



Permanent Magnet motors
MS Series

ABOUT US

DAC Electric is a fairly young but highly experienced combination of professionals from all over the world.

The founders, from the Netherlands and the Czech Republic, together combine more than 100 years of experience in the field of electrical rotating machines.

From the offices in the two countries, global sales and service is coordinated.

Local markets are being served directly by our local agents.

Our main activities lay in the branches *Industry, Water and Energy*.

We are specialized in developing, manufacturing and supplying special electric machines and drives.

We provide our customers with advice, engineering and eventually with a tailor made machine.

Next to our special engineered products we supply all standard trade products such as; motors, gearboxes, generators, transformers, frequency converters and electronic components.

Our highly experienced develop department has the ability to design and customize standard and non standard motors for every application.

We provide our customers with extensive opportunities to improve the technical condition and operating reliability of their equipment, to optimize work, to improve efficiency and to lower operating costs.

The unique flexibility of being able to supply special tailor-made products and standard industrial machines, combined with more than 100 years experience in the field of drive technology makes us the partner you are looking for!



Motors of **MS series** are low voltage permanent magnet motors, they are a new type of synchronous motors for low speed applications, for use with variable speed drives. The synchronous motor is traditionally of a more complex construction than the standard induction motor. With the new motor type, the design has been simplified by using powerful permanent magnets to create a constant flux in the air gap, thereby eliminating the need for the rotor windings and brushes normally used for excitation in synchronous motors. This results in the accurate performance of a synchronous motor, combined with the robust design and low maintenance features of a standard induction motor. The motor is energized directly on the stator by the variable speed drive.

Standard induction motors are not particularly well suited for low-speed operation as their efficiency drops with the reduction in speed. They may also be unable to deliver sufficiently smooth torque across the lower speed range.

This is normally overcome by using a gearbox. The new solution provides a high torque drive coupled directly to the load. By eliminating the gearbox, the user saves space and installation costs, as he only needs to prepare the foundations for one piece of machinery. This also gives more freedom in the layout design.

Motors of **MS series** deliver more power from a smaller unit. For instance, powering the in-drives of a paper machine directly at 220 to 600 r/min with a conventional induction motor would require a motor frame substantially larger than that of a 1500 r/min motor. Using permanent magnet motors also means higher overall efficiency and less maintenance. The combination of fewer components and simpler configuration reduces plant engineering hours, facilitates installation, allows more efficient use of floor space and reduces spare part inventories.

In the case of a paper machine, this direct driven solution will consist of a number of permanent magnet motors, controlled by a low voltage AC drive frequency converter.

The **Direct Drive Solution** improves drive controllability, enabling the paper machine drive to run without a pulse encoder, as synchronized motors allow very exact control without feedback. The accuracy is as good as that of an induction motor in variable speed operation with a feedback device. This means the pulse encoder can be eliminated, further reducing the need for maintenance.



Subject : 750 kW - 640 rpm - 520V - IC 41W
Application : Mixer drive
Installed : 2006

Customer benefits

- Higher overall efficiency of a drive system
- Excellent controllability and adjustability, even without a pulse encoder.
- Fewer components means: less maintenance and less down-time
- Integration into every plant and system configuration
- Space and weight savings
- Service and installation friendly

	Combined motor/gearbox	Direct drive solution
Cost and energy efficiency	<p>Friction losses caused by wear-based mechanical components</p> <p>Fan motors often used for climate control</p> <p>High costs due to maintenance intervals</p>	<p>Increased overall efficiency by reducing friction losses in the system</p> <p>Minimizing time and cost-expensive maintenance intervals by eliminating technically complicated pulley and toothed gears</p>
Running noise	<p>Increased noise pollution caused by the gearbox</p> <p>Fan motors often result in additional energy demand</p>	<p>Motor operates with almost no noise, no gearbox</p> <p>Integrated water cooling</p>
Space requirement	<p>Combined motor and gearbox require a lot for installation space</p>	<p>Assembly kit solution enables a high level of integration</p> <p>Compact design, relatively little installation space required</p>
Service, maintenance / assembly	<p>Regular maintenance intervals when using gearbox and constant oil controls</p> <p>Limited service life of gearbox</p> <p>Utilization of numerous components complicates the assembly; resulting in higher logistic expenses</p>	<p>Almost no maintenance costs</p> <p>Long service life of motors</p> <p>Virtually an oil-free system</p> <p>Simple assembly and logistics because less components are required; this results in greater MTBF</p>

- ◇ **Significant reduction of energy costs and CO2 emissions**
- ◇ **No additional measures required to suppress noise**
- ◇ **Reduction in machinery footprint**
- ◇ **Reduction in service and maintenance costs as well as decreased machine downtime**

Application characteristics

Technically, **MS motors** can be used in any application up to about 850 r/min. However, not all applications may be economic.

Permanent magnet motor solution can typically replace:

- A traditional AC motor and gearbox with frequency converter.
- A traditional low speed AC motor, typically 10 to 16-pole or slower with frequency converter.
- A DC motor with DC drive and gearbox.

The permanent magnet motor is ideal in the following cases:

- Where the application is speed controlled, for instance with a frequency converter.
- Where the nominal load speed, for example the gearbox output speed, is 100 to 850 r/min or ideally 300 to 600 r/min.
- Where the nominal load torque is between 1000 and 200 000 Nm.
- Where the required short-time overloadability is limited to 120 - 150 %.
- The greatest savings are achieved if the current speed reduction system is expensive or otherwise problematic.
- Constant torque or quadratic torque applications are the most ideal. Constant power speed range should ideally be limited to 20 % over nominal speed.



Subject : 320 kW - 620 rpm - 670V - IC 41W
Application : Extruder drive
Installed : 2012



PRODUCTS

The existence of DAC Electric is based on designing and engineering special tailored made products. In order to serve our customers in their broad needs of products in drive industry we have extended our product portfolio with drive components from other well known manufacturers.

Therefore we offer a wide range of products which are divided in below five sections:

MOTORS

- Low voltage Squirrel cage motors
- High voltage Squirrel cage motors
- Low voltage Slip ring motors
- High voltage Slip ring motors
- Direct current motors
- Permanent Magnet motors
- Submersible motors
- Synchronous motors
- Low speed direct drive motors

TRANSFORMERS

- Oil filled transformers
- Dry type transformers in VPI execution
- Dry type transformers in cast resin execution

MECHANICS

- Couplings
- Geared motors
- Gear-units

GENERATORS

- Hydro generators
- Low voltage generators
- High voltage generators

ELECTRONICS

- Softstarters
- Variable speed drives
- Electronic components

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