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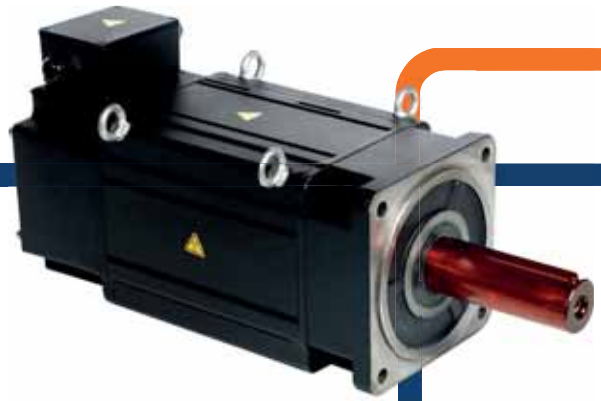
Patented **New** Direct Drive Technology for

Ceramic Industry

SQM Torque Motor



- Direct drive, no gearbox, no cooling
- Adjustable speed with full torque
- No oil, no leakage
- No maintenance
- Stable operation at low speed

EMF Motor®

EMF Motor

Only the Best wins ...

Every solution comes from a real understanding of the challenges facing designers and users.

EMF continues to be a company made up of innovative individuals striving to design, create and build products and solutions that improve industrial demands. We design our products for durability and we test them rigorously to ensure the highest of reliabity.

Our products are the **"next big thing"** in electric motors. Our patented technology provides the ground to attract world's most talented and motivated engineers. EMF products will benefit design engineers to innovate compact products that will respond to the increasing demand from customers.

"Precise motion" is our focus. SQM Torquemotor can distinctly differentiate your product, your efficiency and your operations and deliver a market place advantage by improving its performance. This means totally increased efficiency which is the expactation in every company. Perfectly deployed motion can make your product more reliable and efficient and enhance accuracy.

How is this all possible? What is so different with SQM Torquemotor?

SQM Torquemotor works with patented motor principle that is most suitable for high torque at low speed applications. SQM works synchronously and the windings have no influence on the pole number. The high pole number is achieved by intelligent magnetic field.

As a result SQM Torquemotor, as a direct drive, offers great advantages in all performance criterias, such as very high energy efficiency, high dynamics, high overload capacity, quiet and practically maintenance free operation.

Direct Drive Technology

Gearless Motor for ***Ceramic Industry***

EMF Motor presents ***the world's most efficient torque motor*** with patented PM technology which offers perfect solutions for ceramic applications.

Our patented motor technology enables us to produce gearless, high pole number (66-88-110) and very efficienct motors. It offers reliable speed control, reduced maintenance, quieter operation and high energy saving. The motor can be driven by a simple inverter and no gearbox is used.

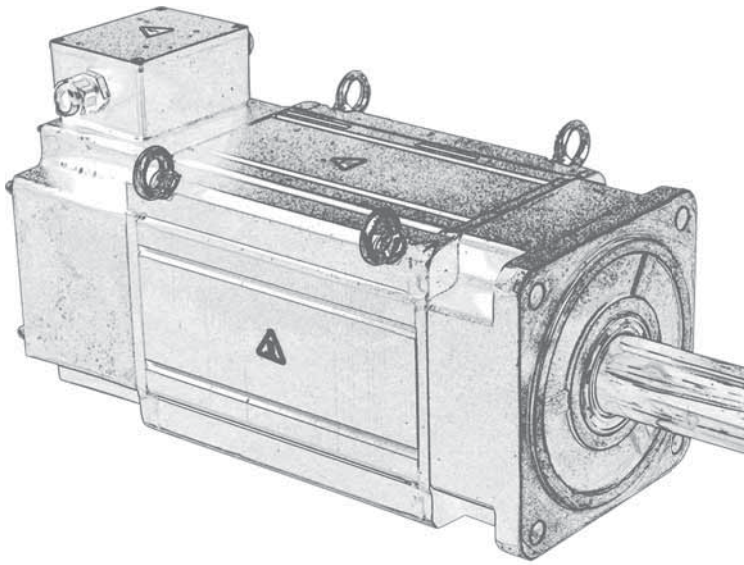
Due to the high number of magnetic poles, high torque is achieved with reduced rotation speed. The motor winding losses are much less than conventional high pole motors. The motor enables a high efficiency even at very low speeds.

Advantages

- Direct drive, no gearbox, no cooling
- Adjustable speed with full torque
- No oil, no leakage
- No maintenance
- Stable operation at low speed
- Highly reliable
- Up to 97 % motor efficiency
- Environmentally friendly
- Compact and symmetric design
- Wide voltage range
- Can be controlled by a simple inverter
- Lowest operating cost
- Highest pole number
- Low vibration, less noise

Specifications

Mounting	Flange / Foot
Insulation	Class H (180˚C)
Protection Class	IP54
Vibration	A level according to IEC 60034-14
Ambient Temperature	-0˚C / +40˚C
Thermal protection	120˚C PTO
Cooling	Natural



For other supply voltage, torque - speed values and IP Class, please contact EMF Motor.

Case Study

EMF Motor has the perfect solution for the critical **glaze mixer** application. The EMF high efficiency torque motor generates very high torque at low speed so can be used in this application as a direct drive solution without the need for a gearbox. The motor can be controlled precisely to accurately maintain speed and torque which results a high productivity and excellent glaze quality.

In the ceramic glaze mixing business, EMF Motor has already gained experience with mixers with tank capacities of 500, 1500, 8000 kg and etc. The patented EMF Motor solution has the capability to mix up to 31 tons of material.

In summary the EMF Motor solution continuously produces very high torque at really low speed. The speed and torque is maintained accurately even in open loop configuration. The motor is extremely efficient resulting in minimal power consumption. The EMF Motor requires no gearbox, no maintenance and no additional cooling.

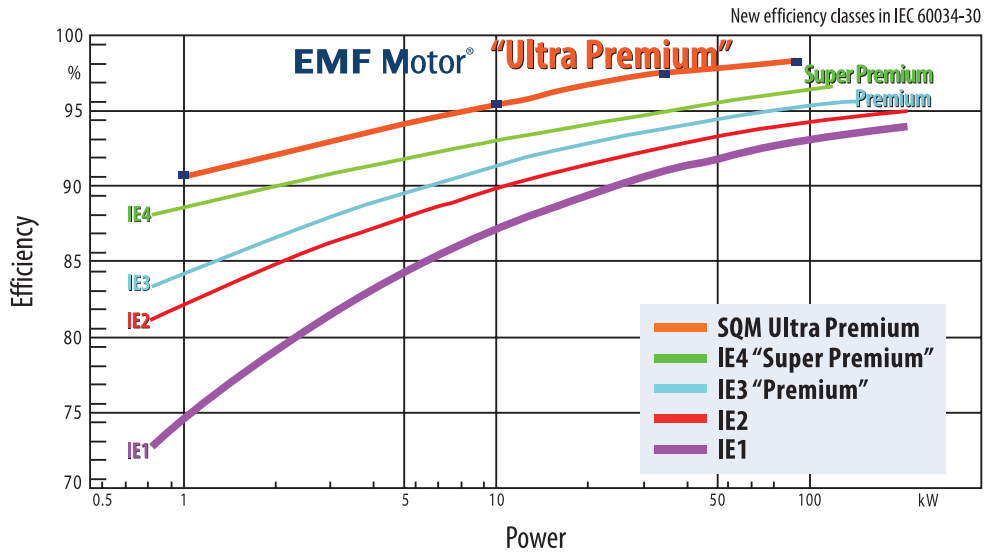
EMF Motor works with ceramic product manufacturers to provide the most reliable and efficient production solution and enable the highest level of glaze product quality.

Efficiency comparison with IEC 60034-30

Due to the direct drive application, gearbox efficiency losses are eliminated.

The diagram shows the efficiency values for SQM motors. The efficiency of an SQM motor is far better than an IE3-"Premium" motor and even better than an IE4-"Super Premium" motor.

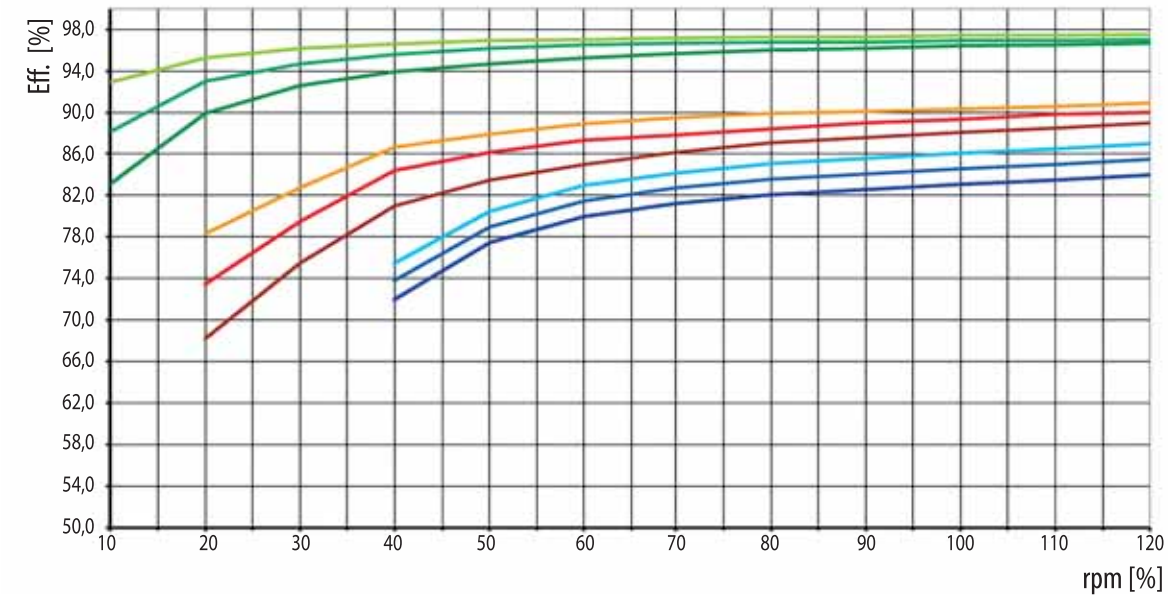
Since SQM motors are driven by an inverter without a gearbox, the total efficiency will be even higher.



Technical Features

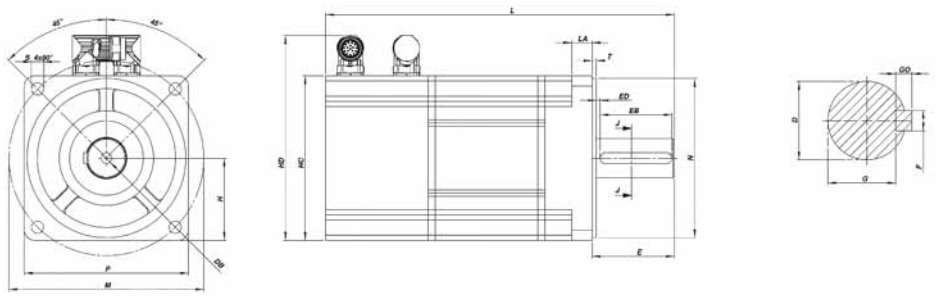
Motor Code	Pole Number	P_n kW	n_n rpm	M_n Nm	f_n Hz	k Nm/A	I_n A	Efficiency %	J (kgm^2)	W (kg) No Brake Fitted
SQM71-90	68	0,27	100	26	56,67	23,6	1,1	62	0,0050	18
SQM71-130		0,44	100	42	56,67	23,3	1,8	61	0,0069	23
SQM71-170		0,63	100	60	56,67	21,4	2,8	61	0,0089	28
SQM100-140	66	1,03	70	140	38,50	45,2	3,1	83	0,0367	60,4
SQM100-200		1,47	70	200	38,50	47,6	4,2	83	0,0512	78,2
SQM100-240		1,61	70	220	38,50	50,0	4,4	83	0,0608	90
SQM132-140	66	0,88	30	280	16,50	116,7	2,4	80	0,1667	145
SQM132-200		1,19	30	380	16,50	118,8	3,2	80	0,2305	175
SQM132-240		1,41	30	450	16,50	121,6	3,7	80	0,2729	195
SQM160-300	66	2,67	30	850	16,50	98,8	8,6	78	0,6695	302
SQM160-400		3,20	30	1020	16,50	105,2	9,7	78	0,8768	379
SQM160-500		4,01	30	1275	16,50	105,4	12,1	77	1,1000	456
SQM200-300	88	4,30	30	1370	22,00	102,2	13,4	81	1,4746	512
SQM200-400		5,74	30	1827	22,00	97,2	18,8	81	2,0467	622
SQM200-500		6,85	30	2180	22,00	103,3	21,1	82	2,3890	731
SQM200-600		8,22	30	2617	22,00	102,2	25,6	83	2,8466	840
SQM200-700		9,59	30	3053	22,00	101,8	30	83	3,3986	950
SQM250-400	88	10,68	30	3400	22,00	93,9	36,2	87	6,850	1110
SQM250-600		15,08	30	4800	22,00	103,2	46,5	89	9,250	1495
SQM250-800		20,73	30	6600	22,00	100,0	66	90	12,800	1822

Efficiency Diagram in full range of speed and torque

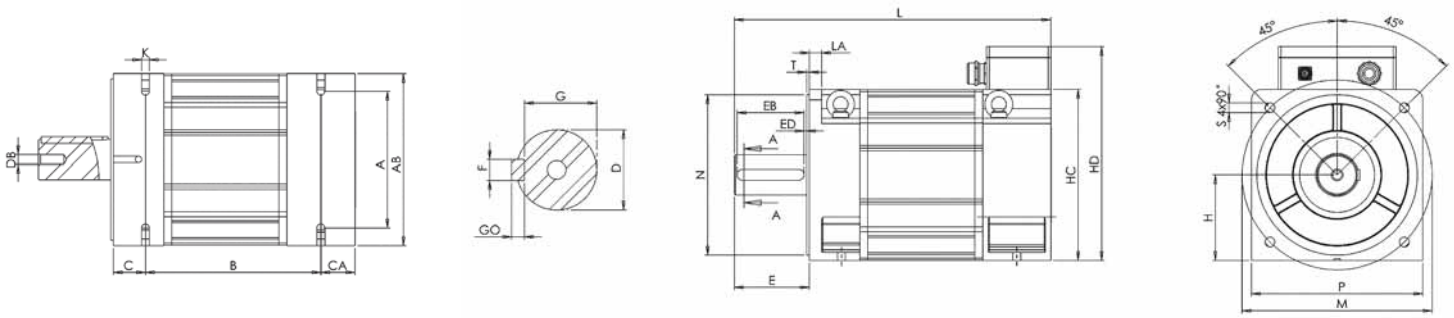


SQM Torque motor 50 % T
SQM Torque motor 75 % T
SQM Torque motor 100 % T
Standard Torque motor 60 % T
Standard Torque motor 80 % T
Standard Torque motor 100 % T
AC-Geared motor 60 % T
AC-Geared motor 80 % T
AC-Geared motor 100 % T

Dimensions



	D	DB	E	EB	ED	F	G	GO	H	HC	HD	L	LA	M	N	P	S	T
SQM71-90												317.50						
SQM71-130	28j6	M10	60.00	50.00	2.70	8h6	24.00	7.00	71.00	142.00	181.00	357.50	15.00	165.00	130j6	142.00	11.00	3.50
SQM71-170												397.50						
SQM100-140												454.00						
SQM100-200	48k6	M16	110.00	100.00	3.00	14h6	42.50	9.00	100.00	200.00	239.50	514.00	20.00	230.00	180j6	200.00	14.50	4.00
SQM100-240												554.00						



	A	AB	B	C	CA	D	DB	E	EB	ED	F	G	GO	H	HC	HD	K	L	LA	M	N	P	S	T
SQM132-140			255.00															514.00						
SQM132-200	216.00	264.00	315.00	56.00	63.00	65m6	M20	140.00	125.00	5.00	18h6	58.00	11.00	132.00	264.00	345.00	14.50	574.00	25.00	300.00	250j6	264.00	18.50	5.00
SQM132-240			355.00															614.00						
SQM160-300			427.50															692.00						
SQM160-400	254.00	320.00	527.50	60.00	63.50	75m6	M20	140.00	125.00	5.00	20h6	67.50	12.00	160.00	320.00	400.00	14.50	792.00	25.00	355.00	300h6	320.00	18.50	5.00
SQM160-500			627.50															892.00						
SQM200-300			477.50															797.00						
SQM200-400			577.50															897.00						
SQM200-500	318.00	400.00	677.50	74.50	75.00	90m6	M24	170.00	140.00	5.00	25h6	81.00	14.00	200.00	400.00	509.00	20.00	997.00	25.00	480.00	450h6	400.00	18.50	5.00
SQM200-600			777.50															1097.00						
SQM200-700			877.50															1197.00						
SQM 250-400SE			591.00															991.00						
SQM 250-600SE	426.00	500.00	791.00	67.00	83.00	120m6	M24	215.00	180.00	17.00	32h6	109.00	18.00	275.00	522.00	635.20	25.00	1191.00	28.00	580.00	530.00	500.00	25.00	4.00
SQM 250-800SE			991.00															1391.00						

EMF Motor reserves the right to amend the dimensions, technical data and design specification without prior notification.
For detailed drawings and for 3D step files please contact EMF Motor.

Glaze and engobe tank motor
for waterfall application

SQM71-90 26Nm 100rpm
- No oil drop risk
- No product waste
- Very low consumption
- Adjustable speed with full torque

Coveyor motor *for waterfall application of glazes and engobes*

SQM71-170 56Nm 150rpm
- No maintenance
- No break-down
- No vibration
- Improvement!
  Perfect product quality
- High precision speed control

Furnace feed conveyor motor

SQM71-100 28Nm 200rpm
- No maintenance
- No break-down at continuous start-stop applications
- High precision speed control
- Speed synchronization on conveyor bands
- Smooth start

Slip Tank (Body Tank) Motor

SQM132-240 450 Nm 25 rpm
- No oil drop risk
- No product waste
- High energy saving
- Variable speed option

Glaze tank motor
high capacity

SQM132-240 450 Nm
- Increased production
- No oil
- No product waste
- High energy saving
- Adjustable speed with full torque

Sanitery Ware

SQM71-170 56 Nm 100 rpm
- Twin shaft
- Direct drive
- Variable speed
- No vibration
- Very low speed application

Glaze tank motor

SQM132-140 280 Nm
- No oil
- No product waste
- High energy saving
- Adjustable speed with full torque

Floatation motor

SQM132-240 350 Nm 270 rpm
- High energy saving
- Low maintenance
- Variable speed range option

Glaze conveyor motor

- Speed synchronization on glaze conveyor
- No maintenance
- No break down
- No vibration
- Direct drive
- High precision speed control

Ceramic Dryer Ascelator

- Stops with motor torque
- No wear on mechanical break
- Variable (multi) speed option

Direct Drive Technology

Gearless Motor for ***Ceramic Industry***

Comparison	IE2 MOTOR + GEARBOX	EMF MOTOR
Energy Efficiency	☹	☺☺
Maintenance	☹	☺
High Pole Number	☹	☺
Full Torque at all Speed	☹	☺
Low Speed Efficiency	☹	☺
Noise	☹	☺
Vibration	☹	☺
Environmentally Friendly	☹	☺
Easy Installation	☹	☺
Bearing Life	☹	☺

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