



## DMI DC motors

### Reliability with less maintenance

The DMI DC motor provides higher output performance over a wide speed range and is easier to maintain compared to conventional DC motors. Unique features and a robust design increases motor reliability and extends the time between maintenance intervals. The power dense low-profile of the DMI DC motor also makes it easy to integrate into almost any existing application.

#### Features:

- Extended speed range capabilities with superior commutating performance
- Longer brush wear lengths compared to conventional designed brushes
- Reduced commutator diameters resulting in lower peripheral speeds and extended brush life
- Precise bearing tolerances preventing the risk of grease leakage into the motor
- High quality bearings with long lubrication intervals
- Mechanical brush wear monitoring system – no special monitoring probed brushes required

#### Specifications:

IEC frame sizes 180, 200, 225, 250, 280, 315, 400

- Power up to 1400 kW Torque up to 22.000 Nm
- Voltage up to 810 V
- IM – horizontal or vertical, foot or flange
- IP – 22-55
- IC-06, 17, 37, 86W, 666, 410
- Class 200 Insulation
- Meets standards IEC, CE, CSA (up to 710 V)

### High output and small dimensions

#### Higher Output and Torque

A number of new solutions - patents applied for several of them by ABB - have together given the DMI motors such a superior performance that they are in a class of their own in the DC market. The development work on the stator, for example, has provided more space for the windings and led to a more uniform temperature distribution due to a more compact coil design and improved manufacturing processes.

The biggest difference however, has been achieved within the design of the armature core laminations. Arranging the cooling ducts below the winding slots provides two important factors:

- Removes heating losses during full load current conditions
- Provides for a fully symmetrical distribution of the magnetic flux path within the armature core

### High output over a wide speed range

#### Peak Performance

The fundamental qualities of the design of the DMI motors have led to a marked increase in the top speed without affecting the service reliability.

The core and winding losses are kept at a low level also at high speeds. This is the result of radially small armature winding slots and amply dimensioned magnetic circuit.

The design work was also focused on increasing the stability of the commutator and reducing its diameter. A smaller diameter gives a lower peripheral speed which ensures proper functioning of the brushes at the highest speeds. In addition vibrations are kept at a low level.

Movements in the coil-ends are prevented by robust supporting rings below the armature coil-ends and by using a massive shaft to prevent its deflection.

#### Features of the DMI:

- Higher torque quality at low speed
- Higher power and torque
- Higher power at top speed
- Higher speed

## Smooth running at low speeds and low moment of inertia

### Higher Torque Quality at Low Speed

An optimized armature design allow the DMI motor to produce full power over extended speed ranges. Placement of the coils within the core slots and the precise slot skew allows for smooth torques transitions and improved commutation as compared to older DC motor technologies

## Benefits of DMI and reduced maintenance

### Reduced maintenance and spare parts

A low level of maintenance is an important customer requirement as well as the ability to predict required maintenance during scheduled shutdowns. The DMI motor design has incorporated many features that will extend the periods between scheduled maintenance intervals and easy access to brush exchanges and brush monitoring. Described are a few items below:

- Optimum commutation characteristics and extended speed ranges within minimum sparking beneath the brushes
- Extended brush wear lengths on all brushes
- Superior commutator performance and stability
- Optimized commutator diameters that reduce peripheral speeds and improved brush wear
- Precise fit tolerances between bearing parts that will eliminate grease leakage into the motor
- Easy access greasing of both bearings
- Filtered blower assemblies that have high resistance to contaminants resulting in reduced maintenance requirements
- Clear and precise maintenance manuals available for all products
- Mechanical brush wear monitoring system – no special monitoring probed brushes required