



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 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 efficient 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.

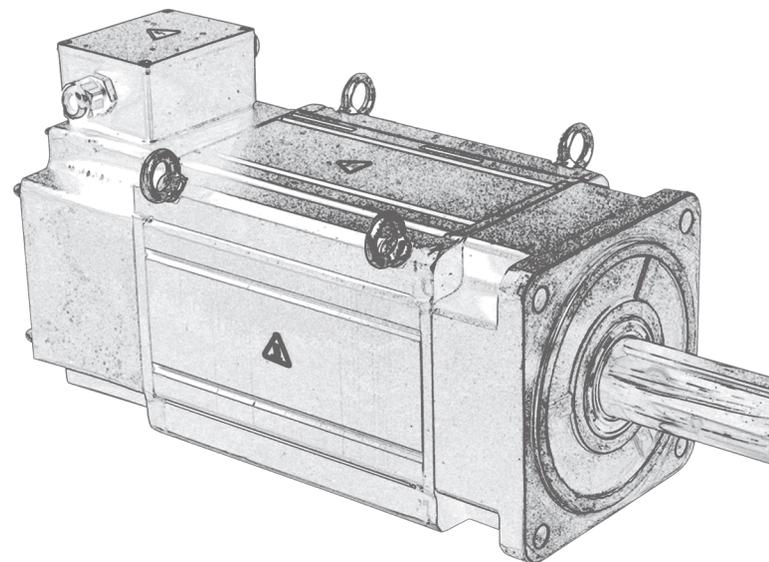
Due to the high number of magnetic poles, high torque is achieved with reduced rotation speed. The motor winding losses are much less than conventional high pole motors. The motor enables a high efficiency even at very low speeds.

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.

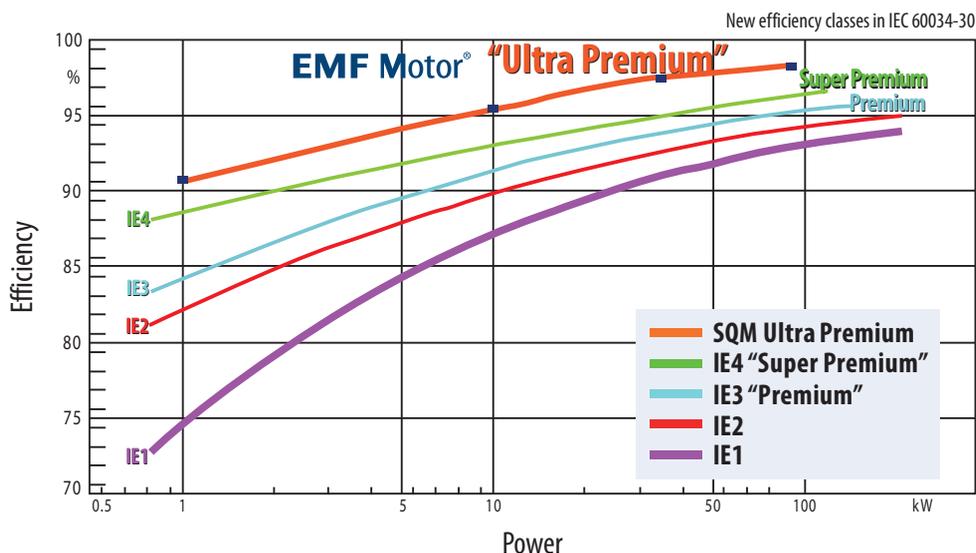


Efficiency comparison with IEC 60034-30

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.



Motor Code	Pole Number	P _n (kW)	n _n (rpm)	M _n (Nm)	f _n (Hz)	kt (Nm/A)	I _n (A)	Efficiency (%)
SQM60- 40	66	0,16	150	10	83	13,9	0,7	67,5
		0,24	250	9	138	9,0	1,0	75,3
		0,47	500	9	275	5,1	1,8	81,8
		0,63	750	8	413	3,6	2,3	84,3
SQM60- 60	66	0,22	150	14	83	16,5	0,9	72,5
		0,34	250	13	138	10,8	1,2	80,0
		0,63	500	12	275	5,9	2,1	85,8
		0,86	750	11	413	4,2	2,6	87,8
SQM60-100	66	0,35	150	22	83	18,6	1,2	78,3
		0,52	250	20	138	11,6	1,7	84,5
		0,94	500	18	275	6,6	2,7	88,9
		1,26	750	16	413	4,3	3,7	90,3
SQM73- 60	66	0,46	150	29	83	22,1	1,3	82,2
		0,71	250	27	138	13,9	1,9	85,6
		1,20	500	23	275	7,5	3,1	90,5
		1,41	750	18	413	5,1	3,6	92,0
SQM73-100	66	0,75	150	48	83	22,9	2,1	85,7
		1,15	250	44	138	15,2	2,9	89,2
		1,83	500	35	275	8,2	4,3	92,5
		2,12	750	27	413	5,7	4,7	93,5
SQM73-140	66	1,07	150	68	83	22,7	3,0	87,5
		1,57	250	60	138	14,9	4,0	91,4
		2,41	500	46	275	8,5	5,4	94,0
		2,83	750	36	413	6,2	5,8	93,9
SQM73-180	66	1,38	150	88	83	22,0	4,0	88,8
		2,02	250	77	138	16,0	4,8	92,1
		3,09	500	59	275	8,9	6,6	95,0
		3,61	750	46	413	6,3	7,3	95,0
SQM100-140	66	1,57	100	150	55	33,0	4,6	89,0
		2,41	200	115	110	19,0	6,0	93,1
		3,33	300	106	165	13,4	7,9	95,0
		3,77	400	90	220	11,1	8,1	95,2
SQM100-200	66	2,28	100	218	55	33,5	6,5	90,7
		3,64	200	174	110	19,2	9,0	94,6
		4,52	300	144	165	14,0	10,3	95,3
		4,90	400	117	220	11,7	10,0	95,1
SQM100-240	66	2,51	100	240	55	35,3	6,8	91,2
		4,10	200	196	110	20,5	9,6	95,0
		5,43	300	173	165	14,1	12,3	95,3
		5,70	400	136	220	11,3	12,0	95,0
SQM132-140	66	2,99	100	286	55	40,9	7,0	91,0
		5,24	200	250	110	21,9	11,4	92,4
		6,28	300	200	165	15,9	12,6	93,4
		6,45	400	154	220	12,5	12,3	93,8
SQM132-200	66	4,24	100	405	55	40,5	10,0	91,5
		7,54	200	360	110	21,8	16,5	92,7
		8,95	300	285	165	15,8	18,0	93,8
		9,21	400	220	220	12,9	17,0	94,0
SQM132-240	66	5,13	100	490	55	40,8	12,0	91,7
		9,21	200	440	110	21,6	20,4	93,2
		10,7	300	340	165	15,7	21,6	94,5
		11,10	400	265	220	12,4	21,4	95,0
SQM160-200	66	4,5	70	610	39	47,7	12,8	90,0
		6,1	100	580	55	36,3	16,0	91,8
		8,6	150	550	83	23,9	23,0	93,0
		11,0	200	525	110	19,4	27,0	93,3
		15,4	300*	490	165	13,1	37,5	93,7

With SE and forced ventilation, M = +30% up to 100rpm and M = +40% from 150 rpm

These data are valid for 400V power supply. For other supply voltage, torque and speed values please contact EMF Motor.

* with axial fan

Motor Code	Pole Number	P _n (kW)	n _n (rpm)	M _n (Nm)	f _n (Hz)	kt (Nm/A)	I _n (A)	Efficiency (%)
SQM160-300	66	6,7	70	920	39	49,2	18,7	91,0
		9,1	100	870	55	35,5	24,5	92,9
		11,9	150	760	83	25,8	29,5	94,0
		14,3	200	685	110	21,1	32,5	94,2
		20,1	300*	640	165	14,0	45,8	94,5
SQM160-400	66	8,9	70	1220	39	49,2	24,8	91,9
		12,1	100	1160	55	36,1	32,1	93,3
		14,9	150	950	83	26,5	35,8	94,3
		17,6	200	840	110	22,6	37,2	94,5
		24,7	300*	785	165	14,8	53,0	94,5
SQM160-500	66	11,2	70	1530	39	49,4	31,0	92,2
		15,2	100	1450	55	23,9	60,6	93,8
		17,6	150	1120	83	28,1	39,8	94,8
		20,1	200	960	110	23,6	40,7	94,8
		28,3	300*	900	165	14,0	64,1	95,0
SQM200-300SE	88	11,0	70	1500	51	51,4	29,2	93,0
		14,1	100	1350	73	37,3	36,2	94,3
		18,1	150	1150	110	27,9	41,2	95,0
		23,0	200*	1100	147	20,9	52,7	95,1
SQM200-400SE	88	14,7	70	2000	51	50,0	40,0	93,8
		18,8	100	1800	73	37,4	48,1	94,7
		23,6	150	1500	110	27,9	53,7	95,3
		30,4	200*	1450	147	21,7	66,9	95,4
SQM200-500SE	88	18,3	70	2500	51	50,8	49,2	93,9
		23,0	100	2200	73	39,0	56,4	95,0
		28,3	150	1800	110	27,2	66,2	95,5
		36,6	200*	1750	147	20,1	86,9	95,5
SQM200-600SE	88	22,0	70	3000	51	48,8	61,5	94,1
		27,2	100	2600	73	37,5	69,4	95,1
		33,0	150	2100	110	28,0	75,0	95,6
		44,0	200*	2100	147	18,6	112,8	95,6
SQM200-700SE	88	25,7	70	3500	51	49,3	71,0	94,3
		31,9	100	3050	73	38,4	79,5	95,3
		38,5	150	2450	110	27,3	89,8	95,7
		51,3	200*	2450	147	21,8	112,5	95,7
SQM250-400SE	88	24,2	70	3300	51	50,3	65,6	94,9
		30,9	100	2950	73	38,6	76,4	95,7
		34,6	150	2200	110	26,9	81,9	96,0
		48,2	200*	2300	147	19,9	115,5	96,0
SQM250-600SE	88	35,9	70	4900	51	50,3	97,5	95,2
		45,5	100	4350	73	34,8	125,0	95,9
		51,8	150	3300	110	28,8	114,5	96,2
		71,2	200*	3400	147	19,9	170,6	96,2
SQM250-800SE	88	48,4	70	6600	51	46,4	142,2	95,5
		60,7	100	5800	73	38,7	150,0	96,1
		67,5	150	4300	110	30,7	140,0	96,2
		94,2	200*	4500	147	23,0	195,5	96,2
SQM315-700SE	110	61,6	70	8400	64	50,9	165,0	93,2
		82,7	100	7900	92	40,5	195,0	94,8
		102,1	150	6500	138	20,4	318,0	95,0
		130,7	200*	6240	183	20,1	310,0	95,2
SQM315-900SE	110	72,9	70	9950	64	52,4	190,0	93,5
		92,1	100	8800	92	39,1	225,0	94,5
		119,4	150	7600	138	26,2	290,0	95,0
		150,8	200*	7200	183	22,8	316,0	95,3
SQM315-1100SE	110	80,6	70	11000	64	55,0	200,0	94,0
		103,7	100	9900	92	32,2	307,0	95,0
		131,9	150	8400	138	27,9	301,0	95,2
		169,6	200*	8100	183	16,1	503,0	95,5



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



Sanitary 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



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