2350*	1000	1000
VTPC 1220 D	4 - 12	125 - 140	210 - 250	1220	1120	1320	2750	2550^	1125	1125
VTPC 1220 E	4 - 12	125 - 160	210 - 250	1220	1120	1320	2950	2550^	1125	1125
VTPC 1220 F	4 - 12	140 - 160	210 - 250	1220	1120	1320	3150	2550^	1125	1125
VTPC 1700 E	4 - 12	180 - 200	300	1700	1600	1800	3525	3150^	1275	1275
VTPC 1700 F	4 - 12	180 - 200	300	1700	1600	1800	3725	3150^	1275	1275
VTPC 1700 G	4 - 12	200	300	1700	1600	1800	3925	3150^	1275	1275

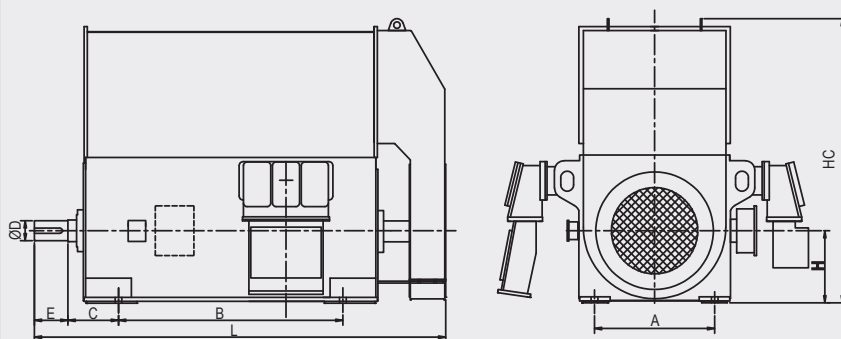
All dimensions are in mm \* Refer figure -1 ^Refer figure -2

† VTPC2000 is also available on request

## Technical Specification

Shaft Height IMB3	: 355 - 900 mm
Frame Size IMV1	: 740 to 2000
Type of Mounting	: IMB3, IMV1
Cooling	: IC6A1A1/ IC6A1A6 / IC6A6A6
Frame Construction	: Fabricated Steel
Rotor Construction	: Squirrel Cage
Insulation	: Class H,F with VPI
Standards	: IEC 60034 / IS:325
Enclosures	: Totally Enclosed Air Cooled
Degree of Protection	: IP55 as per IS:4691

## General Arrangement Drawing



## Overall Dimensions of Motor

Type	Poles	A	B	C	ØD	E	H	HC	L
TPC 355 D	2 - 6	610	1000	315	85 - 100	170 - 210	355	1450	2050 - 2250
TPC 400 E	2 - 6	686	1250	315	85 - 110	170 - 210	400	1800	2300 - 2425
TPC 450 E	2 - 10	750	1250	315	85 - 125	170 - 210	450	1775 - 2130	2375 - 2550
TPC 450 F	2 - 10	750	1400	315 - 570	85 - 125	170 - 210	450	1775 - 1950	2375 - 2550
TPC 500 F	2 - 10	850	1400	335 - 570	110 - 140	210 - 250	500	1900 - 2150	2650 - 3250
TPC 500 H	2 - 10	850	1800	335 - 570	110 - 140	210 - 250	500	1900 - 2150	3050 - 3650
TPC 560 F	2 - 12	950	1400	355 - 570	125 - 160	210 - 250	560	2250 - 2500	2700 - 3275
TPC 560 G	2 - 12	950	1600	355 - 570	125 - 160	210 - 250	560	2250 - 2500	2900 - 3475
TPC 630 F	2 - 12	1060	1400	375 - 570	140 - 160	250 - 300	630	2300 - 2600	2400 - 2775
TPC 630 G	2 - 12	1060	1600	375 - 570	140 - 180	250 - 300	630	2300 - 2600	2600 - 2975
TPC 630 H	2 - 12	1060	1800	375 - 570	140 - 180	250 - 300	630	2300 - 2600	2800 - 3175
TPC 710 G	2 - 12	1180	1600	375 - 630	160 - 180	250 - 300	710	2400 - 2600	2925 - 3650
TPC 710 H	2 - 12	1180	1800	375 - 630	160 - 200	300 - 350	710	2400 - 2600	3125 - 3800

All dimensions are in mm

† TPC800 and TPC900 are also available on request

Note : Due to continuous improvements and developments, the above data is likely to be changed without prior notice.



## High Voltage Closed Air Circuit Water Cooled (CACW) UW Series Induction motors

The UW range of induction motors comes under the offerings in squirrel cage rotor (SCR) design. These motors belong to UW range general purpose motors having totally enclosed construction. The UW range consist of foot mounted IMB3 15: 2253 / IEC 60034-7 totally enclosed self cooled IP55 IS4691 / IEC 60034-5 cooled with air to water IC 8AIW7- IEC 60034-6 heat exchangers.

VUWC range is a variant of the UW range modular design with IMV1 flange mounted construction.

The UWR range of induction motors are slip ring design offerings

The UW range of motors has been designed to meet varying application demands while maintaining the performance and high level of quality. TP range meets requirement of various Industrial Sectors namely oil & gas, cement, sugar, textile, steel, mining, chemical Industries.

### Work Horse for the Industry

CG UW Series packs high power densities i.e these motors are characterized by high power to weight ratio. These motors have fabricated steel stator frame unit with twin circuit internal air paths.

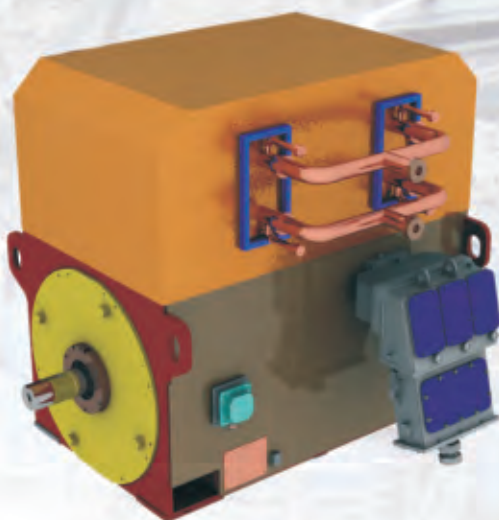
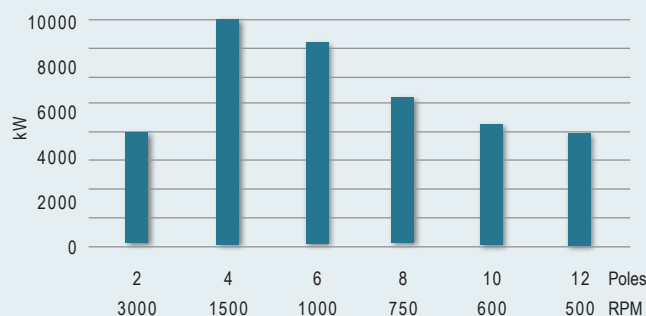
Ensuring a very low vibration level enhances the life of motor, this is achieved through a sturdy construction and careful three stage balancing of rotor to very high accuracy as per ISO 1940 Shafts are subjected to stringent stage wise quality checks after fabrication & machining UW range comply to IEC 60034-9 and IEC 60034-14 noise and vibration standards.

Rotors are generally designed as rigid however flexible rotors are also offered depending on the application. Rotors reliability is ensured by the use of latest design tools. Fabricated mild steel body structure ensures low vibration characteristics for longer life and maintenance free operations. UW range of motors lends itself to highly versatile modular concept.



VUWC-Series, 500M Frame Motor

UW Series Output Chart, 3300-6600 V, 50Hz



### Motors that you can depend on

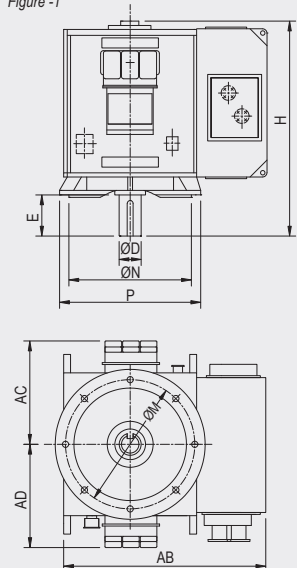
CG CACW range of motors are designed to deliver and perform in most demanding & strenuous operations. CG engineers use the latest technologies that help build motors with high commitment to performance, reliability and quality.

#### CG's Motor Solutions

CG deliver variants of the UW-Series motor (with 11kV 60Hz. higher poles/low speed). Special mounting arrangements can also be built as per customer requirement. CG also supply configurations of UW-Series motors with sleeve bearings, double shaft extension, low vibration, low noise levels, motors for hazardous areas. Additional sensors (Water leakage detector, water flow detector, vibration sensors, speed sensor, contact thermometer) can be provided to compliment motor monitoring and fault protection units.

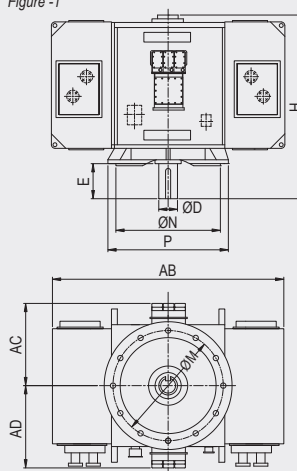
## General Arrangement Drawing

Figure -1



## General Arrangement Drawing

Figure -1



## Overall Dimensions of Motor

Type	Poles	ØD	E	ØM	ØN	P	H	AC	AD	AB
VUWC 740 D	4 - 6	100	210	740	680	800	1825	925	925	1530*
VUWC 940 D	4 - 6	125	210	940	880	1000	1825	1000	1000	1825*
VUWC 940 E	4 - 10	125	210	940	880	1000	2025	1000	1000	1825*
VUWC 1080 D	4 - 10	125	210	1080	1000	1150	1825	1000	1000	1850*
VUWC 1080 E	4 - 10	125	210	1080	1000	1150	2025	1000	1000	1850*
VUWC 1080 F	4 - 10	125	210	1080	1000	1150	2225	1000	1000	1850*
VUWC 1220 D	4 - 10	125 - 140	210 - 250	1220	1120	1320	2025	1125	1125	2600^
VUWC 1220 E	4 - 12	125 - 160	210 - 250	1220	1120	1320	2225	1125	1125	2600^
VUWC 1220 F	4 - 12	140 - 160	210 - 250	1220	1120	1320	2425	1125	1125	2600^
VUWC 1700 E	4 - 12	180 - 200	300	1700	1600	1800	2200	1275	1275	3200^
VUWC 1700 F	4 - 12	180 - 200	300	1700	1600	1800	2400	1275	1275	3200^
VUWC 1700 G	4 - 12	180 - 200	300 - 350	1700	1600	1800	2600	1275	1275	3200^
VUWC 1700 H	4 - 12	200	350	1700	1600	1800	2600	1275	1275	3200^

All dimensions are in mm \* Refer figure -1 ^ Refer figure -2

† VUWC2000 is also available on request

## Overall Dimensions of Motor

Type	Poles	A	B	C	ØD	E	H	HA	L
UWC 450 E	2 - 10	750	1250	315	85 - 125	170 - 210	450	1860	2000
UWC 500 E	2 - 10	850	1250	315 - 570	85 - 140	170 - 250	500	2100	2050 - 2450
UWC 560 E	2 - 10	950	1250	335 - 570	100 - 140	170 - 250	560	2300	2075 - 2515
UWC 560 G	2 - 10	950	1600	335 - 570	125 - 140	210 - 250	560	2300	2475 - 2915
UWC 630 F	2 - 10	1060	1400	355 - 570	125 - 160	210 - 250	630	2325	2350 - 2715
UWC 630 H	2 - 10	1060	1800	355 - 570	140 - 160	210 - 250	630	2325	2750 - 3115
UWC 710 F	2 - 10	1180	1400	375 - 630	160 - 180	250 - 300	710	2475	2450 - 2850
UWC 710 H	2 - 10	1180	1800	375 - 630	160 - 200	300 - 350	710	2475	2850 - 3250

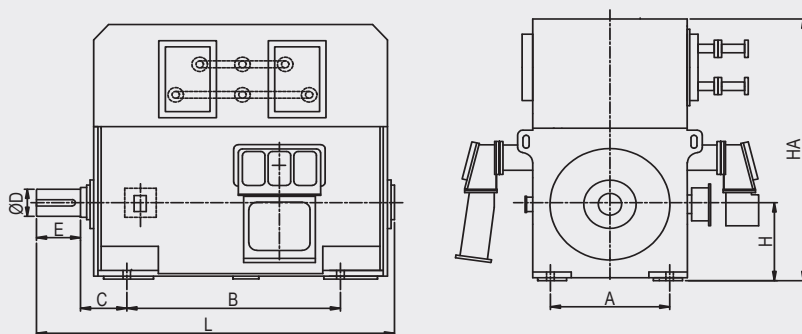
All dimensions are in mm

† UWC800 and UWC900 are also available on request

## Technical Specification

Shaft Height IMB3	355 - 710 mm
Frame Size IMV1	740/940/1080/1220/1700
Type of Mounting	IMB3,IMV1
Cooling	IC8A1W7
Frame Construction	Fabricated Steel
Rotor Construction	SCR (Squirrel Cage Rotor)
	SR (Slip Ring Motor )
Insulation	Class H,F with VPI
Standards	IEC 60034 / IS: 325
Enclosures	CACW (IC8A1W7)
Degree of Protection	IP55 as per IS: 4691

## General Arrangement Drawing



Note : Due to continuous improvements and developments, the above data is likely to be changed without prior notice.



# Slip Ring Induction Motors

## Introduction

Crompton Greaves gained a position of leadership in design & manufacturing of high voltage slip ring induction motor is secured by an unfailing commitment to engineering excellence & technological innovation. CG has been recognized as an industry leader in dependability & quality.

CG motors are custom designed to each customer's specific application. By virtue of design versatility & high operating efficiency, CG motors are logical choice for a multitude of industries including cement, sugar, steel, oil & gas, petrochemical, pulp & paper, water & irrigation.

Slip ring motors are used for higher torque during start-up and coincidentally lower current flow. For maintaining the same, SR motors are started with external resistance in the rotor circuit which results in dissipation of losses in the external resistance.

## Slip ring motors are ideal for

- Loads with high inertia.
- High starting torque
- Low starting Current
- Speed Variation
- Frequent Peak Loads

## Constructional Features

- Robust Steel Frame
- Spider type Shaft
- Double Ended Radial Ventilation
- Solid Deep Rotor Bars in Single Cage
- Special Double Cage as per Drive
- Endshield Mounted Bearings
- Antifriction/Sleeve Bearings
- Dynamically Balanced Rotors
- Class 'F' Insulation with Class 'B' temperature rise
- Ease of Maintenance
- Space Heaters, Online greasing for bearing



TPR-Series 630F Frame Motor

To suit various applications CG offered motors in different enclosures like

**CACA** High Voltage Closed Air Circuit Air Cooled TPR & BTPR Series Induction motors

**CACW** High Voltage Closed Air Circuit Water Cooled UWR Series Induction motors

**TETV** High Voltage Totally Enclosed Tube Ventilated TVR Series Induction Motors

**SPDP** HT/LT Squirrel Cage / Slip Ring Induction Motors in UDR & KMR Enclosure

The motor meet the general technical conditions in IEC 60034-1 & IS: 325 standards.

Enclosure	Cooling Standards	CG Series of Slip Ring Motor	
		Horizontal	Vertical
CACA	IC6A1A1, IC6A1A6, IC6A6A6	TPR / BTPR	VTPR
CACW	IC8A1W7	UWR	VUWR
SPDP	IC01A1	UDR / KMR	VUDR /VKMR
TETV	IC5A1A1	TVR	VTVR

## Special Features

- Optimized electrical design
- Vacuum pressure impregnated stator winding
- Reliable and rugged heavy-duty construction
- Compact design and low weight
- Low noise and low vibration
- Easy installation and maintenance
- Wide range of accessories

## CGL's Motor Solutions

CG deliver variants of the SR-Series motor (with 13.8kV 60Hz. higher poles/low speed). Special mounting arrangements can also be built as per customer requirement. CG also supply configurations of SR-Series motors with sleeve bearings, double shaft extension, low vibration, low noise levels , motors for hazardous areas. Additional sensors (Water leakage detector, water flow detector, vibration sensors, speed sensor, contact thermometer) can be provided to compliment motor monitoring and fault protection units.



TPR-Series, 710M Frame Internal Slipring Motor

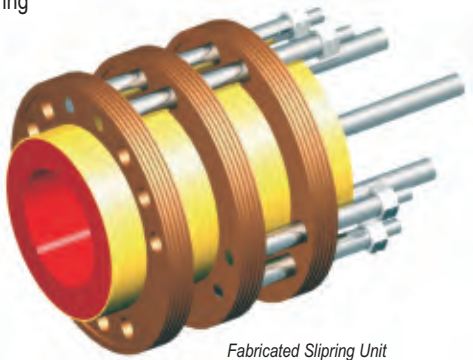
Technical Specification

Shaft Height IMB3	: 355 to 900 mm
Type of mounting	: IMB3, IMV1
Frame Construction	: Fabricated Steel
Insulation	: Class H,F with VPI
Enclosures	: CACA, CACW, SPDP, TETV
Cooling	: IC6A1A1/ IC8A1W7/ IC6A1A6/IC5A1A1
Rotor Construction	: Slipring
Standards	: IEC 60034 / IS: 325
Degree of Protection	: IP55, IP23 , IP54 as per IEC 60034-5 / IS: 4691

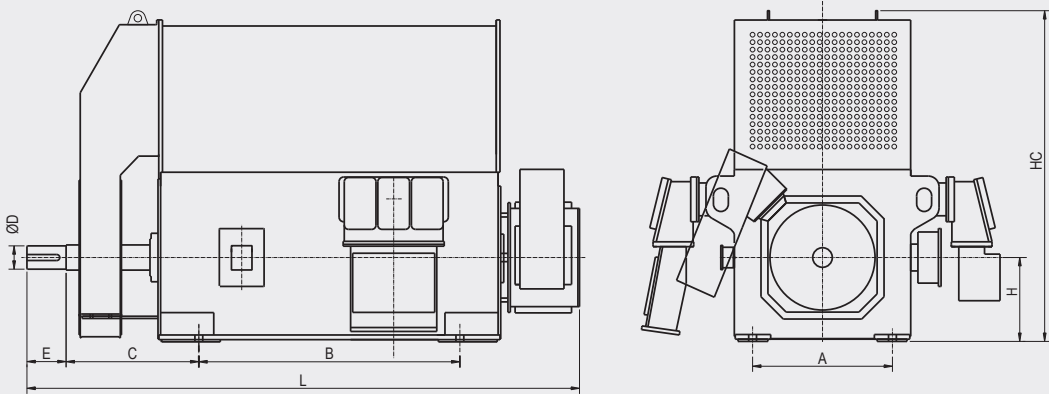
kW	: 100 - 10000
Pole	: 4 - 20
Voltage	: 380 - 13800

Wide range to cover our Customers in many Industries

<b>Cement Plant</b>	: Mills, Crusher, Fans, Conveyor, Pump, Compressor, Roller Press
<b>Metal &amp; Steel Sector</b>	: Crushers, Blower, Fan, Mixture
<b>Sugar Industries</b>	: Fibrizor , Cutter, Compressor, Pump, Leveller
<b>Paper Mill</b>	: Refiner, Chipper, Pump, Compressor



General Arrangement Drawing TPR Series



Overall Dimensions of Motor

Frame	Poles	A	B	C	D	E	H	HC	L
TPR400 E	4 - 8	686	1250	315	110	210	400	1800	3100
TPR450 E	4 - 10	750	1250	315	125	210	450	1775	3125
TPR450 F	4 - 10	750	1400	315	125	210	450	1775	3325
TPR500 F	4 - 10	850	1400	335	140	250	500	1900	3425
TPR500 H	4 - 10	850	1800	335	140	250	500	1900	3825
TPR560 F	4 - 10	950	1400	355	160	250	560	2250	3425
TPR560 G	4 - 10	950	1600	355	160	250	560	2250	3625
TPR630 F	4 - 10	1060	1400	375	160	300	630	2300	3475
TPR630 G	4 - 10	1060	1600	375	180	300	630	2300	3675
TPR630 H	4 - 10	1060	1800	375	180	300	630	2300	3875
TPR710 G	4 - 10	1180	1600	375	180	300	710	2400	3875
TPR710 H	4 - 10	1180	1800	375	200	350	710	2400	4075

All dimensions are in mm

General Arrangement drawing for rest of series, please contact us

Note : Due to continuous improvements and developments, the above data is likely to be changed without prior notice.



## HT/LT Squirrel Cage / Slip Ring Induction Motors in SPDP Enclosure

### Introduction

CG Screen Protected Drip Proof Motors are specially designed to provide continuous trouble free service. These motors are suitable for all industrial drives, mill, pumps, etc. In SPDP motor external air is sucked inside through a wire mesh screen by means of a shaft mounted fan. The air traverses the length of the motor and is expelled at the opposite end through the wire mesh screen. Crompton Greaves UDR, UDC and VUDC series motors are continuously rated for S1 duty as per IS: 325 / IEC 60034-7 They are suitable for 3 phase supply, 50Hz freq. The motor enclosure is offered with Degree of protection IP 23, providing adequate protection against dripping liquids and solid objects as per IS: 4691/ IEC 60034-5 & the mounting dimensions are as per IS: 1231/ IEC 60072.

### Stator

To minimize the iron losses, stator stack is made up of low-loss silicon stampings. The stator winding consists of insulated coils of high conductivity, fiber glass covered strips. Completely taped & insulated coils are housed in the stator slots followed by insertion of tight slot wedges & termination of the end connections.

### Rotor

The rotor bars are made of Copper for carrying higher current to ensure minimum deflection and stress concentrations, specially incorporated strappings to make the overhang rigid to encounter stresses on account of starting and switching for various critical applications, rotor shafts are used of high grade steel (like EN8 or other suitable grade) with Ultrasonic test.

### Balancing

Ensuring a very low vibration level enhances the life of rotor, this is achieved through a sturdy construction and careful three stage balancing of rotor to very high accuracy as per ISO 1940 shafts are subjected to stringent stage wise quality checks after fabrication & machining. UD range comply to IEC 60034-9 for noise and IEC 60034-14 for vibration standards.

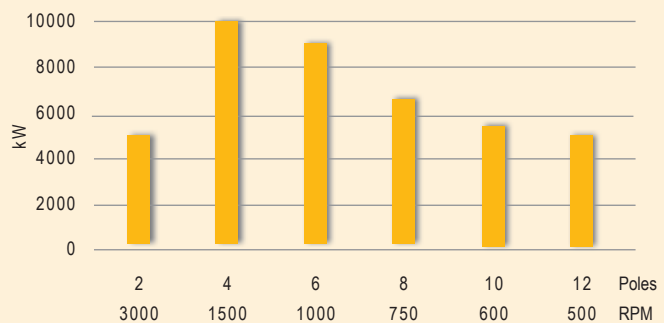
### End-Shields

The end shields support the rotor on bearings & protect the winding, with other internal parts of the machine. These are either of fabricated Mild steel or of cast iron.



UD450 IP23 Drip Proof Motor

UD Series Output Chart, 3300-6600 V, 50Hz



### Bearings

Carefully selected anti-friction bearing are used. These bearing are regreased and located in bearing housing of adequate size. The grease used is lithium based grade 3. All the motors irrespective of frame size have the bearing housing insulated to prevent the flow of shaft current as a standard practice. (Insulated bearing can also be provided for special requirements)

### Terminal Box

For good mechanical strength and for good current carrying capacity the terminal studs are made from extruded brass rods, rigid welded construction with ample size for making connections of supply cables along with pressure relief disk in the box in case of an arching short circuit, Cable entry position can be changed in steps of 90 degree about the axis of terminal box. The terminal box has been certified to withstand fault level of 43kA for 0.25 secs.

### Accessories

- Winding Temp. Detectors (RTD) for HT, PTC thermistor for LT.
- Bearing Temp. Detectors (BTD)
- Temp. Indicators Dial type thermometer (DTT)
- Mounting of Vibration Probes
- Phase Segregated Terminal Box (Fault withstanding type) for HT,
- Star Point Terminal Box

Dial type thermometers (DTT) are used to monitor bearing temperature under all conditions and commonly, mercury in steel type DTT is used (Non mercury can also be provided for special requirements). Space heater are used to avoid any condensation of moisture inside the motor when in idle condition. Suitably located lifting hooks of adequate strength are provided to lift the motor for the purpose of installation, alignment, repairs and overhauling. Earthing terminals are provided at opposite side on stator body & also on each terminal box. Suitable sized slip ring with large creepage distances are mounted externally to the main enclosure on the non-drive end, for ease of maintenance, inspection windows are also provided for monitoring the condition of the slip ring and brushes.

### CGL's Motor Solutions

CG deliver variants of the UD-Series motor (with 11kV 60Hz. higher poles/low speed). Special mounting arrangement can also be built as per customer requirement. CG also supply configurations of UD-Series motors with sleeve bearings, double shaft extension, low vibration, low noise levels, motors for hazardous areas. Additional sensors (vibration sensors, speed sensor, contact thermometer) can be provided to compliment motor monitoring and fault protection units.

Technical Specification

Shaft Height	355 - 710 mm
Protection	IP23
Cooling	IC01A1
Rotor Constructions	SR / SCR
Insulation	Class H,F with VPI, RR
Standards	IEC60034 / IS:325
Frame Construction	Fabricated Steel
Voltage & Frequency	3.3 kv to 11kV, +/-10% & 50 Hz, +/-5%

Salient Features

- Robust Steel Frame
- Spider type Shaft
- Double Ended Radial Ventilation
- Solid Deep Rotor Bars in Single Cage
- End shield Mounted Bearings
- Antifriction/Sleeve Bearings
- Dynamically Balanced Rotors
- Class 'F' Insulation with Class 'B' temp. rise
- Ease of Maintenance
- Space Heaters

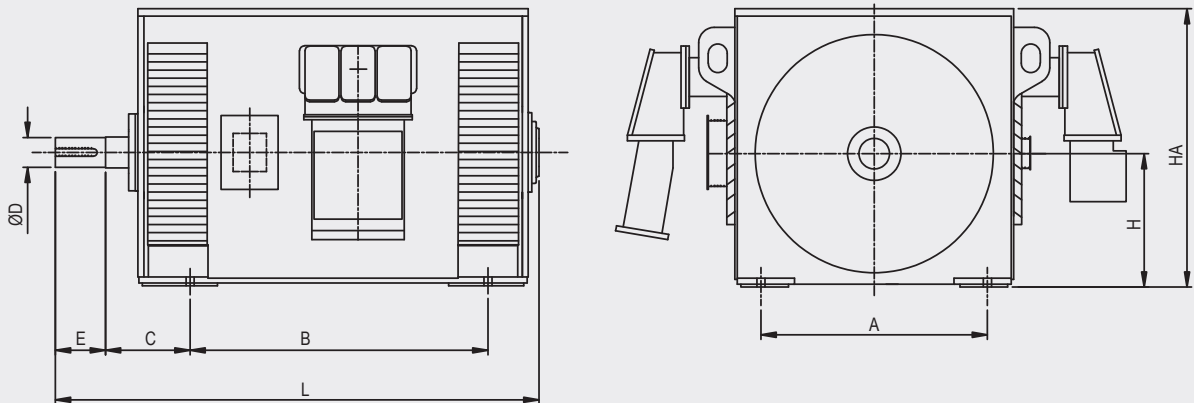
UD Series are Specially Designed for Applications Like

- Cane-leveller
- Cane Cutter
- Pump (Indoor)
- Fibrizor
- Rolling Mill
- Leveller
- Rubber Mill
- Fans
- Compressors



VUDC1700 IP23 Drip Proof Motor

General Arrangement Drawing



Overall Dimensions of Motor

Type	Poles	A	B	C	ØD	E	H	HA	L
UDC 450 E	2 - 10	750	1250	315	85 - 125	170 - 210	450	950	2000
UDC 500 E	2 - 10	850	1250	315 - 570	85 - 140	170 - 250	500	1050	2050 - 2450
UDC 560 E	2 - 10	950	1250	335 - 570	100 - 140	170 - 250	560	1170	2075 - 2515
UDC 560 G	2 - 10	950	1600	335 - 355	125 - 140	210 - 250	560	1170	2475 - 2915
UDC 630 F	2 - 10	1060	1400	355 - 570	125 - 160	210 - 250	630	1300	2350 - 2715
UDC 630 H	2 - 10	1060	1800	355 - 570	140 - 160	210 - 250	630	1300	2750 - 3115
UDC 710 F	2 - 10	1180	1400	375 - 630	160 - 180	250 - 300	710	1470	2450 - 2850
UDC 710 H	2 - 10	1180	1800	375 - 630	160 - 200	300 - 350	710	1470	2850 - 3250

All dimensions are in mm

† UD800 and UD900 are also available on request

Note : Due to continuous improvements and developments, the above data is likely to be changed without prior notice.



# High Voltage Totally Enclosed Tube Ventilated (TETV) TV Series Induction Motors

CG totally enclosed tube ventilated (TETV) motors perform in the most demanding environments load condition The 'TV' series are TETV motors most suitable for highly dusty humid and polluted atmosphere. TV series motors are used in industries such as cement, steel, tyre /rubber paper industries, refineries, petrochemicals, fertilizers, power generation plants etc.

## Built to Last

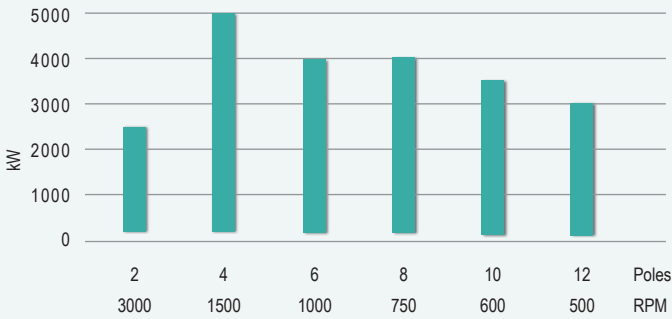
The integrated heat exchanger is designed to add to the stiffness of the frame structure keeping stress concentration to the lowest. 'TV' series rotors are generally rigid in design, but flexible rotors are also engineered to meet specific application requirements. The 'TV' series motors are extensively used in applications requiring extreme low vibration, high reliability with minimal maintenance.

Ensuring a very low vibration level enhances the life of motor, this is achieved through a sturdy construction and careful three stage balancing of rotor to very high accuracy as per ISO 1940 Shafts are subjected to stringent stage wise quality checks after fabrication & machining TV range comply to IEC 60034-9 and IEC 60034-14 noise and vibration standards.

## CGL's Motor Solutions

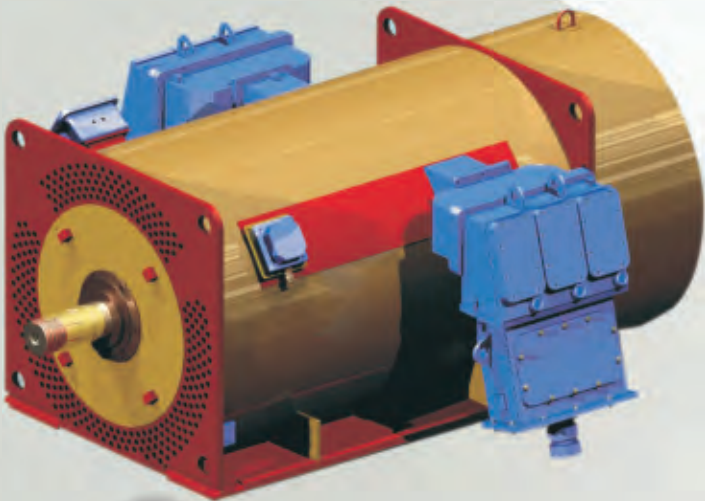
CG deliver variants of the TV-Series motor (with 11kV 60Hz. higher poles/low speed). Special mounting arrangement can also be built as per customer requirement. CG also supply configurations of TV-Series motors with sleeve bearings, double shaft extension, low vibration, low noise levels , motors for hazardous areas. Additional sensors (vibration sensors, speed sensor, contact thermometer) can be provided to compliment motor monitoring and fault protection units.

TV Series Output Chart, 3300-6600 V, 50Hz



## Advantages

- Sturdy Construction
- High Performance
- Less Noise
- Low Vibration
- Easy Maintenance
- Highly Reliable

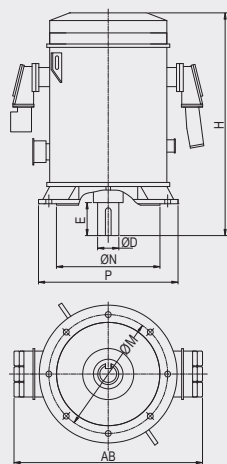


Flange Mounted (IMV1) VTVC-Series,1080 Frame

## Modular variants in the 'TV' range

	Mounting Type	Cooling Type	Degree of Protection	Rotor Type
TVC Series	IM B3	IC5A1A1 IEC 60034-6 / IS: 636262	IP55 / IP54 IEC 60034 / IS: 4691	Squirrel Cage
VTVC Series	IM VI			
TVR Series	IM B3			
VTVR Series	IM VI			Slip Ring

General Arrangement Drawing

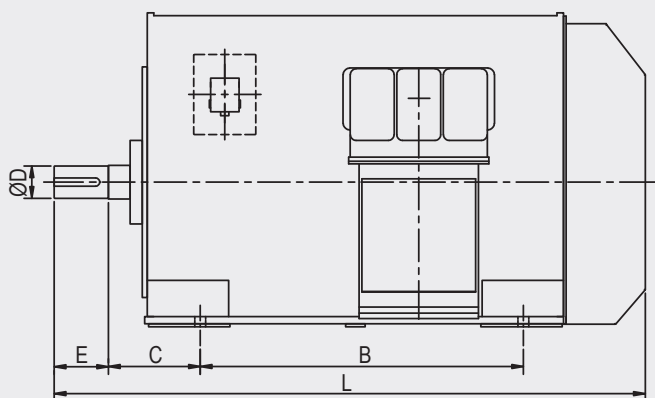
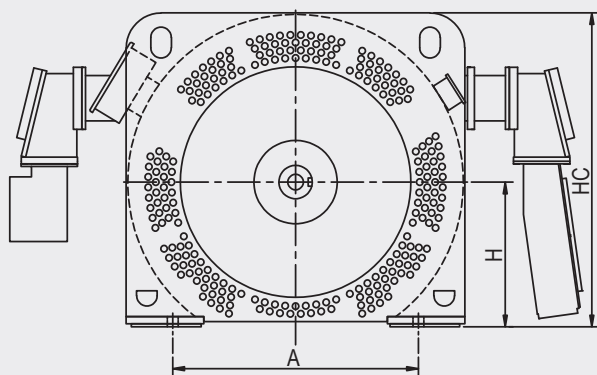


Overall Dimensions of Motor

Type	Poles	ØD	E	ØM	ØN	P	H	AB
VTVC 940 D	4 - 6	100	210	940	880	1000	2400	2300
VTVC 940 E	4 - 6	100	210	940	880	1000	2600	2300
VTVC 1080 D	4 - 10	125	210	1080	1000	1150	2325	2500
VTVC 1080 E	4 - 10	125	210	1080	1000	1150	2525	2500
VTVC 1080 F	4 - 10	125	210	1080	1000	1150	2750	2500
VTVC 1220 D	4 - 12	125 - 140	210 - 250	1220	1120	1320	2400	2600
VTVC 1220 E	4 - 12	125 - 140	210 - 250	1220	1120	1320	2600	2600
VTVC 1220 F	4 - 12	140 - 160	210 - 250	1220	1120	1320	2800	2600
VTVC 1700 E	4 - 12	140 - 180	250 - 300	1700	1600	1800	2675	2800
VTVC 1700 F	4 - 12	180 - 200	250 - 300	1700	1600	1800	2875	2800

All dimensions are in mm

General Arrangement Drawing



Overall Dimensions of Motor

Type	Poles	A	B	C	ØD	E	H	HC	L
TVC450E	2 - 6	800	1250	315	85 - 100	170 - 210	450	985	2275
TVC500E	2 - 8	850	1250	355	85 - 110	170 - 210	500	1050	2325 - 2450
TVC560E	2 - 10	950	1250	355	85 - 125	170 - 210	560	1225	2350 - 2500
TVC630E	2 - 12	1060	1250	335 - 570	125 - 140	210 - 250	630	1355	2300 - 2850
TVC630F	2 - 12	1060	1400	335 - 570	125 - 140	210 - 250	630	1355	2500 - 3050
TVC710F	2 - 12	1250	1400	375 - 570	140 - 160	210 - 250	710	1500	2600 - 3125
TVC710G	2 - 12	1250	1600	375 - 570	140 - 160	210 - 250	710	1500	2800 - 3325

All dimensions are in mm

† TVC800 is also available on request

Technical Specification

Shaft Height IMB3	400 - 710 mm
Frame Size IMV1	740/940/1080/1220/1700
Type of Mounting	IMB3, IMV1
Cooling	IC5A1A1
Protection	IP55
Frame Construction	Fabricated Steel
Rotor Construction	Squirrel Cage / Slip Ring Rotor
Insulation	Class H, F with VPI
Standards	IEC 60034 / IS: 325

Note : Due to continuous improvements and developments, the above data is likely to be changed without prior notice.



## Large Re-rolling mill duty induction motors

Over the years CGL has developed a highly standardized range of motors dedicated specifically to re-rolling mill industry.

Re-rolling mill duty motors are used to drive re-rolling mill for rolling hot steel billets into rods, flat bars, rails, channels, angles sheet etc under arduous condition of widely fluctuating loads and sudden overloads which last few seconds. CGL re-rolling mill duty induction motors are compact, robust, simple construction requiring least attention and offering greater reliability

### Constructional Features

#### Stator

The stator coils are made from class 'F' varnish, bonded, double glass covered rectangular copper strips.

For HT motors, thermosetting type mica-based insulation system is used. The stator windings are designed and manufactured with specially incorporated strapping methods to ensure high degree of mechanical rigidity making them suitable against vibrations and electromechanical forces during starting and overloading conditions encountered in re-rolling mill applications.

#### Rotor

The rotor winding is made up of class 'F' insulated, heavy duty, rectangular copper strips. Connections between bars as well as the phase interconnections are tig brazed ensuring high thermal and mechanical strength.

Banding of rotor overhang is done by means of high tensile resin loaded glass tapes which prevent flaring of the overhangs due to centrifugal forces, vibrations, surge loads, etc.

#### Shaft

Heavy duty shafts are manufactured from carbon steel forgings as per IS 2004 and are 100 percent ultrasonically tested to detect any flaws / defects, thus ensuring long life. Spider shaft construction with large effective diameters, ensures very low rotor deflections, and thus, low vibrations and smooth operation.



Drip Proof (IP23) KMR500L, 1250HP Re-rolling Mill Duty Motor

### Specifications of RRM Range of Asynchronous Motors.

HP	FRAME	ROTOR VOLTS	ROTOR AMPS	FULL LOAD SPEED	FULL LOAD CURRENT	PULL OUT TORQUE
350	KMR 450 S	455	340	488	738	275
400	KMR 450 S	520	340	558	739	275
500	KMR 450 S	610	365	694	739	275
600	KMR 450 S	665	400	805	737	275
800	KMR 500 M	680	530	1052	735	275
1000	KMR 500 MX	820	540	1350	737	275
1250	KMR 500 L	1050	530	1625	737	275
1500	KMR 560 L	1070	625	1918	739	275
2000	KMR 560 LX	1500	590	2549	741	275

### Bearings

Heavy duty grease-lubricated, anti-friction bearings are liberally selected for long life under the worst operating conditions. On-line greasing arrangement is provided as a standard feature.

### Sliprings

Over-sized sliprings with large creepage distances are mounted external to the main enclosure on the non-drive end, for ease of maintenance. Inspection windows are also provided for monitoring the condition of the slipring and brushes.

### Balancing

Rotors are dynamically balanced to Grade 2.5 as per ISO 1940, thus ensuring low vibration levels.

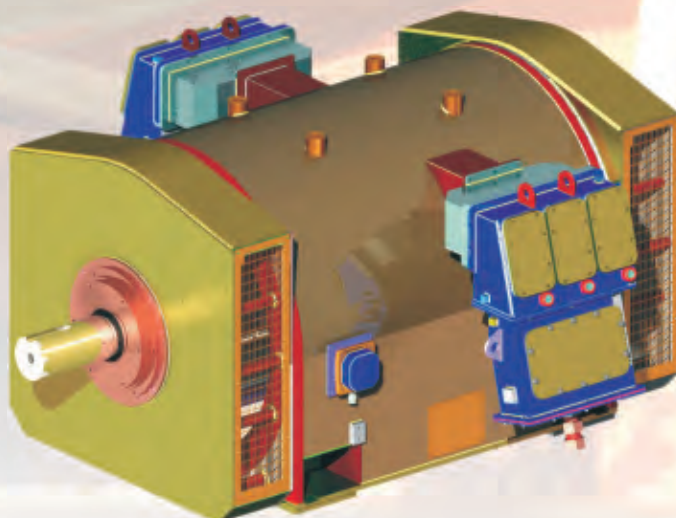
### Accessories

Space heaters of adequate ratings are fitted inside the motors to prevent moisture condensation on the windings during shut down of the motor.

6 Nos. PTC (Positive Temperature Coefficient) type thermistors for monitoring the stator winding temperature and 2 Nos. RTDs (Resistance Temperature Detectors) or DTTs (Dial Type Thermometer) for measuring the bearing temperatures are also available on request.

### Quality Control

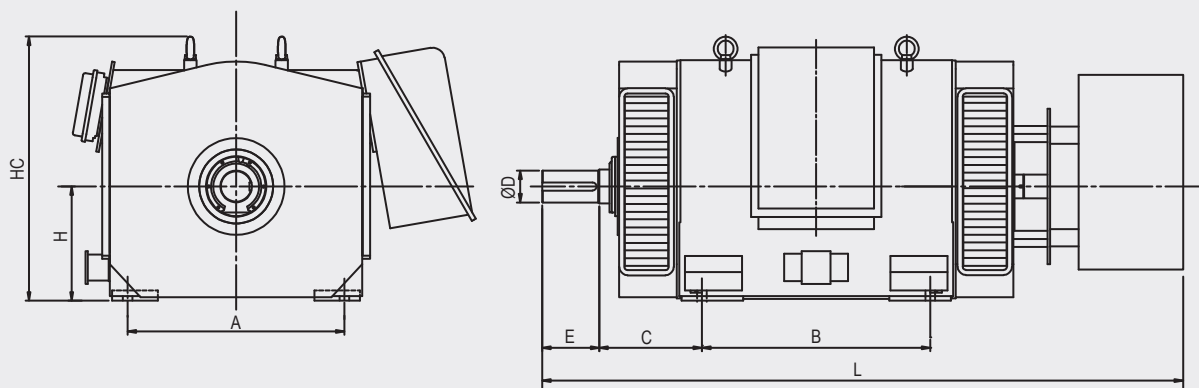
Stringent quality checks at all critical stages viz. in-coming, in-process, final assembly and testing, ensure high quality and reliable products.



**Rugged Design** Crompton Greaves large re-rolling mill duty induction motors are equipped with IP23 (IEC 60034-5, IC0A1, IEC 60034-6)

- Suitable for 3 phase, 415 volts  $\pm 10\%$  & 50Hz  $\pm 5\%$
- Class F insulated stator and rotor winding (temperature index 155°c) suitable for 45°c ambient with temperature rise restricted to 75°c by resistance (class B rise)
- Suitable for 125% class IV overload for 2 Hrs. typifying re-rolling mill duty
- All performance figures are subjected to tolerances as per IS: 325/ IEC 60034-1
- All main dimension conform to IEC 60072-A
- To monitor winding temperature motors are equipped with PTC thermistor
- Motors of higher ratings and higher voltages with different frequency, are also available on request.

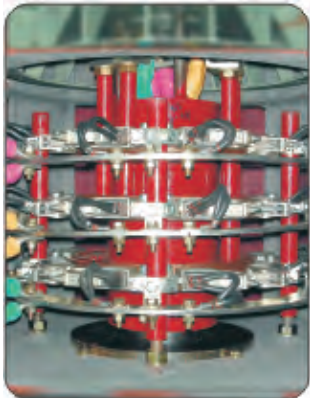
**General Arrangement Drawing**



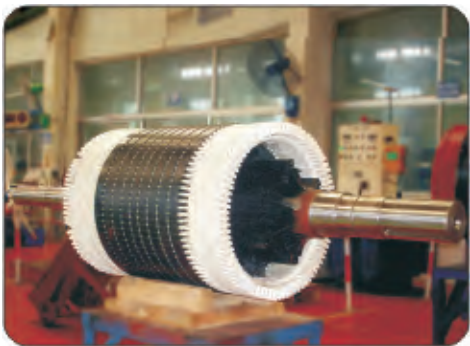
**Overall Dimensions of Motor**

Type	Rating HP/ kW	Poles	A	B	C	ØD	E	H	HC	L
KMR 450 S	350 / 261	8	850	750	355	125	210	450	1040	2250
KMR 450 S	400 / 298	8	850	750	355	125	210	450	1040	2250
KMR 450 S	500 / 373	8	850	750	355	125	210	450	1040	2250
KMR 450 S	600 / 448	8	850	750	355	125	210	450	1040	2250
KMR 500 MX	800 / 597	8	950	850	450	140	250	500	1175	2550
KMR 500 MX	1000 / 746	8	950	900	450	140	250	500	1175	2600
KMR 500 L	1250 / 932	8	950	1000	450	140	250	500	1175	2700
KMR 560 L	1500 / 1119	8	1000	1120	500	170	300	560	1295	2990
KMR 560 LX	2000 / 1492	8	1000	1250	500	160	300	560	1295	3200

All dimensions are in mm



Fabricated Type Slip Ring Unit



Wound Rotor



Spaciously Designed Terminal Box

Note : Due to continuous improvements and developments, the above data is likely to be changed without prior notice.



# Flameproof Motors For Hazardous Area Applications

## “CG Launches Series FLP Motors”

Motors for hazardous area represent one of CGL’s special area of focus. The regulatory requirements & the scenario in which CGL’s customers operate are complex and constantly changing with the introduction of new European and Indian standards. Among the latest development CGL ensures that its products comply with relevant regulations.

### Applications

CGL offers Flameproof motors for hazardous areas for applications such as fans, pumps, compressors, blowers, and areas where inflammable gases/ vapours are likely to be present such as oil & gas ( on-shore / off-shore ) exploration sites, oil & gas terminals, refineries, petrochemicals, fertilizers plants and chemical industries. CGL offers Flameproof Ex 'd' motors for zone-I & II gas group I , IIA, IIB complying to IS: 325 / IEC 60034-7 IS: 2148 - 2004 & IEC 60079-1:2007

**Note:** Motors for gas group IIC are also available on special request

### Application groups

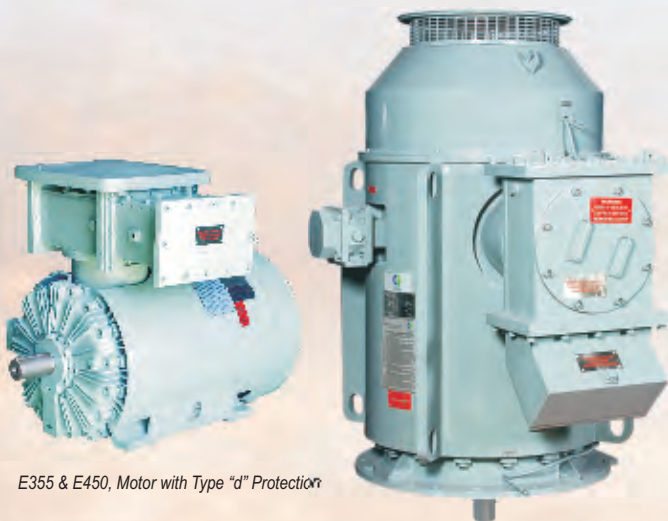
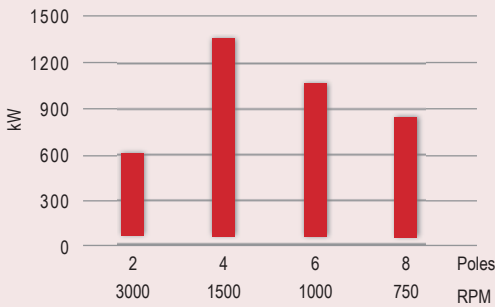
Depending on the intended use, explosion proof electrical operating equipment is divided into two major groups:

- Group I** Equipment for coal mines (only special designed motors for mines can be used)
- Group II** Electrical equipment for use other than mines (surface industry) Group II motors with flameproof enclosure are still further divided into gas groups: IIA, IIB & IIC.

### Testing and certification

Motors conform to latest IS/IEC standards Flameproof (Exd) motors have to meet tough requirements with regard to withstanding and preventing transmission of internal explosion. The latest IEC and EN standards specify criteria for risk assessment and gas environment tests for the motor designs. CGL motors are tested by Central Institute of Mining and Fuel Research (CIMFR, formerly CMRI) Dhanbad and approved by Statutory bodies like Directorate General of Mine Safety (DGMS) Dhanbad for use in mines and by Petroleum and Explosive Safety Organization (PESO, formerly CCOE) Nagpur for use in surface industries.

FLP Output Chart, 3300-6600 V, 50Hz

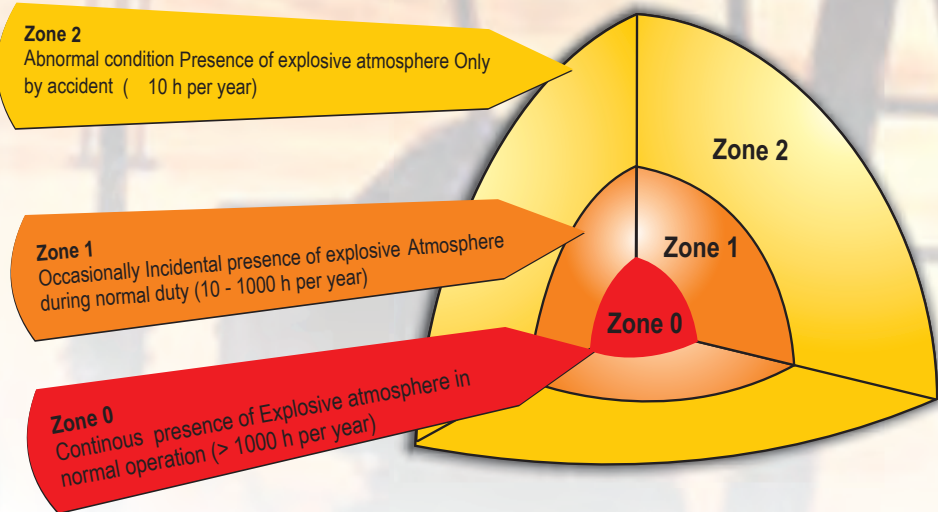


E355 & E450, Motor with Type “d” Protection

E560 Motor with Type “d” Protection & Vertical Mounting

### Temperature Classes

Temperature Class	Ignition temp. for gas vapour °C	Max. permitted temperature equipment °C
T1	> 450	450
T2	> 300< 450	300
T3	> 200 < 300	200
T4	> 135< 200	135
T5	> 100< 450	100
T6	> 85< 100	85



Crompton Greaves Large Flameproof Motors are robust, compact and simple in construction which need minimum of attention. They are best suitable for conditions encountered in applications, such as:

- Frequent movements during coal extraction.
- Rigorous transport system.
- Restriction in space due to narrow lanes.
- Inadequate maintenance facilities.
- Impact of falling stones/coal and debris, dusty and damp conditions.
- Necessity to maintain lower surface temperatures.
- Hazardous gases and combustible coal dust.
- Fluctuating loads.
- Wide fluctuations in supply voltage.

# Flameproof Induction Motors

## (Exd for ZONE-I, II - Gas Group IIA, IIB)

The essential principle of electrical apparatus with flame proof enclosure is that the hazardous atmosphere is not excluded from entry into the enclosure. It is recognized that an explosion is likely to occur within the apparatus but the construction of the enclosure should be such that it shall withstand the internal explosion without any evidence of distress and shall prevent the communication of the internal ignition to the surrounding atmosphere (the term flame proof as used here is synonymous with the term "explosion proof" as used in the USA or "Explosion Proof type'd' protection" used in Germany and other continental countries)

### Construction

Stator frame has a barrel type construction made from thick fabricated steel to withstand internal pressure, stringent checks like pressure tests are in place to ensure to high degree of welding quality. Adequate care is taken during machining to ensure a perfect concentricity of stator bore leading to minimum vibration level & optimum heat transfer. For higher frame sizes i.e. 630 & 710 the frame is of TETV construction. The tubes are double expanded in thick end plates to provide protection against leakage in case of explosion.

### Other Features

- Resin poor insulation system with VPI using solvent less epoxy resin.
- Die penetration & Ultrasonically tested rotor shafts.
- Two stage dynamic balancing of rotors complying to grade 2.5 of ISO 1940.
- Copper/copper alloy bars tight fitted in slots and brazed to short circuiting ring.
- Grease lubricated ball /roller bearings.
- Oil lubricated sleeve bearings to withstand high speed & heavy loads.

## Technical Specification

Degree of Protection	: IP55
Enclosure	: Totally Enclosed Fan cooled (TEFC)
Dimensions	: As per IEC 60072-A
Output	: Upto 2000kW
Supply Voltage	: 415,690, 3300, 6600
Supply frequency	: 50, 60 Hz
Mounting	: IMB3, IMV1, IMB35
Frame Size	: E355, E400, E450, E500, E560, E630*, E710*

\* E630 & E710 is available on request in TETV Construction

### TERMINAL BOX

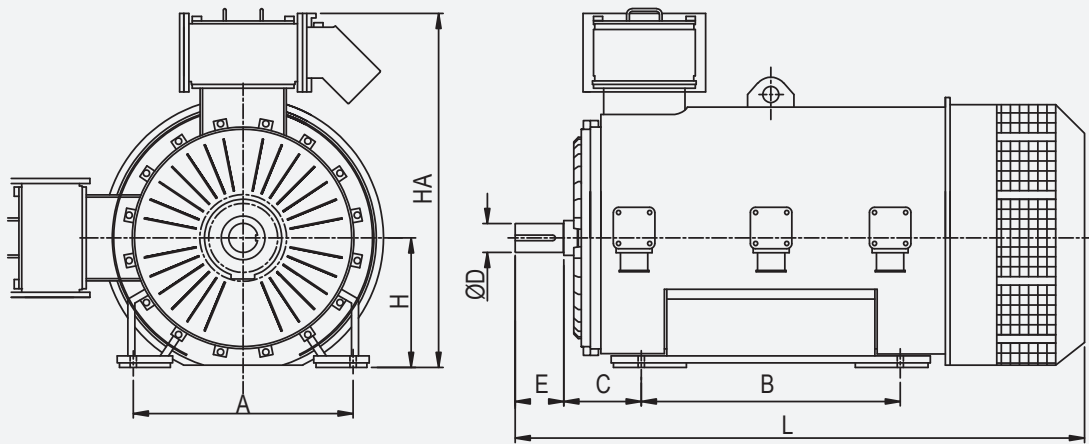
The terminal box has been certified to withstand fault level of 43kA for 0.25 secs. It is designed to withstand internal pressures, in the event of explosion and to prevent transmission of such explosion to outside explosive gases / vapours. Winding leads are terminated on a pillar type epoxy moulded insulators, which are mounted on insulating mounting plate. Double compression Flameproof cable glands are also provided.

### ACCESSORIES

For easier and better monitoring of motor condition and for effective warning system for malfunctioning of vital parts of motors such as winding and bearing, following accessories can be provided:

- Resistance Temperature Detectors (RTD) for measuring / monitoring temperatures of winding and / or bearing.
- For low voltage motors, Thermistor as thermal switch can be provided for winding protection.
- Dial type thermometers (with / without contact) for bearing temperature indication

## General Arrangement Drawing



Fabricated Frame for FLP

## Overall Dimensions of Motor

Type	No. of Poles	A	B	C	ØD	E	HA	H	L
E 355	2 - 6	610	630	254	85 - 95	170 - 250	1200	355	1700 - 1540
E 400	2 - 6	686	710	280	85 - 100	170 - 250	1300	400	1900 - 1750
E 450	2 - 8	750	710	315	85 - 100	170 - 250	1450	450	2150 - 2000
E 500	2 - 8	850	800	315	100 - 125	170 - 300	1500	500	2300 - 2100
E 560	2 - 8	950	1120	335	100 - 125	170 - 300	1530	560	2450 - 2200

All dimensions are in mm

Note : Due to continuous improvements and developments, the above data is likely to be changed without prior notice.





Smart solutions.  
Strong relationships.

### Our product range:

- Induction Motors  
Squirrel Cage Rotor:  
500 kW–15000 kW  
Wound Rotor:  
500 kW–10000 kW
- Synchronous Generators  
1000 kVA–30000 kVA
- Traction Machines  
AC & DC Machines:  
150 kW–1000 kW



## 130 YEARS EXPERTISE IN ROTATING ELECTRIC MACHINES

The original GANZ factory was founded in 1844 by Ábrahám Ganz in Budapest. Its Electrotechnical Department was established in 1878 by András Mechwart and in the same year the first d.c. motors and dynamos were built. In 1881 three engineers of the company, namely Károly Zipernowszky, Miksa Déry and Ottó Bláthy elaborated and built the first industry purpose transformer, which established the worldwide reputation for the company. Ganz also has been manufacturing electric traction equipments since 1892. Manufacturing of 3-phase induction motors began as early as 1894. The first electrified main line in Europe and the World's first HV alternating current railway was supplied by Ganz in "Val Tellina", Italy in 1902. During the following about 100 years the company supplied various electrical equipment for the energy generation-transportation- and distribution industries in several countries of the world, and numerous inventions have been worked out. The company was known as Ganz Electric Works up to the end of the 80's.

In 1991 a joint venture was founded with the Italian Ansaldo Group, called Ganz Ansaldo Electric Ltd. In 2000 the Hungarian Transelektro company acquired its shares from Ansaldo and following that the company name became Ganz Transelektro Electric Co. Ltd.

Ganz Transelektro Electric Co. Ltd. is the biggest electric equipment manufacturer in Hungary. The variety of equipment are manufactured according to the specific needs of the customer. Our rotating machines can be horizontal or vertical mounted according to various constructions, can be tailor made or serial manufactured up to 30 MW maximal output. Traction motors and traction generators are also manufactured for traffic conveyances. Our references are available in several countries of Europe, Asia and Africa.

Our products are manufactured according to ISO 9001:2000 and ISO 14001:2004 quality assurance systems.

2006

Ganz Transelektro Electric Co. Ltd.  
is a wholly-owned subsidiary of  
Crompton Greaves Ltd.

2000

The Hungarian Transelektro acquired  
from Ansaldo the shares and  
established Ganz Transelektro Ltd.

2005

CGL completed the acquisition  
of the Belgium-based Pauwels

1991

Joint venture between Ganz Electric  
Works and the Italian Ansaldo, named  
Ganz Ansaldo Electric Ltd.

1966

Change of name to CGL  
(Crompton Greaves Ltd.)

1980s

Ganz Electric Works  
till the end of the 1980s

1947

The company (CPL) was taken over  
by Lala Karamchand Thapar

1894

The company started the production of  
three-phase induction motors

1937

Crompton Parkinson Ltd.  
was established

1884

Invention of the transformer  
Károly Zipernowszky, Miksa Déry,  
Ottó Bláthy

1927

R.E.B. Crompton founded  
R.E.B. Crompton & Co.

1878

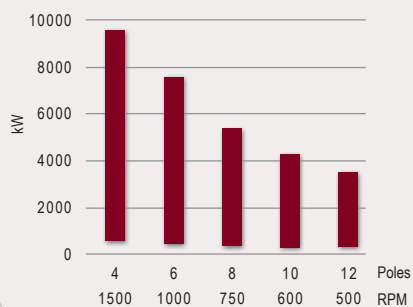
András Mechwart founded the  
Electrotechnical Department

1844

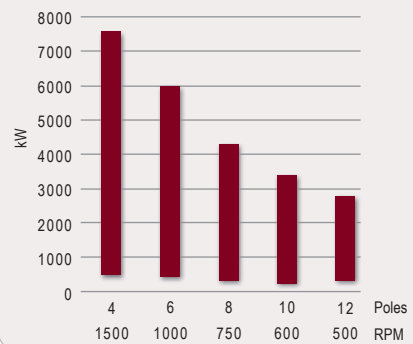
Ábrahám Ganz founded  
his company



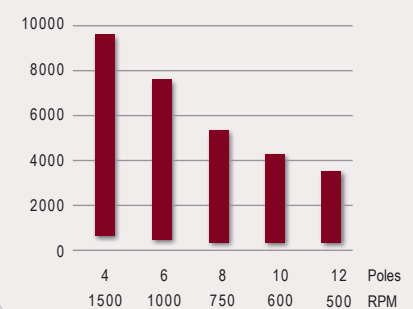
FH Series Output Chart, 6600 V, 50Hz



FT Series Output Chart, 6600 V, 50Hz



FR Series Output Chart, 6600 V, 50Hz



### CG Electric Systems Hungary Zrt. Rotating Machines Business Unit

H - 1095 Budapest Máriássy Utca 7

Tel : +36 1 483 6655

Fax : +36 1 483 6637

E-mail : rotatingmachines.hu@cglobal.com

Note : Due to continuous improvements and developments, the above data is likely to be changed without prior notice.





Industry  
Segment

Applications

■ Power Generation

Pumps - Boiler Feed Pump, Circulating Water Pump, Condensate Extraction Pump, Ash - Water Pump, Ash - Slurry Pump Fans - Induced Draft Fan, Forced Draft Fan, Primary Air Fan, Secondary Air Fan, Dust Extraction Fan, Conveyor, Crusher, Coal Mill, Ring Granulator Compressor

■ Cement Sector

Mills - Raw Mill (Ball Mill), Vertical Roller Table, Cement / Mill (Ball Mill), Coal Mill, ATOX Mill, Polycone Grinder. Crusher - Lime Stone Crusher (Rotary Impact) Fans - ESP Fan, Bag Filter Fan, Waste Gas Fan, Cooler Vent Fan, Raw Mill Vent Fan, Sepax Fan, Pre-Heater Fan, Bag House Fan, Aux, Separator, Booster Fan, Sepol Fan, Multicone Fan. Conveyor - Belt Conveyor, Bucket Conveyor, Pump, Compressor, Roller Press

■ Refineries &  
Petrochemical

Pump - Centrifugal, Compressor - Centrifugal, Screw, Reciprocating

■ Fertilizer & Chemical

Pumps - Centrifugal, Vacuum pump, Compressor - Centrifugal, Screw, Reciprocating, Agitator, Mixer, Blower, Granulator, Leveller, Extruder

■ Steel & Non Forms  
Industries

Pump, Compressor, Fan and Blower, Conveyor, Crusher - Hammer Crusher, Mixer

■ Coal & Other Mines

Pump, Crusher, Compressor, Fan, Haulage, Conveyor

■ Water Supply  
/ Irrigation

Pump - Centrifugal, Compressor, Disc Refiner, Chipper

■ Paper Mills

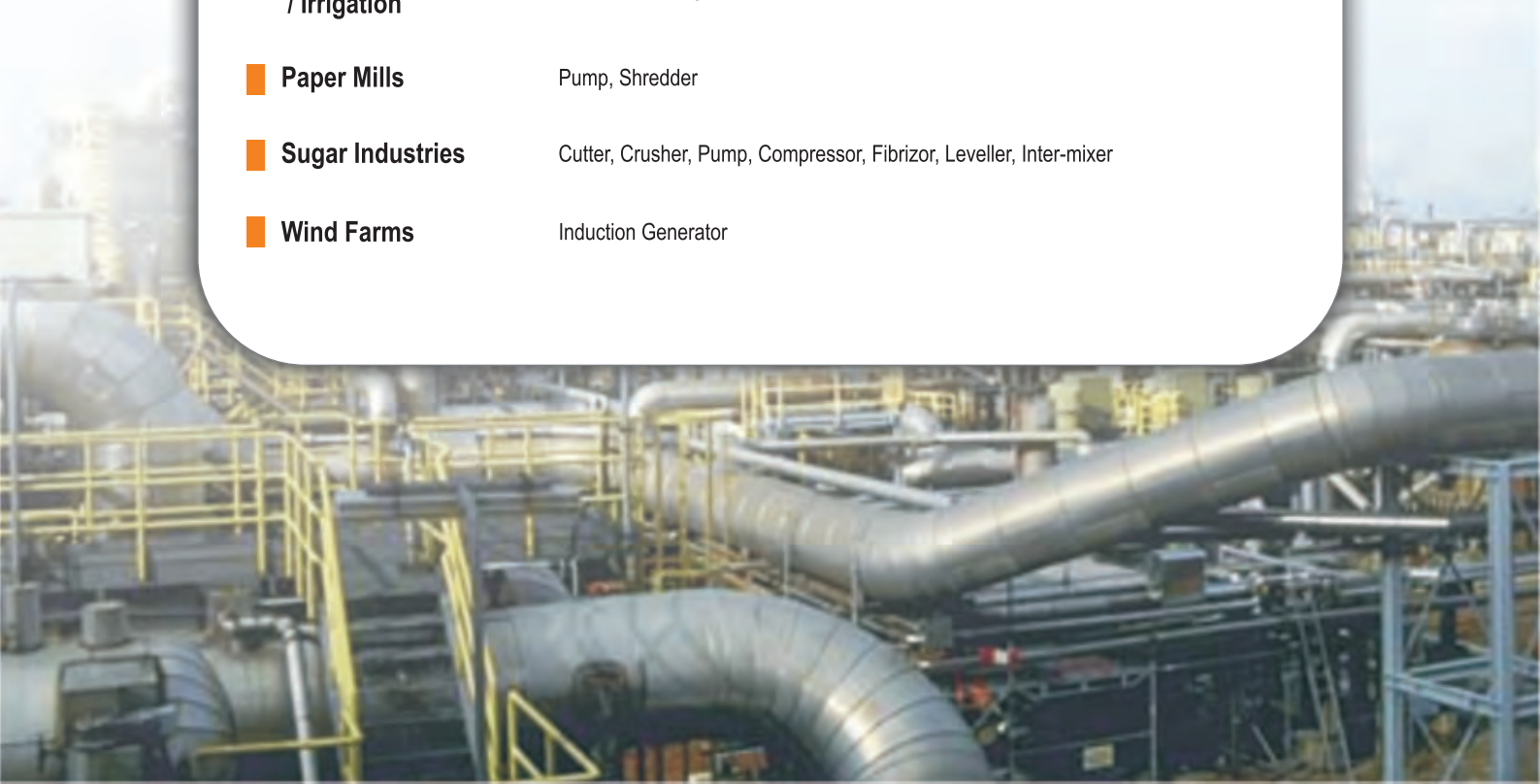
Pump, Shredder

■ Sugar Industries

Cutter, Crusher, Pump, Compressor, Fibrizor, Leveller, Inter-mixer

■ Wind Farms

Induction Generator



General



Standard	Part	Year	Title
BS 4999	111	1987	General Requirements for Rotating Electrical Machines Specification for built-in thermal Protection for electric motors rated at 660 Volts A.C. And below.
BS 5000	10	1978	Specification for Rotating Electrical Machines of Particular type or for Particular application Part 10 General Purposes Induction Motors.
BS 5000	17	1981	Specification for Rotating Electrical Machines of Particular type or for Particular application Part 17 Machines with flame proof enclosure.
IEC 60034	5	1991	Rotating Electrical Machines - Classification of Degree of Protection Provided by enclosures of Rotating Electrical Machines. (IP Code)
IEC 60034	7	1992	Rotating Electrical Machines - Classification of types of Constructions & Mounting arrangement (IM Code)
IEC 60034	8	1972	Rotating Electrical Machines - Terminal markings & Direction of Rotation of Rotating Machines
NEMA MG	1	1993	Publication No. MG 1-1993- Motors & Generators.

Electrical Specification



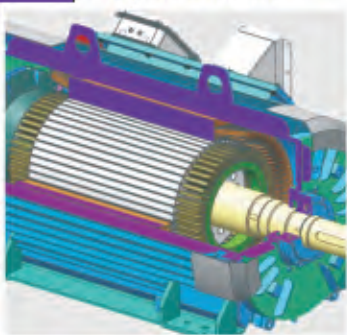
Standard	Part	Year	Title
BS 4999	144	1987	General Requirements for Rotating Electrical Machines Specification for the Insulation of Bars & Coils Of High Voltage Machines including test method.
JEC	37	1979	Standard of the Japanese Electrotechnical Committee.

Quality & Testing



Standard	Part	Year	Title
IEEE 112		1991	Standard Test Procedure for Polyphase Induction Motors & Generators.
IEEE 115		1983	Test Procedures For Synchronous Machines.
IEC 60034	2	1972	Rotating Electrical Machines. Method for determining losses & efficiency of Rotating Electrical Machines from tests.
IEC 60034	4	1985	Methods for determining Synchronous Machines. Quantics From Test.
IEC 60034	9	1990	Rotating Electrical Machines - Noise Limits.
IEC 60034	14	1996	Rotating Electrical Machines -Mechanical Vibrations of certain Machines with shaft height 56 mm & Higher - Measurement, Evaluation & Limits of the Vibration severity.
IEC 60034	15	1995	Impulse Voltage Withstand Level of Rotating a.c. Machines with form wound stator coils.
ISO 8402		1994	Quality Management & Quality Assurance Vocabulary.
ISO 9000	1		Quality Management & Quality Assurance Standards.
ISO 9001		2000	Model For Quality Assurance In Design, Development, Production & Installation.

Mechanical Specification



Standard	Part	Year	Title
IEC 60072	1	1991	Dimension Output Series For Rotating Electrical Machines.
IEC 60072	2	1990	Dimension Output Series for Rotating Electrical Machines Frame Nos. 355 To 1000 & Flange 1180 to 2360



## Reference List

## Cement

Year	Client, Plant	Qty.	Enclosure	kW	Voltage (V)	Pole	Frame
1992	Andhra Cements	1	CACA	1800	6600	6	710
1992	Andhra Cements	1	SPDP	1500	6600	6	630
1992	Ambuja Cements Ltd.	1	CACA	1600	6600	6	710
1992	Ambuja Cements Ltd.	1	CACA	1025	6600	6	630
1993	Grasim Industries Ltd.	1	CACA	1024	6600	6	560
1993	Ambuja Cements Ltd.	1	CACA	2800	6600	6	710
1993	Ambuja Cements Ltd.	1	CACA	2200	6600	6	710
1993	Ambuja Cements Ltd.	1	CACA	1600	6600	6	710
1994	Grasim Industries Ltd.	1	CACA	3300	6600	6	710
1994	Grasim Industries Ltd.	1	CACA	2600	6600	6	710
1994	Grasim Industries Ltd.	2	CACA	2200	6600	6	710
1994	Grasim Industries Ltd.	1	CACA	2050	6600	6	710
1994	Grasim Industries Ltd.	1	CACA	1020	6600	6	630
1994	Grasim Industries Ltd.	1	CACA	4375	6600	6	710
1994	Maihar Cement	2	CACA	1500	6600	6	710
1994	Maihar Cement	2	CACA	2500	6600	6	710
1994	Maihar Cement	2	CACA	2500	6600	6	710
1994	Maihar Cement	3	CACA	1000	6600	6	560
1995	Grasim Industries Ltd.	1	CACA	3400	6600	6	710
1995	Grasim Industries Ltd.	1	CACA	2200	6600	6	710
1995	Grasim Industries Ltd.	1	CACA	1250	6600	6	630
1996	Binani Cement	1	CACA	2775	6600	6	710
1996	Binani Cement	2	CACA	1500	6600	6	560
1996	Binani Cement	1	CACA	1300	6600	6	560
1996	Binani Cement	2	CACA	1025	3300	8	630
1996	Madras Cements Ltd.	1	CACA	2850	6600	6	710
1996	Madras Cements Ltd.	1	CACA	1750	6600	6	710
1997	Binani Cement	6	CACA	2600	6600	6	710
1997	Madras Cements Ltd.	4	CACA	1750	6600	6	710
1998	ACC	4	CACA	1233	6600	8	560
1998	ACC	1	CACA	2200	6600	6	710
1998	ACC	1	SPDP	2700	3300	6	710
1998	Andhra Cements	1	CACA	1500	6600	6	630
1998	Binani Cement	2	CACA	1370	11000	6	560
1999	ACC	1	CACA	1200	3300	6	560
1999	Madras Cements Ltd.	2	CACA	3200	6600	6	710
1999	Madras Cements Ltd.	1	CACA	1750	6600	8	710
1999	Penna Cement Ind. Ltd	4	CACA	1250	6600	6	630
2000	Madras Cements Ltd.	2	CACA	2200	6600	6	710
2000	Madras Cements Ltd.	1	CACA	2850	6600	6	710
2000	Madras Cements Ltd.	1	CACA	4000	6600	6	710
2000	Madras Cements Ltd.	2	CACA	1750	6600	8	710
2000	Madras Cements Ltd.	1	CACA	4000	6600	6	710
2000	Madras Cements Ltd.	2	CACA	3200	6600	6	710
2000	Madras Cements Ltd.	2	CACA	1750	6600	8	710
2000	Madras Cements Ltd.	1	CACA	2200	6600	6	710
2000	Larsen & Toubro Ltd.	2	CACA	2500	3300	6	710
2001	The India Cements Ltd.	1	CACA	1455	11000	6	560
2001	Chola Cements Ltd.	2	CACA	1500	6600	6	630
2001	Binani Cement	1	CACA	2600	6600	6	710
2001	Binani Cement	1	CACA	2600	6600	6	710
2001	Madras Cements Ltd.	1	CACA	2000	6600	6	710
2001	OCL India Ltd.	1	SPDP	3150	3300	6	710
2001	Indorama Cement Ltd.	1	CACA	2500	3300	6	710
2001	Larsen & Toubro Ltd.	1	CACA	2360	6600	8	710
2001	Associated Cement Cos Ltd.	1	CACA	2200	6600	6	710
2001	Associated Cement Cos Ltd.	1	CACA	1200	3300	6	560
2002	Grasim Industries Ltd.	1	CACA	1680	6600	6	710
2002	OCL India Ltd.	1	SPDP	3450	3300	6	710
2002	Chaanakya Cements Ltd.	6	CACA	1500	6600	6	630
2002	Narmada Cement Co Ltd.	1	CACA	2500	6600	6	710
2003	Grasim Industries Ltd.	1	TETV	1450	6600	6	710
2003	Grasim Industries Ltd.	1	CACA	1450	6600	6	630
2003	Binani Cement	1	CACA	1370	11000	6	560
2003	Binani Cement	1	CACA	1370	11000	6	560
2003	Associated Cement Cos Ltd.	1	CACA	1200	3300	6	560
2003	Cements Manufacturing Co. Ltd.	1	CACA	2200	6600	6	630
2003	Cements Manufacturing Co. Ltd.	1	CACA	2200	6600	6	630
2003	Cements Manufacturing Co. Ltd.	1	CACA	2200	6600	6	630
2004	The India Cements Ltd.	1	CACA	1200	6600	6	630

# Reference List

## Cement

Year	Client, Plant	Qty.	Enclosure	kW	Voltage (V)	Pole	Frame
2004	Grasim Industries Ltd.	1	CACA	2600	3300	6	710
2004	OCL India Ltd.	1	SPDP	2500	3300	6	710
2004	Oman Cement Company	1	CACA	3000	3300	6	710
2004	Grasim Industries Ltd.	1	CACA	2600	6600	6	710
2004	Maihar Cement	1	CACA	1000	6600	6	560
2004	Maihar Cement	2	CACA	1000	6600	6	560
2005	Shree Cement	2	CACA	2000	6600	6	630
2005	Shree Cement	2	CACA	1600	6600	6	560
2005	Shree Cement	1	CACA	1500	6600	6	560
2005	Shree Cement	1	CACA	1450	6600	6	560
2005	Shree Cement	2	CACA	1000	6600	4	560
2006	Shree Cement	1	CACA	2000	6600	6	630
2006	Shree Cement	1	CACA	2000	6600	6	630
2006	Shree Cement	1	CACA	1000	6600	6	560
2006	Shree Cement	1	CACA	1600	6600	6	560
2006	Shree Cement	1	CACA	1500	6600	6	560
2006	Shree Cement	1	CACA	1600	6600	6	560
2006	Shree Cement	2	CACA	2400	6600	6	710
2007	ABB Ltd.	1	CACA	2550	6600	6	710
2007	ABB Ltd.	1	CACA	2550	6600	6	710
2007	Grasim Industries Ltd.	1	CACA	3300	6600	6	710
2007	India Cements Ltd.	2	CACA	2500	6600	6	710
2007	Madras Cements Ltd.	1	CACA	3200	6600	6	710
2007	Shree Cement	2	CACA	1600	6600	6	560
2007	Shree Cement	2	CACA	2400	6600	6	710
2007	Shree Cement	1	CACA	1500	6600	6	560
2007	Shree Cement	2	CACA	1600	6600	6	560
2007	Shree Cement	1	CACA	1600	6600	6	560
2007	Shree Cement	1	CACA	2000	6600	6	630
2007	Shree Cement	1	CACA	1450	6600	6	560
2007	Shree Cement	1	CACA	1500	6600	6	560
2007	Ultra Tech Cement Ltd.	1	CACW	2400	6600	6	560
2008	ABB Ltd.-Shree Jayajothi Cement, Kurnool	1	CACA	4550	6600	6	710
2008	ABB Ltd.-Shree Jayajothi Cement, Kurnool	1	CACA	3100	6600	6	710
2008	ABB Ltd.-Shree Jayajothi Cement, Kurnool	1	CACA	2800	6600	6	710
2008	Ambuja Cements Ltd.	1	CACA	2150	6600	6	710
2008	Ambuja Cements Ltd.	1	CACA	2000	6600	6	630
2008	Ambuja Cements Ltd.	2	CACA	2000	6600	6	630
2008	Ambuja Cements Ltd.	1	CACA	2000	6600	6	630
2008	Birla Corporation	1	CACA	2300	6600	6	630
2008	Cement Manufacturing Comp.	1	CACA	2200	6600	6	630
2008	Deccan Cements Ltd.	2	CACA	2550	6600	6	710
2008	Jsw Cement Ltd.	1	CACA	3100	6600	6	710
2008	Madras Cements Ltd.	1	CACA	2000	6600	6	710
2008	Parasakti Cement Industries	1	CACA	2000	6600	6	630
2008	Shree Cement	2	CACA	2400	6600	6	710
2008	Shree Cement	2	CACA	2400	6600	6	710
2008	Shree Cement	1	CACA	1000	6600	6	560
2008	Shree Cement	1	CACA	1600	6600	6	560
2008	Shree Cement	1	CACA	1600	6600	6	560
2008	Shree Cement	1	CACA	1600	6600	6	560
2008	Shree Cement	1	CACA	1600	6600	6	560
2008	Shree Cement	1	CACA	2400	6600	6	710
2008	The India Cements Ltd.	1	CACA	2850	6600	6	710
2008	The India Cements Ltd.	2	CACA	2500	6600	6	710
2008	The India Cements Ltd.	2	CACA	2400	6600	6	710
2008	The India Cements Ltd.	1	CACA	2100	6600	6	710
2008	Zuari Cements Ltd.	1	CACA	4800	6600	6	900
2008	Zuari Cements Ltd.	1	CACA	3750	6600	6	710
2008	ABB Ltd.-Shree Jayajothi Cement, Kurnool	1	CACA	2450	11000	6	630
2009	Grasim Industries Ltd.	1	CACA	2500	6600	6	710
2009	LNv Technologies Pvt. Ltd.	2	CACA	2700	6600	6	710
2009	Sagar Cement Ltd.	1	CACA	3200	6600	6	710
2009	Shree Cement	8	CACA	1000	6600	4	560



# Reference List

## Irrigation/Water Supply

Year	Client, Plant	Qty.	Enclosure	kW	Voltage (V)	Pole	Frame
1993	Mather & Platt Pumps Ltd. A/c BMC	3	CACW	1150	3300	6	450
1997	DLF - Mahaprabha	2	SPDP	1200	3300	8	710
1999	KBL - A Irrigation	2	SPDP	1360	6600	12	1220
2000	Subhash Projects & Mktg. Ltd.	22	CACW	1500	6600	10	1220
2000	Subhash Projects & Mktg. Ltd.	33	CACW	1505	6600	8	1220
2000	KBL - Almatti	4	CACA	1250	6600	12	1700
2001	Kirloskar Brothers Ltd.	5	CACA	1300	6600	12	1700
2001	Kirloskar Brothers Ltd.	5	CACA	1300	6600	12	1700
2001	Subhash Projects & Mktg. Ltd.	22	CACW	1500	6600	8	1220
2001	Subhash Projects & Mktg. Ltd.	22	CACW	1500	6600	8	1220
2001	KBL	3	CACW	4500	6600	4	560
2001	KBL	2	TETV	1050	6600	4	1220
2001	KBL	5	CACA	1850	6600	12	1700
2002	Kirloskar Brothers Ltd.	3	CACW	2300	11000	8	1220
2002	Kirloskar Brothers Ltd.	6	CACW	2300	11000	8	1220
2002	Kirloskar Brothers Ltd.	6	CACW	1125	3300	6	630
2002	Mather & Platt Pumps Ltd.	1	CACA	1320	3300	4	500
2003	Kirloskar Brothers Ltd.	5	TETV	1750	6600	8	1700
2003	Kirloskar Brothers Ltd.	3	CACA	1570	11000	6	710
2003	Subhash Projects & Mktg. Ltd.	3	TETV	1015	6600	8	630
2003	Mather & Platt Pumps Ltd.	4	CACW	1130	6600	12	1700
2003	Mather & Platt Pumps Ltd.	5	TETV	1750	6600	8	1700
2004	Kirloskar Brothers Ltd.	4	CACA	2250	6600	12	1700
2004	Kirloskar Brothers Ltd.	6	CACA	1475	6600	4	500
2004	Kirloskar Brothers Ltd.	3	CACA	1775	6600	12	1700
2004	Kirloskar Brothers Ltd.	6	CACA	1475	6600	4	500
2004	Kirloskar Brothers Ltd.	6	CACA	1425	6600	4	500
2004	Kirloskar Brothers Ltd.	1	CACA	1425	6600	14	1700
2004	Kirloskar Brothers Ltd.	6	CACA	1300	6600	4	500
2004	Kirloskar Brothers Ltd.	1	CACA	1120	6600	14	1700
2004	Kolkata Metropolitan Water Corp. Ltd.	1	SPDP	1450	6000	8	630
2006	Kirloskar Brothers Ltd.	4	CACW	1700	6600	8	630
2006	Kirloskar Brothers Ltd.	6	CACA	1475	6600	4	500
2006	IVRCL	7	CACA	1450	6600	6	1220
2007	Kirloskar Brothers Ltd.	2	CACA	1525	6600	12	1700
2007	Mather & Platt Pumps Ltd.	1	CACW	1615	11000	12	1700
2008	Kirloskar Brothers Limited	6	SPDP	1500	11000	12	710
2008	Kirloskar Brothers Limited	3	SPDP	1475	6600	6	560
2008	Subhash Projects & Mktg. Ltd.	4	CACA	1205	3300	8	560
2008	IVRCL	9	CACA	2100	11000	6	1700
2008	IVRCL	5	CACA	1700	11000	6	1700
2009	Kirloskar Brothers Limited	1	CACA	1450	6600	6	1220
2009	WPIL Ltd.	8	SPDP	1400	6600	16	1700
2009	WPIL Ltd.	15	SPDP	1250	6600	8	1220

## Sugar

2002	Walchand Industries Ltd.	1	CACA	1125	11000	8	630
2004	Fivescail - KCP Ltd.	1	CACW	1120	11000	8	630
2004	Rajshree Sugars & Chemicals Ltd.	2	CACA	1250	11000	8	630
2004	National Heavy Engg Co-op Ltd.	1	SPDP	1500	6600	8	630
2005	National Heavy Engg Co-op Ltd.	1	CACA	1500	6600	8	710
2005	National Heavy Engg Co-op Ltd.	2	CACA	1500	6600	8	710
2006	Gem Sugars Ltd.	1	CACW	1120	11000	8	630
2006	SS Engineers	4	CACA	1750	11000	8	710
2006	Walchandnagar Industries Ltd.	2	CACA	1750	11000	8	710
2006	Gem Sugars Ltd.	1	CACW	1120	11000	8	630
2007	The Dhampur Sugar Mills	1	CACW	2500	11000	8	710
2007	Kumbhi Chini Mills	1	CACA	1750	11000	8	710
2007	Walchandnagar Industries Ltd.	1	CACA	1750	11000	8	710
2007	Uttam Industrial Engg. Ltd.	3	CACW	1500	11000	8	630
2008	Walchandnagar Industries Ltd.	2	CACA	1250	11000	8	630
2008	Walchandnagar Industries Ltd.	2	CACA	1750	11000	8	710
2008	Wahid Sandhar Sugars Ltd.	2	CACA	750	11000	8	560
2009	Kinyara Sugar Ltd.	2	CACA	1500	11000	8	630
2009	Vedant Equip Sales & Service Pvt. Ltd.	2	SPDP	1250	11000	8	630
2009	Walchandnagar Industries Ltd.	1	CACA	1100	11000	8	630
2009	Isgec John Thompson	2	CACA	1000	11000	8	560

# Reference List

## Mining

Year	Client, Plant	Qty.	Enclosure	kW	Voltage (V)	Pole	Frame
1990	M & P-NLC	14	CACA	1655	6600	12	800
2000	Deepak Sobhipyu Corp. Pvt. Ltd.	5	CACA	1450	6600	12	710
2002	Neyveliignite Corp.	1	CACA	1655	6600	12	800
2003	Neyveli Lignite Corp. Ltd.	2	CACW	3500	6600	4	630
2003	Neyveli Lignite Corp. Ltd.	1	CACW	3500	6600	4	630
2003	Neyveli Lignite Corp. Ltd.	2	CACW	3500	6600	4	630
2003	Neyveli Lignite Corp. Ltd.	1	TETV	1200	6600	4	710
2003	South Eastern Coalfields Ltd.	2	TEFC	640	3300	4	450
2004	FFE Minerals India Ltd.	2	CACA	650	6600	4	450
2004	FFE Minerals India Ltd.	2	CACA	260	6600	4	355
2004	FFE Minerals India Ltd.	2	CACA	200	6600	4	355
2004	FFE Minerals India Ltd.	1	CACA	160	6600	4	355
2004	FFE Minerals India Ltd.	2	CACA	132	6600	4	355
2004	Ingersoll Rand (I) Ltd.	3	TETV	224	3300	4	400
2004	Ingersoll Rand (I) Ltd.	1	TETV	336	6600	4	450
2008	Mather & Platt Pumps Ltd.	1	TEFC	300	3300	4	355
2008	Mather & Platt Pumps Ltd.	2	TEFC	250	3300	4	355
2008	Aramco Engineers	1	CACA	660	11000	2	450
2009	Mc Nally Bharat Engg Co. Ltd.	2	CACA	1000	6600	4	450
2009	Mc Nally Bharat Engg Co. Ltd.	2	CACA	350	6600	4	400
2009	Eastern Trade Agency	1	TEFC	180	3300	4	355
2009	Eastern Trade Agency	1	TEFC	300	3300	4	450
2009	Revathi Equipments Ltd.	1	TETV	500	6600	4	500
2009	Revathi Equipments Ltd.	4	TETV	373	6600	4	450

## Power

1990	Mather & Platt - MSEB	8	CACA	1800	3300	12	1700
1991	WBPDC	1	CACA	1160	6600	6	630
1992	Mather & Platt - NTPC Talcher	3	CACA	215	3300	4	940
1992	Indure - NTPC	10	CACA	325	3300	4	450
1993	Indure - NTPC	4	CACA	390	6600	4	940
1994	MRPL- EIL	3	TETV	1100	6600	8	710
1995	Boving Foress	3	SPDP	1250	3300	6	560
1996	Mseb - Chandrapur	1	TETV	710	3300	4	560
1996	DVC - CTPC	1	SPDP	634	3300	12	1080
1997	ABB - Mseb Koradi	2	CACA	1720	6600	8	710
1998	AECO	1	CACW	4000	6600	2	710
1998	KBL - KPCL	2	CACA	1325	6600	12	1700
1999	Mather & Platt Pumps	1	SPDP	350	6300	8	940
2000	Mather & Platt Pumps Ltd.	1	CACW	1150	3300	6	450
2000	Mather & Platt Pumps Ltd.	1	SPDP	750	6300	6	1220
2000	KSB Pumps Ltd.	2	CACA	625	6300	2	450
2000	KSB Pumps Ltd.	2	CACA	200	6600	2	355
2000	Gujarat Ind. Power Co. Ltd.	1	TEFC	250	6600	4	400
2001	Kirloskar Brothers Ltd.	5	CACA	1450	6600	12	1700
2001	Kirloskar Brothers Ltd.	5	CACA	1850	6600	12	1700
2001	Kirloskar Brothers Ltd.	5	CACA	1450	6600	12	1700
2001	Neyveli Lignite Corp. Ltd.	1	CACA	1655	6600	12	355
2001	Neyveli Lignite Corp. Ltd.	1	TETV	1400	6600	4	710
2001	Bangladesh Power Dev Board	2	SPDP	250	6600	4	900
2001	The Indure Ltd.	7	CACA	710	6600	4	940
2001	The Indure Ltd.	6	TEFC	315	6600	4	355
2001	West Bengal Power Development	1	CACA	385	6600	4	500
2001	Karnataka Power Corp. Ltd.	1	CACA	900	6600	10	630
2001	KSB Pumps Ltd.	3	CACW	4500	6600	4	560
2001	KSB Pumps Ltd.	2	TETV	1050	6600	4	1220
2002	Kirloskar Brothers Ltd.	3	CACA	1500	6600	12	1700
2002	Kirloskar Brothers Ltd.	3	CACA	1325	6600	12	1700
2002	Kirloskar Brothers Ltd.	5	CACA	1250	6600	12	1700
2002	National Thermal Power Corp. Ltd.	1	TETV	220	6600	4	940
2002	Neyveli Lignite Corp. Ltd.	1	TETV	1800	6600	6	800
2002	Neyveli Lignite Corp. Ltd.	1	CACW	4000	6600	4	710
2002	Neyveli Lignite Corp. Ltd.	1	TETV	1800	6600	6	710
2002	AP Power Generation Corp. Ltd.	1	CACA	550	6600	8	450



## Reference List

## Power

Year	Client, Plant	Qty.	Enclosure	kW	Voltage (V)	Pole	Frame
2002	AP Power Generation Corp. Ltd.	1	CACA	333	6600	4	355
2002	AP Power Generation Corp. Ltd.	1	TETV	220	6600	4	400
2002	AP Power Generation Corp. Ltd.	1	CACA	215	6600	4	355
2002	DC Industrial Plant Services Ltd.	3	TEFC	275	6600	4	315
2002	DC Industrial Plant Services Ltd.	3	TEFC	225	6600	4	355
2002	West Bengal Power Development	1	CACA	1160	6600	6	630
2003	Kirloskar Brothers WPIL Ltd.	9	SPDP	720	6600	12	1180
2003	National Thermal Power Corp. Ltd.	1	TEFC	360	3300	4	355
2003	National Thermal Power Corp. Ltd.	1	TEFC	200	3300	4	355
2003	WPIL Ltd.	7	CACA	1500	6600	12	1700
2003	WPIL Ltd.	7	CACA	985	6600	18	1700
2003	WPIL Ltd.	2	CACA	680	3300	10	1220
2003	Alstom Power India Ltd.	2	CACA	1750	3300	8	500
2003	AP Power Generation Corp. Ltd.	1	TETV	215	6600	4	400
2003	Atlas Copco (I) Ltd.	5	TEFC	340	3300	4	355
2003	Atlas Copco (I) Ltd.	2	TEFC	305	6600	4	355
2003	Atlas Copco (I) Ltd.	3	TEFC	275	6600	4	355
2003	Bangladesh Power Dev Board	2	CACA	960	6600	4	450
2003	DC Industrial Plant Services Ltd.	3	TETV	300	6600	4	450
2003	DC Industrial Plant Services Ltd.	9	TETV	300	6600	4	450
2003	DC Industrial Plant Services Ltd.	3	TETV	300	6600	4	450
2003	Gujarat Electricity Board	2	TEFC	360	6600	4	400
2003	CESC Ltd.	1	CACA	429	6600	8	560
2004	Mather & Platt Pumps	8	SPDP	1100	11000	12	710
2004	WPIL Ltd.	3	CACA	1475	6600	12	1700
2004	WPIL Ltd.	2	CACA	1650	6600	12	1700
2004	KSB Pumps Ltd.	2	CACA	2850	6600	4	630
2004	Alstom Projects India Ltd.	3	CACA	580	6600	6	450
2004	Atlas Copco (I) WPIL Ltd.	5	TEFC	340	3300	4	355
2005	Mather & Platt Pumps	4	TEFC	360	6600	4	355
2006	DCIPS A/c NTPC Vindhyachal	12	TEFC	275	3300	4	315
2006	DCIPS A/c NTPC Vindhyachal	7	TEFC	275	3300	4	315
2006	DCIPS A/c NTPC Vindhyachal	4	TEFC	275	3300	4	315
2006	Mather & Platt Pumps Ltd.	1	CACA	1500	6600	12	1700
2006	Kirloskar Brothers Ltd.	1	CACWV	1700	6600	8	630
2007	Mather & Platt Pumps Ltd.	3	SPDP	1615	11000	12	1700
2007	Kirloskar Brothers Ltd.	7	CACA	1700	6600	12	1700
2007	BGR Energy Systems Ltd.	1	CACA	2050	6600	6	630
2007	Megha Technical & Engg. Ltd.	1	CACA	2200	6600	6	630
2008	DCIPS A/c NTPC Barh	5	TEFC	290	3300	4	315
2008	DCIPS A/c NTPC Barh	10	TEFC	290	3300	4	315
2008	DCIPS A/c NTPC Barh	5	TEFC	290	3300	4	315
2008	KBL A/c NTPC Barh	3	TETV	300	3300	4	740
2008	KBL A/c NTPC Barh	3	TETV	350	3300	6	1080
2008	KBL A/c NTPC Barh	2	TETV	350	3300	6	1080
2008	KBL A/c NTPC Barh	3	TETV	350	415	8	1080
2008	Shubham Fluid Controls A/c NTPC Rihand	1	CACA	350	3300	4	355
2008	Vinamra Corporation A/c NTPC Kahakgaon	2	CACA	350	6600	4	355
2008	Vinamra Corporation A/c NTPC Kahakgaon	2	CACA	220	6600	4	355
2008	Mather & Platt Pumps Ltd.	3	TETV	1270	6300	4	630
2008	Mather & Platt Pumps Ltd.	3	TETV	1260	6300	4	630
2008	Kirloskar Brothers Ltd.	1	CACA	1700	6600	12	1700
2008	Kirloskar Brothers Ltd.	5	CACA	1500	6600	12	1700
2008	Kirloskar Brothers Ltd.	4	CACA	1400	11000	12	1700
2008	Kirloskar Brothers Ltd.	5	TETV	1500	6600	12	1700
2008	WPIL Ltd.	3	CACA	1600	6600	12	1700
2008	WPIL Ltd.	3	CACA	1220	11000	8	450
2008	The Indure Pvt. Ltd.	4	CACA	1800	6600	12	1700
2009	Unicon A/c NTPC Kaniha	1	CACA	250	3300	4	355
2009	Unicon A/c NTPC Kaniha	2	TETV	325	3300	4	450
2009	Unicon A/c NTPC Kaniha	1	CACA	321	3300	4	400
2009	WPIL A/c NTPC Talcher	4	CACA	860	3300	10	1220
2009	Flowmore A/c NTPC Harduaganj	5	SPDP	1650	6600	12	1700
2009	Mather & Platt Pumps Ltd.	3	CACA	1910	6600	12	1700
2009	Mather & Platt Pumps Ltd.	1	CACA	1500	6600	12	1700
2009	Subhash Project & Marketing Ltd.	4	SPDP	1450	6600	8	1220
2009	Godavari Power & Ispat Ltd.	2	CACA	1400	11000	6	560
2009	S. B. M. Enterprise	1	SPDP	1020	6600	12	1700

# Reference List

## Steel

Year	Client, Plant	Qty.	Enclosure	kW	Voltage (V)	Pole	Frame
1992	Mather & Platt - Tisco	3	TETV	475	6600	6	560
1992	KR Steel	1	SPDP	1000	6600	2	560
1992	Hindustan Steel	1	CACA	630	6600	8	560
1993	SAIL - RSP	1	CACA	2000	6600	2	710
1993	Bhilai Steel	2	FLP	350	6600	2	450
1993	Lloyd Steel	2	CACA	2611	11000	2	630
1993	Bokaro Steel	1	CACA	630	6600	8	560
1994	Siemens Ltd.	2	TETV	450	6600	4	500
1995	Hindalco	1	TETV	1050	3300	4	710
1995	DSP - Nicco	1	CACA	3100	11000	4	710
1995	VSP	1	CACA	630	6600	4	630
1996	Volvo Steel Ltd.	1	SPDP	1119	3300	8	560
1996	Mather & Platt - Hindalco	4	CACA	1600	6600	12	710
1997	Hindalco	2	TETV	765	6600	6	710
1998	BSP	1	CACA	500	6600	2	400
1998	BSP	1	TETV	470	6600	4	560
1998	KBL - Tisco	3	TETV	650	6600	6	560
1999	TATA Steel	1	SPDP	627	6300	6	560
1999	Jindal Strips	2	CACA	800	3300	6	450
1999	TATA Steels	2	CACA	900	3300	8	630
1999	Essar Steel	1	CACA	522	6600	2	560
2000	Jindal Steel	2	TETV	420	3300	6	1080
2001	Jindal Steel & Power Ltd.	1	CACA	580	3300	6	450
2001	Shah Alloys Ltd.	1	CACA	4960	11000	12	1700
2002	The Associated Cement Co. Ltd.	1	TETV	1100	6300	8	710
2002	Hindustan Suppliers	1	TETV	1000	6600	8	630
2002	Vijaya Steels Ltd.	2	CACA	3250	11000	12	1700
2003	The Tata Iron & Steel Co. Ltd.	1	TETV	650	6300	6	560
2003	Upadrasta & Sons	1	CACA	3400	6000	4	630
2003	Jindal Vijaynagar Steel	1	CACW	2240	6600	10	630
2003	Transmission India	1	SPDP	1350	6600	8	560
2003	JRC Industries Ltd.	1	TETV	1000	6600	6	630
2003	Jindal Vijaynagar Steel	4	CACW	3750	6600	6	630
2003	Jindal Vijaynagar Steel	1	CACW	3750	6600	6	630
2004	The Tata Iron & Steel Co. Ltd.	1	TETV	1550	6300	2	710
2006	Visakhapatnam Steel	2	CACA	1000	6600	8	500
2006	NCL Industries Ltd.	1	CACA	1750	6600	6	560
2006	Visakhapatnam Steel	1	TETV	1000	6600	8	630
2007	JSW Steel Ltd.	1	CACW	2240	6600	10	630
2007	JSW Steel Ltd.	1	CACW	3750	6600	6	630
2008	Jindal Steel & Power Ltd.	1	CACA	3100	6600	6	710
2008	Siemens Ltd.	3	CACA	2940	630	6	630
2008	Siemens Ltd.	2	CACA	2500	630	6	560
2008	Vedant Alumina Ltd.	1	CACA	2350	6600	6	710
2008	Worthington Pumps India Ltd.	5	CACA	1800	6600	14	1700
2008	Mather & Platt	5	CACA	1500	6600	12	1700
2008	SB Enterprise	1	SPDP	1492	3300	8	630
2008	Mather & Platt	2	CACA	1300	6600	4	1220
2008	Jindal Steel & Power Ltd.	1	CACA	1100	6600	6	500
2008	Inertia Iron & Steel Inds	1	TETV	1000	6300	6	630
2008	Hindustan Suppliers	1	TETV	1000	6600	8	630
2009	Mather & Platt	10	CACA	1860	6600	12	1700
2009	Hindalco	1	CACA	1600	11000	6	630

## Petro/Chemical

1997	Reliance Petroleum Ltd.	1	TEFC	1750	6600	2	355
2000	Reliance Petroleum Ltd.	3	TETV	400	6600	4	940
2001	Indian Oil Corporation Ltd.	1	CACA	325	6600	4	450
2001	Kirloskar Ebara Pumps Ltd.	3	CACA	250	6600	4	355
2002	Kirloskar Ebara Pumps Ltd.	3	FLP	280	3300	2	450
2002	Reliance Petroleum Ltd.	2	TEFC	250	6600	4	355
2002	Reliance Petroleum Ltd.	1	CACA	250	6600	4	355
2002	Dresser Rand India Private Ltd.	1	CACA	725	6600	18	630
2002	Dresser Rand India Private Ltd.	2	CACA	466	6600	18	630
2002	Dresser Rand India Private Ltd.	1	CACA	300	3300	6	450
2002	Dresser Rand India Private Ltd.	2	CACA	260	6600	18	560
2003	Indian Oil Corporation Ltd.	2	TETV	800	6600	2	560



# Reference List

## Petro/Chemical

Year	Client, Plant	Qty.	Enclosure	kW	Voltage (V)	Pole	Frame
2003	Kirloskar Ebara Pumps Ltd.	1	CACA	725	6600	2	450
2003	Kirloskar Ebara Pumps Ltd.	2	CACA	590	6600	2	400
2003	Kirloskar Ebara Pumps Ltd.	1	CACA	420	6600	2	355
2003	Kirloskar Ebara Pumps Ltd.	2	CACA	215	6600	2	355
2003	Reliance Petroleum Ltd.	2	TETV	1300	6600	2	710
2003	Reliance Petroleum Ltd.	1	CACW	875	6600	4	400
2003	Reliance Petroleum Ltd.	1	SPDP	810	6600	2	400
2003	Reliance Petroleum Ltd.	1	TETV	580	6600	2	560
2003	Reliance Petroleum Ltd.	4	TETV	745	6600	6	560
2003	Sulzer Pumps India Ltd.	2	CACA	2000	6600	2	560
2004	Flowserve India Controls Pvt Ltd.	1	CACA	800	3300	2	450
2004	Flowserve India Controls Pvt Ltd.	4	CACA	280	3300	4	400
2004	Flowserve India Controls Pvt Ltd.	3	FLP	215	6600	4	450
2004	Flowserve India Controls Pvt Ltd.	2	CACA	200	6600	2	355
2004	Indian Oil Corporation Ltd.	2	TETV	800	6600	8	710
2004	Kirloskar Ebara Pumps Ltd.	1	CACA	1190	6600	4	500
2004	Kirloskar Ebara Pumps Ltd.	4	CACA	550	6600	2	400
2004	Kirloskar Ebara Pumps Ltd.	3	CACA	340	6600	2	355
2004	Kirloskar Ebara Pumps Ltd.	2	FLP	200	6600	2	355
2004	Sulzer Pumps India Ltd.	2	CACA	1135	6600	2	500
2004	Paharpur Cooling Towers Ltd.	3	CACA	2700	6600	10	800
2004	Dresser Rand India Private Ltd.	2	CACA	160	415	18	560
2004	BOC India Ltd.	3	CACA	950	6600	2	500
2005	Reliance Petroleum Ltd.	2	TETV	320	6600	2	450
2005	Chennai Petroleum Corpn Ltd.	1	TETV	1300	6600	4	630
2007	Paharpur Cooling Towers Ltd.	12	CACA	1820	6600	8	630
2007	Paharpur Cooling Towers Ltd.	4	CACA	1520	6600	8	630
2008	Flowserve India Controls Ltd.	1	CACA	1500	6600	4	500
2008	Promac Engg. Industries Ltd.	2	CACA	1000	6600	6	500
2008	Mather & Platt Pumps Ltd.	2	CACA	900	6600	6	500
2008	ITT Gould	2	CACA	520	6600	2	400
2008	Swam Pneumatics Pvt. Ltd.	6	CACA	355	6600	6	400
2008	Swam Pneumatics Pvt. Ltd.	1	CACA	355	6600	6	400
2008	Swam Pneumatics Pvt. Ltd.	1	CACA	250	6600	6	355
2008	Deepak Soabhipyu Inc	1	TETV	410	6600	4	500
2008	Promac Engg. Industries Ltd.	2	CACA	400	6600	6	400
2008	Kirloskar Brothers Ltd.	3	CACA	375	6600	6	400
2008	Larsen & Toubro Ltd.	2	CACA	1850	6600	6	710
2009	Flowserve India Controls Ltd.	2	CACA	225	6600	2	355
2009	Kirloskar Ebara Pumps Ltd.	2	CACA	255	6600	2	355
2009	Essar Oil Ltd.	2	CACA	440	6600	4	1080

## Chemical/Fertilizer

1990	Chambal Fertilizers	1	CACA	1200	6600	10	710
1992	Chambal Fertilizers	1	CACA	1100	3300	2	450
1992	Chambal Fertilizers	1	CACA	1000	3300	2	450
1995	Chambal Fertilizers	1	CACA	1100	3300	2	450
2000	Coromandel Fertilizers Ltd.	1	TEFC	310	3300	4	400
2001	Coromandel Fertilizers Ltd.	2	TEFC	230	3300	6	400
2001	India Glycols Ltd.	1	FLP	160	3300	4	355
2002	Futura Polymers Ltd.	1	CACA	280	415	10	450
2003	Coromandel Fertilizers Ltd.	1	TETV	485	3300	6	500
2003	India Glycols Ltd.		CACA	450	6600	10	500
2003	Indo Gulf Corpn Ltd.	1	TETV	850	3300	2	560
2004	Indian Farmers Fertilizers Corp. Ltd.	1	CACA	1450	11000	10	800
2004	Indian Farmers Fertilizers Corp. Ltd.	1	CACA	1300	11000	10	800
2007	M/S Nagarjuna Fertilizers	2	CACA	1200	6600	10	560
2008	York India Pvt. Ltd.	3	CACA	760	6600	2	450
2008	York India Pvt. Ltd.	1	CACA	210	6600	2	355
2008	TLT Engineering India Pvt.	1	CACA	540	3300	4	450
2008	Coromandel Fertilizers Ltd.	1	TETV	500	6600	2	500
2008	Mather & Platt Pumps Ltd.	1	CACA	160	6600	4	740
2008	York India Pvt. Ltd.	1	CACA	1250	6600	2	500

## Reference List

### Paper

Year	Client, Plant	Qty.	Enclosure	kW	Voltage (V)	Pole	Frame
2001	Century Pulp & Paper	1	CACA	450	6600	8	450
2001	The Central Pulp Mills Ltd.	1	TETV	450	6600	6	560
2002	M/S Kaydee Engineers	1	CACA	500	415	8	450
2002	The Central Pulp Mills Ltd.	1	TETV	450	6600	8	560
2002	Star Paper Mills Ltd.	1	TETV	400	415	6	500
2004	M.A.H.Y Khoory & Co.	1	TEFC	630	6000	4	500
2004	West Coast Paper Mills Ltd.	1	SPDP	400	415	4	400
2008	BILT	2	CACA	1320	6600	2	500
2008	BILT	2	CACA	1100	11000	4	500
2008	BILT	3	CACA	900	11000	4	500
2008	BILT	4	CACA	800	11000	4	500
2008	BILT	2	CACA	775	11000	2	500
2008	BILT	2	CACA	700	690	6	500
2009	BILT	2	CACA	1500	11000	4	630
2009	BILT	3	CACA	1000	11000	4	500
2009	BILT	1	CACA	850	11000	4	500
2009	APPMIL	1	CACA	800	11000	10	560
2009	BILT	3	CACA	630	11000	4	450

### VFD Application Motors

2000	Ingersoll-Rand India Ltd.	1	CACA	410	415	2	355
2002	Anama Energies Pvt. Ltd., Pune	1	CACA	803	415	2	450
2002	Futura Polymers Ltd., Chennai	1	CACA	280	415	10	450
2002	Dresser Rand India Private Ltd., Ahmedabad	2	CACA	56	415	18	560
2002	Dresser Rand India Private Ltd., Ahmedabad	2	CACA	65	415	18	560
2002	Asea Brown Boveri Ltd., Bangalore	1	CACA	132	690	6	355
2002	Asea Brown Boveri Ltd., Bangalore	2	CACA	150	690	6	355
2002	Asea Brown Boveri Ltd., Bangalore	1	CACA	210	690	6	355
2002	M/S Kaydee Engineers, Amritsar	1	CACA	500	415	8	450
2003	Siemens Ltd., Mumbai	2	CACA	750	690	4	500
2003	Siemens Ltd., Mumbai	2	CACA	870	690	6	500
2003	Kirloskar Pneumatic Co. Ltd., Pune	1	CACA	300	415	2	355
2003	Kirloskar Pneumatic Co. Ltd., Pune	1	CACA	260	415	8	400
2004	Kirloskar Pneumatic Co. Ltd., Pune	3	CACA	520	415	8	940
2004	Asea Brown Boveri Ltd., Bangalore	3	CACA	610	690	8	450
2004	Dresser Rand India Pvt. Ltd., Ahmedabad	2	CACA	160	415	18	560
2004	Ingersoll-Rand India Ltd., Naroda	1	CACA	400	415	2	355
2007	Chico Traders	1	CACA	350	415	2	400
2008	BILT, Pune	2	CACA	700	690	6	500
2008	BILT, Pune	1	CACA	500	690	6	500
2008	Siemens Ltd., Kolkata	2	CACA	2500	690	6	560
2008	Siemens Ltd., Kolkata	3	CACA	2940	690	6	630





CG Hungary

## GLOBAL OPERATIONS

### EUROPE OFFICE

**CG Electric Systems Hungary Zrt.  
Rotating Machines Business Unit**

H - 1095 Budapest Máriássy Utca 7.

Tel : +36 1 483 6655

Fax : +36 1 483 6637

E-mail : rotatingmachines.hu@cgglobal.com

## DIVISIONAL OFFICE

D - 5 Industrial Area, Mandideep - 462 046

Madhya Pradesh (India).

Tel : (91 7480) 400171-176

Fax : ( 91 7480 ) 403119, 400178

E-mail : rotatingmachines.in@cgglobal.com

## REGISTERED OFFICE

CG House, 6th Floor, Dr Annie Besant Road,

Worli, Mumbai 400 030, India

W: www.cgglobal.com

## INDIA OPERATIONS

### REGIONAL OFFICES

#### NORTH

Vandana Building, 11 Tolstoy Marg, New Delhi -110001.

Tel : (91 11) 3041 6300,6926

Fax : (91 11) 2332 4360

E-mail : info.nr@cgglobal.com

#### EAST

50, Chowringhee Road, Kolkata 700 071.

Tel : (91 33) 2282 9681-85,7909

Fax : (91 33) 2282 9942

E-mail : info.er@cgglobal.com

#### WEST

Kanjur Marg (East), Mumbai 400 042.

Tel : (91 22) 67558000,8588

Fax : (91 22) 28231973

E-mail : info.wr@cgglobal.com

#### SOUTH

3, MGR Salai (K. H. Road), Nungambakkam, Chennai 600 034.

Tel : (91 44) 4224 7500,7545

Fax : (91 44) 2823 1973

E-mail : info.sr@cgglobal.com

#### INTERNATIONAL

Crompton Greaves Ltd. International Division Kanjur Works,  
Western Region, Kanjurmarg, Mumbai - 400042 (India)

Tel : (91 22) 67558000,8958,8944

Fax : (91 22) 25774066

E-mail : info.int@cgglobal.com



WHERE  
TECHNOLOGY AND PROGRESS  
WORK TOGETHER



CG India

[www.cgglobal.com](http://www.cgglobal.com)



Smart solutions.  
Strong relationships.

**Machine 7 Division**

D - 5 Industrial Area, Mandideep - 462 046. Madhya Pradesh

Tel : (91 7480) 400103. Fax : (91 7480) 403119



**AVANTHA**  
GROUP COMPANY