Extrusion
Blow Moulding
Injection
Calenders
Winding - Unwinding
Puller (Caterpillar)
Dosing

Direct Drive Technology **without** cooling

Highest extrusion quality
Highest efficiency
Stable torque and speed even at 0,1 rpm

Efficiency is better than IE5 - We put the limits -

EMF Motor®

SQME Gearless Extruder Motor

Patented and most efficient Direct Drive Technology for the Extrusion Industry

SQME-Series torque motors are the perfect direct-drive solution for low speed high torque applications based on permanent magnet synchronous motor technology. SQME is the latest direct drive concept to replace the conventional gearbox system for applications such as extruders, injection molding machines, winders-unwinders, mixers, etc.

SQME has the **"ULTRA PREMIUM"** efficieny due to its advanced motor principle

Characteristics

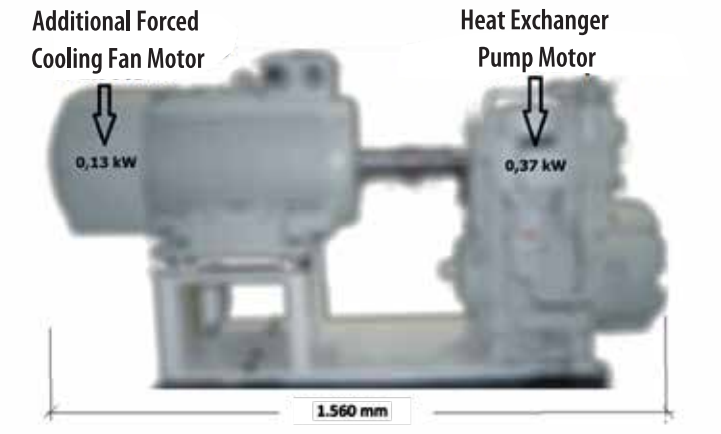
- No water cooling
- Constant torque and speed even from 0,1 rpm to rated speed
- High efficiency across the full speed and torque range
- Direct Drive System without gearbox and/or belt drive
- Extremely low torque ripple = precise and high quality extrusion
- Integrated trust bearing and hollow shaft design through the shaft
- Low energy consumption
- Compact design
- Low maintenance cost
- Various encoder and driver options
- Sensorless drive possibility with some drivers (please contact us for details)
- Different voltage options (110 V, 220V, 400 V, 460 V)
- 230 V / 400 V option in the same motor (by changing delta-star connection)

Technical Specifications

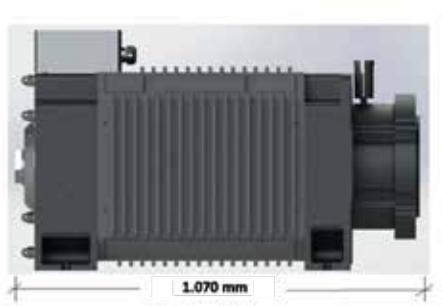
• Motor Technology	Permanent magnet synchronous motor
• Frame Size	100, 132, 160, 200, 250 and 315
• Torque Range	up to 13.000 Nm
• Number of Poles	66 - 88 - 110
• Rated Voltage	110 V, 220 V, 400 V, 460 V VAC supply voltage
• Cooling	None
• Protection Level	IP 54
• Thermal Protection	PTO is standard, additionally PT100, PT1000, PTC, KTY84 are optional
• Hollow Shaft	(Customized mechanical design or modification available on request)
• Thrust Bearing	Integrated 29412 thrust bearing for SQME100 and SQME132
	Integrated 29416 thrust bearing for SQME160
	Integrated 29420 thrust bearing for SQME200
	Integrated 29428 thrust bearing for SQME250
	Integrated 29432 thrust bearing for SQME315
• Feedback Sensor	Hiperface, EnDat encoder, sensorless control

Case Study

Comparison between an AC motor with Gearbox and Cooling System and SQME 250 - 500



Height : 900 mm
Width : 620 mm



Height : 500 mm (except terminal box)
Width : 500 mm

AC Motor with Gearbox

AC Motor
45 kW 1.475 rpm
291 Nm
IE3 – run by driver
Motor efficiency % 94.2

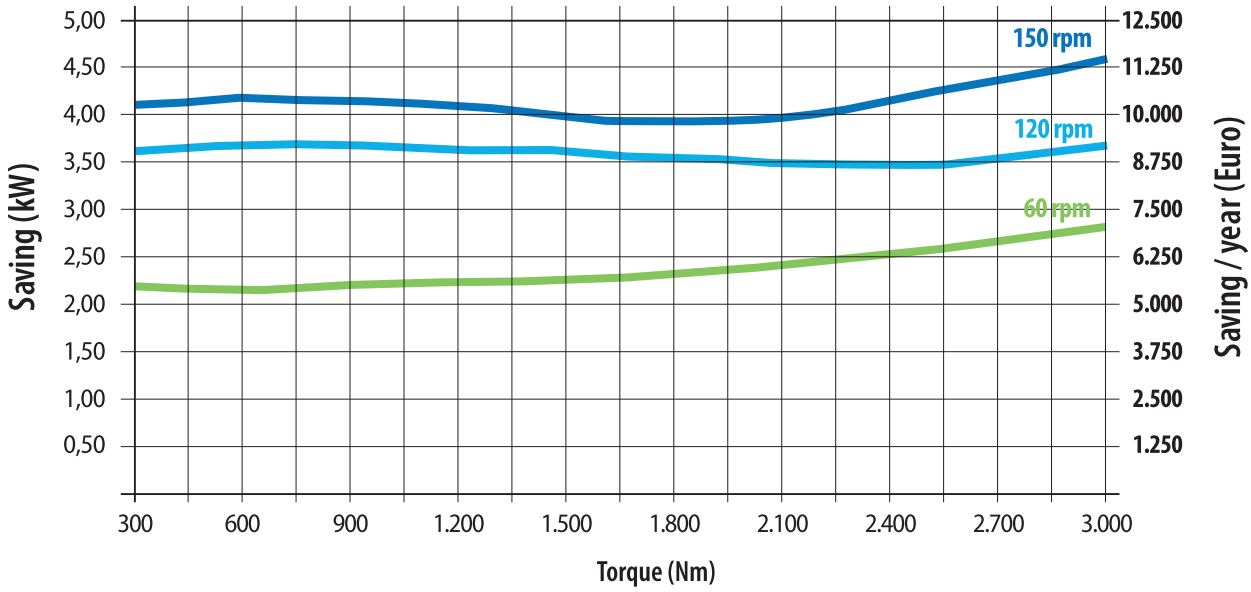
Gearbox
ratio 1:9.64

Output of Gearbox
153 d/d 2.809 Nm (theoretical torque)

SQME Synchronous Torque Motor

SQME 250-500
45 kW 153 rpm
2.809 Nm
run by driver.

Energy Saving
EMF Motor vs 45 kW IE3 Geared Motor



Calculated with 0,3 Euro / kWh unit price
Annual savings are based on 340 days, 24 hours continuous operation.
All data is based on actual test results.
For the geared motor system, additional 0.5 kWh energy is consumed for cooling and oil pump.

SQME Technical Specifications

We customize your SQME exactly according to your torque and speed needs.

Motor Code	Pole Number	P_n (kW)	n_n (rpm)	M_n (Nm)	f_n (Hz)	kt (Nm/A)	I_n (A)	Efficiency (%)
SQME100-140	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
SQME100-200	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
SQME100-240	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
SQME132-140	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
SQME132-200	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
SQME132-240	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
SQME160-200	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
SQME160-300	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
SQME160-400	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
SQME160-500	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

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

SQME Dimensions

Please contact info@emfmotor.com for 2D drawings, 3D softcopies and performance diagrams of SQME motors.

Motor Code	Pole Number	P_n (kW)	n_n (rpm)	M_n (Nm)	f_n (Hz)	kt (Nm/A)	I_n (A)	Efficiency (%)
SQME200-300SE	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
SQME200-400SE	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
SQME200-500SE	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
SQME200-600SE	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
SQME200-700SE	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
SQME250-400SE	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
SQME250-600SE	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
SQME250-800SE	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
SQME315- 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
SQME315- 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
SQME315-1100SE	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

* with surface air cooling jacket (IC 4A6) (details in pg. 6)

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

SQME Dimensions

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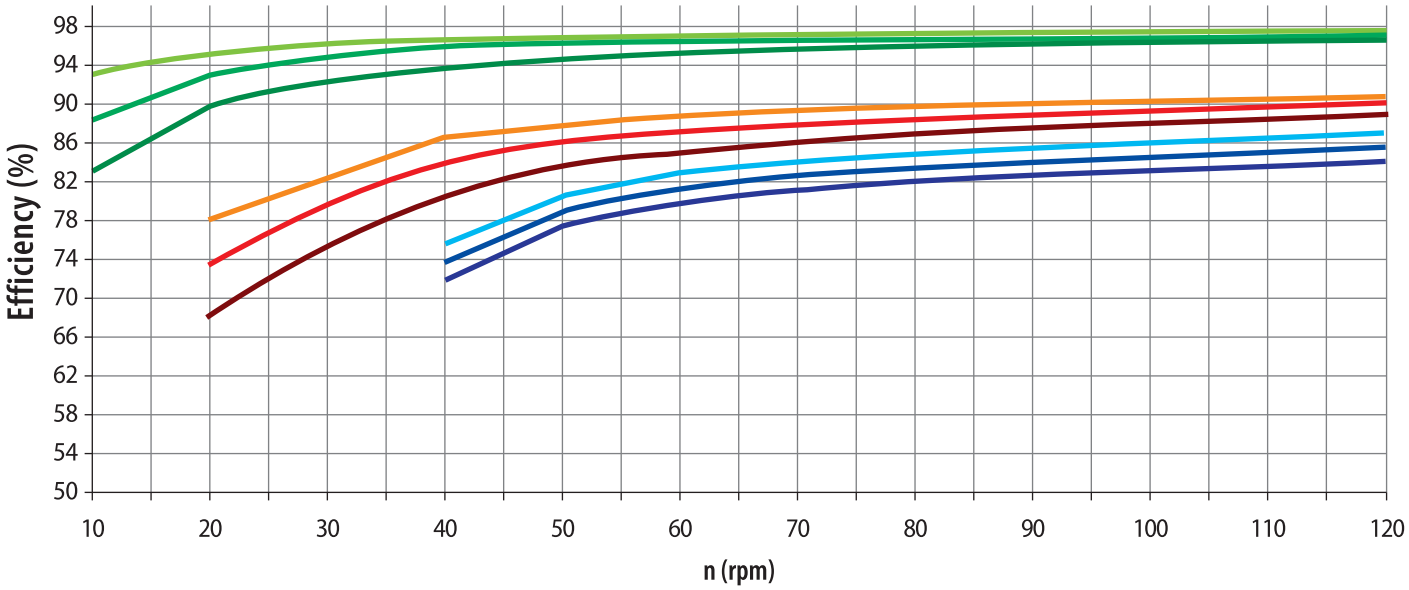
Case Study

Efficiency Diagram in full range of Speed and Torque

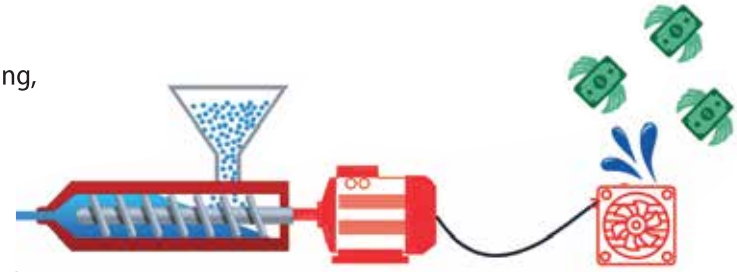


SQME Torque Motor 118 kW - 10.000 Nm No Water Cooling	Standard Torque Motor 135 kW - 10.740 Nm Water Cooled	Geared Motor 132 kW - 10.505 Nm Forced Ventilation
SQME Torque motor 100%T	Standard Torque motor 100%T	AC-Geared motor 100%T
SQME Torque motor 80%T	Standard Torque motor 80%T	AC-Geared motor 80%T
SQME Torque motor 60%T	Standard Torque motor 60%T	AC-Geared motor 60%T

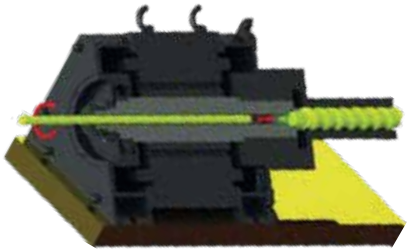
The energy losses of cooling systems are not considered in the efficiency calculation.

Disadvantages of water cooling

- Additional investment cost
- Water cooling needs chemical and physical clean water, piping, flow and temperature monitoring, controller and cabeling.
- The system requires more maintenance
- The motor performance is effected by the climatic conditions
- The power consumed by the pump is considerable and affects the power output of the motor
- The cooling system failure may cause significant damage on the motor



Hollow Shaft Design



- Extruder Direct Drive Motors are produced with hollow shafts.
- The extruder screw is mounted into the shaft hole at the thrust bearing end.
- A metric threaded end rod is used to push out and disassemble the extruder screw from the other end.

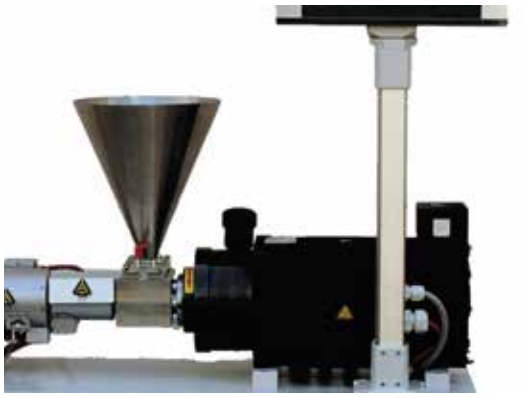
SQME with Surface Air Cooling Jacket (IC 4A6)

- Utilizes 230 V EBM-papst W2 series fans
- Number of fans varies based on size and lenght (1 to 5 fans)
- Each fan consumes only 27 W or 64 W

Applications with SQME

Solutions for complete extrusion line (extruder, blow molding, calenders, winding - unwinding, puller (caterpillar), dosing)





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