

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer		: Astraprom d.o.o.			
Product line		: W22 IE3 Three-Phase		Product code : 12862393	
Frame	: 160M	Cooling method	: IC411 - TEFC		
Insulation class	: F	Mounting	: B3T		
Duty cycle	: S1	Rotation <sup>1</sup>	: Both (CW and CCW)		
Ambient temperature	: -20°C to +40°C	Starting method	: Direct On Line		
Altitude	: 1000 m.a.s.l.	Approx. weight <sup>2</sup>	: 137 kg		
Protection degree	: IP55	Moment of inertia (J)	: 0.0551 kgm <sup>2</sup>		
Design	: N				
Output [kW]	15	15	15	15	
Poles	2	2	2	2	
Frequency [Hz]	50	50	50	60	
Rated voltage [V]	380/660	400/690	415	460	
Rated current [A]	28.5/16.4	27.7/16.1	27.7	24.7	
L. R. Amperes [A]	222/128	230/133	244	222	
LRC [A]	7.8	8.3	8.8	9.0	
No load current [A]	10.0/5.76	11.0/6.38	12.0	11.0	
Rated speed [RPM]	2945	2950	2955	3560	
Slip [%]	1.83	1.67	1.50	1.11	
Rated torque [kgfm]	4.96	4.95	4.94	4.10	
Locked rotor torque [%]	250	280	300	340	
Breakdown torque [%]	320	360	390	430	
Service factor	1.00	1.00	1.00	1.00	
Temperature rise	80 K	80 K	80 K	80 K	
Locked rotor time	14s (cold) 8s (hot)	14s (cold) 8s (hot)	14s (cold) 8s (hot)	14s (cold) 8s (hot)	
Noise level <sup>2</sup>	67.0 dB(A)	67.0 dB(A)	67.0 dB(A)	72.0 dB(A)	
Efficiency (%)	25%				
	50%	91.0	90.9	90.3	89.7
	75%	91.6	91.8	91.6	91.5
	100%	91.9	92.0	91.9	91.7
Power Factor	25%				
	50%	0.72	0.67	0.63	0.66
	75%	0.82	0.79	0.76	0.78
	100%	0.87	0.85	0.82	0.83
Losses at normative operating points (speed;torque), in percentage of rated output power					
Losses (%)	P1 (0,9;1,0)	8.6	8.5	8.6	8.8
	P2 (0,5;1,0)	7.4	7.3	7.4	7.6
	P3 (0,25;1,0)	7.1	7.0	7.1	7.3
	P4 (0,9;0,5)	4.2	4.1	4.2	4.3
	P5 (0,5;0,5)	2.8	2.8	2.8	2.9
	P6 (0,5;0,25)	1.8	1.8	1.8	1.9
	P7 (0,25;0,25)	1.3	1.3	1.3	1.3
Bearing type	: Drive end 6309 ZZ C3 Non drive end 6209 ZZ C3	Foundation loads			
Sealing	: V'Ring V'Ring	Max. traction : 209 kgf			
Lubrication interval	: - -	Max. compression : 346 kgf			
Lubricant amount	: - -				
Lubricant type	: Mobil Polyrex EM				
This revision replaces and cancel the previous one, which must be eliminated. (1) Looking the motor from the shaft end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At 100% of full load.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
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Customer : Astraprom d.o.o.

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### Thermal protection

ID	Application	Type	Quantity	Sensing Temperature
1	Winding	Thermistor - 2 wires	1 x Phase	155 °C

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# TORQUE AND CURRENT VS SPEED CURVE

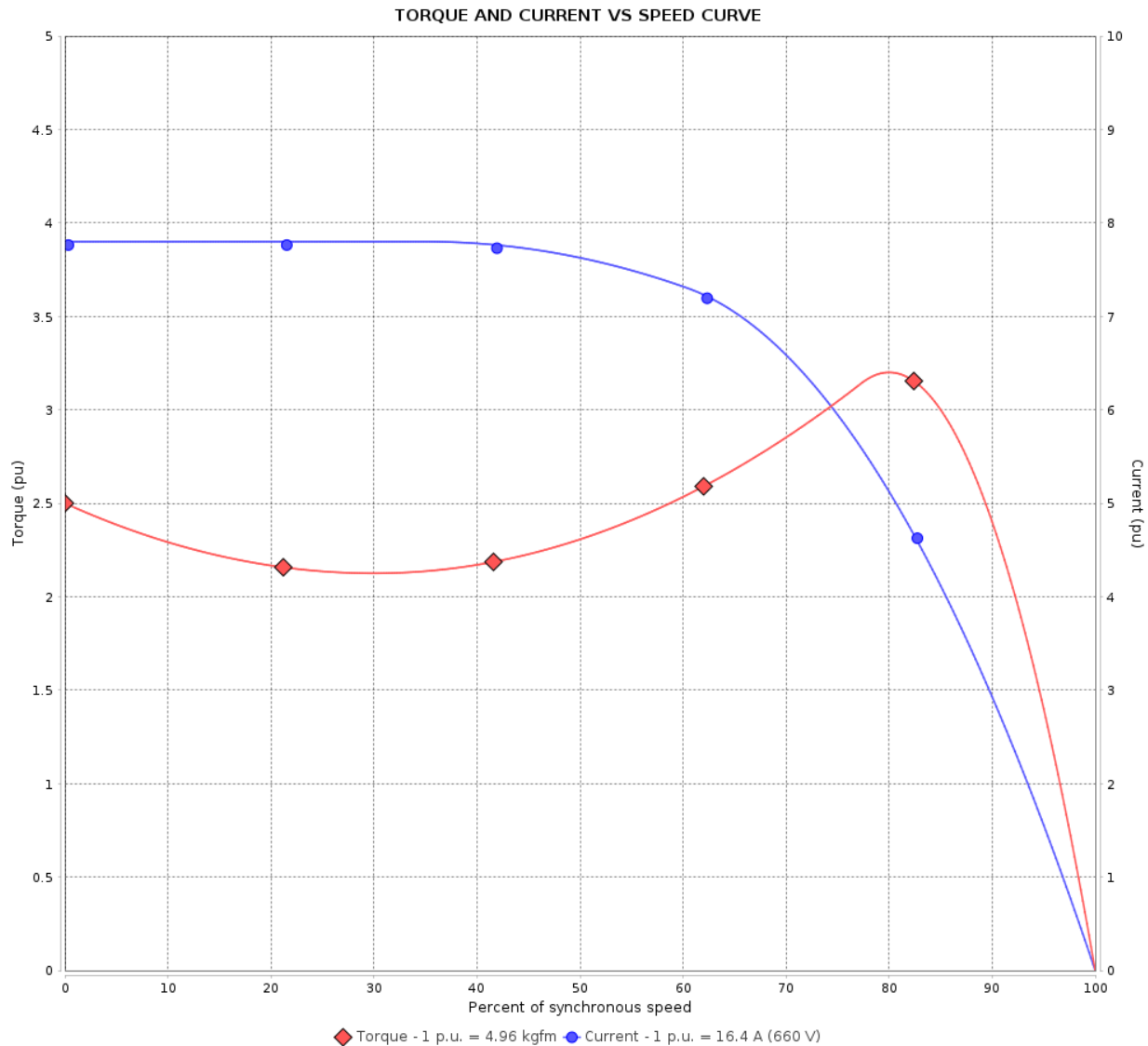
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12862393



Performance : 380/660 V 50 Hz 2P

Rated current	: 28.5/16.4 A	Moment of inertia (J)	: 0.0551 kgm <sup>2</sup>
LRC	: 7.8	Duty cycle	: S1
Rated torque	: 4.96 kgfm	Insulation class	: F
Locked rotor torque	: 250 %	Service factor	: 1.00
Breakdown torque	: 320 %	Temperature rise	: 80 K
Rated speed	: 2945 rpm	Design	: N

Locked rotor time : 14s (cold) 8s (hot)

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# TORQUE AND CURRENT VS SPEED CURVE

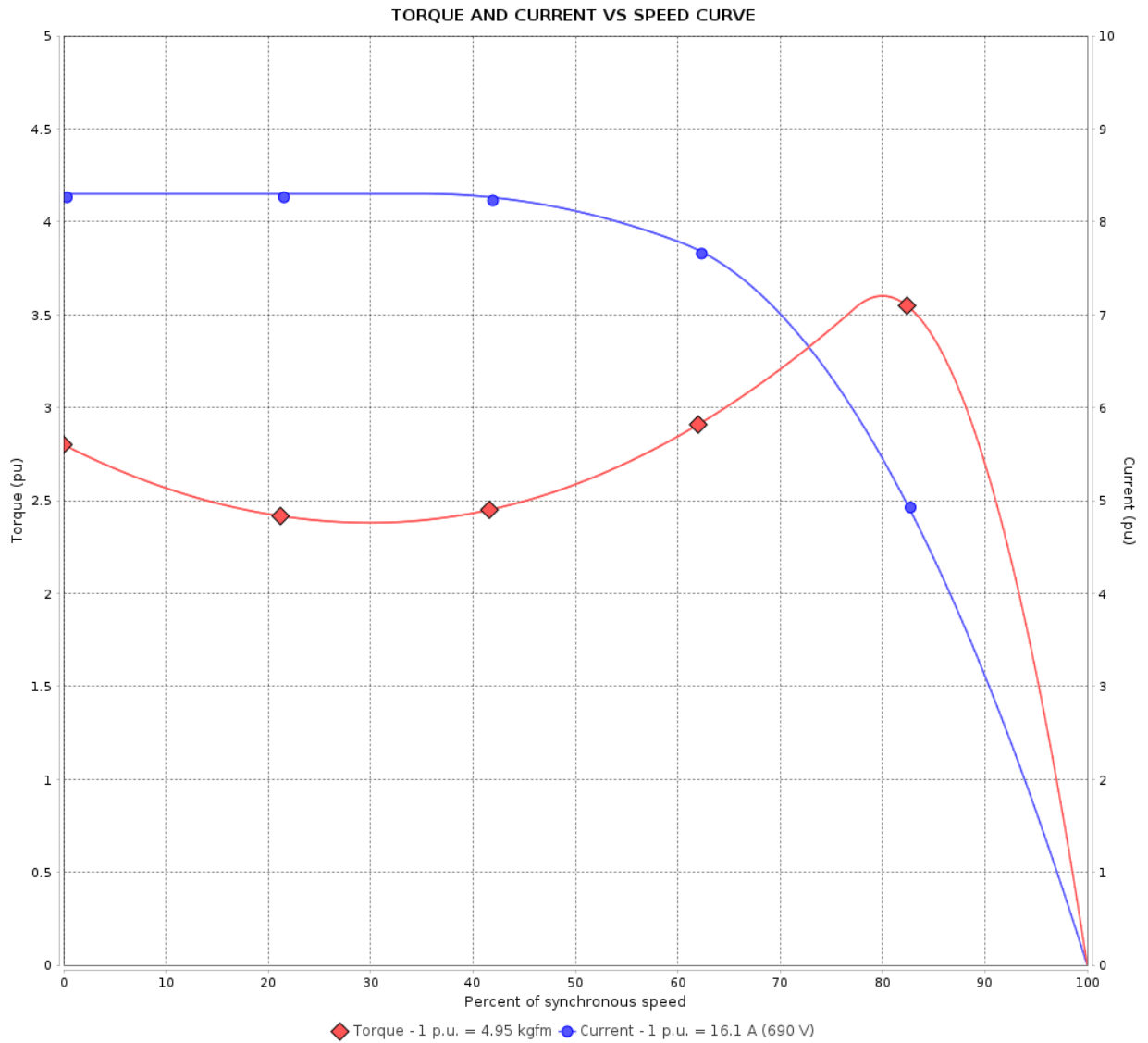
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12862393



Performance : 400/690 V 50 Hz 2P

Rated current	: 27.7/16.1 A	Moment of inertia (J)	: 0.0551 kgm <sup>2</sup>
LRC	: 8.3	Duty cycle	: S1
Rated torque	: 4.95 kgfm	Insulation class	: F
Locked rotor torque	: 280 %	Service factor	: 1.00
Breakdown torque	: 360 %	Temperature rise	: 80 K
Rated speed	: 2950 rpm	Design	: N

Locked rotor time : 14s (cold) 8s (hot)

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# TORQUE AND CURRENT VS SPEED CURVE

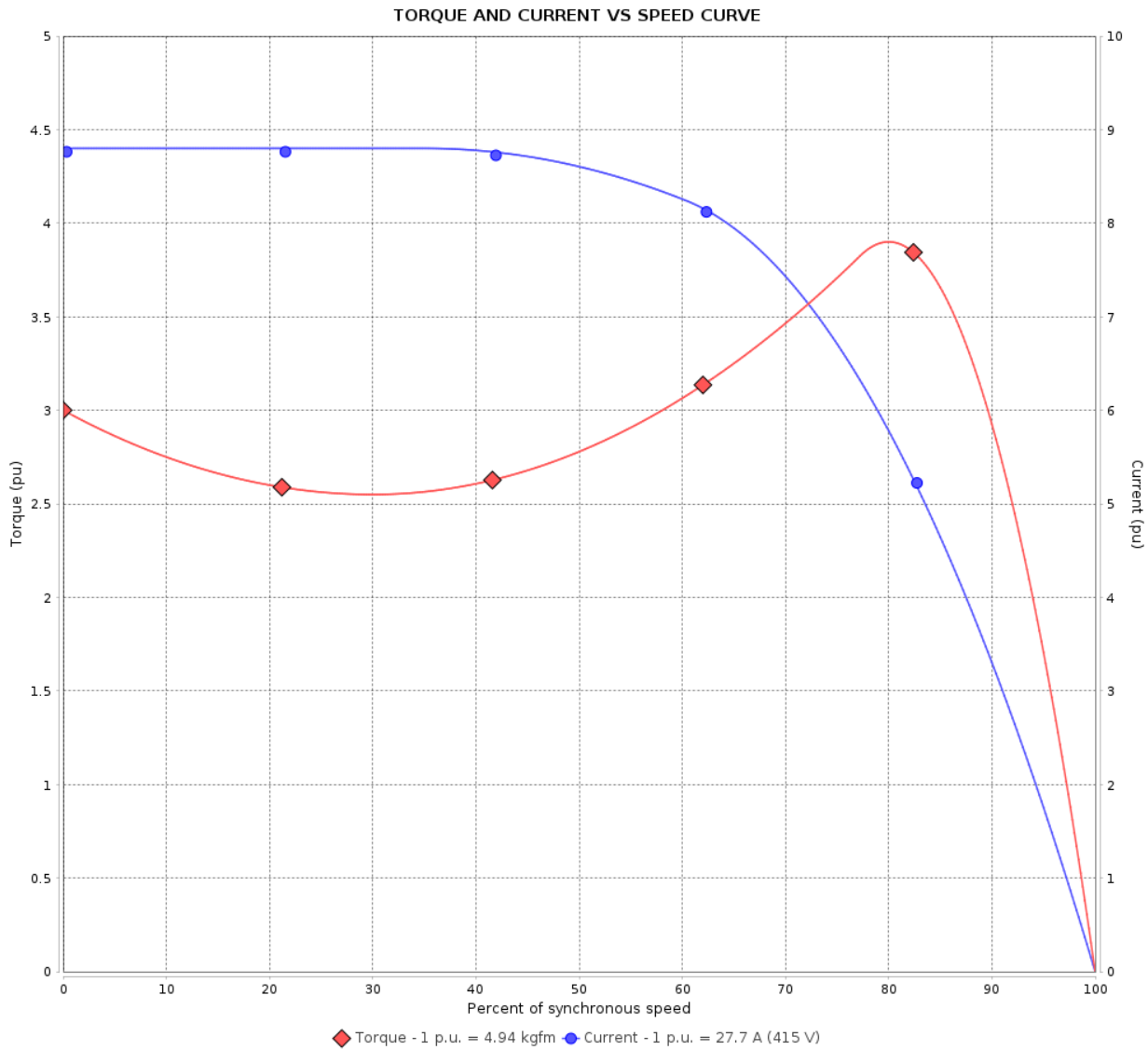
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12862393



Performance : 415 V 50 Hz 2P

Rated current	: 27.7 A	Moment of inertia (J)	: 0.0551 kgm <sup>2</sup>
LRC	: 8.8	Duty cycle	: S1
Rated torque	: 4.94 kgfm	Insulation class	: F
Locked rotor torque	: 300 %	Service factor	: 1.00
Breakdown torque	: 390 %	Temperature rise	: 80 K
Rated speed	: 2955 rpm	Design	: N

Locked rotor time : 14s (cold) 8s (hot)

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# TORQUE AND CURRENT VS SPEED CURVE



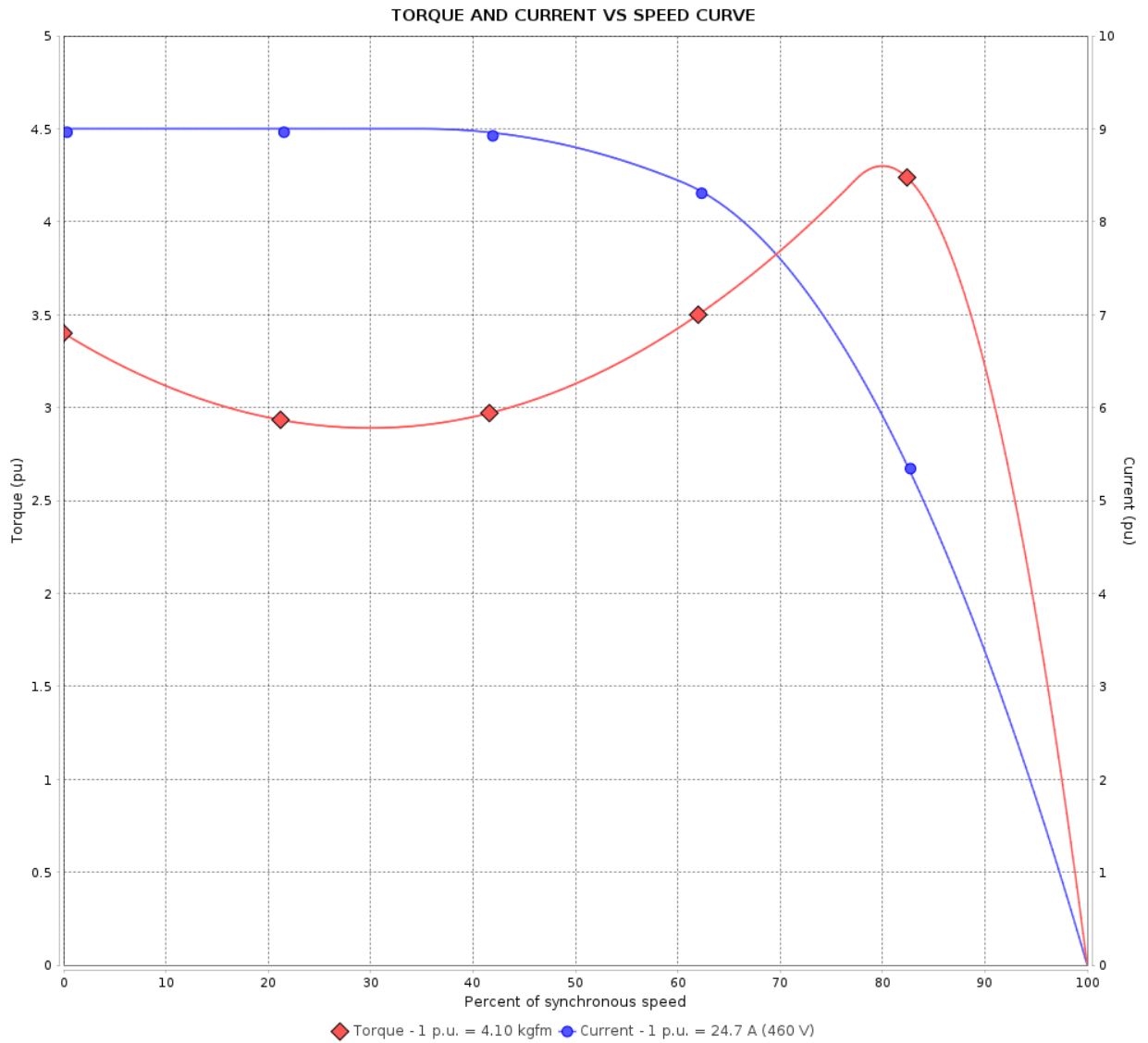
## Three Phase Induction Motor - Squirrel Cage

Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code :

12862393



Performance : 460 V 60 Hz 2P

Rated current	: 24.7 A	Moment of inertia (J)	: 0.0551 kgm <sup>2</sup>
LRC	: 9.0	Duty cycle	: S1
Rated torque	: 4.10 kgfm	Insulation class	: F
Locked rotor torque	: 340 %	Service factor	: 1.00
Breakdown torque	: 430 %	Temperature rise	: 80 K
Rated speed	: 3560 rpm	Design	: N

Locked rotor time : 14s (cold) 8s (hot)

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# LOAD PERFORMANCE CURVE

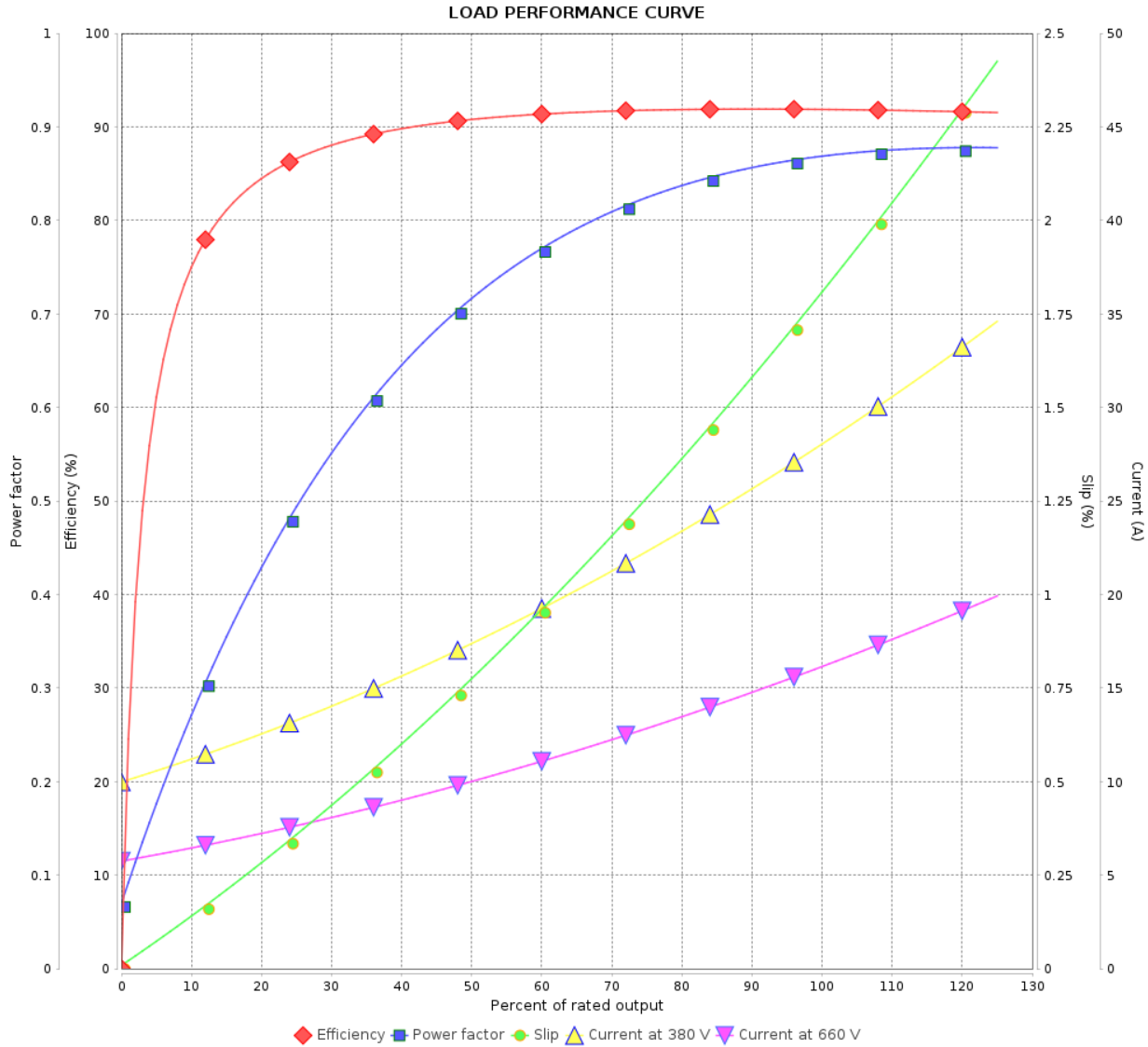
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12862393



Performance : 380/660 V 50 Hz 2P

Rated current : 28.5/16.4 A  
 LRC : 7.8  
 Rated torque : 4.96 kgfm  
 Locked rotor torque : 250 %  
 Breakdown torque : 320 %  
 Rated speed : 2945 rpm

Moment of inertia (J) : 0.0551 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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# LOAD PERFORMANCE CURVE

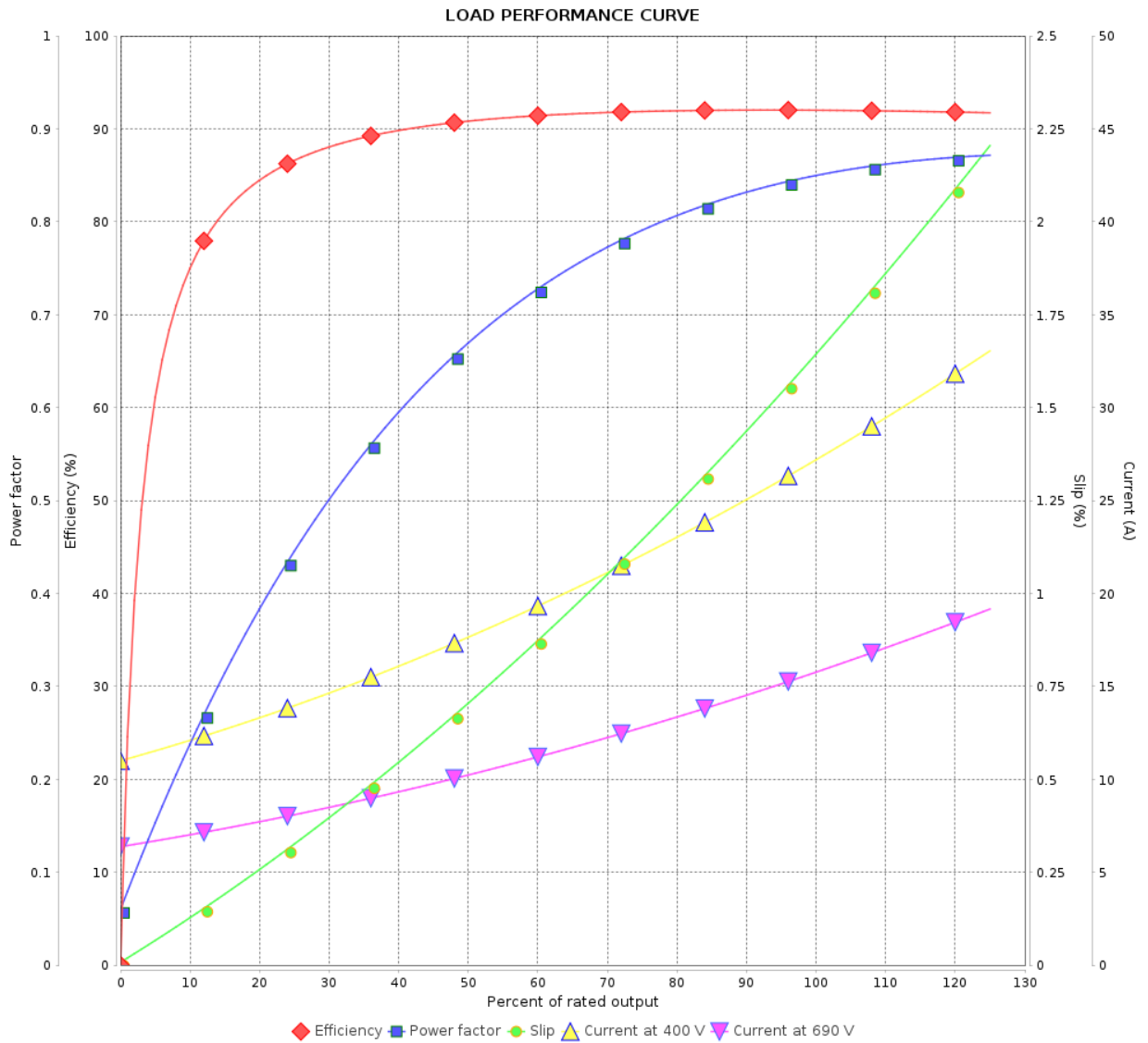
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12862393



Performance : 400/690 V 50 Hz 2P

Rated current : 27.7/16.1 A  
 LRC : 8.3  
 Rated torque : 4.95 kgfm  
 Locked rotor torque : 280 %  
 Breakdown torque : 360 %  
 Rated speed : 2950 rpm

Moment of inertia (J) : 0.0551 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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# LOAD PERFORMANCE CURVE

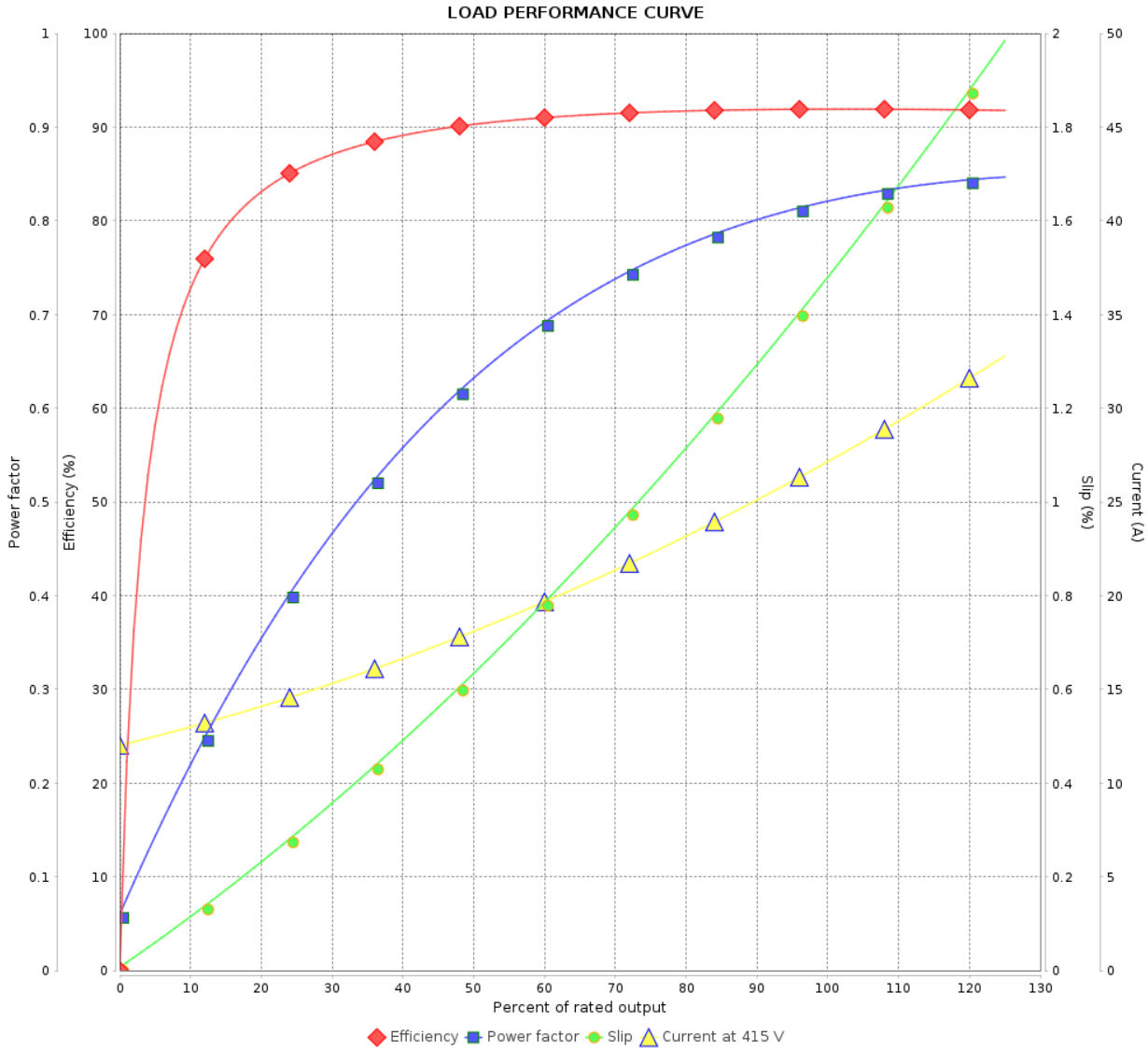
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12862393



Performance : 415 V 50 Hz 2P

Rated current	: 27.7 A	Moment of inertia (J)	: 0.0551 kgm <sup>2</sup>
LRC	: 8.8	Duty cycle	: S1
Rated torque	: 4.94 kgfm	Insulation class	: F
Locked rotor torque	: 300 %	Service factor	: 1.00
Breakdown torque	: 390 %	Temperature rise	: 80 K
Rated speed	: 2955 rpm	Design	: N

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# LOAD PERFORMANCE CURVE

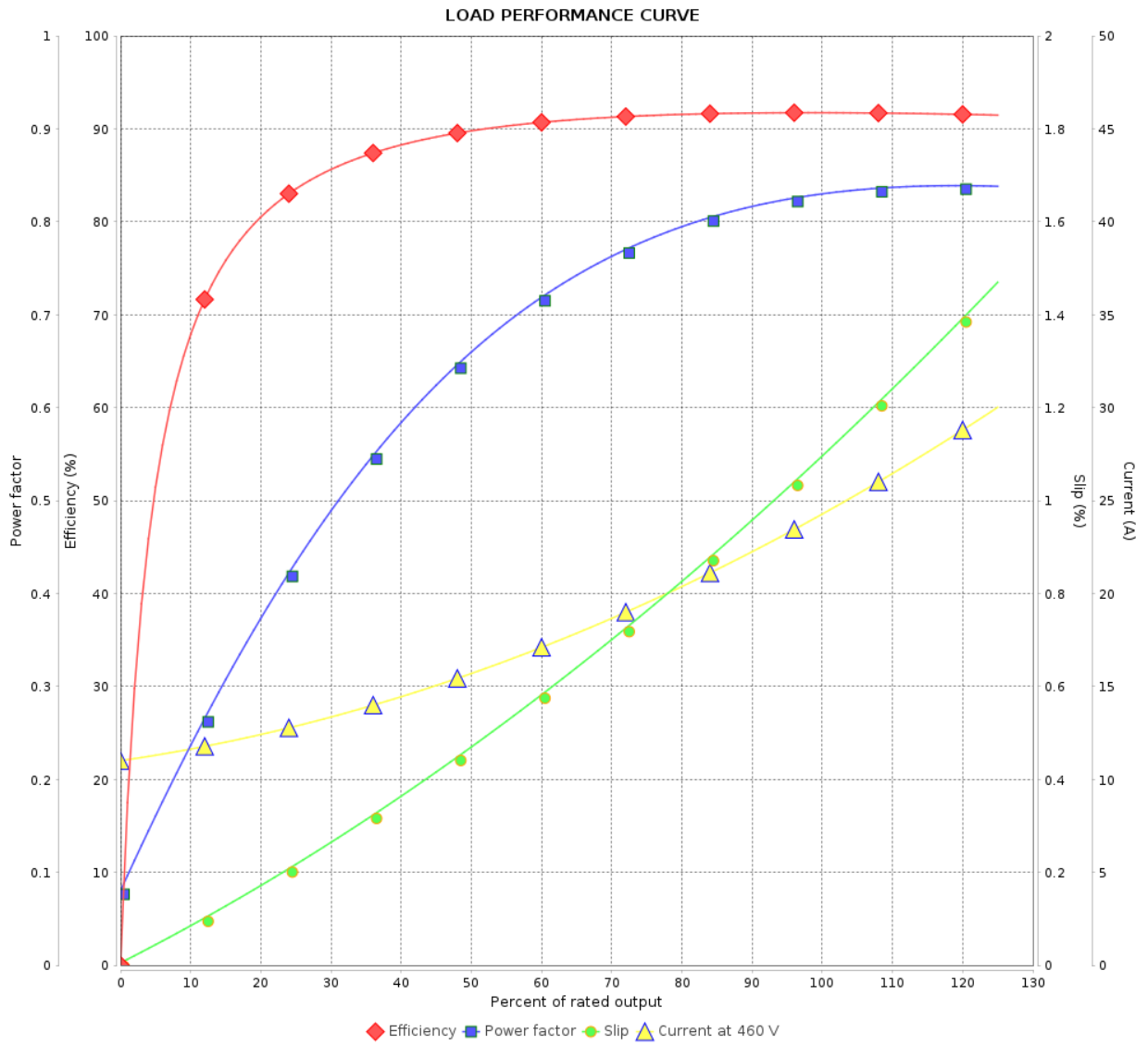
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12862393



Performance : 460 V 60 Hz 2P

Rated current : 24.7 A  
 LRC : 9.0  
 Rated torque : 4.10 kgfm  
 Locked rotor torque : 340 %  
 Breakdown torque : 430 %  
 Rated speed : 3560 rpm

Moment of inertia (J) : 0.0551 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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# THERMAL LIMIT CURVE

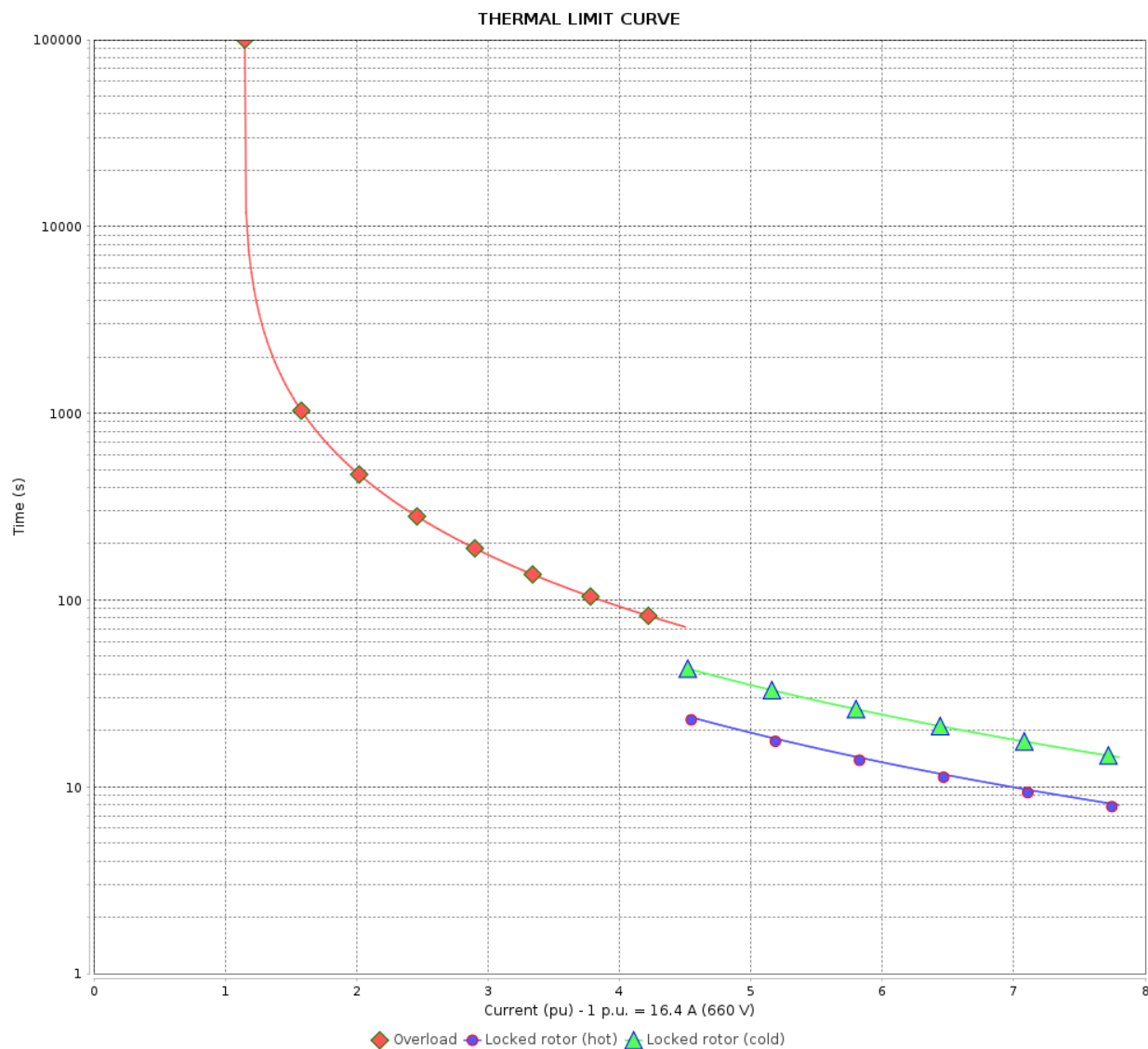
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 LRC : 7.8  
 Rated torque : 4.96 kgfm  
 Locked rotor torque : 250 %  
 Breakdown torque : 320 %  
 Rated speed : 2945 rpm

Moment of inertia (J) : 0.0551 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Heating constant  
 Cooling constant

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# THERMAL LIMIT CURVE

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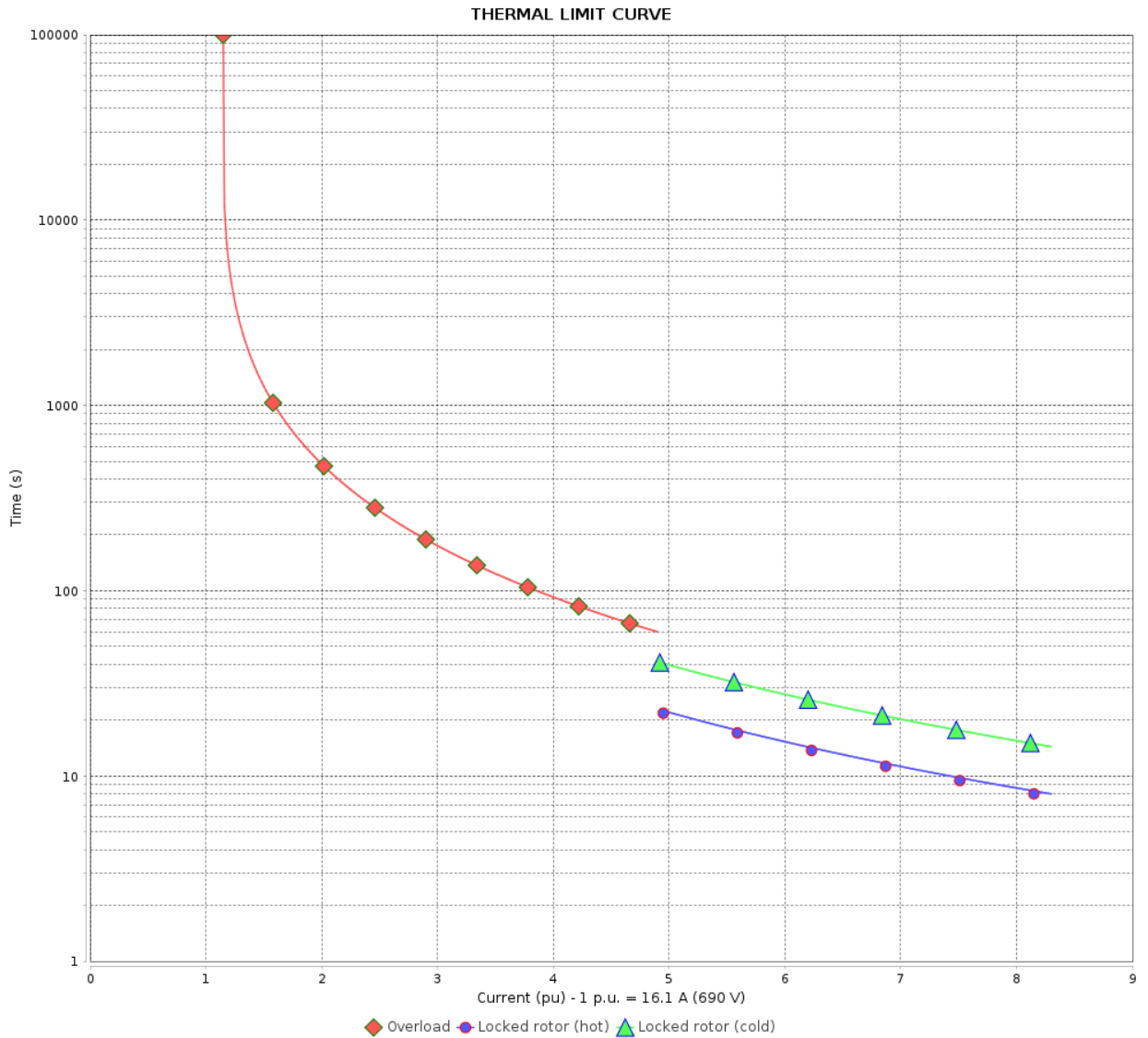


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Performance : 400/690 V 50 Hz 2P

Rated current : 27.7/16.1 A  
 LRC : 8.3  
 Rated torque : 4.95 kgfm  
 Locked rotor torque : 280 %  
 Breakdown torque : 360 %  
 Rated speed : 2950 rpm

Moment of inertia (J) : 0.0551 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Heating constant

Cooling constant

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# THERMAL LIMIT CURVE

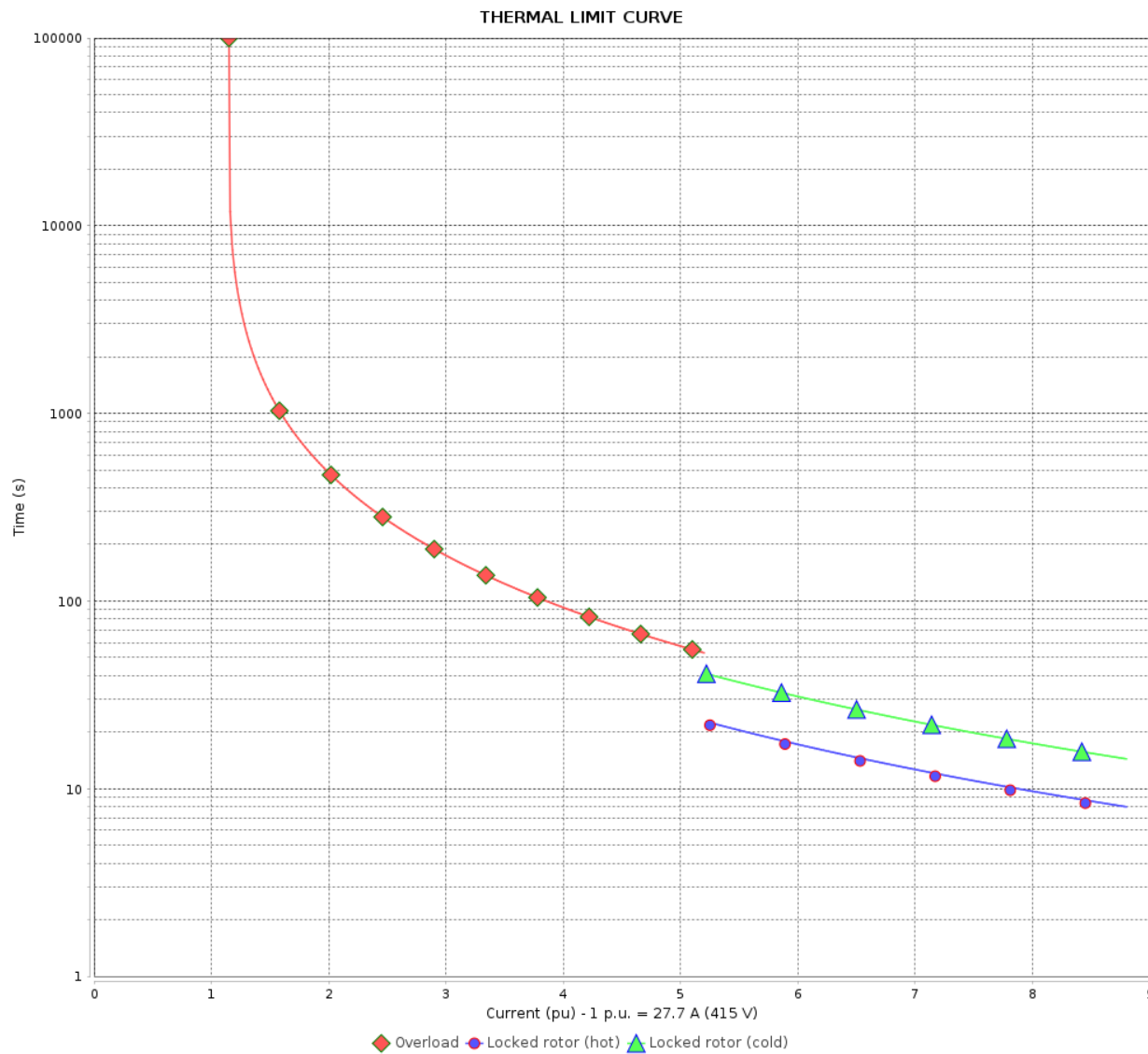
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Product line : W22 IE3 Three-Phase

Product code : 12862393



Performance : 415 V 50 Hz 2P

Rated current	: 27.7 A	Moment of inertia (J)	: 0.0551 kgm <sup>2</sup>
LRC	: 8.8	Duty cycle	: S1
Rated torque	: 4.94 kgfm	Insulation class	: F
Locked rotor torque	: 300 %	Service factor	: 1.00
Breakdown torque	: 390 %	Temperature rise	: 80 K
Rated speed	: 2955 rpm	Design	: N

Heating constant

Cooling constant

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# THERMAL LIMIT CURVE

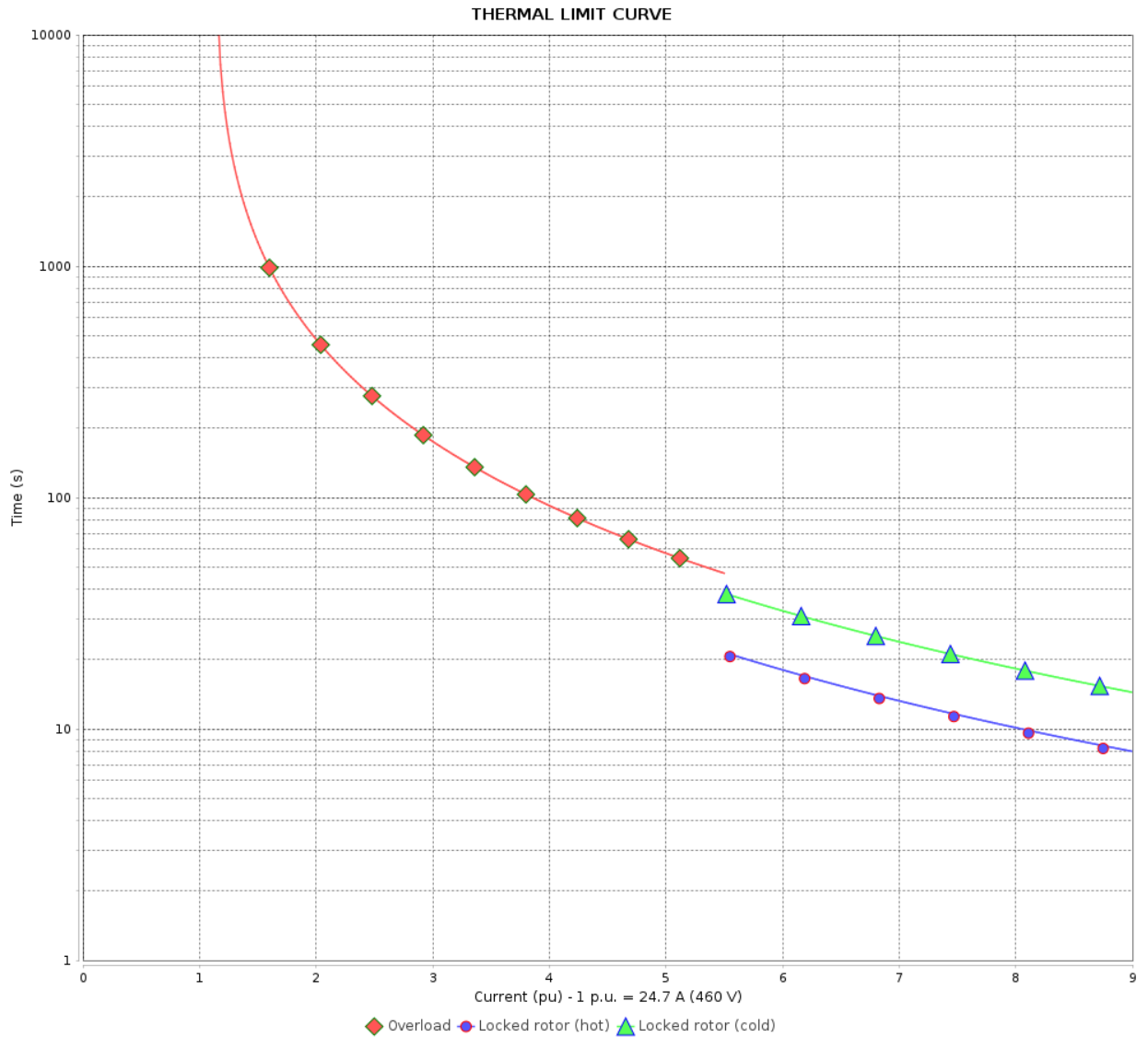
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Performance : 460 V 60 Hz 2P

Rated current : 24.7 A  
 LRC : 9.0  
 Rated torque : 4.10 kgfm  
 Locked rotor torque : 340 %  
 Breakdown torque : 430 %  
 Rated speed : 3560 rpm

Moment of inertia (J) : 0.0551 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Heating constant

Cooling constant

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# VFD OPERATION CURVE

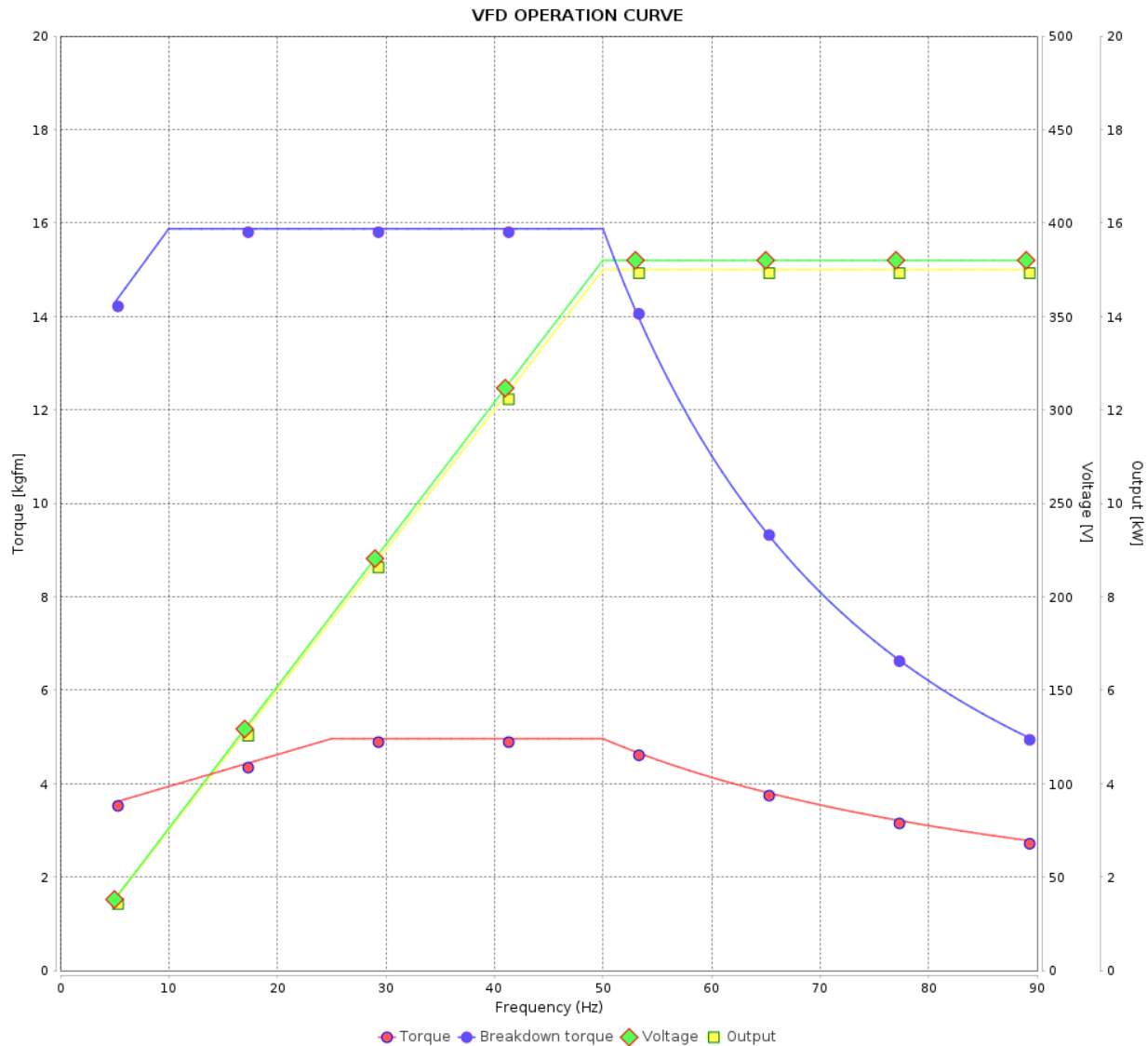
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 Locked rotor torque : 250 %  
 Breakdown torque : 320 %  
 Rated speed : 2945 rpm

Moment of inertia (J) : 0.0551 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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# VFD OPERATION CURVE

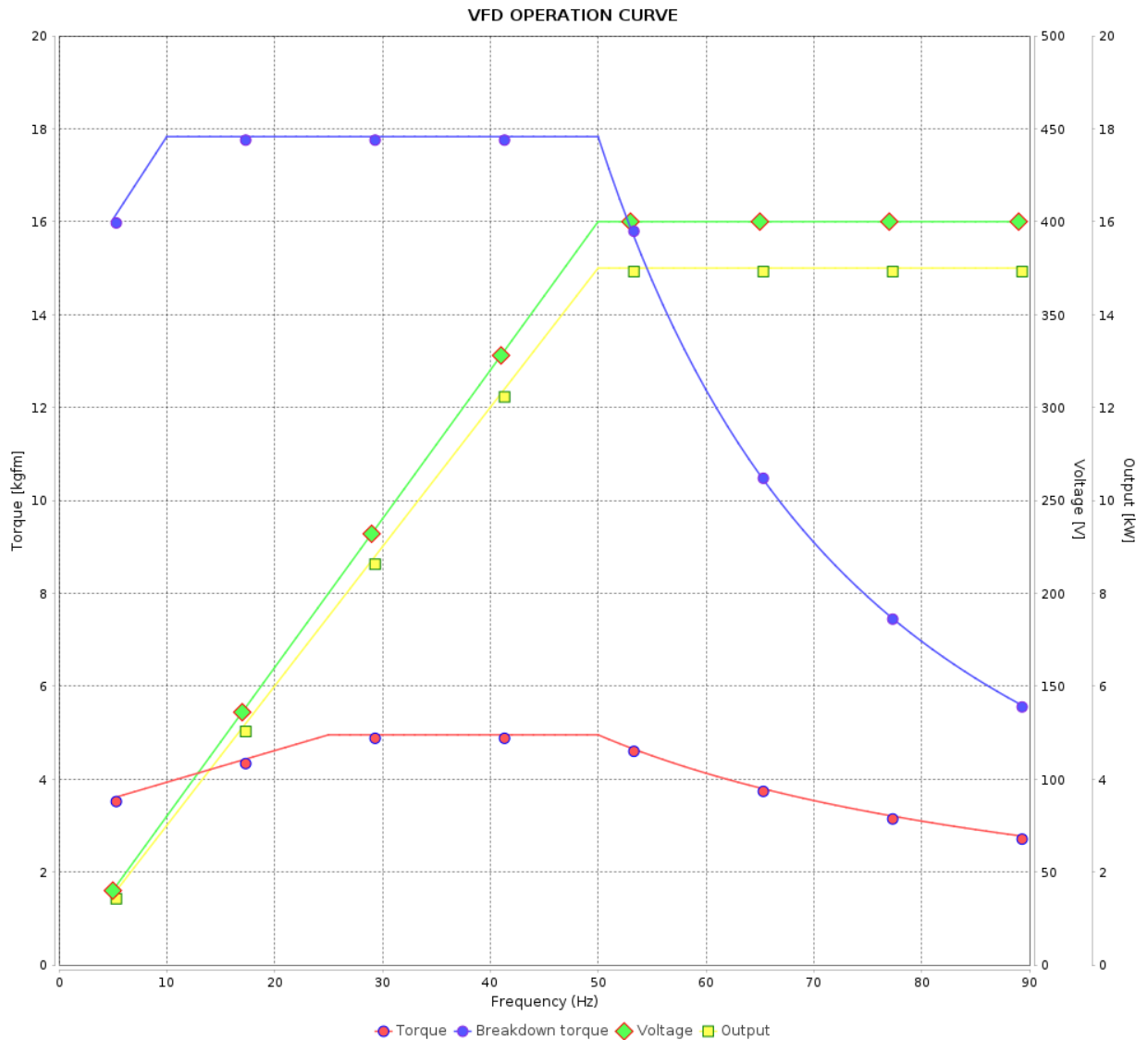
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Performance : 400/690 V 50 Hz 2P

Rated current : 27.7/16.1 A  
 LRC : 8.3  
 Rated torque : 4.95 kgfm  
 Locked rotor torque : 280 %  
 Breakdown torque : 360 %  
 Rated speed : 2950 rpm

Moment of inertia (J) : 0.0551 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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# VFD OPERATION CURVE

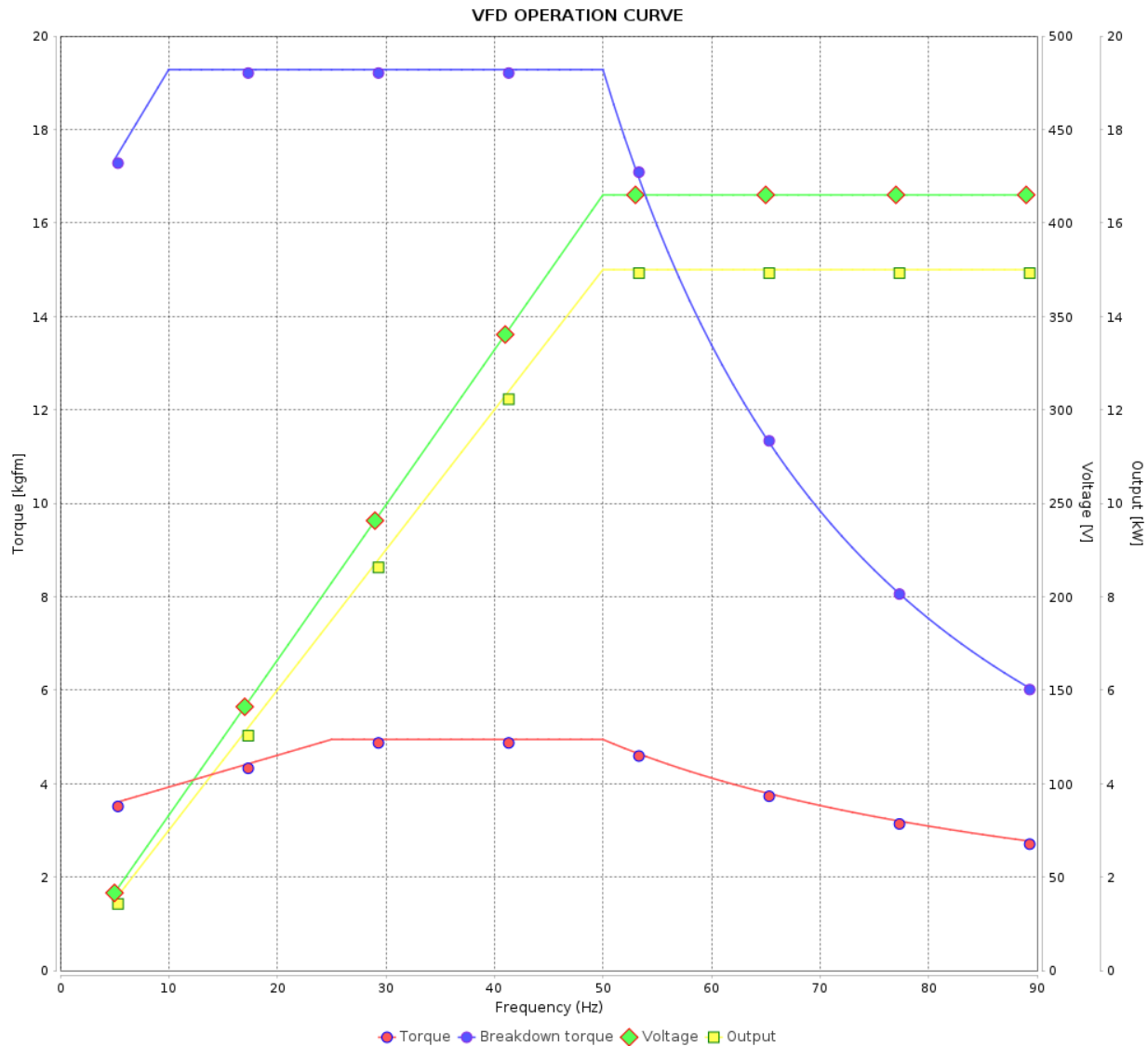
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Locked rotor torque	: 300 %	Service factor	: 1.00
Breakdown torque	: 390 %	Temperature rise	: 80 K
Rated speed	: 2955 rpm	Design	: N

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# VFD OPERATION CURVE

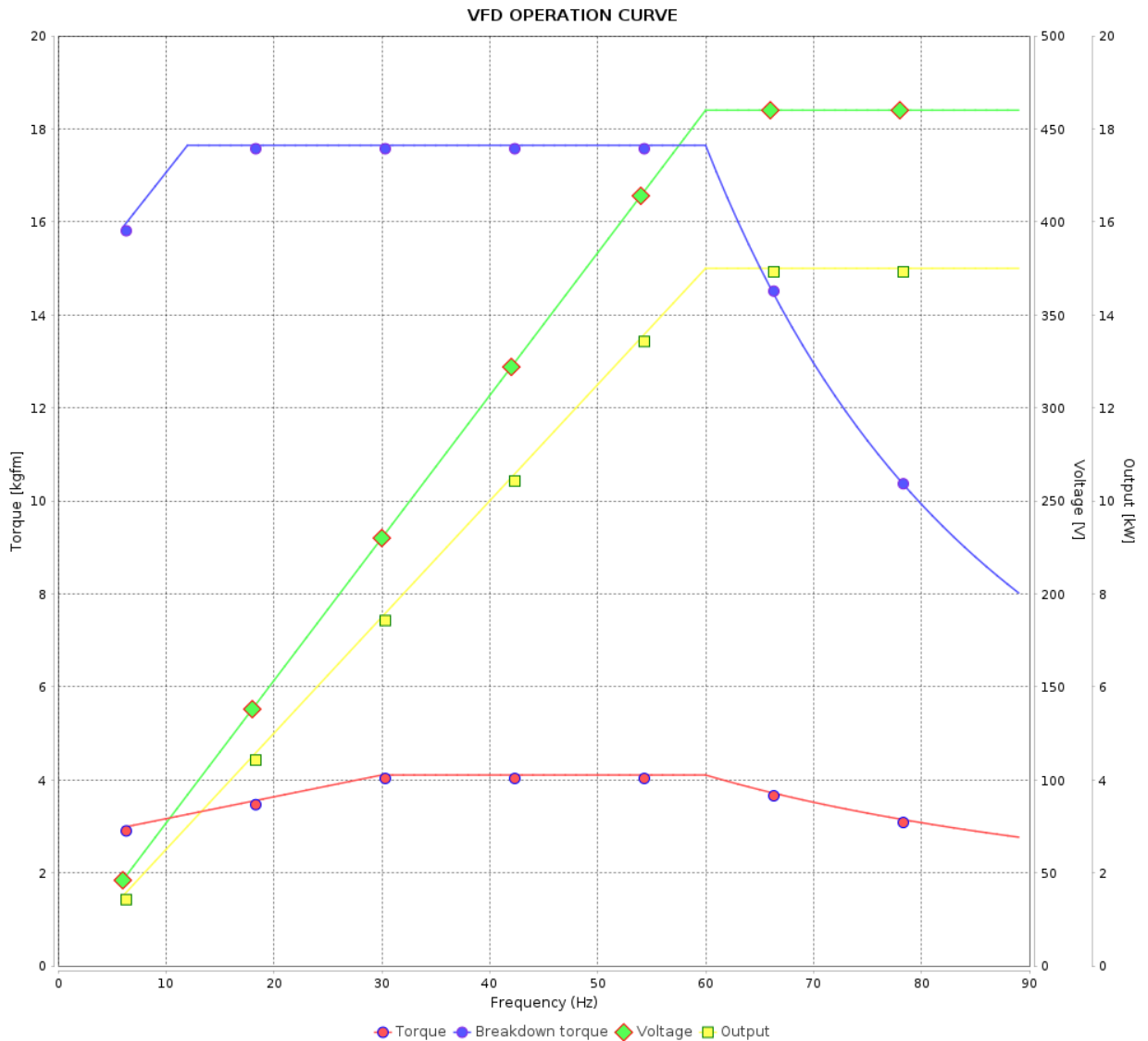
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 Rated speed : 3560 rpm

Moment of inertia (J) : 0.0551 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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