

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



|  |                      |                             |  |                         |                      |
|--|----------------------|-----------------------------|--|-------------------------|----------------------|
| Customer   |                      | : Astraprom d.o.o.          |  |                         |                      |
| Product line   |                      | : W22 IE3 Three-Phase       |  | Product code : 12868213 |                      |
| Frame  | : 132S               | Cooling method              | : IC411 - TEFC   |                         |                      |
| Insulation class   | : F                  | Mounting                    | : B5T  |                         |                      |
| 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> | : 67.4 kg  |                         |                      |
| Protection degree  | : IP55               | Moment of inertia (J)       | : 0.0491 kgm <sup>2</sup>  |                         |                      |
| Design   | : N                  |                             |  |                         |                      |
| Output [kW]  | 5.5                  | 5.5                         | 5.5  | 5.5                     | 5.5                  |
| Poles  | 4                    | 4                           | 4  | 4                       | 4                    |
| Frequency [Hz]   | 50                   | 50                          | 50   | 50                      | 60                   |
| Rated voltage [V]  | 380/660              | 400/690                     | 415  | 415                     | 460                  |
| Rated current [A]  | 10.8/6.22            | 10.5/6.09                   | 10.4   | 10.4                    | 9.18                 |
| L. R. Amperes [A]  | 81.0/46.6            | 87.2/50.5                   | 91.5   | 91.5                    | 82.6                 |
| LRC [A]  | 7.5                  | 8.3                         | 8.8  | 8.8                     | 9.0                  |
| No load current [A]  | 4.70/2.71            | 5.20/3.01                   | 5.60   | 5.60                    | 4.70                 |
| Rated speed [RPM]  | 1460                 | 1465                        | 1470   | 1470                    | 1770                 |
| Slip [%]   | 2.67                 | 2.33                        | 2.00   | 2.00                    | 1.67                 |
| Rated torque [kgfm]  | 3.67                 | 3.67                        | 3.66   | 3.66                    | 3.03                 |
| Locked rotor torque [%]  | 210                  | 229                         | 250  | 250                     | 250                  |
| Breakdown torque [%]   | 300                  | 330                         | 360  | 360                     | 390                  |
| Service factor   | 1.00                 | 1.00                        | 1.00   | 1.00                    | 1.00                 |
| Temperature rise   | 80 K                 | 80 K                        | 80 K   | 80 K                    | 80 K                 |
| Locked rotor time  | 25s (cold) 14s (hot) | 21s (cold) 12s (hot)        | 21s (cold) 12s (hot)   | 21s (cold) 12s (hot)    | 28s (cold) 16s (hot) |
| Noise level <sup>2</sup>   | 56.0 dB(A)           | 56.0 dB(A)                  | 56.0 dB(A)   | 56.0 dB(A)              | 58.0 dB(A)           |
| Efficiency (%)   | 25%                  |                             |  |                         |                      |
|  | 50%                  | 89.0                        | 89.0   | 89.4                    | 90.2                 |
|  | 75%                  | 89.6                        | 89.6   | 89.6                    | 91.0                 |
|  | 100%                 | 89.6                        | 89.7   | 89.8                    | 91.7                 |
| Power Factor   | 25%                  |                             |  |                         |                      |
|  | 50%                  | 0.71                        | 0.66   | 0.63                    | 0.65                 |
|  | 75%                  | 0.81                        | 0.78   | 0.75                    | 0.76                 |
|  | 100%                 | 0.86                        | 0.84   | 0.82                    | 0.82                 |
| Losses at normative operating points (speed;torque), in percentage of rated output power   |                      |                             |  |                         |                      |
| Losses (%)   | P1 (0,9;1,0)         | 11.4                        | 11.2   | 11.1                    | 8.9                  |
|  | P2 (0,5;1,0)         | 10.1                        | 10.0   | 9.9                     | 7.9                  |
|  | P3 (0,25;1,0)        | 9.8                         | 9.7  | 9.6                     | 7.7                  |
|  | P4 (0,9;0,5)         | 5.3                         | 5.2  | 5.2                     | 4.1                  |
|  | P5 (0,5;0,5)         | 3.9                         | 3.8  | 3.8                     | 3.0                  |
|  | P6 (0,5;0,25)        | 2.5                         | 2.5  | 2.5                     | 2.0                  |
|  | P7 (0,25;0,25)       | 1.8                         | 1.8  | 1.8                     | 1.4                  |
| Bearing type   | : Drive end 6308 ZZ  | Non drive end 6207 ZZ       | Foundation loads   |                         |                      |
| Sealing  | : Oil Seal           | Lip Seal                    | Max. traction : 184 kgf  |                         |                      |
| Lubrication interval   | : -                  | -                           | Max. compression : 252 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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# TORQUE AND CURRENT VS SPEED CURVE

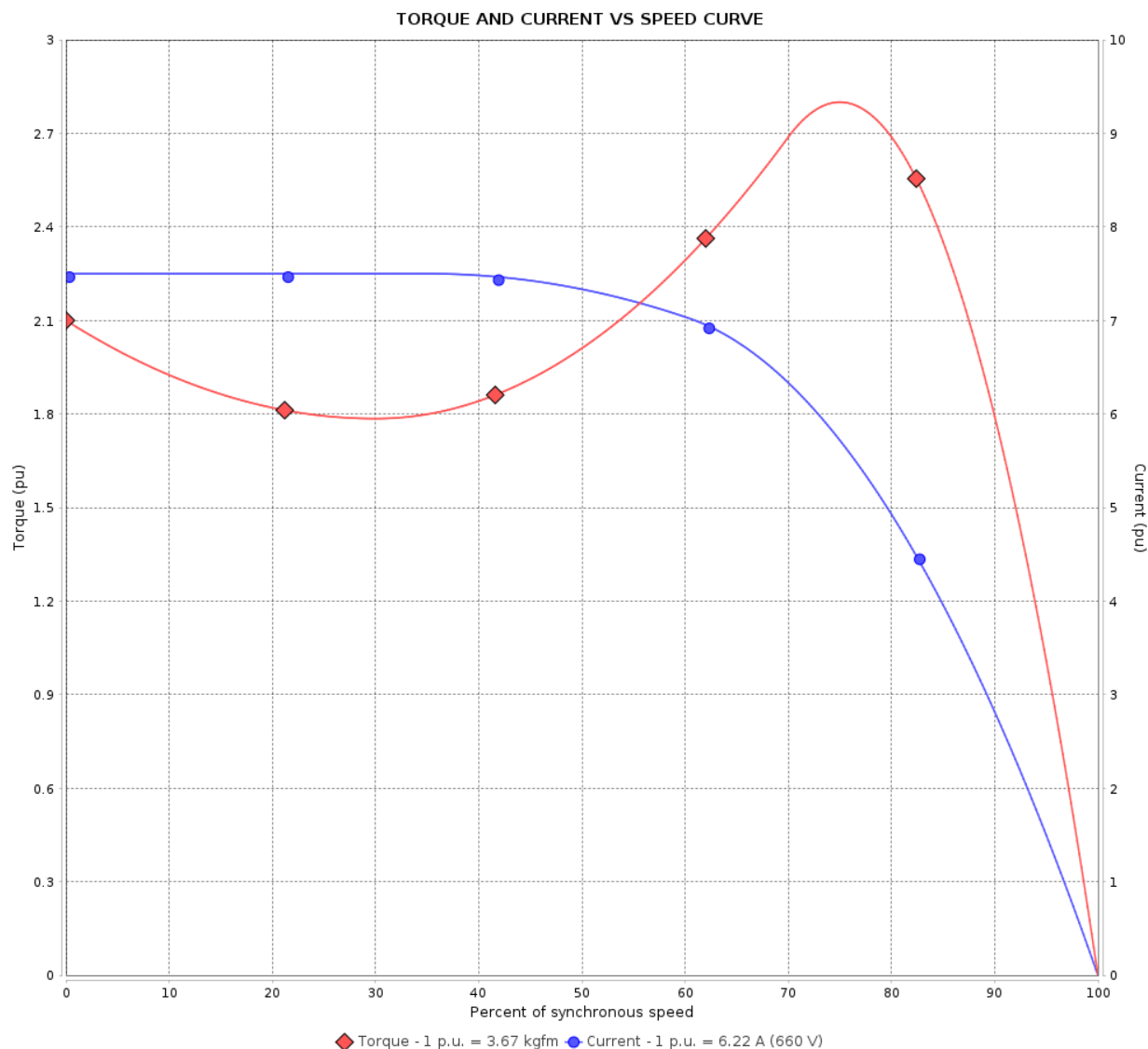
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12868213



Performance : 380/660 V 50 Hz 4P

Rated current : 10.8/6.22 A  
 LRC : 7.5  
 Rated torque : 3.67 kgfm  
 Locked rotor torque : 210 %  
 Breakdown torque : 300 %  
 Rated speed : 1460 rpm

Moment of inertia (J) : 0.0491 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Locked rotor time : 25s (cold) 14s (hot)

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

Three Phase Induction Motor - Squirrel Cage

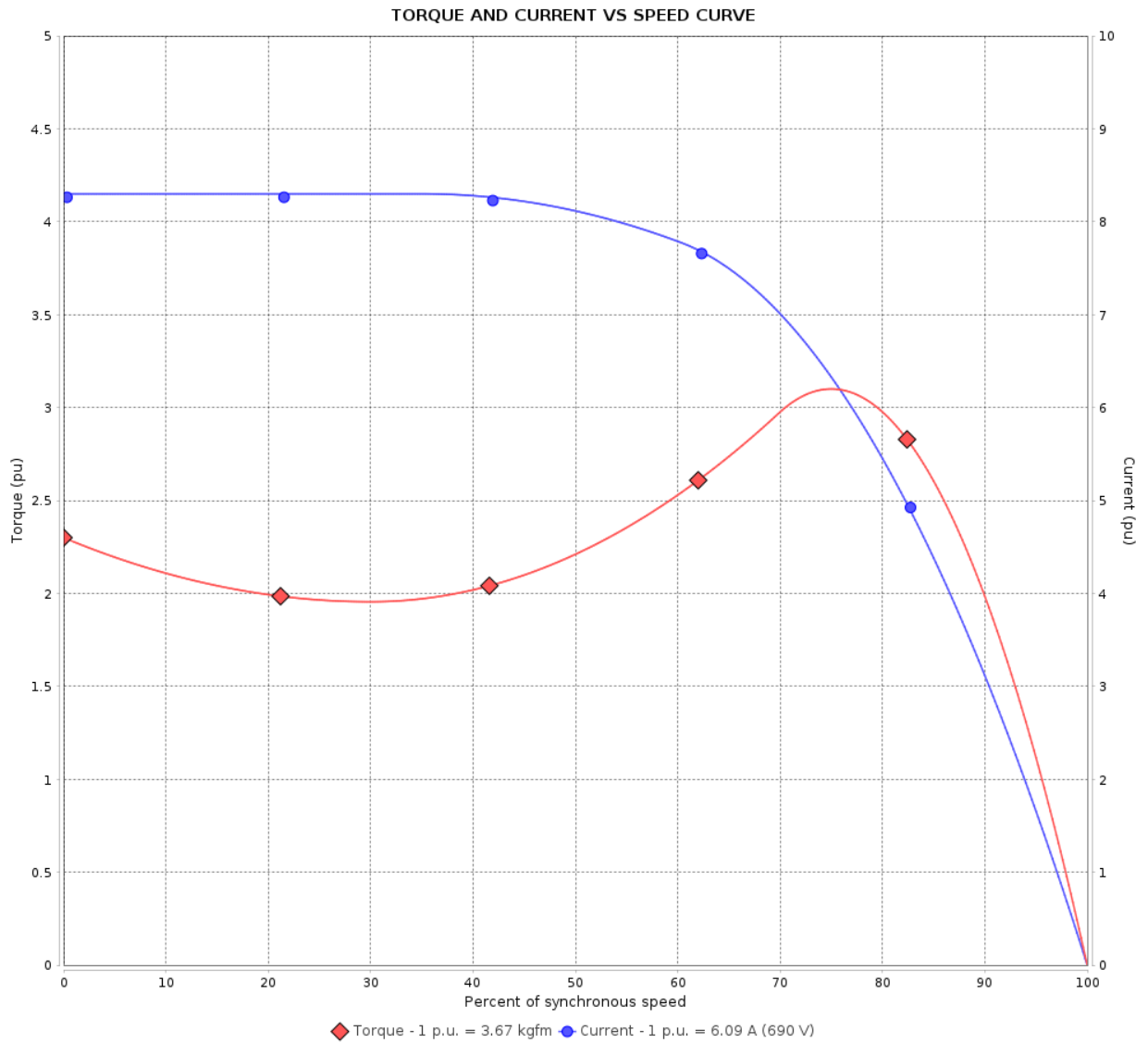


Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code :

12868213



Performance : 400/690 V 50 Hz 4P

Rated current : 10.5/6.09 A  
 LRC : 8.3  
 Rated torque : 3.67 kgfm  
 Locked rotor torque : 229 %  
 Breakdown torque : 330 %  
 Rated speed : 1465 rpm

Moment of inertia (J) : 0.0491 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Locked rotor time : 21s (cold) 12s (hot)

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

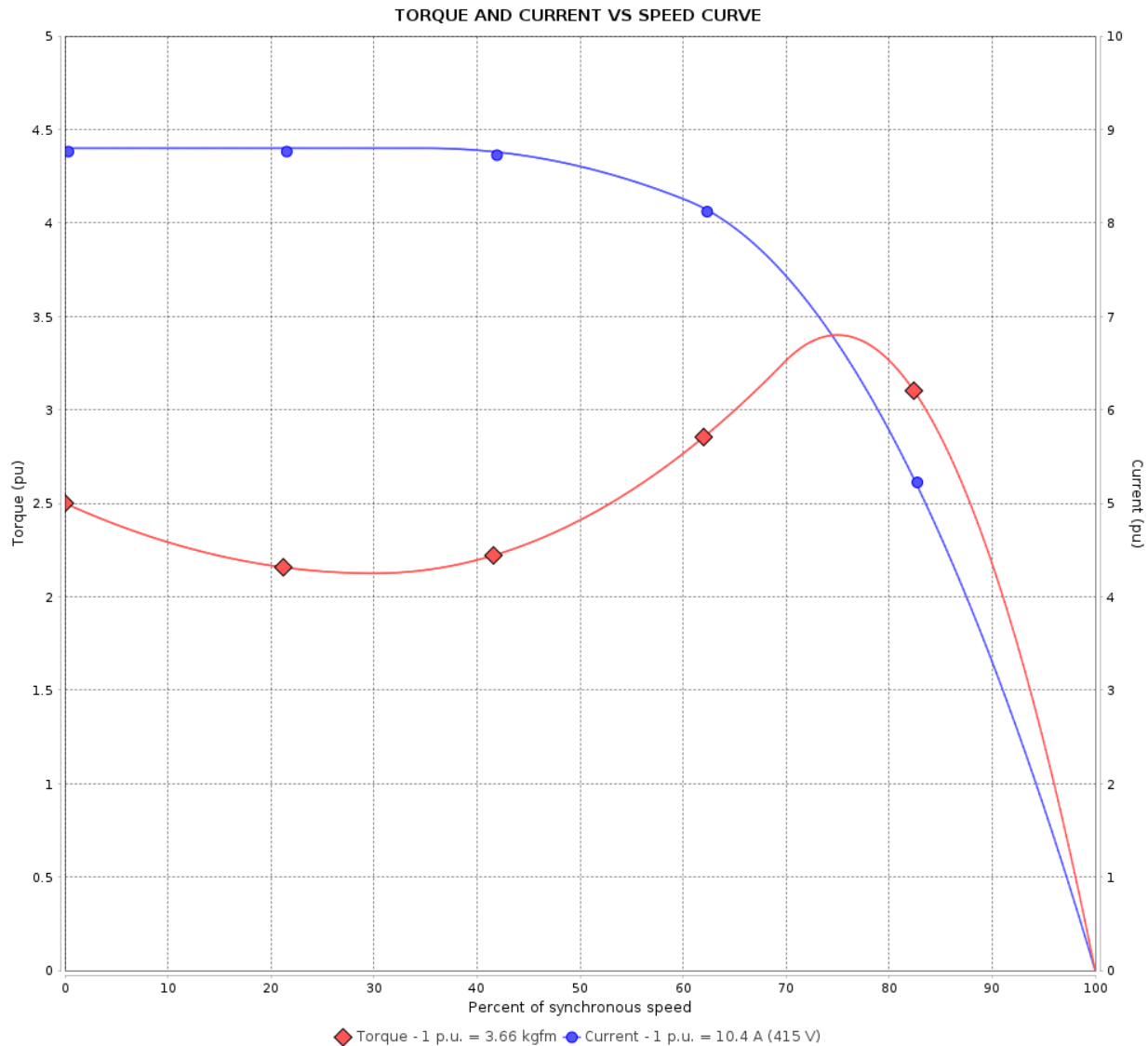
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12868213



Performance : 415 V 50 Hz 4P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 10.4 A    | Moment of inertia (J) | : 0.0491 kgm <sup>2</sup> |
| LRC                 | : 8.8       | Duty cycle            | : S1                      |
| Rated torque        | : 3.66 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 250 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 360 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 1470 rpm  | Design                | : N                       |

Locked rotor time : 21s (cold) 12s (hot)

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



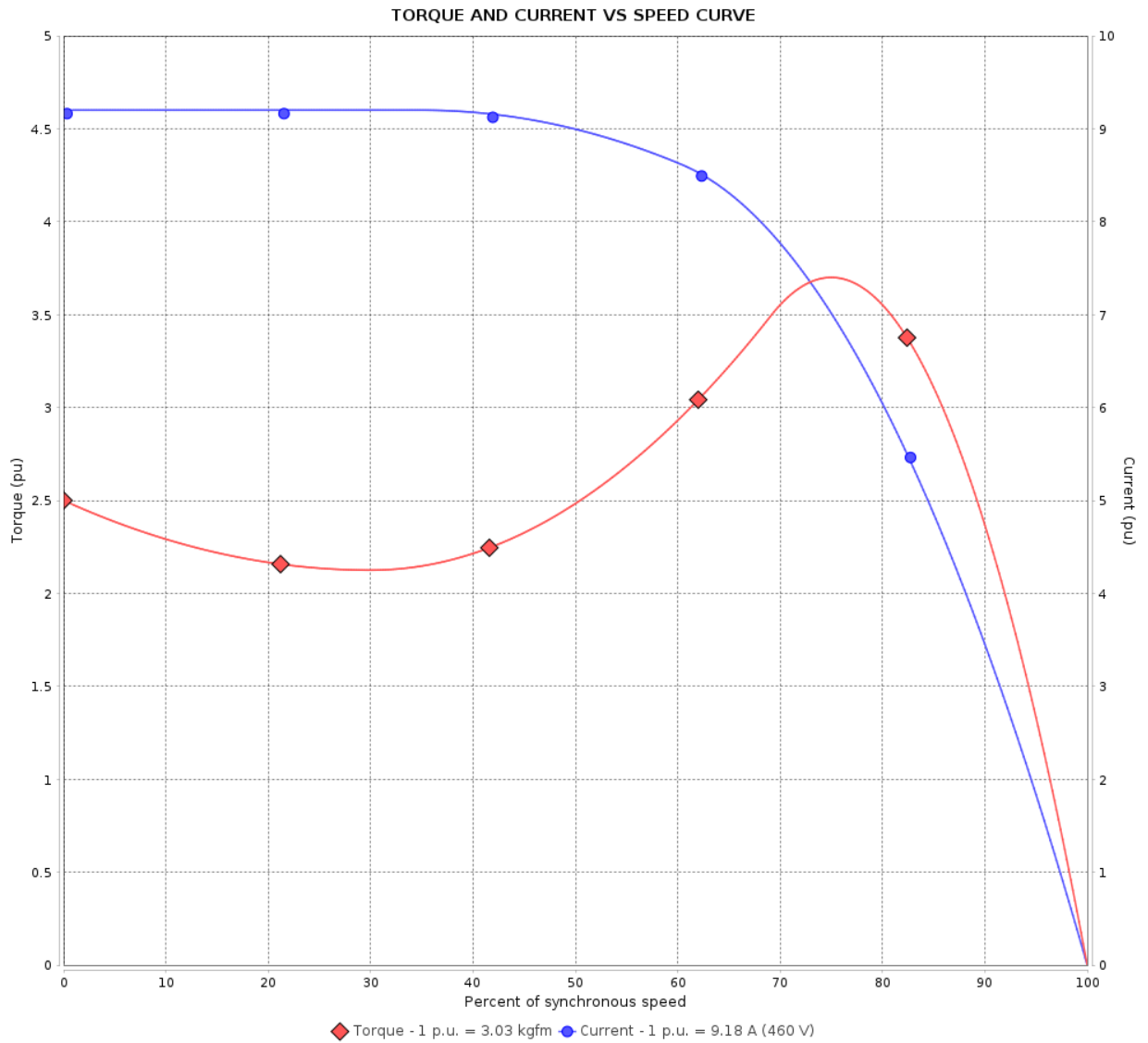
## Three Phase Induction Motor - Squirrel Cage

Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code :

12868213



Performance : 460 V 60 Hz 4P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 9.18 A    | Moment of inertia (J) | : 0.0491 kgm <sup>2</sup> |
| LRC                 | : 9.0       | Duty cycle            | : S1                      |
| Rated torque        | : 3.03 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 250 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 390 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 1770 rpm  | Design                | : N                       |

Locked rotor time : 28s (cold) 16s (hot)

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

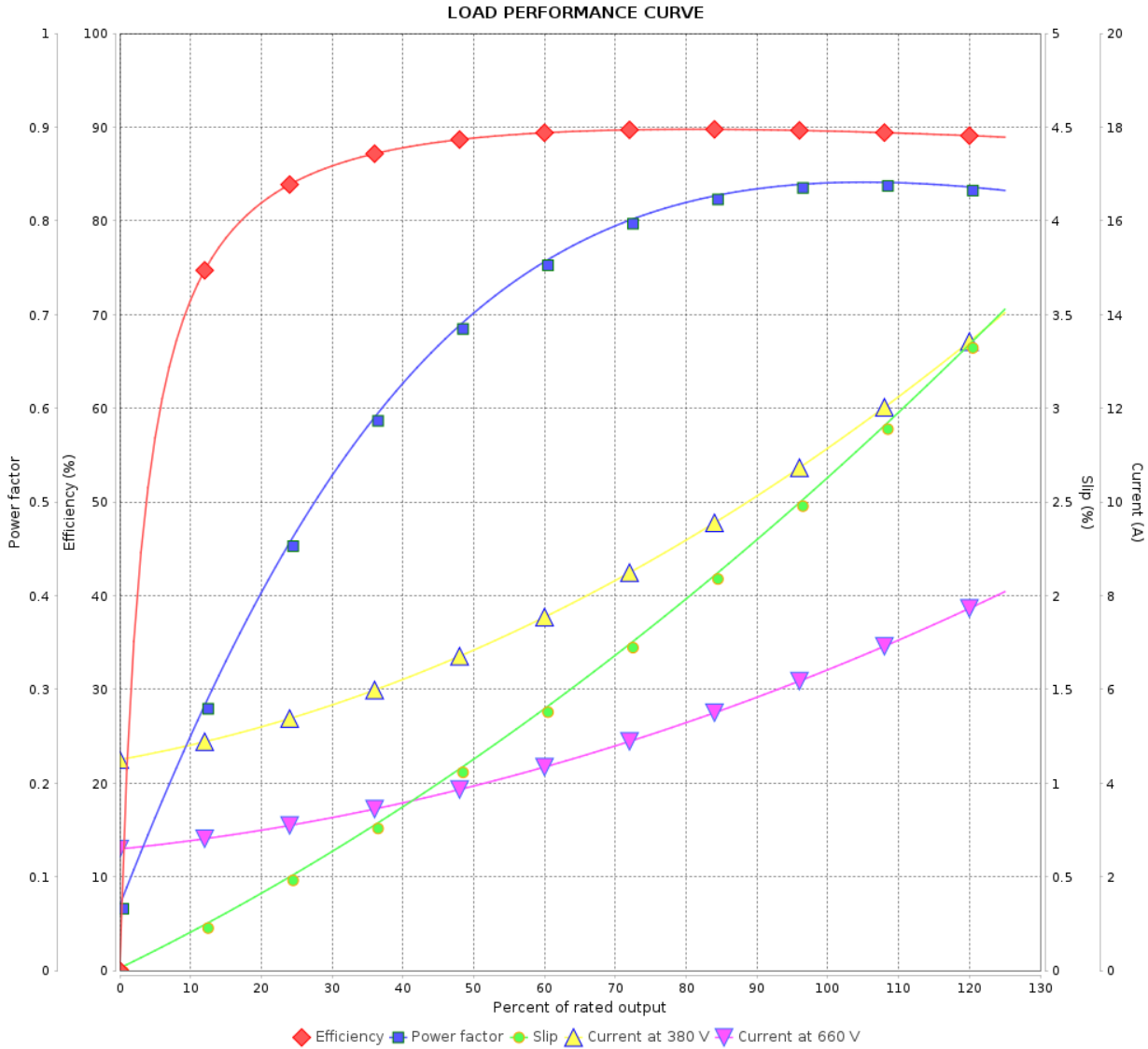
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12868213



Performance : 380/660 V 50 Hz 4P

Rated current : 10.8/6.22 A  
 LRC : 7.5  
 Rated torque : 3.67 kgfm  
 Locked rotor torque : 210 %  
 Breakdown torque : 300 %  
 Rated speed : 1460 rpm

Moment of inertia (J) : 0.0491 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

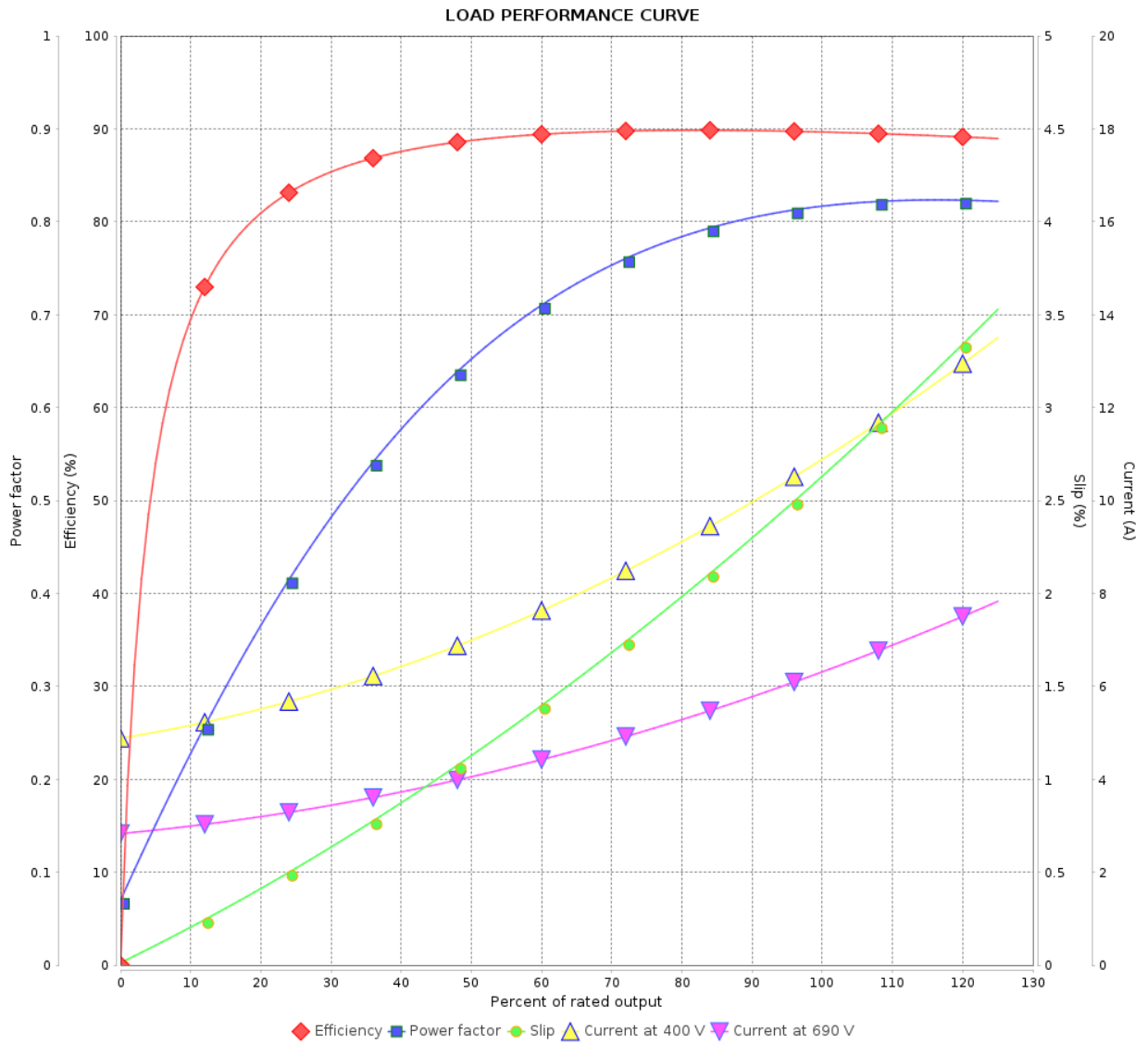


Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code :

12868213



Performance : 400/690 V 50 Hz 4P

Rated current : 10.5/6.09 A  
 LRC : 8.3  
 Rated torque : 3.67 kgfm  
 Locked rotor torque : 229 %  
 Breakdown torque : 330 %  
 Rated speed : 1465 rpm

Moment of inertia (J) : 0.0491 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

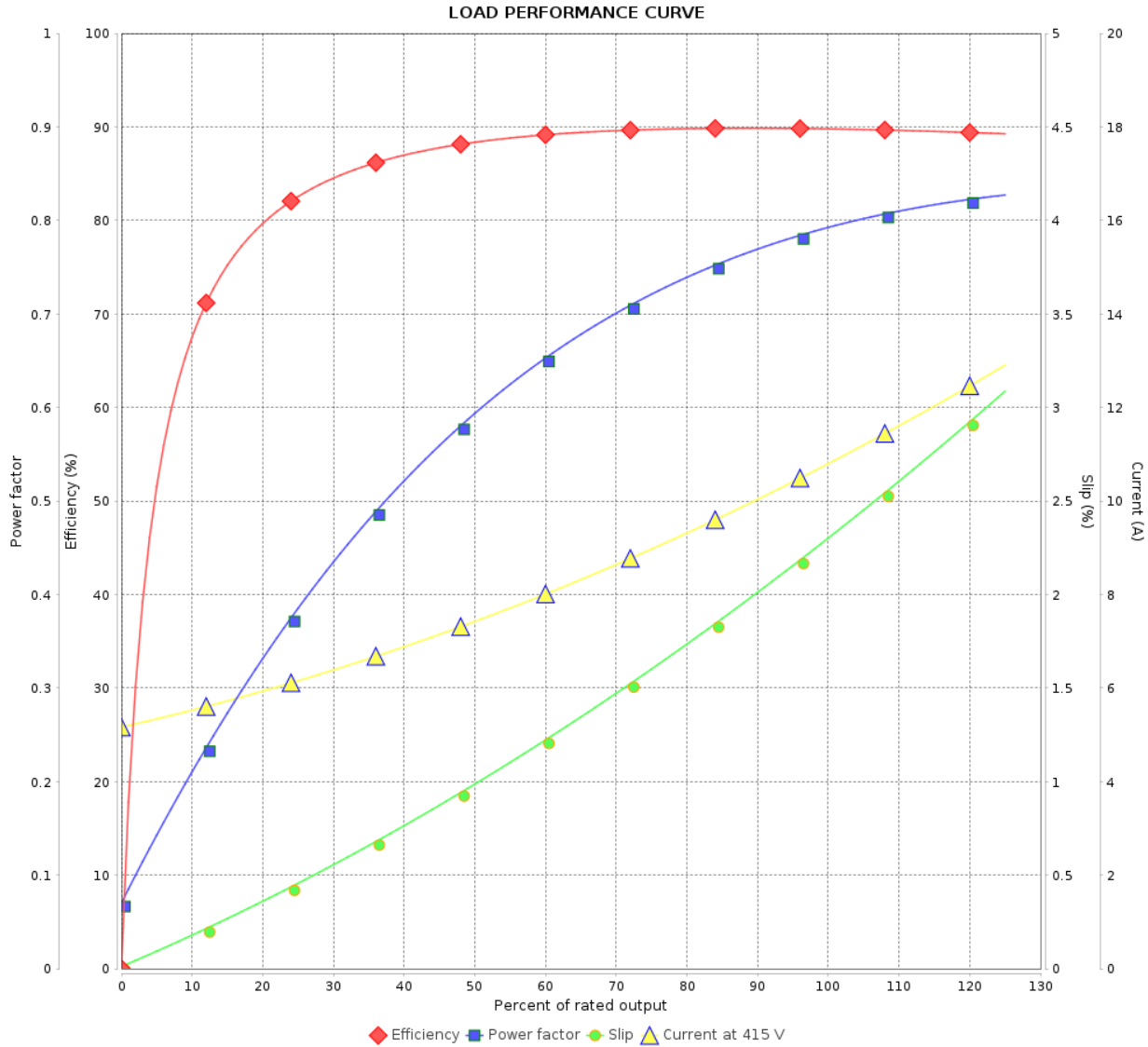
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12868213



Performance : 415 V 50 Hz 4P

Rated current : 10.4 A  
 LRC : 8.8  
 Rated torque : 3.66 kgfm  
 Locked rotor torque : 250 %  
 Breakdown torque : 360 %  
 Rated speed : 1470 rpm

Moment of inertia (J) : 0.0491 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

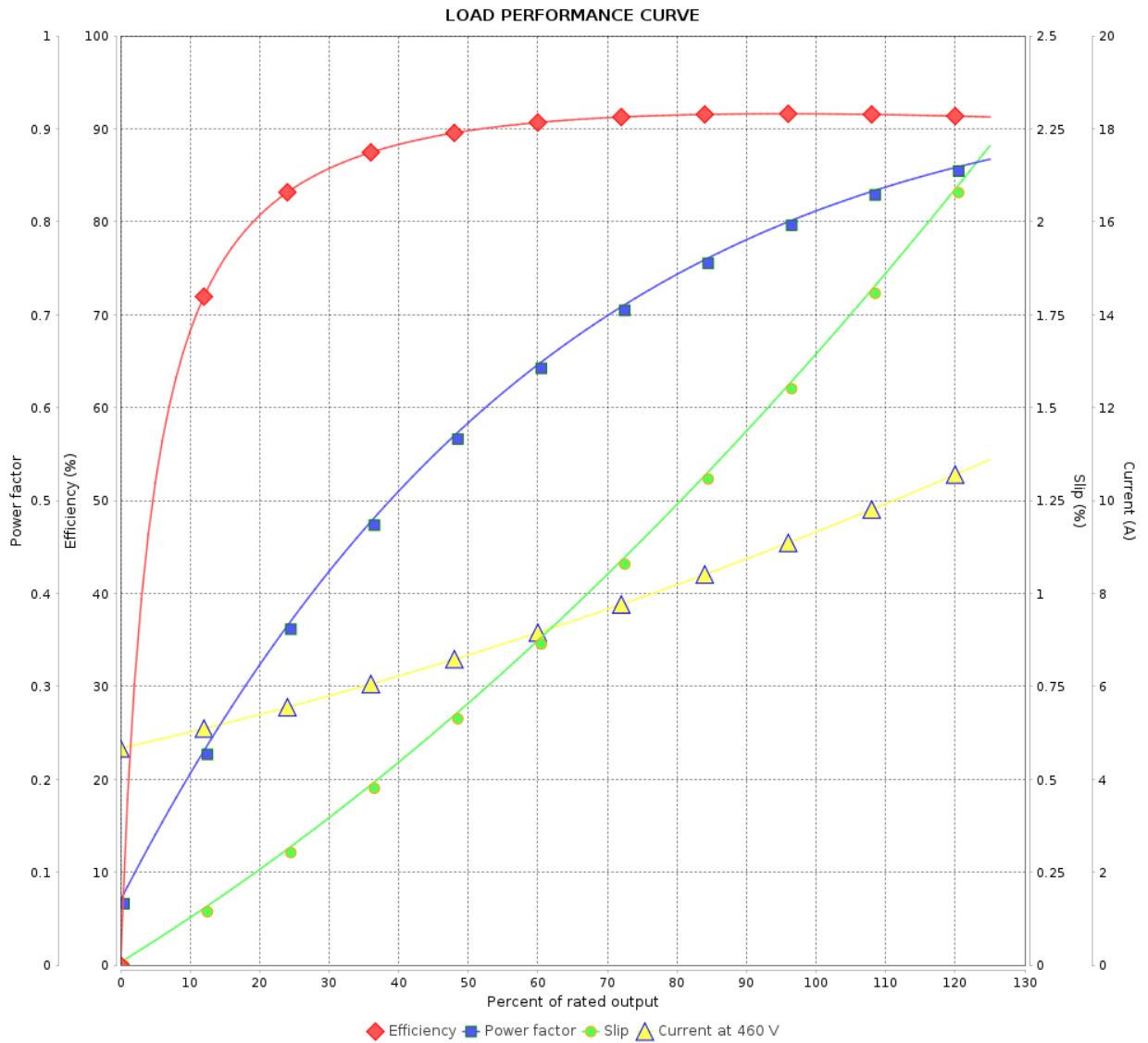
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12868213



Performance : 460 V 60 Hz 4P

Rated current : 9.18 A  
 LRC : 9.0  
 Rated torque : 3.03 kgfm  
 Locked rotor torque : 250 %  
 Breakdown torque : 390 %  
 Rated speed : 1770 rpm

Moment of inertia (J) : 0.0491 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

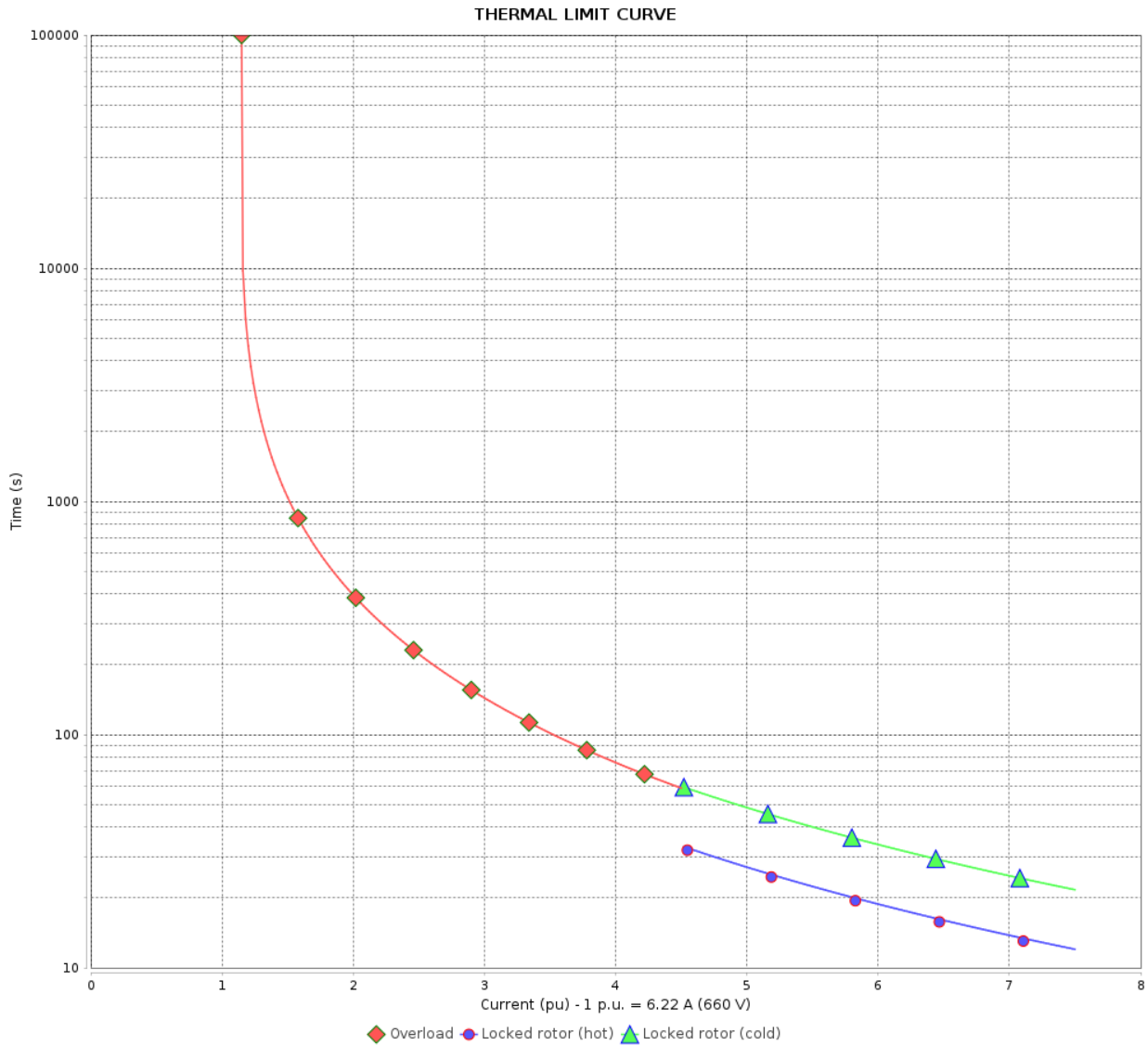
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12868213



Performance : 380/660 V 50 Hz 4P

Rated current : 10.8/6.22 A  
 LRC : 7.5  
 Rated torque : 3.67 kgfm  
 Locked rotor torque : 210 %  
 Breakdown torque : 300 %  
 Rated speed : 1460 rpm

Moment of inertia (J) : 0.0491 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

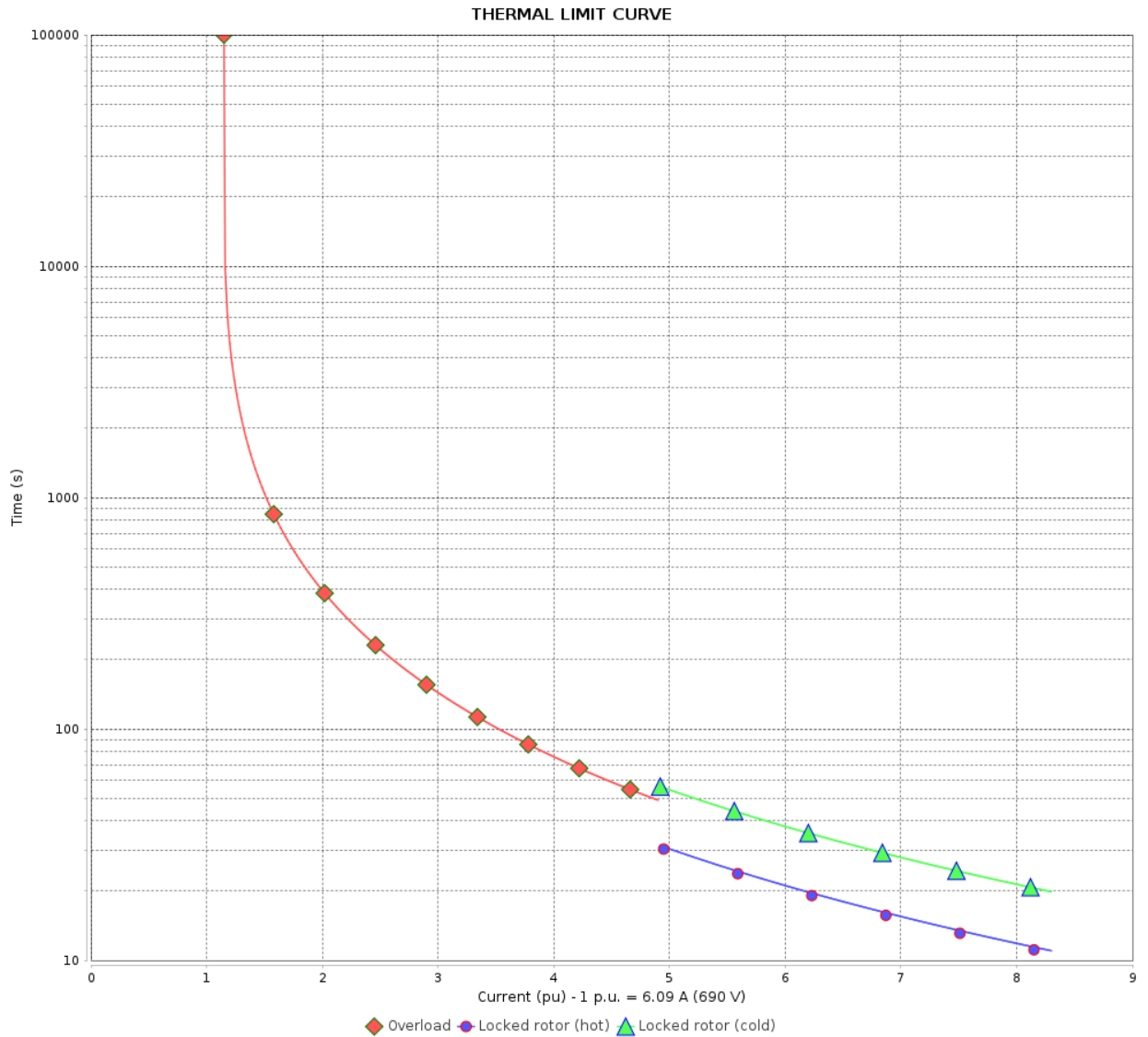


Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code :

12868213



Performance : 400/690 V 50 Hz 4P

Rated current : 10.5/6.09 A  
 LRC : 8.3  
 Rated torque : 3.67 kgfm  
 Locked rotor torque : 229 %  
 Breakdown torque : 330 %  
 Rated speed : 1465 rpm

Moment of inertia (J) : 0.0491 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

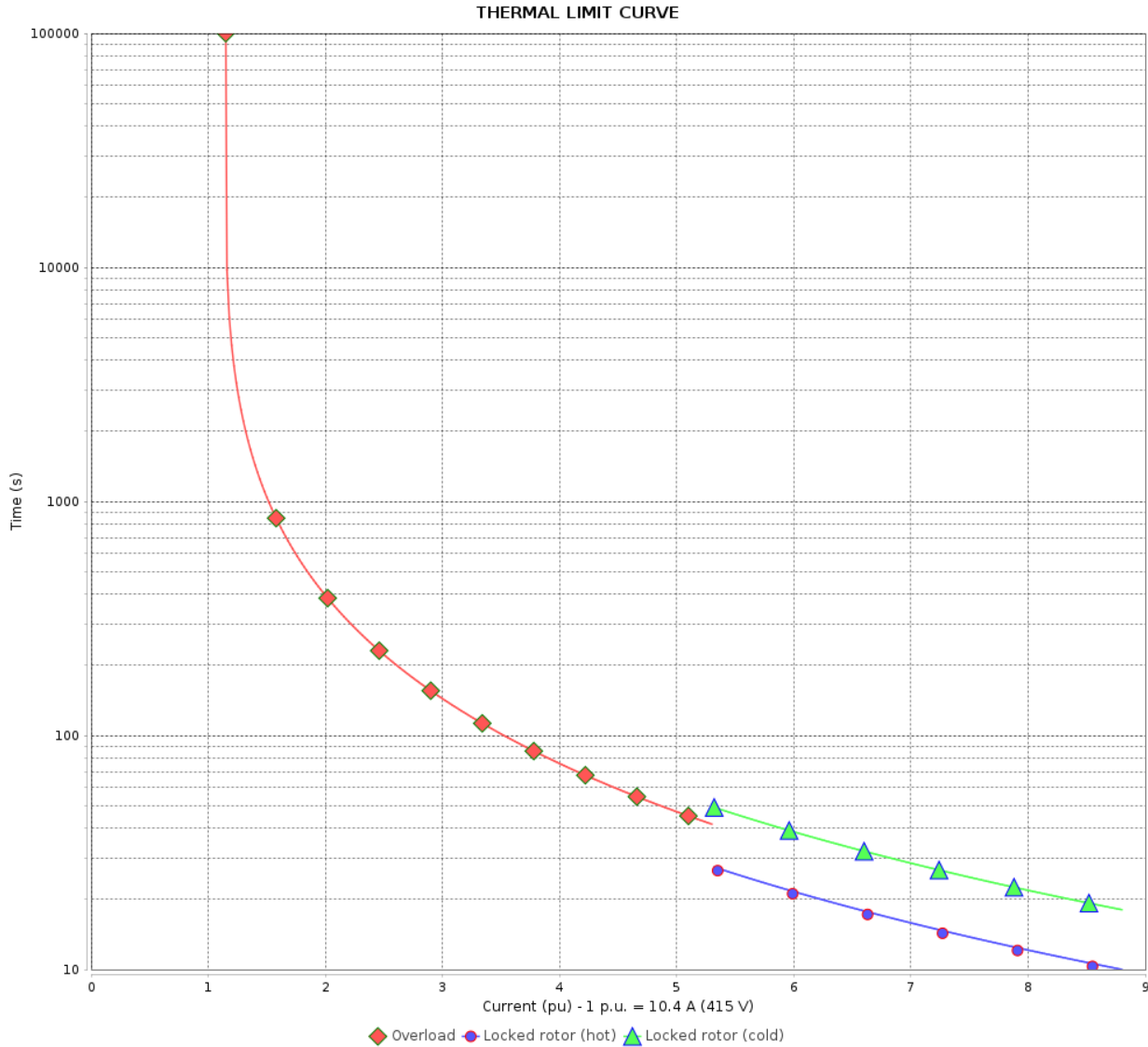
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12868213



Performance : 415 V 50 Hz 4P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 10.4 A    | Moment of inertia (J) | : 0.0491 kgm <sup>2</sup> |
| LRC                 | : 8.8       | Duty cycle            | : S1                      |
| Rated torque        | : 3.66 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 250 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 360 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 1470 rpm  | Design                | : N                       |

Heating constant

Cooling constant

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

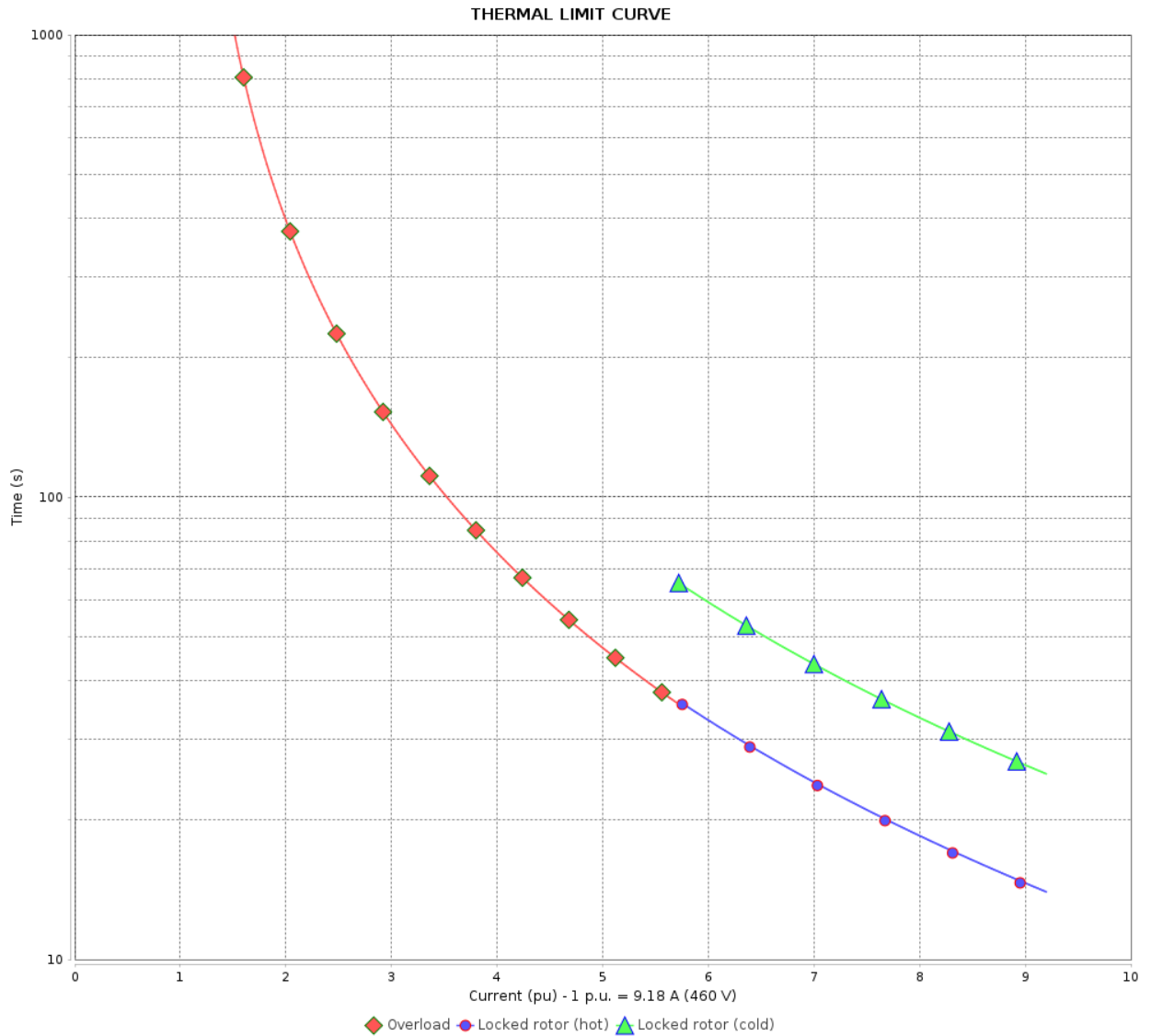
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Customer : Astraprom d.o.o.

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 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

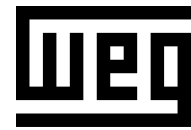
Heating constant

Cooling constant

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

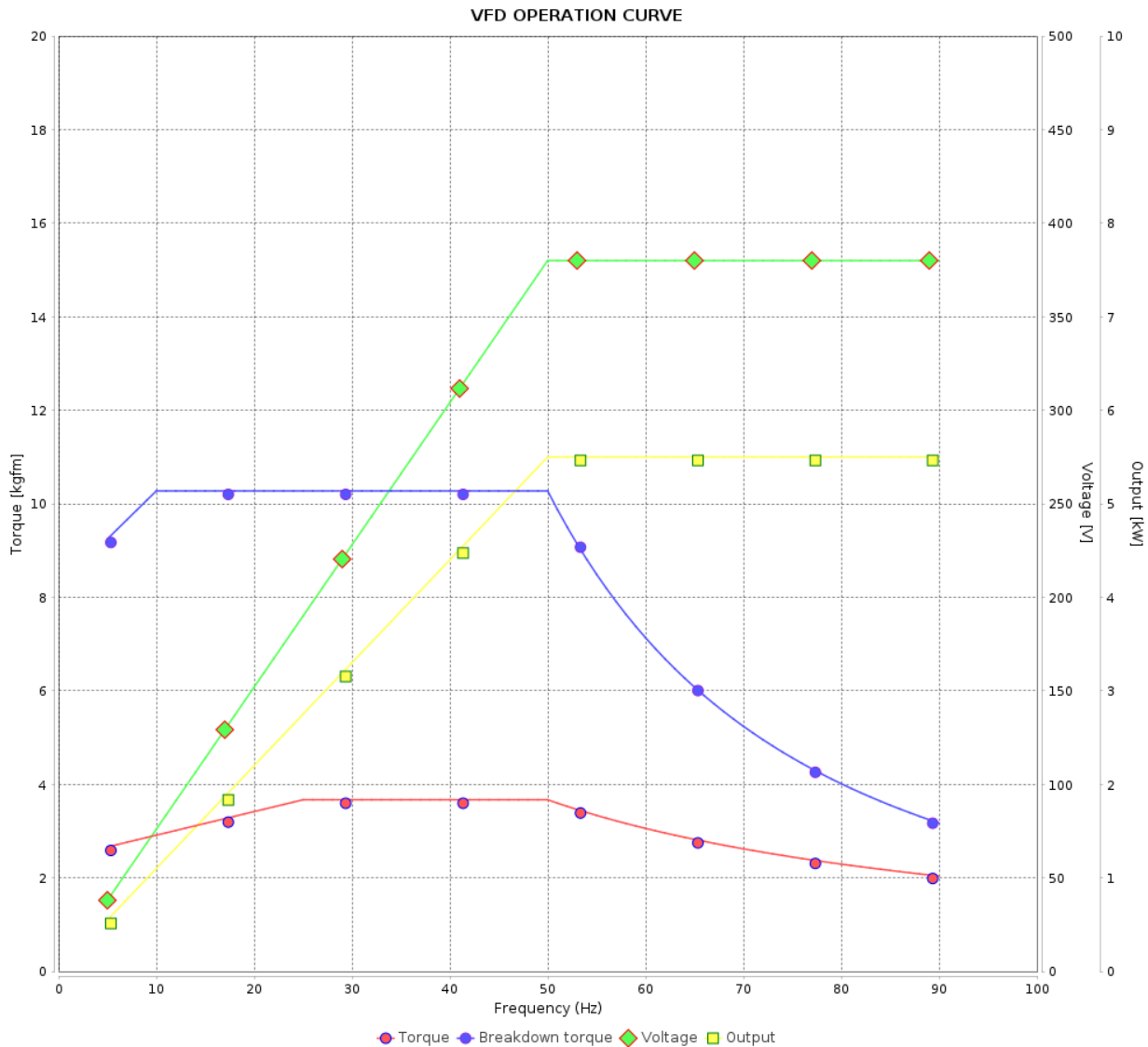
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 Breakdown torque : 300 %  
 Rated speed : 1460 rpm

Moment of inertia (J) : 0.0491 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

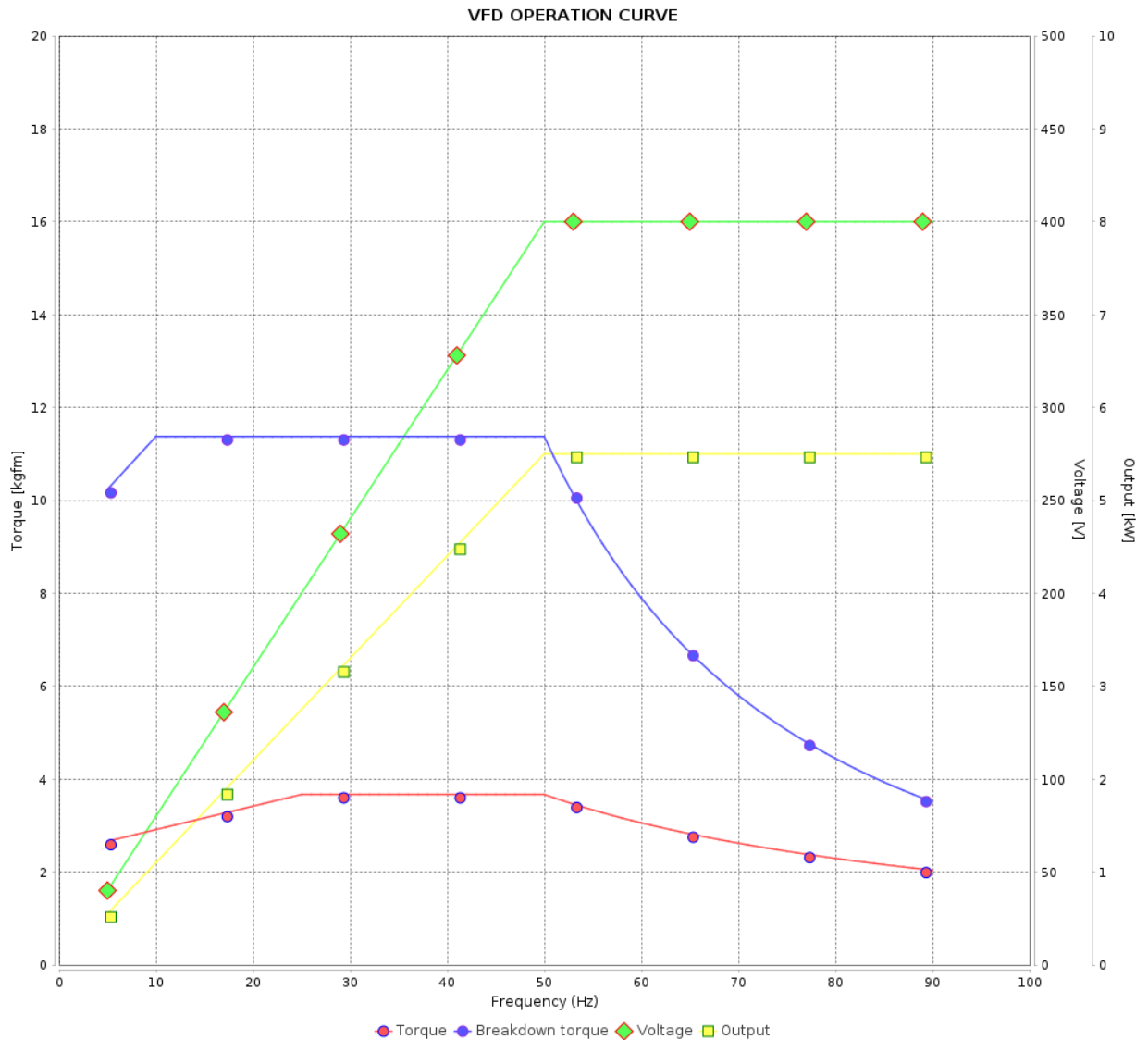
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Customer : Astraprom d.o.o.

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 Duty cycle : S1  
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 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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

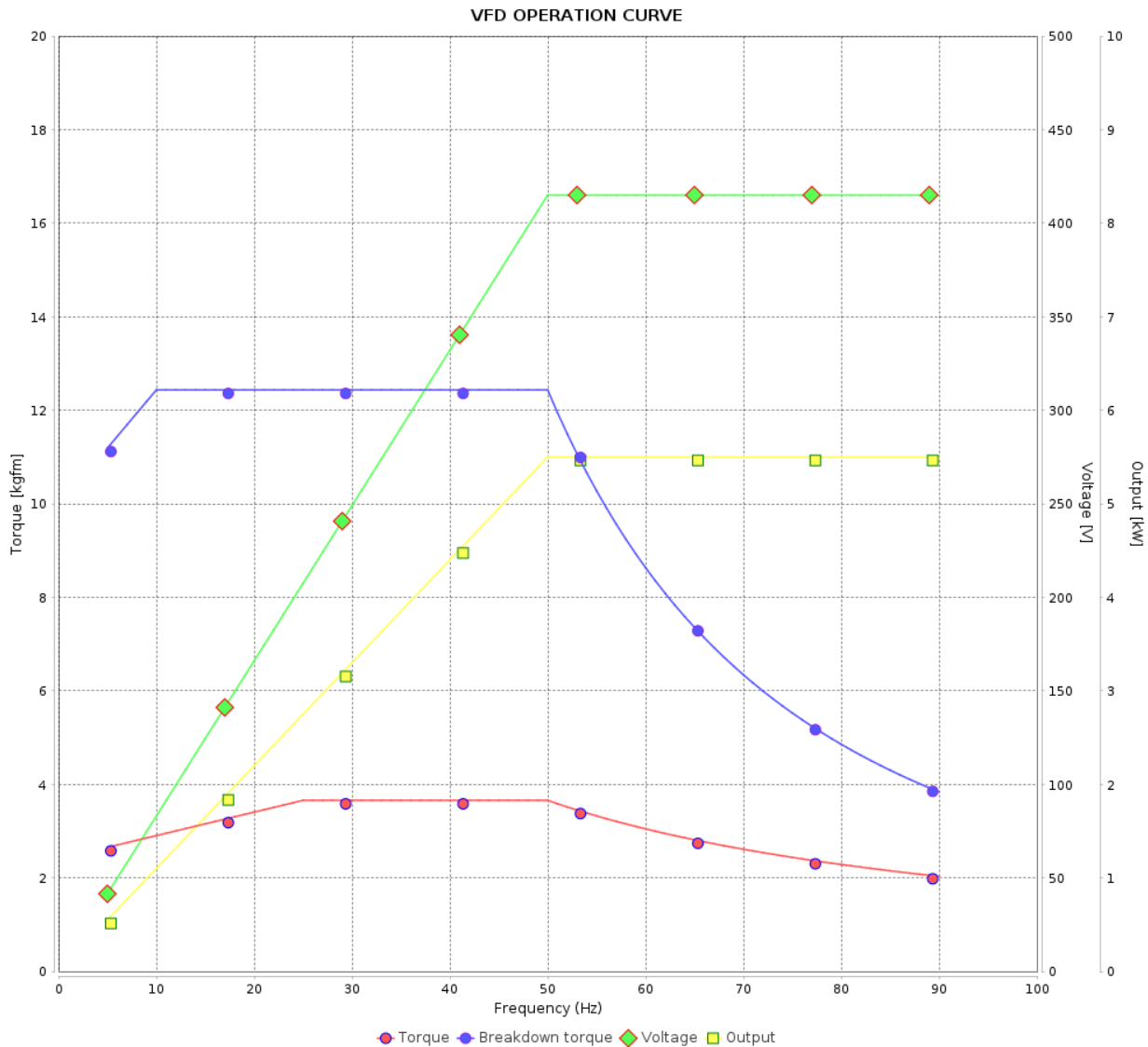
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12868213



Performance : 415 V 50 Hz 4P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 10.4 A    | Moment of inertia (J) | : 0.0491 kgm <sup>2</sup> |
| LRC                 | : 8.8       | Duty cycle            | : S1                      |
| Rated torque        | : 3.66 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 250 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 360 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 1470 rpm  | Design                | : N                       |

| Rev.         | Changes Summary | Performed | Checked         | Date     |
|--------------|-----------------|-----------|-----------------|----------|
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| Checked by   |                 |           |                 |          |
| Date         | 24/10/2023      |           |                 |          |

# VFD OPERATION CURVE

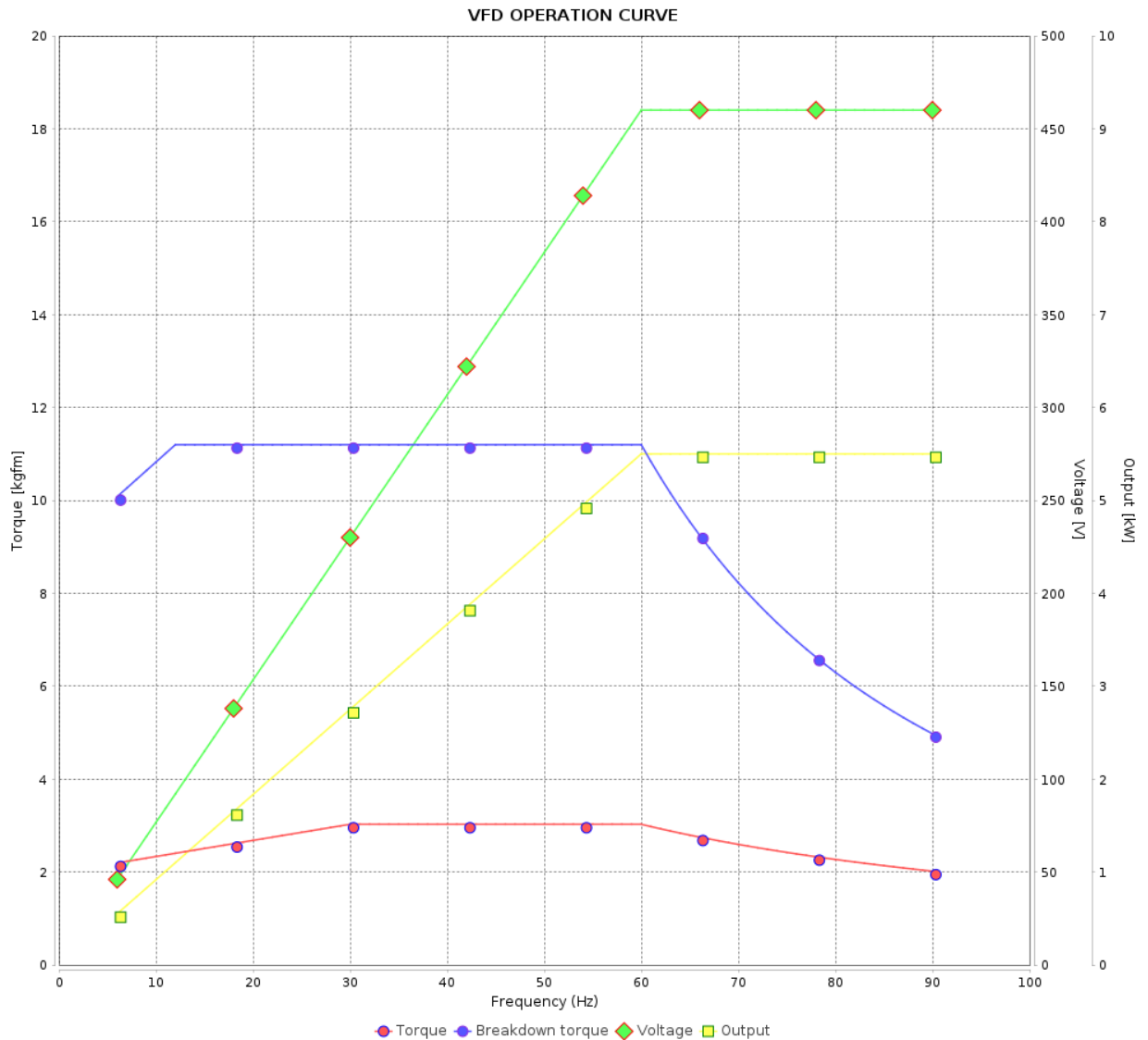
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : W22 IE3 Three-Phase

Product code : 12868213



Performance : 460 V 60 Hz 4P

Rated current : 9.18 A  
 LRC : 9.0  
 Rated torque : 3.03 kgfm  
 Locked rotor torque : 250 %  
 Breakdown torque : 390 %  
 Rated speed : 1770 rpm

Moment of inertia (J) : 0.0491 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     |
|--------------|-----------------|------------|---------|----------|
|              |                 |            |         |          |
| Performed by |                 | Page       |         | Revision |
| Checked by   |                 | 19 / 19    |         |          |
| Date         |                 | 24/10/2023 |         |          |