

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



|  |   |                             |  |                         |          |
|--|---|-----------------------------|--|-------------------------|----------|
| Customer   |   | : Astraprom d.o.o.          |  |                         |          |
| Product line   |   | : W22 IE3 Three-Phase       |  | Product code : 12863156 |          |
| Frame  | : 200L  | 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> | : 243 kg   |                         |          |
| Protection degree  | : IP55  | Moment of inertia (J)       | : 0.4571 kgm <sup>2</sup>  |                         |          |
| Design   | : N   |                             |  |                         |          |
| Output [kW]  | 15  | 15                          | 15   | 15                      |          |
| Poles  | 8   | 8                           | 8  | 8                       |          |
| Frequency [Hz]   | 50  | 50                          | 50   | 60                      |          |
| Rated voltage [V]  | 380/660   | 400/690                     | 415  | 460                     |          |
| Rated current [A]  | 33.9/19.5   | 33.0/19.1                   | 33.3   | 28.7                    |          |
| L. R. Amperes [A]  | 153/87.8  | 162/93.7                    | 170  | 158                     |          |
| LRC [A]  | 4.5   | 4.9                         | 5.1  | 5.5                     |          |
| No load current [A]  | 17.0/9.79   | 19.0/11.0                   | 21.0   | 17.0                    |          |
| Rated speed [RPM]  | 730   | 730                         | 735  | 885                     |          |
| Slip [%]   | 2.67  | 2.67                        | 2.00   | 1.67                    |          |
| Rated torque [kgfm]  | 20.0  | 20.0                        | 19.9   | 16.5                    |          |
| Locked rotor torque [%]  | 160   | 200                         | 220  | 200                     |          |
| Breakdown torque [%]   | 180   | 200                         | 220  | 229                     |          |
| Service factor   | 1.00  | 1.00                        | 1.00   | 1.00                    |          |
| Temperature rise   | 80 K  | 80 K                        | 80 K   | 80 K                    |          |
| Locked rotor time  | 63s (cold) 0s (hot)                                 | 57s (cold) 0s (hot)         | 52s (cold) 0s (hot)  | 73s (cold) 0s (hot)     |          |
| Noise level <sup>2</sup>   | 56.0 dB(A)  | 56.0 dB(A)                  | 56.0 dB(A)   | 56.0 dB(A)              |          |
| Efficiency (%)   | 25%   |                             |  |                         |          |
|  | 50%   | 89.4                        | 88.5   | 88.0                    | 89.5     |
|  | 75%   | 89.5                        | 89.9   | 89.6                    | 91.0     |
|  | 100%  | 89.6                        | 90.0   | 89.6                    | 91.0     |
| Power Factor   | 25%   |                             |  |                         |          |
|  | 50%   | 0.60                        | 0.56   | 0.53                    | 0.55     |
|  | 75%   | 0.70                        | 0.67   | 0.63                    | 0.65     |
|  | 100%  | 0.75                        | 0.73   | 0.70                    | 0.72     |
| Losses at normative operating points (speed;torque), in percentage of rated output power   |   |                             |  |                         |          |
| Losses (%)   | P1 (0,9;1,0)  | 11.3                        | 10.8   | 11.3                    | 9.6      |
|  | P2 (0,5;1,0)  | 9.8                         | 9.3  | 9.8                     | 8.3      |
|  | P3 (0,25;1,0)                                       | 9.1                         | 8.7  | 9.1                     | 7.7      |
|  | P4 (0,9;0,5)  | 5.6                         | 5.4  | 5.6                     | 4.8      |
|  | P5 (0,5;0,5)  | 4.1                         | 3.9  | 4.1                     | 3.5      |
|  | P6 (0,5;0,25)                                       | 2.9                         | 2.8  | 2.9                     | 2.5      |
|  | P7 (0,25;0,25)                                      | 2.1                         | 2.0  | 2.1                     | 1.8      |
| Bearing type   | : Drive end : 6312 ZZ C3 Non drive end : 6212 ZZ C3 | Foundation loads            |  |                         |          |
| Sealing  | : V'Ring V'Ring                                     | Max. traction : 355 kgf     |  |                         |          |
| Lubrication interval   | : - -   | Max. compression : 599 kgf  |  |                         |          |
| Lubricant amount   | : - -   |                             |  |                         |          |
| Lubricant type   | : Mobil Polyrex EM                                  |                             |  |                         |          |
| This revision replaces and cancel the previous one, which must be eliminated.<br>(1) Looking the motor from the shaft end.<br>(2) Measured at 1m and with tolerance of +3dB(A).<br>(3) Approximate weight subject to changes after manufacturing process.<br>(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. |                         |          |
| Rev.   | Changes Summary                                     |                             | Performed  | Checked                 | Date     |
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# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Notes

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# DATA SHEET



## Three Phase Induction Motor - Squirrel Cage

Customer : Astraprom d.o.o.

### Thermal protection

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

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|              |                 |           | Revision |                |

# TORQUE AND CURRENT VS SPEED CURVE

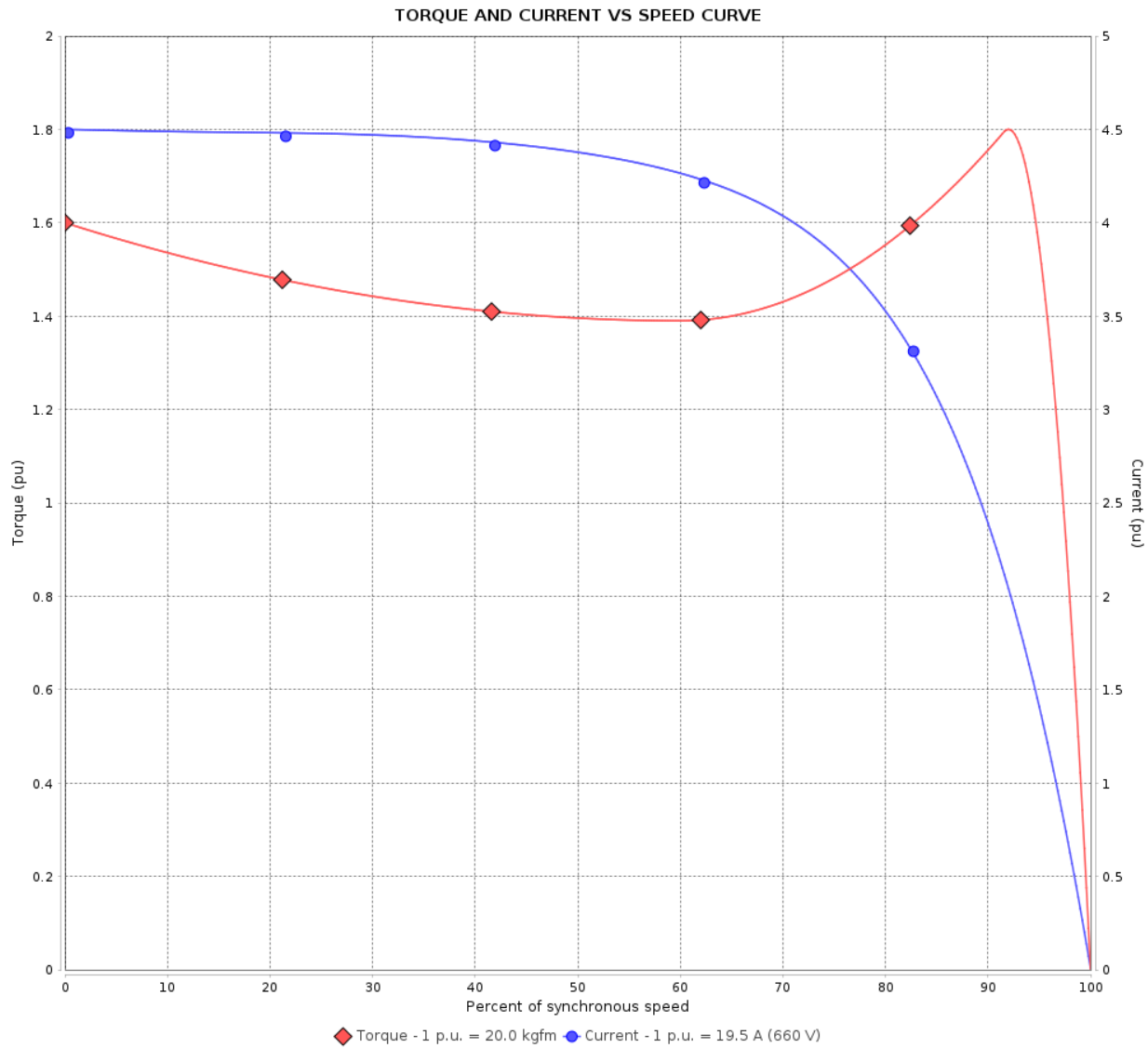
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 380/660 V 50 Hz 8P

|                     |               |                       |                           |
|---------------------|---------------|-----------------------|---------------------------|
| Rated current       | : 33.9/19.5 A | Moment of inertia (J) | : 0.4571 kgm <sup>2</sup> |
| LRC                 | : 4.5         | Duty cycle            | : S1                      |
| Rated torque        | : 20.0 kgfm   | Insulation class      | : F                       |
| Locked rotor torque | : 160 %       | Service factor        | : 1.00                    |
| Breakdown torque    | : 180 %       | Temperature rise      | : 80 K                    |
| Rated speed         | : 730 rpm     | Design                | : N                       |

Locked rotor time : 63s (cold) 0s (hot)

| Rev.         | Changes Summary | Performed | Checked | Date     |
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# TORQUE AND CURRENT VS SPEED CURVE

Three Phase Induction Motor - Squirrel Cage

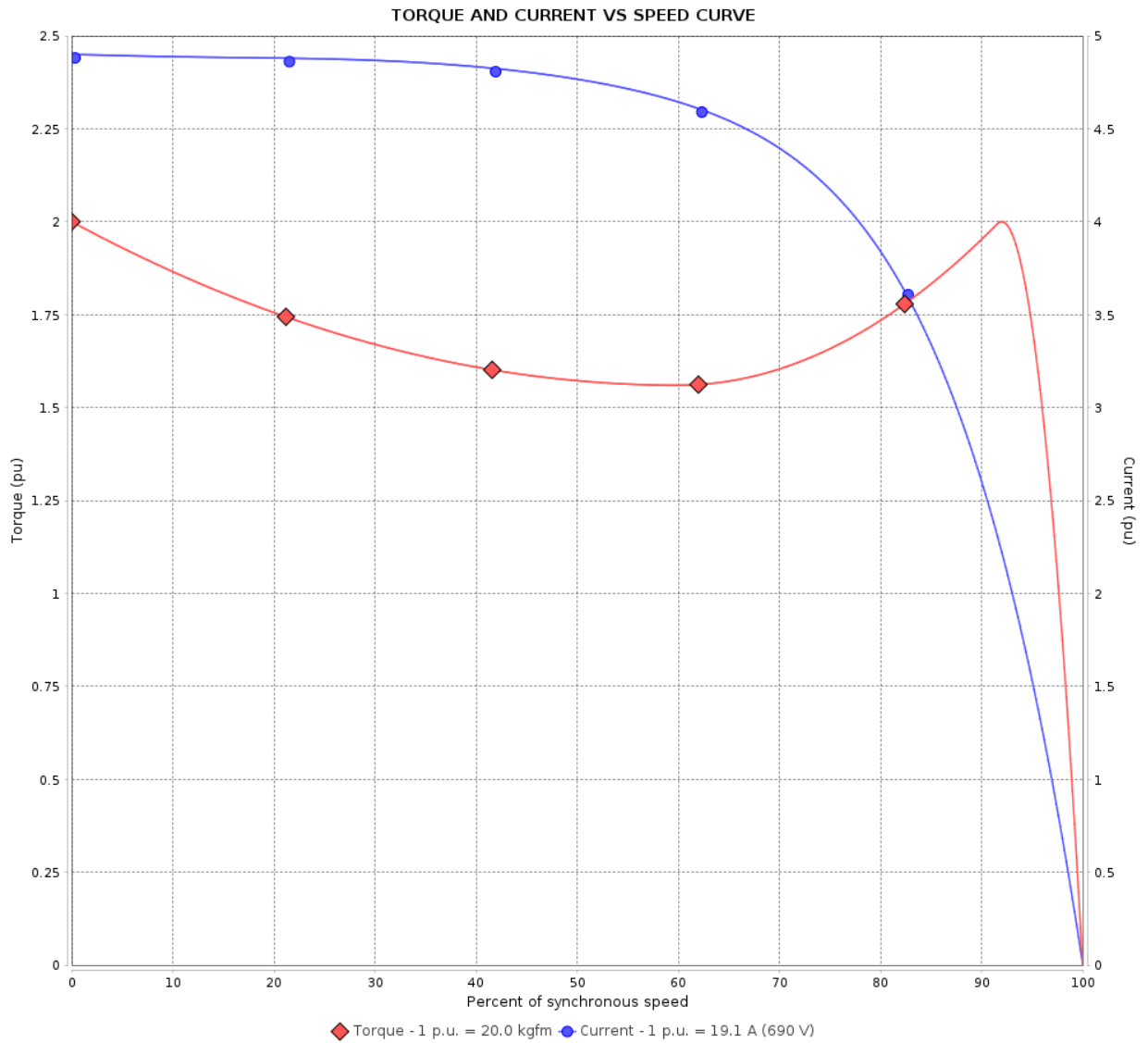


Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code :

12863156



Performance : 400/690 V 50 Hz 8P

Rated current : 33.0/19.1 A  
 LRC : 4.9  
 Rated torque : 20.0 kgfm  
 Locked rotor torque : 200 %  
 Breakdown torque : 200 %  
 Rated speed : 730 rpm

Moment of inertia (J) : 0.4571 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Locked rotor time : 57s (cold) 0s (hot)

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# TORQUE AND CURRENT VS SPEED CURVE

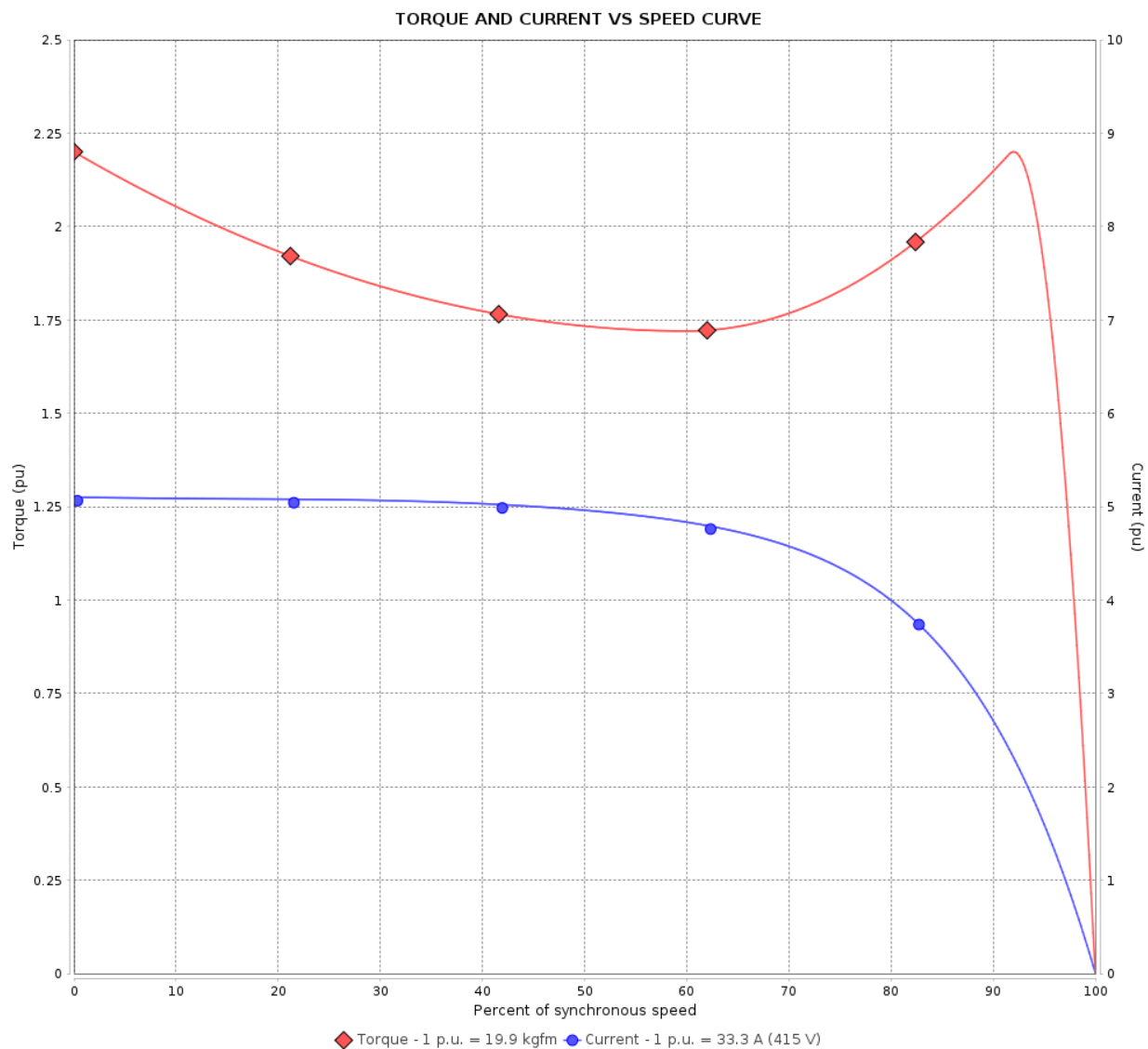
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 415 V 50 Hz 8P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 33.3 A    | Moment of inertia (J) | : 0.4571 kgm <sup>2</sup> |
| LRC                 | : 5.1       | Duty cycle            | : S1                      |
| Rated torque        | : 19.9 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 220 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 220 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 735 rpm   | Design                | : N                       |

Locked rotor time : 52s (cold) 0s (hot)

| Rev.         | Changes Summary | Performed | Checked        | Date     |
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# TORQUE AND CURRENT VS SPEED CURVE

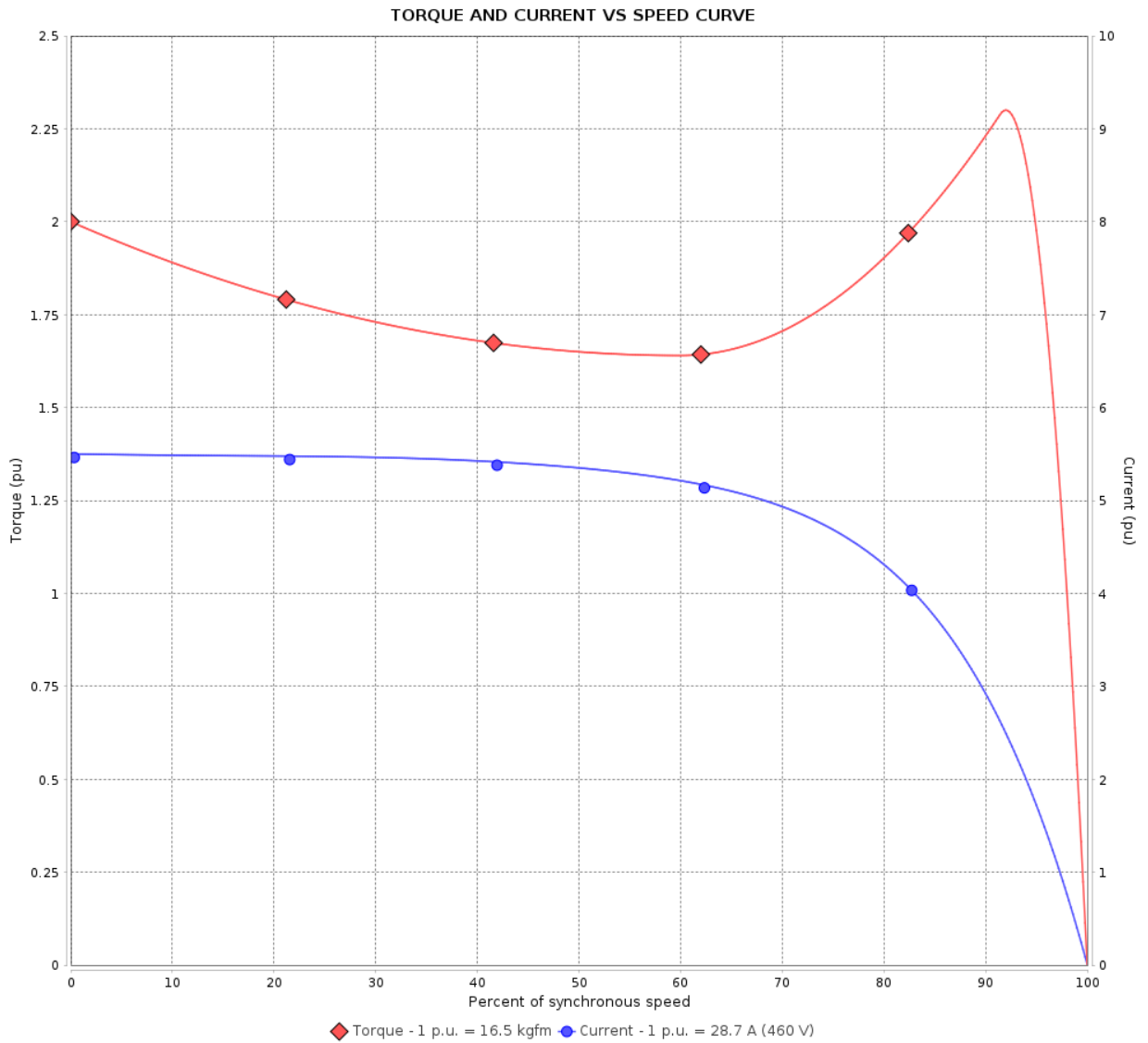


## Three Phase Induction Motor - Squirrel Cage

Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 460 V 60 Hz 8P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 28.7 A    | Moment of inertia (J) | : 0.4571 kgm <sup>2</sup> |
| LRC                 | : 5.5       | Duty cycle            | : S1                      |
| Rated torque        | : 16.5 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 200 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 229 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 885 rpm   | Design                | : N                       |

Locked rotor time : 73s (cold) 0s (hot)

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# LOAD PERFORMANCE CURVE

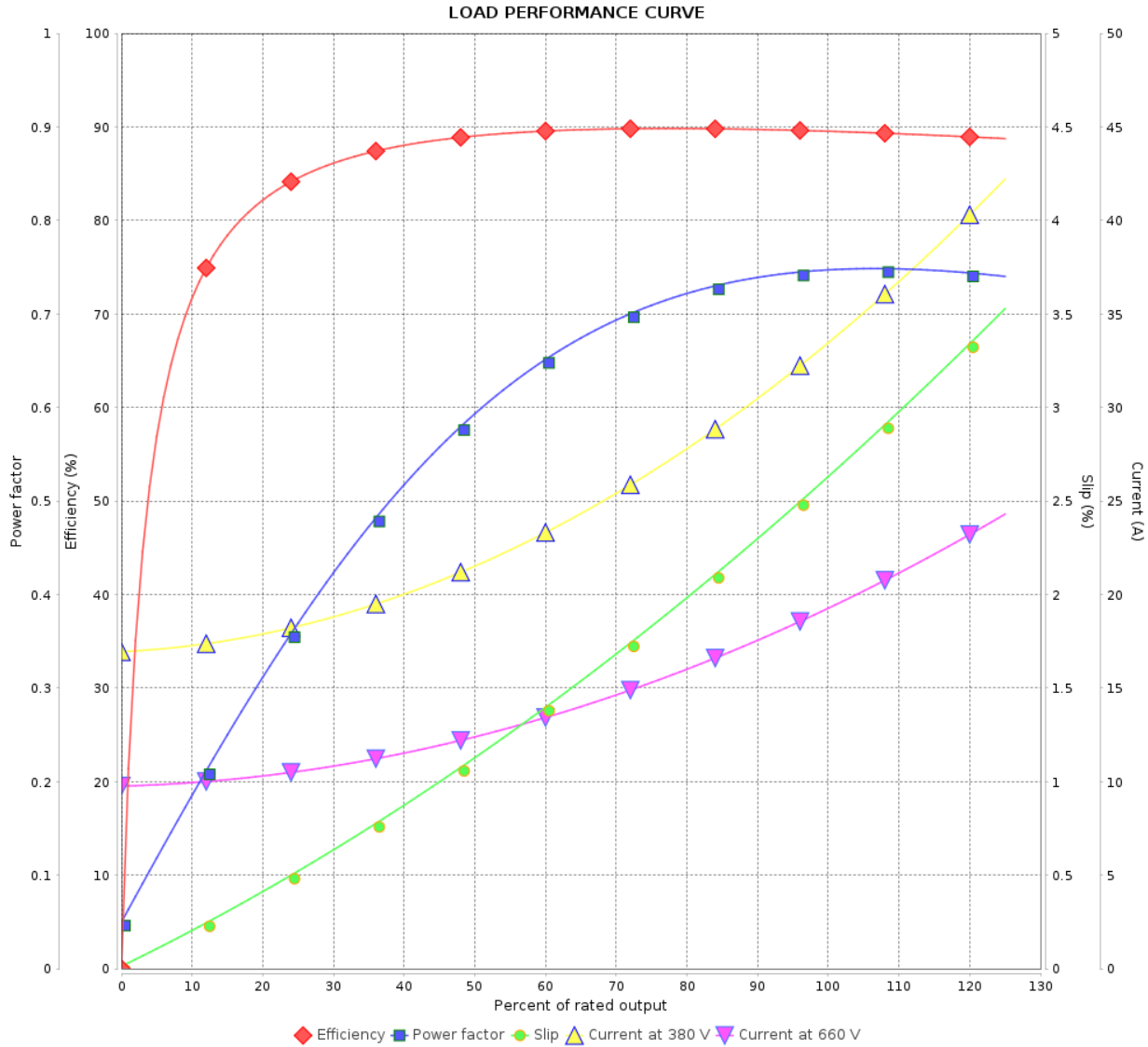
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 380/660 V 50 Hz 8P

Rated current : 33.9/19.5 A  
 LRC : 4.5  
 Rated torque : 20.0 kgfm  
 Locked rotor torque : 160 %  
 Breakdown torque : 180 %  
 Rated speed : 730 rpm

Moment of inertia (J) : 0.4571 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

| Rev.         | Changes Summary | Performed | Checked        | Date     |
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# LOAD PERFORMANCE CURVE

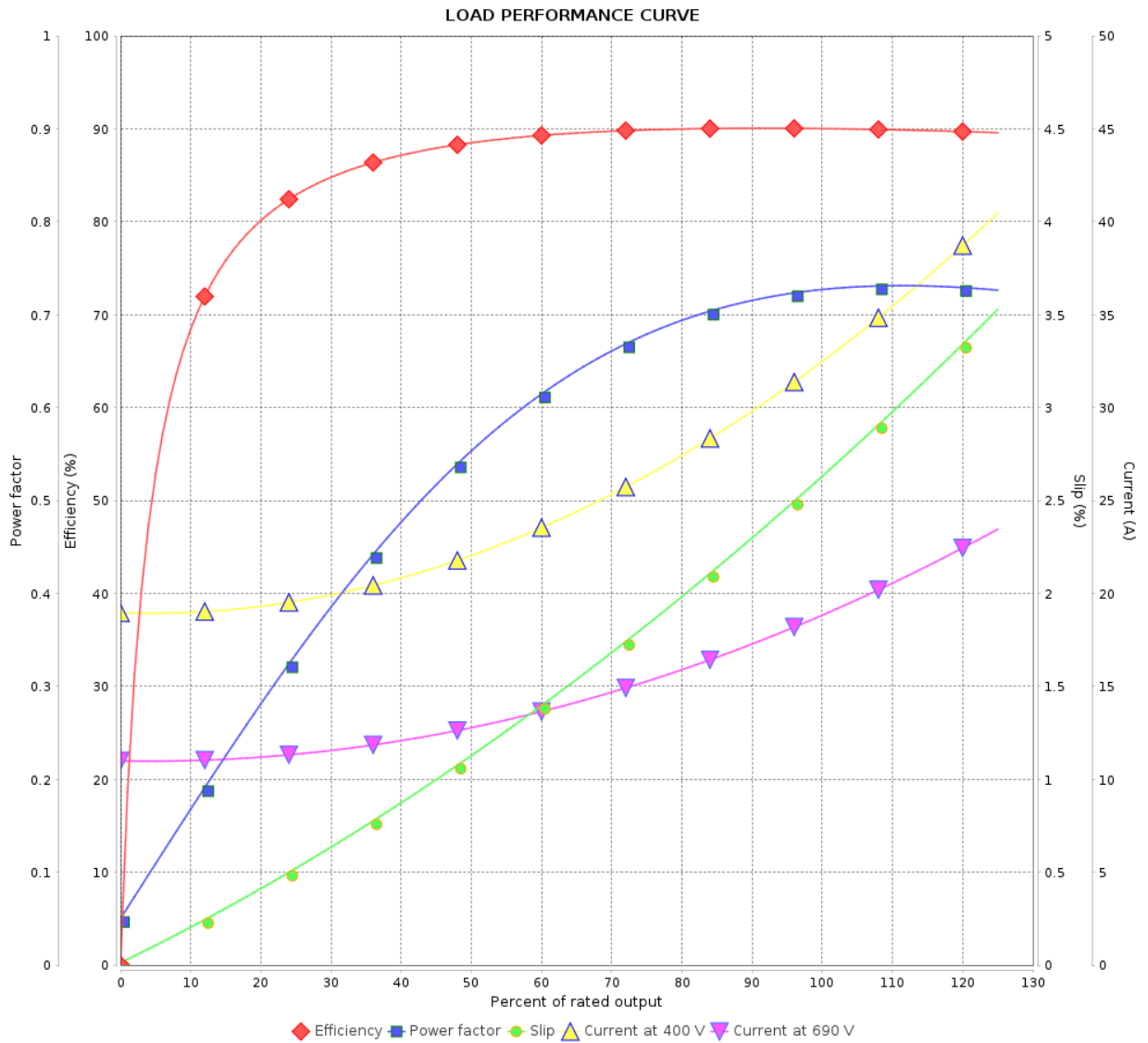
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 400/690 V 50 Hz 8P

Rated current : 33.0/19.1 A  
 LRC : 4.9  
 Rated torque : 20.0 kgfm  
 Locked rotor torque : 200 %  
 Breakdown torque : 200 %  
 Rated speed : 730 rpm

Moment of inertia (J) : 0.4571 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

| Rev.         | Changes Summary | Performed | Checked | Date     |
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# LOAD PERFORMANCE CURVE

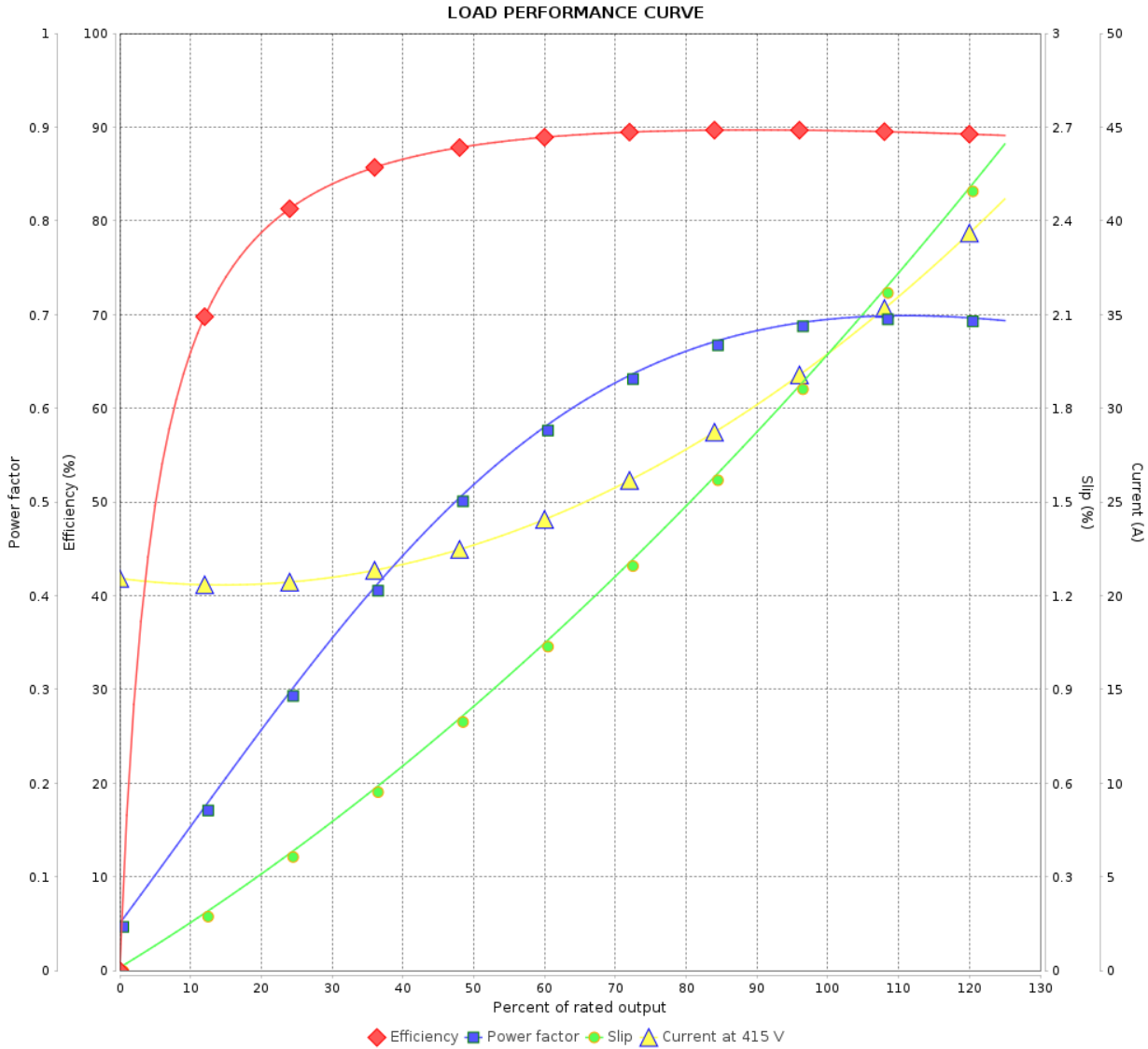
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 415 V 50 Hz 8P

Rated current : 33.3 A  
 LRC : 5.1  
 Rated torque : 19.9 kgfm  
 Locked rotor torque : 220 %  
 Breakdown torque : 220 %  
 Rated speed : 735 rpm

Moment of inertia (J) : 0.4571 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

| Rev.         | Changes Summary | Performed | Checked | Date     |
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# LOAD PERFORMANCE CURVE

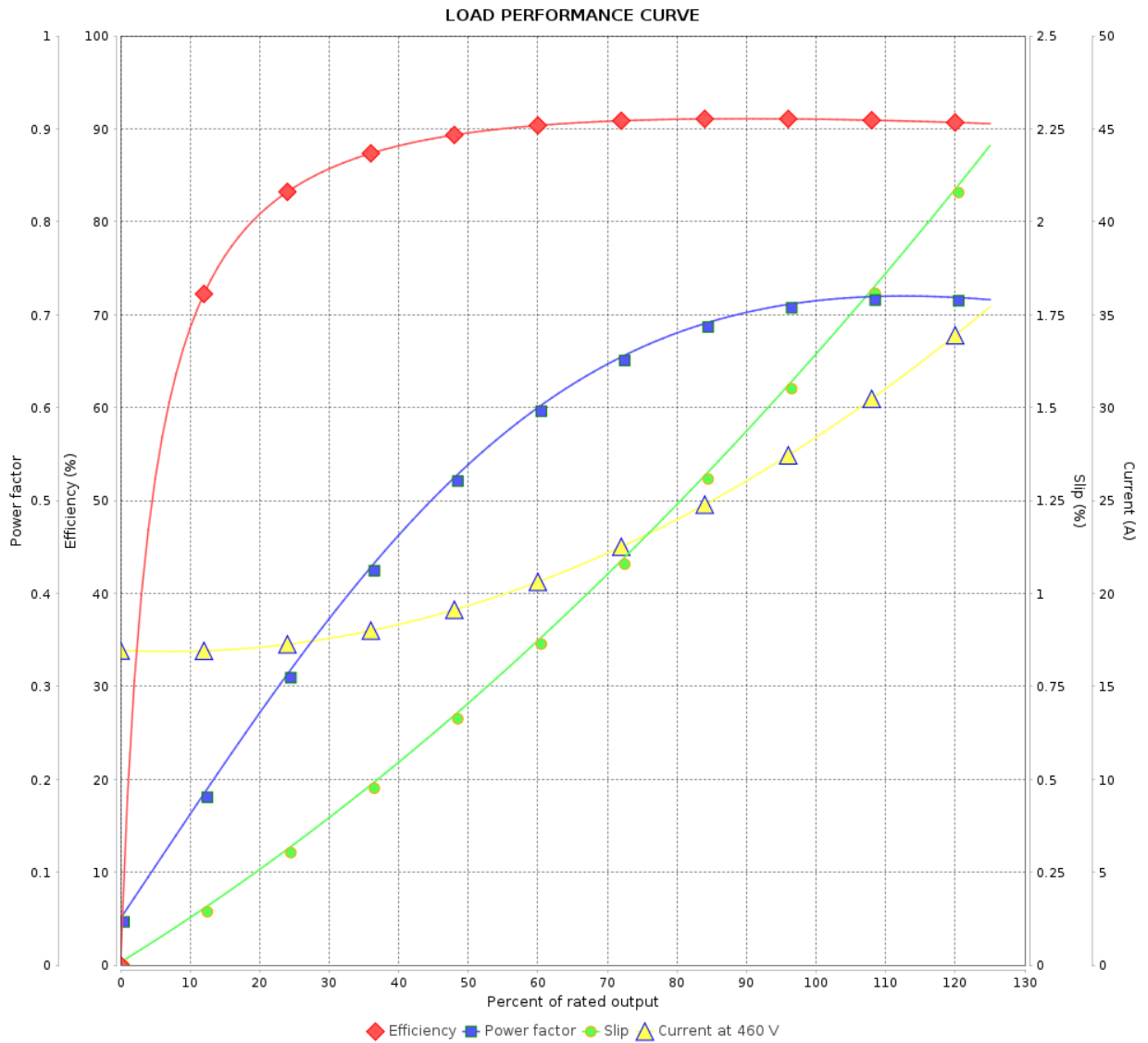
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 460 V 60 Hz 8P

Rated current : 28.7 A  
 LRC : 5.5  
 Rated torque : 16.5 kgfm  
 Locked rotor torque : 200 %  
 Breakdown torque : 229 %  
 Rated speed : 885 rpm

Moment of inertia (J) : 0.4571 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

| Rev.         | Changes Summary | Performed | Checked | Date     |
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# THERMAL LIMIT CURVE

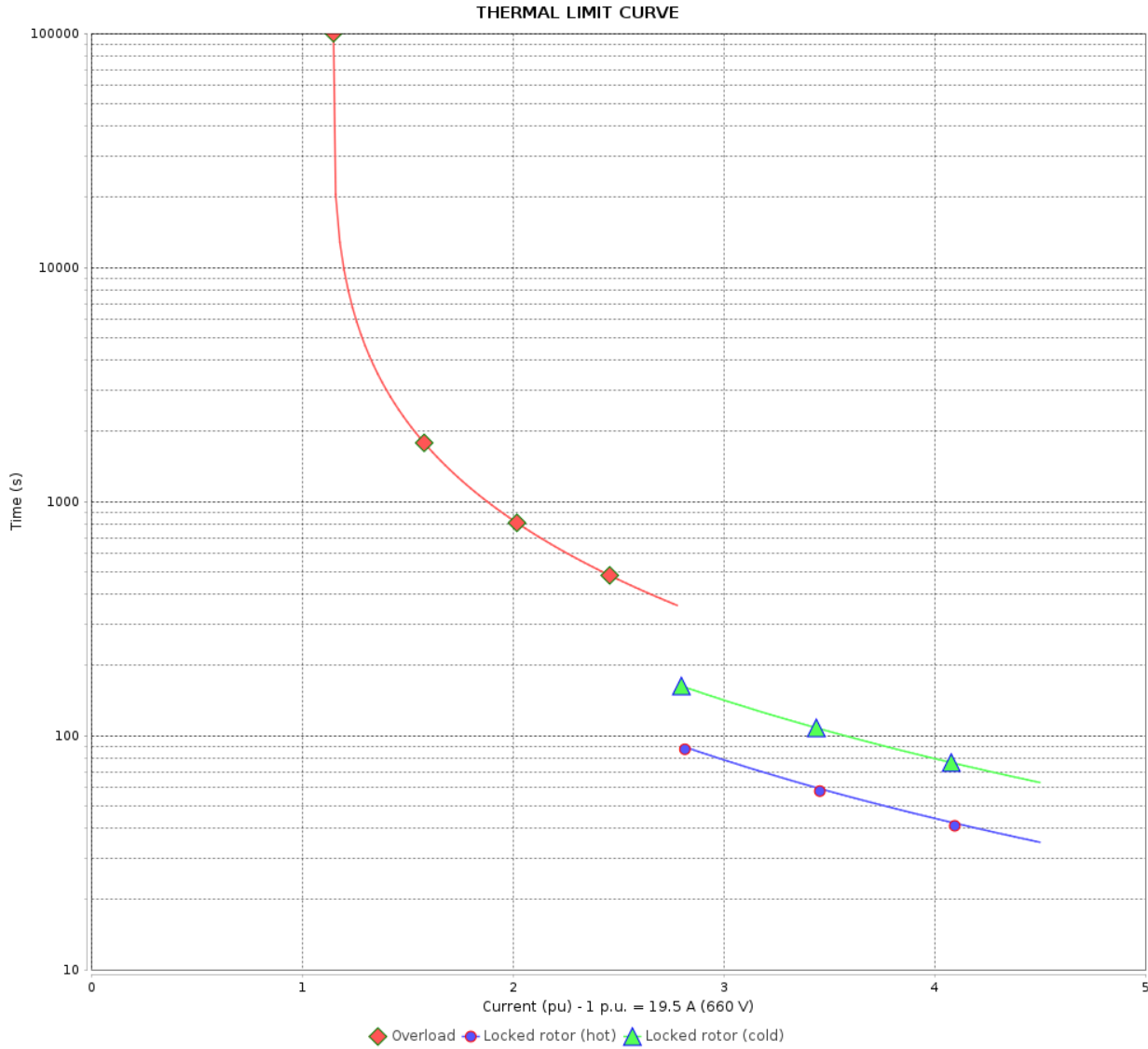
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 380/660 V 50 Hz 8P

Rated current : 33.9/19.5 A  
 LRC : 4.5  
 Rated torque : 20.0 kgfm  
 Locked rotor torque : 160 %  
 Breakdown torque : 180 %  
 Rated speed : 730 rpm

Moment of inertia (J) : 0.4571 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Heating constant

Cooling constant

| Rev.         | Changes Summary | Performed | Checked  | Date |
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# THERMAL LIMIT CURVE

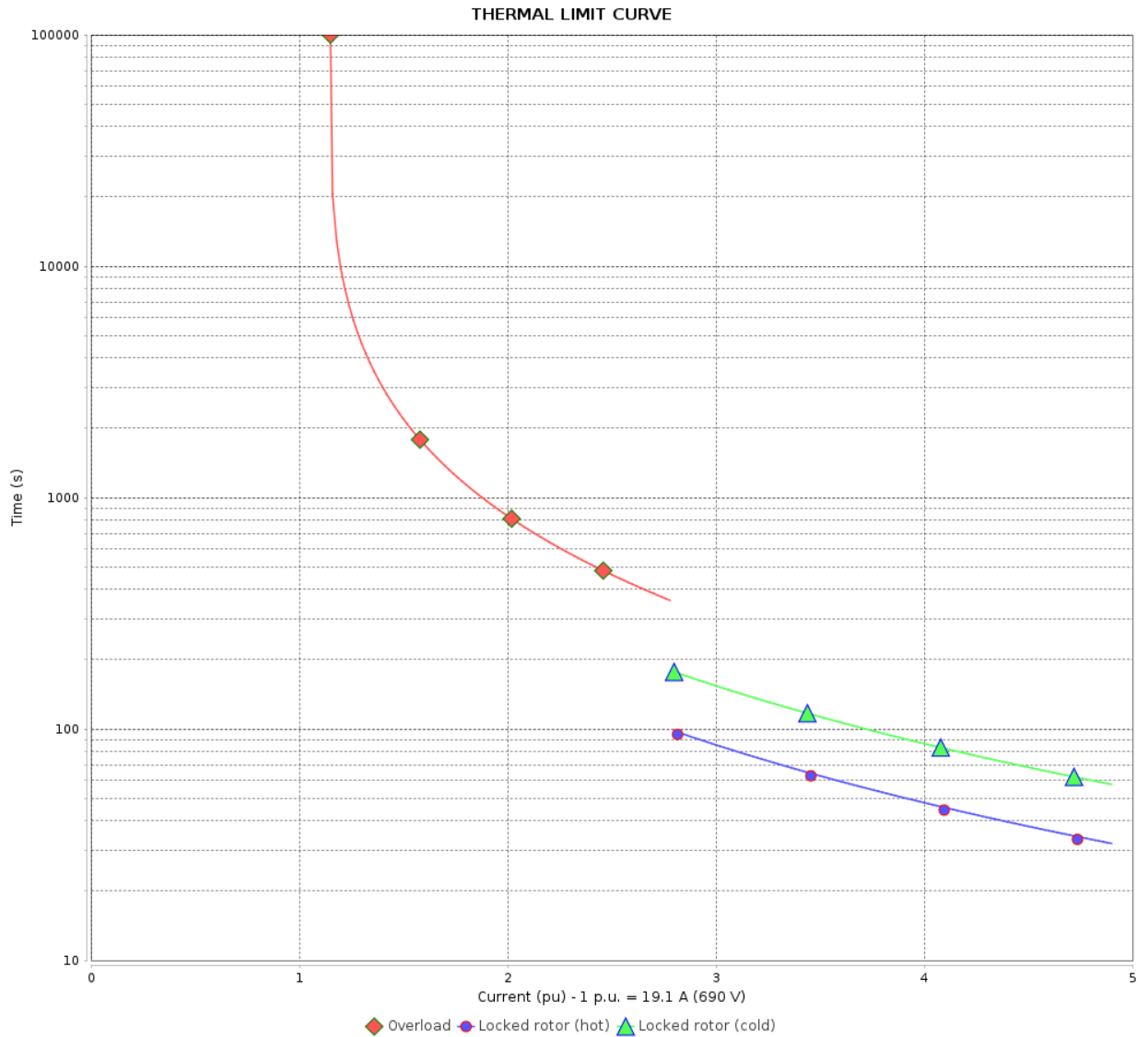
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 400/690 V 50 Hz 8P

Rated current : 33.0/19.1 A  
 LRC : 4.9  
 Rated torque : 20.0 kgfm  
 Locked rotor torque : 200 %  
 Breakdown torque : 200 %  
 Rated speed : 730 rpm

Moment of inertia (J) : 0.4571 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Heating constant

Cooling constant

| Rev.         | Changes Summary | Performed | Checked  | Date |
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# THERMAL LIMIT CURVE

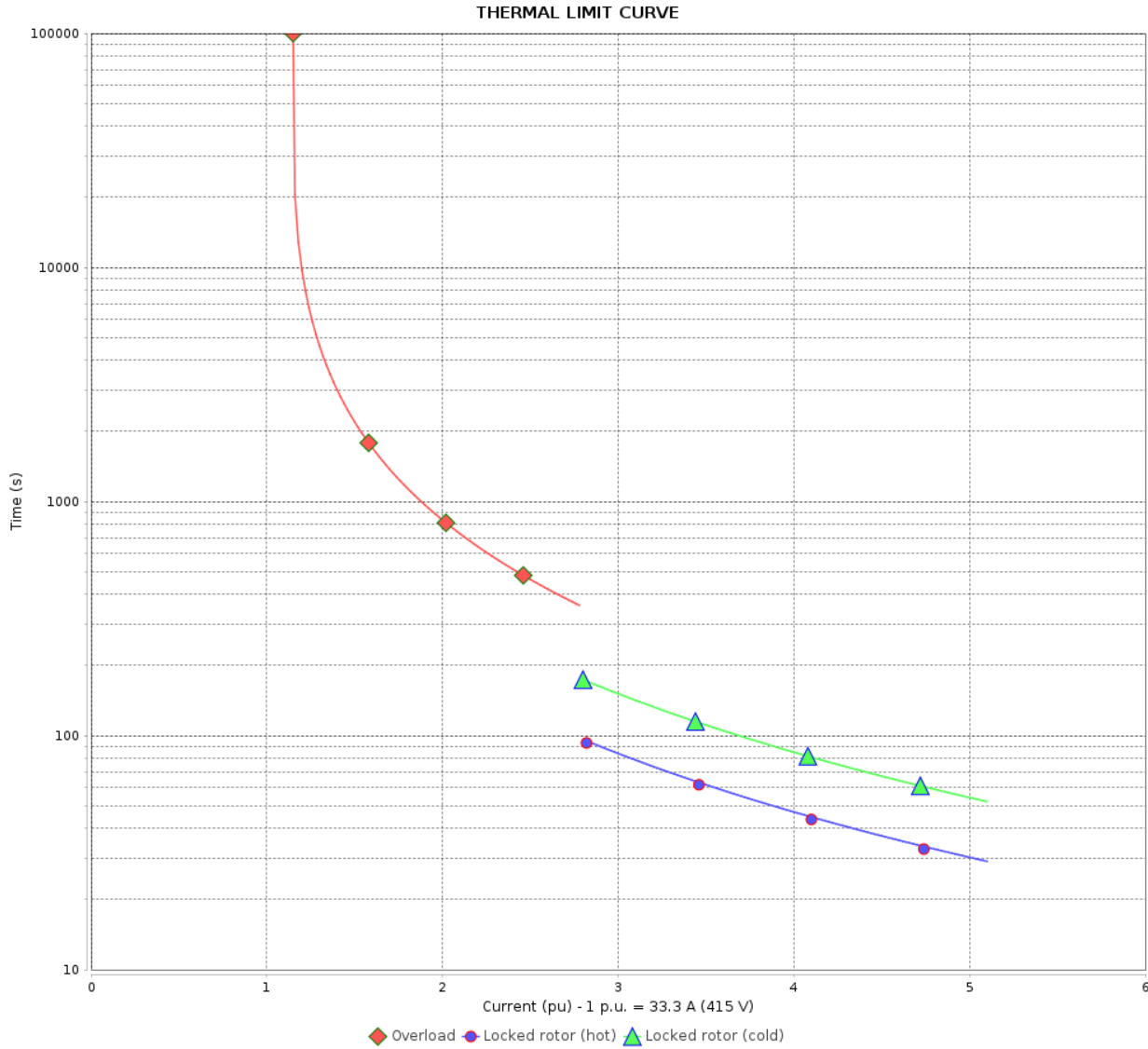
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 415 V 50 Hz 8P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 33.3 A    | Moment of inertia (J) | : 0.4571 kgm <sup>2</sup> |
| LRC                 | : 5.1       | Duty cycle            | : S1                      |
| Rated torque        | : 19.9 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 220 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 220 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 735 rpm   | Design                | : N                       |

Heating constant

Cooling constant

| Rev.         | Changes Summary | Performed | Checked         | Date     |
|--------------|-----------------|-----------|-----------------|----------|
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# THERMAL LIMIT CURVE

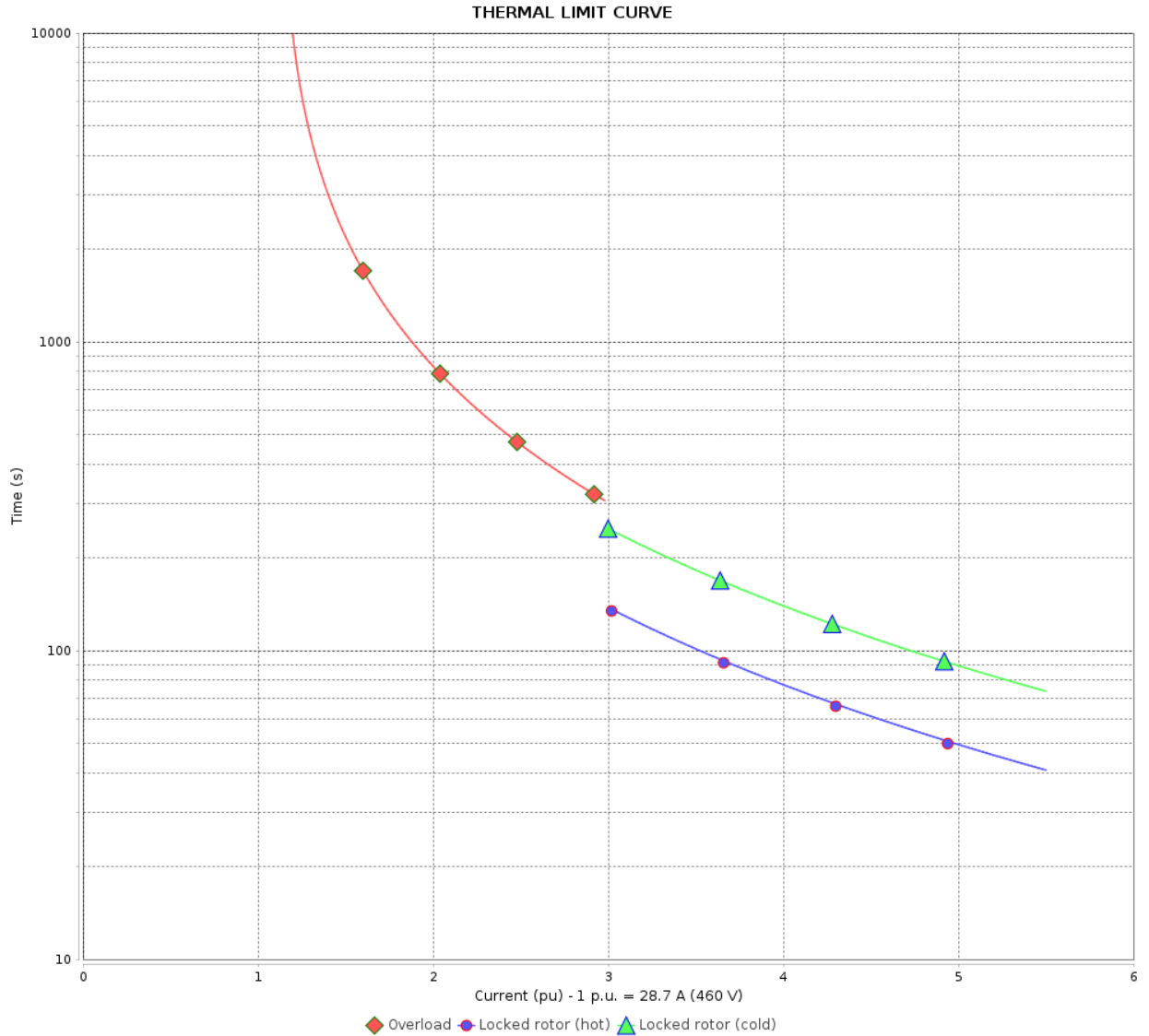
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

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Product code : 12863156



Performance : 460 V 60 Hz 8P

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| Rated current       | : 28.7 A    | Moment of inertia (J) | : 0.4571 kgm <sup>2</sup> |
| LRC                 | : 5.5       | Duty cycle            | : S1                      |
| Rated torque        | : 16.5 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 200 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 229 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 885 rpm   | Design                | : N                       |

Heating constant

Cooling constant

| Rev.         | Changes Summary | Performed | Checked | Date     |
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# VFD OPERATION CURVE

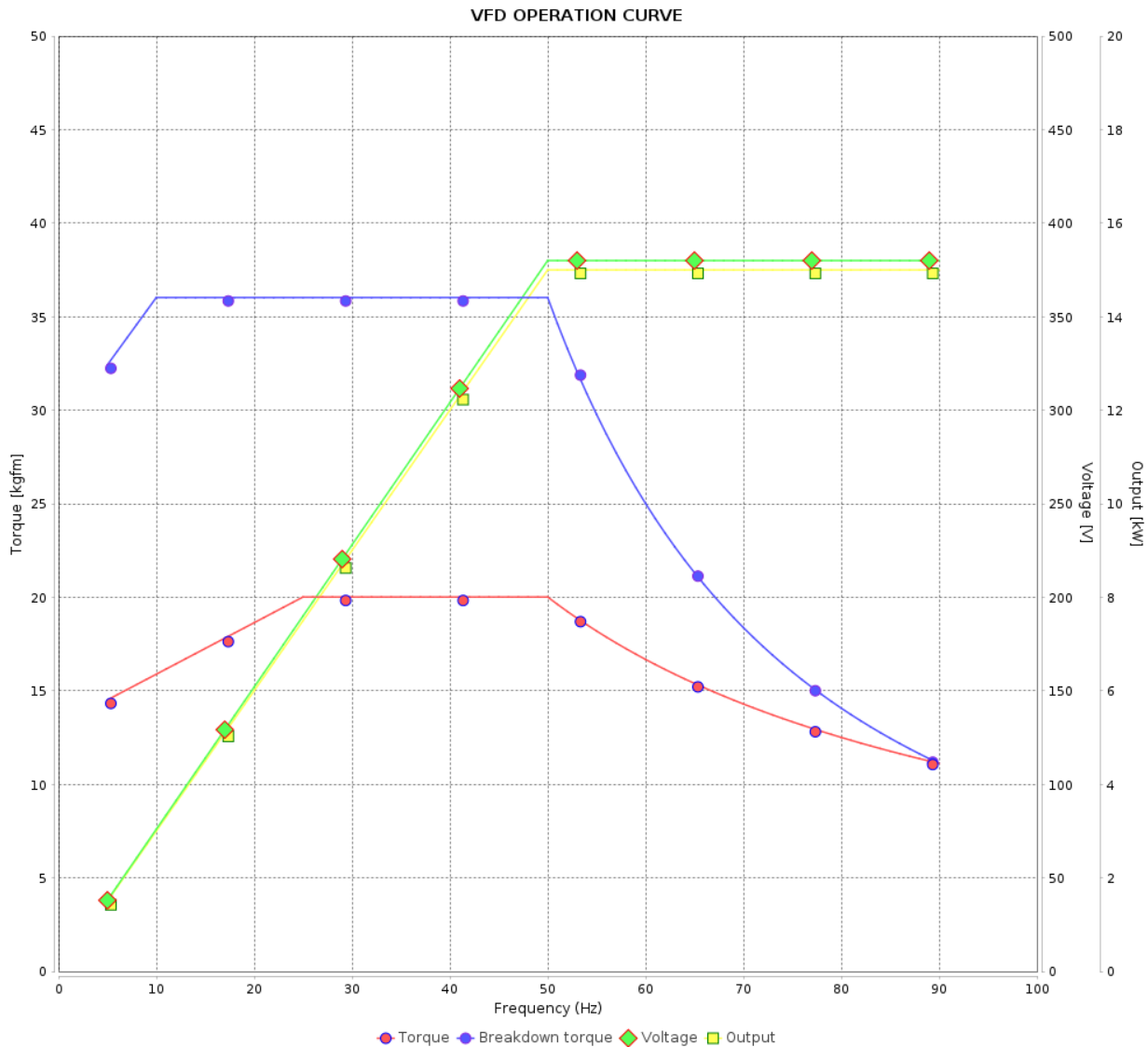
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

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 Breakdown torque : 180 %  
 Rated speed : 730 rpm

Moment of inertia (J) : 0.4571 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

| Rev.         | Changes Summary | Performed | Checked         | Date     |
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# VFD OPERATION CURVE

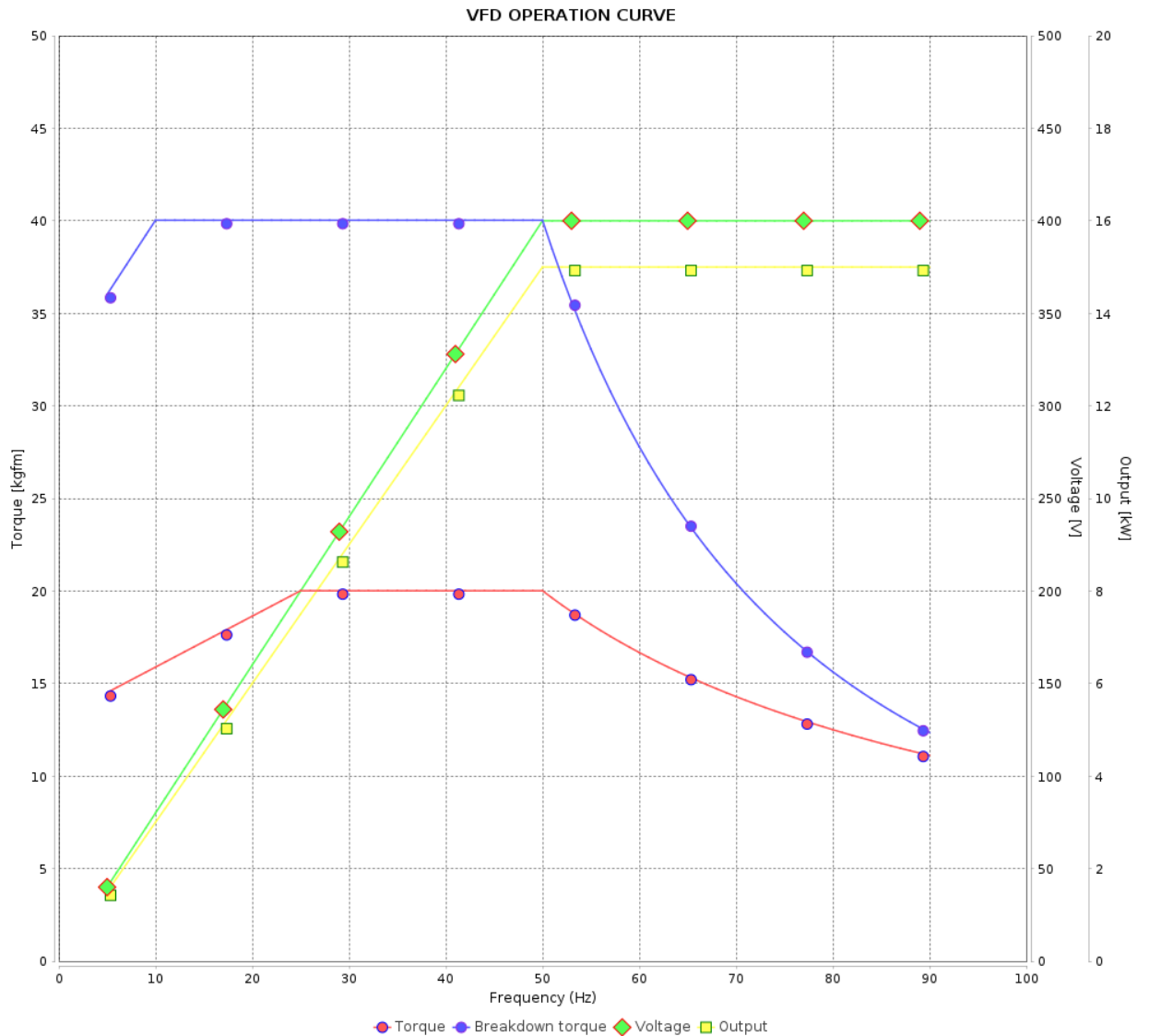
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 Temperature rise : 80 K  
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| Rev.         | Changes Summary | Performed | Checked         | Date     |
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# VFD OPERATION CURVE

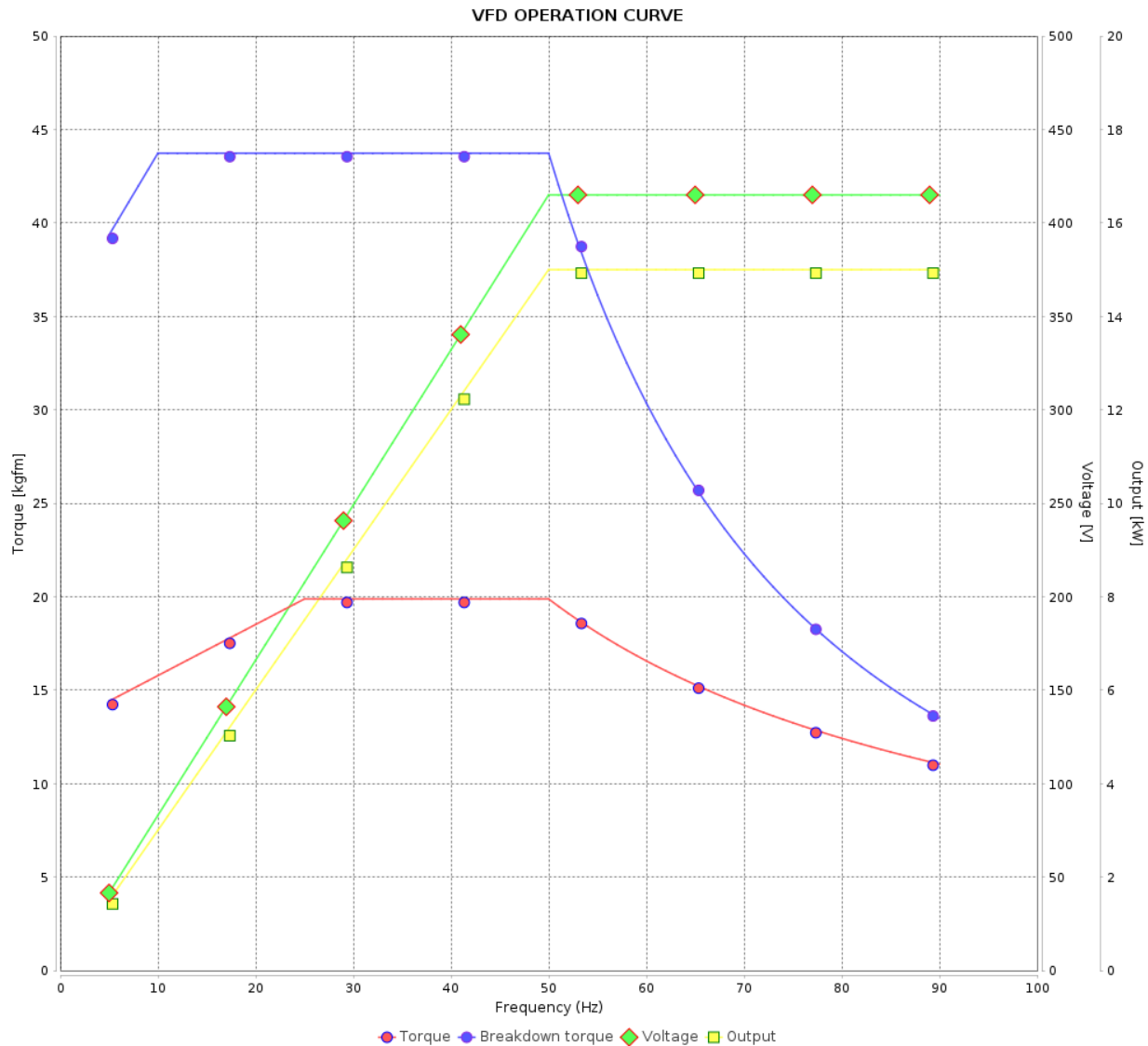
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

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Product code : 12863156



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|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
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| LRC                 | : 5.1       | Duty cycle            | : S1                      |
| Rated torque        | : 19.9 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 220 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 220 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 735 rpm   | Design                | : N                       |

| Rev.         | Changes Summary | Performed | Checked | Date     |
|--------------|-----------------|-----------|---------|----------|
|              |                 |           |         |          |
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| Date         | 30/10/2023      |           |         |          |

# VFD OPERATION CURVE

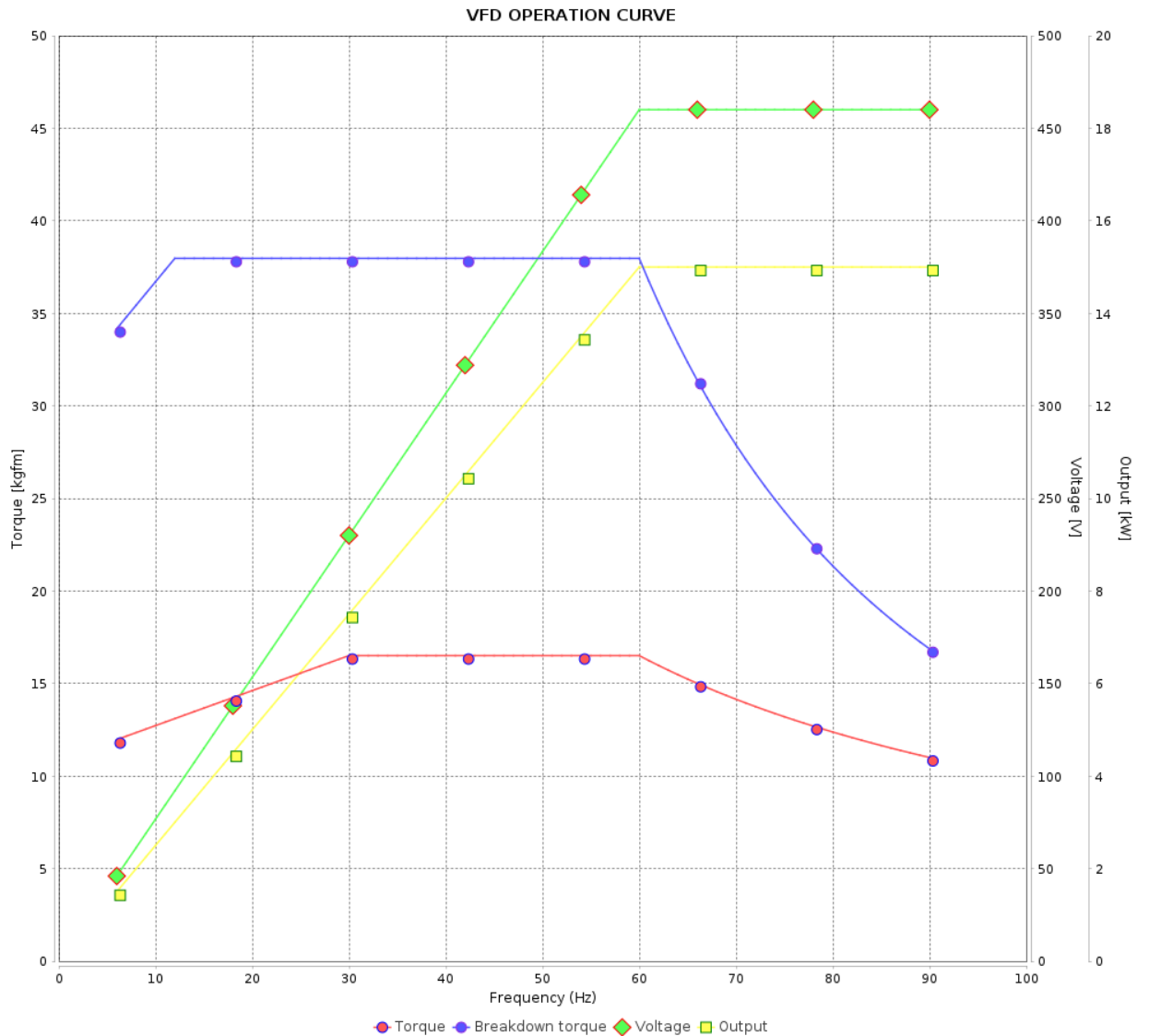
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12863156



Performance : 460 V 60 Hz 8P

Rated current : 28.7 A  
 LRC : 5.5  
 Rated torque : 16.5 kgfm  
 Locked rotor torque : 200 %  
 Breakdown torque : 229 %  
 Rated speed : 885 rpm

Moment of inertia (J) : 0.4571 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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