

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



|  |                       |                                 |  |                         |          |
|--|-----------------------|---------------------------------|--|-------------------------|----------|
| Customer   |                       | : Astraprom d.o.o.              |  |                         |          |
| Product line   |                       | : Multimounting IE3 Three-Phase |  | Product code : 13760753 |          |
| Frame  | : L100L               | Cooling method                  | : IC411 - TEFC   |                         |          |
| Insulation class   | : F                   | Mounting                        | : B14T   |                         |          |
| 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>3</sup>     | : 39.2 kg  |                         |          |
| Protection degree  | : IP55                | Moment of inertia (J)           | : 0.0120 kgm <sup>2</sup>  |                         |          |
| Design   | : N                   |                                 |  |                         |          |
| Output [kW]  | 3                     | 3                               | 3  | 3                       |          |
| Poles  | 4                     | 4                               | 4  | 4                       |          |
| Frequency [Hz]   | 50                    | 50                              | 50   | 60                      |          |
| Rated voltage [V]  | 220/380               | 230/400                         | 240/415  | 460                     |          |
| Rated current [A]  | 11.1/6.42             | 11.0/6.31                       | 10.8/6.23  | 5.46                    |          |
| L. R. Amperes [A]  | 86.5/50.1             | 85.6/49.2                       | 84.0/48.6  | 47.0                    |          |
| LRC [A]  | 7.8                   | 7.8                             | 7.8  | 8.6                     |          |
| No load current [A]  | 5.35/3.10             | 6.00/3.45                       | 6.57/3.80  | 3.15                    |          |
| Rated speed [RPM]  | 1430                  | 1440                            | 1445   | 1740                    |          |
| Slip [%]   | 4.67                  | 4.00                            | 3.67   | 3.33                    |          |
| Rated torque [kgfm]  | 2.04                  | 2.03                            | 2.02   | 1.68                    |          |
| Locked rotor torque [%]  | 310                   | 350                             | 380  | 459                     |          |
| Breakdown torque [%]   | 330                   | 370                             | 400  | 480                     |          |
| Service factor   | 1.00                  | 1.00                            | 1.00   | 1.00                    |          |
| Temperature rise   | 80 K                  | 80 K                            | 80 K   | 80 K                    |          |
| Locked rotor time  | 23s (cold) 13s (hot)  | 27s (cold) 15s (hot)            | 27s (cold) 15s (hot)   | 32s (cold) 18s (hot)    |          |
| Noise level <sup>2</sup>   | 53.0 dB(A)            | 53.0 dB(A)                      | 53.0 dB(A)   | 54.0 dB(A)              |          |
| Efficiency (%)   | 25%                   |                                 |  |                         |          |
|  | 50%                   | 87.7                            | 87.0   | 86.3                    | 84.0     |
|  | 75%                   | 88.0                            | 88.0   | 87.7                    | 86.5     |
|  | 100%                  | 87.7                            | 88.0   | 88.1                    | 89.5     |
| Power Factor   | 25%                   |                                 |  |                         |          |
|  | 50%                   | 0.63                            | 0.58   | 0.54                    | 0.57     |
|  | 75%                   | 0.75                            | 0.71   | 0.68                    | 0.69     |
|  | 100%                  | 0.81                            | 0.78   | 0.76                    | 0.77     |
| Losses at normative operating points (speed;torque), in percentage of rated output power   |                       |                                 |  |                         |          |
| Losses (%)   | P1 (0,9;1,0)          | 13.6                            | 13.2   | 13.1                    | 11.3     |
|  | P2 (0,5;1,0)          | 12.0                            | 11.6   | 11.5                    | 10.0     |
|  | P3 (0,25;1,0)         | 11.5                            | 11.2   | 11.1                    | 9.6      |
|  | P4 (0,9;0,5)          | 6.2                             | 6.0  | 5.9                     | 5.2      |
|  | P5 (0,5;0,5)          | 4.5                             | 4.4  | 4.3                     | 3.8      |
|  | P6 (0,5;0,25)         | 2.9                             | 2.8  | 2.8                     | 2.4      |
|  | P7 (0,25;0,25)        | 2.1                             | 2.1  | 2.1                     | 1.8      |
| Bearing type   | : Drive end : 6206 ZZ | Non drive end : 6205 ZZ         | Foundation loads   |                         |          |
| Sealing  | : Oil Seal            | Oil Seal                        | Max. traction  | : 181 kgf               |          |
| Lubrication interval   | : -                   | -                               | Max. compression   | : 221 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     |
| Performed by   |                       |                                 |  |                         |          |
| Checked by   |                       |                                 |  | Page                    | Revision |
| Date   | 31/05/2023            |                                 |  | 1 / 19                  |          |

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Notes

| Rev.         | Changes Summary | Performed | Checked | Date     |
|--------------|-----------------|-----------|---------|----------|
| Performed by |                 |           |         |          |
| Checked by   |                 |           | Page    | Revision |
| Date         | 31/05/2023      |           | 2 / 19  |          |

# 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              |

| Rev.         | Changes Summary | Performed | Checked | Date           |
|--------------|-----------------|-----------|---------|----------------|
|              |                 |           |         |                |
| Performed by |                 |           |         | Page<br>3 / 19 |
| Checked by   |                 |           |         |                |
| Date         | 31/05/2023      |           |         |                |
|              |                 |           |         | Revision       |

# TORQUE AND CURRENT VS SPEED CURVE

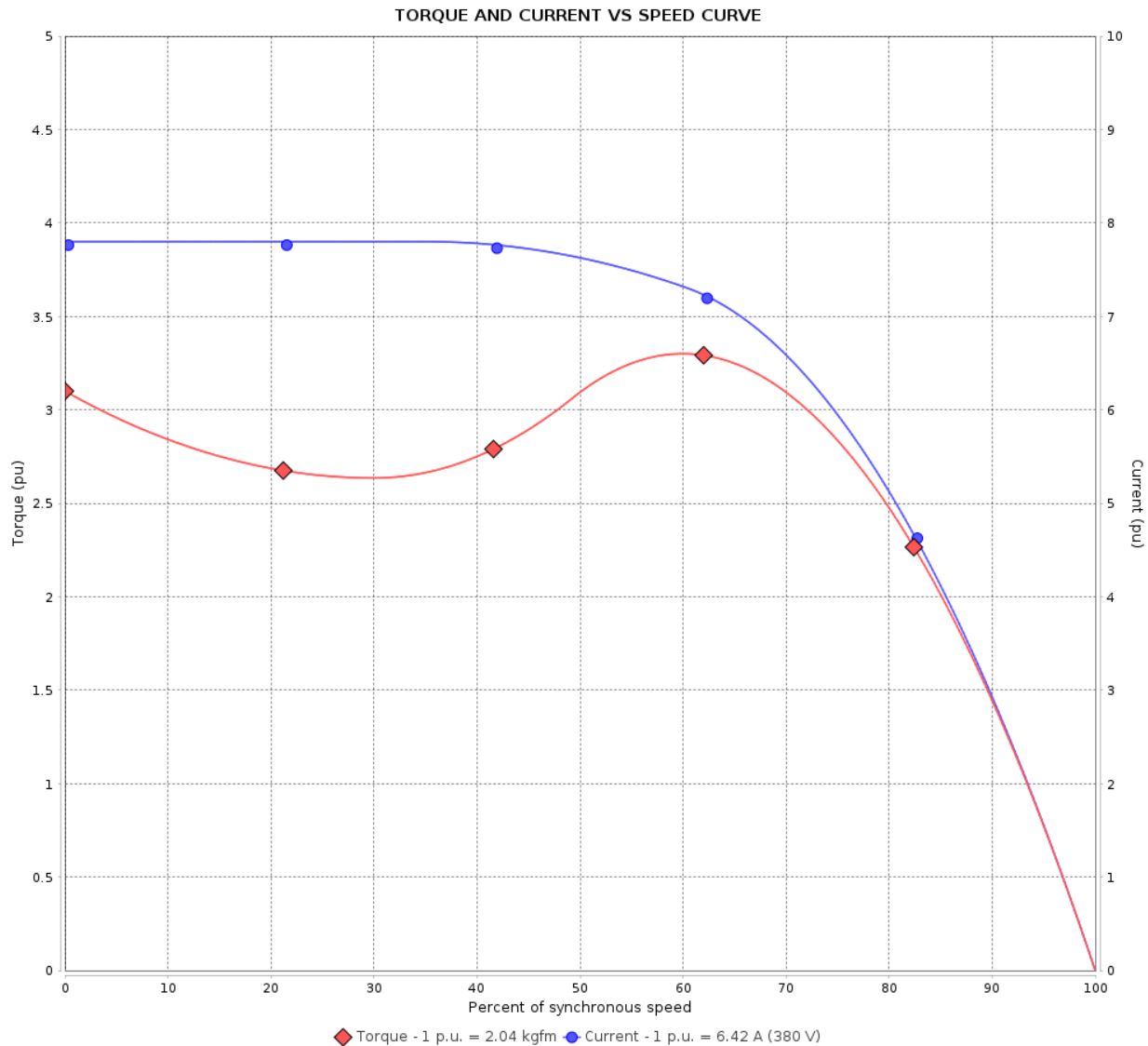
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 220/380 V 50 Hz 4P

|                     |               |                       |                           |
|---------------------|---------------|-----------------------|---------------------------|
| Rated current       | : 11.1/6.42 A | Moment of inertia (J) | : 0.0120 kgm <sup>2</sup> |
| LRC                 | : 7.8         | Duty cycle            | : S1                      |
| Rated torque        | : 2.04 kgfm   | Insulation class      | : F                       |
| Locked rotor torque | : 310 %       | Service factor        | : 1.00                    |
| Breakdown torque    | : 330 %       | Temperature rise      | : 80 K                    |
| Rated speed         | : 1430 rpm    | Design                | : N                       |

Locked rotor time : 23s (cold) 13s (hot)

| Rev.         | Changes Summary | Performed | Checked        | Date     |
|--------------|-----------------|-----------|----------------|----------|
|              |                 |           |                |          |
| Performed by |                 |           | Page<br>4 / 19 | Revision |
| Checked by   |                 |           |                |          |
| Date         | 31/05/2023      |           |                |          |

# TORQUE AND CURRENT VS SPEED CURVE

Three Phase Induction Motor - Squirrel Cage

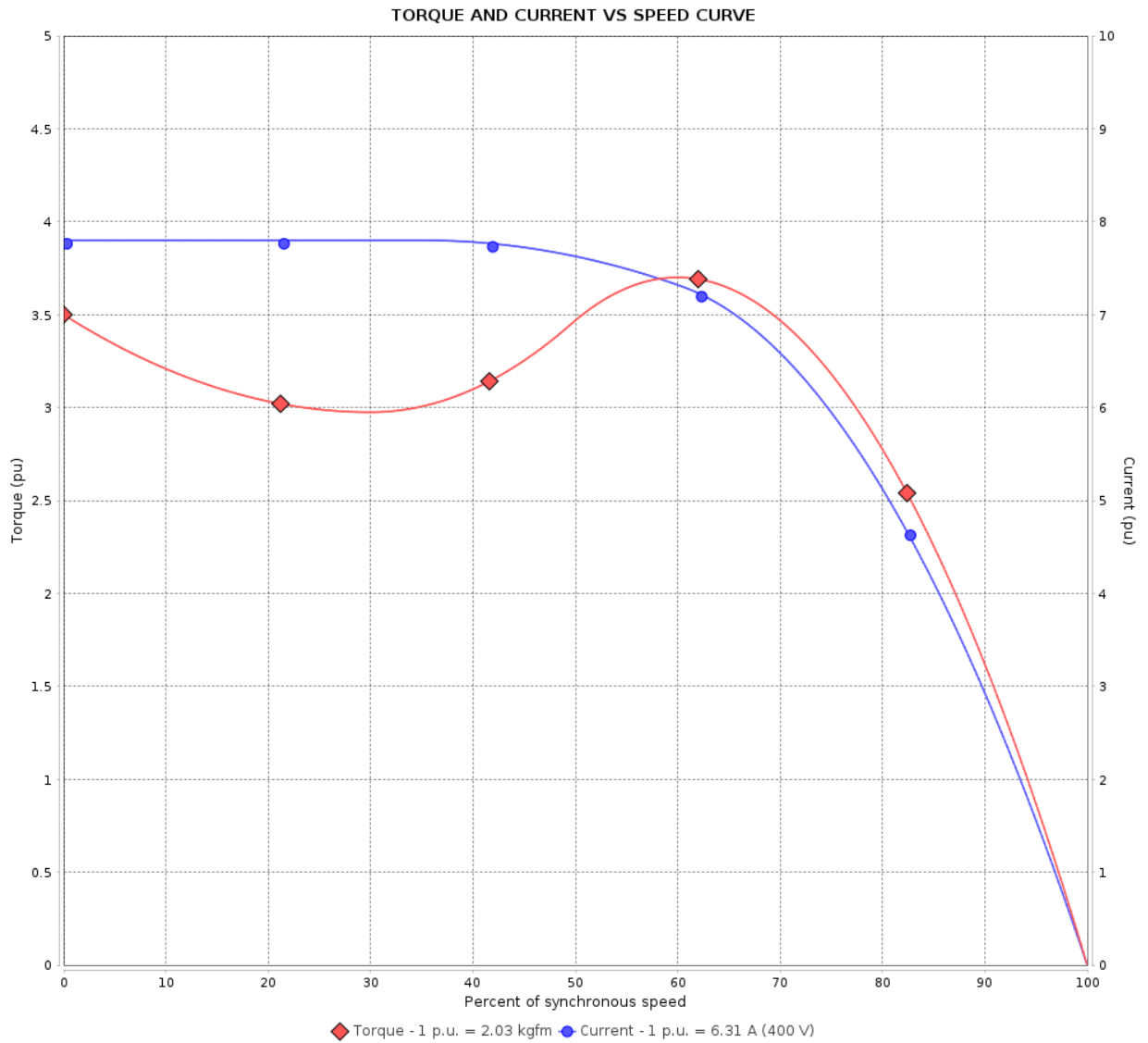


Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code :

13760753



Performance : 230/400 V 50 Hz 4P

Rated current : 11.0/6.31 A  
 LRC : 7.8  
 Rated torque : 2.03 kgfm  
 Locked rotor torque : 350 %  
 Breakdown torque : 370 %  
 Rated speed : 1440 rpm

Moment of inertia (J) : 0.0120 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Locked rotor time : 27s (cold) 15s (hot)

| Rev.         | Changes Summary | Performed | Checked | Date     |
|--------------|-----------------|-----------|---------|----------|
|              |                 |           |         |          |
| Performed by |                 |           | Page    | Revision |
| Checked by   |                 |           |         |          |
| Date         | 31/05/2023      |           |         |          |

# TORQUE AND CURRENT VS SPEED CURVE

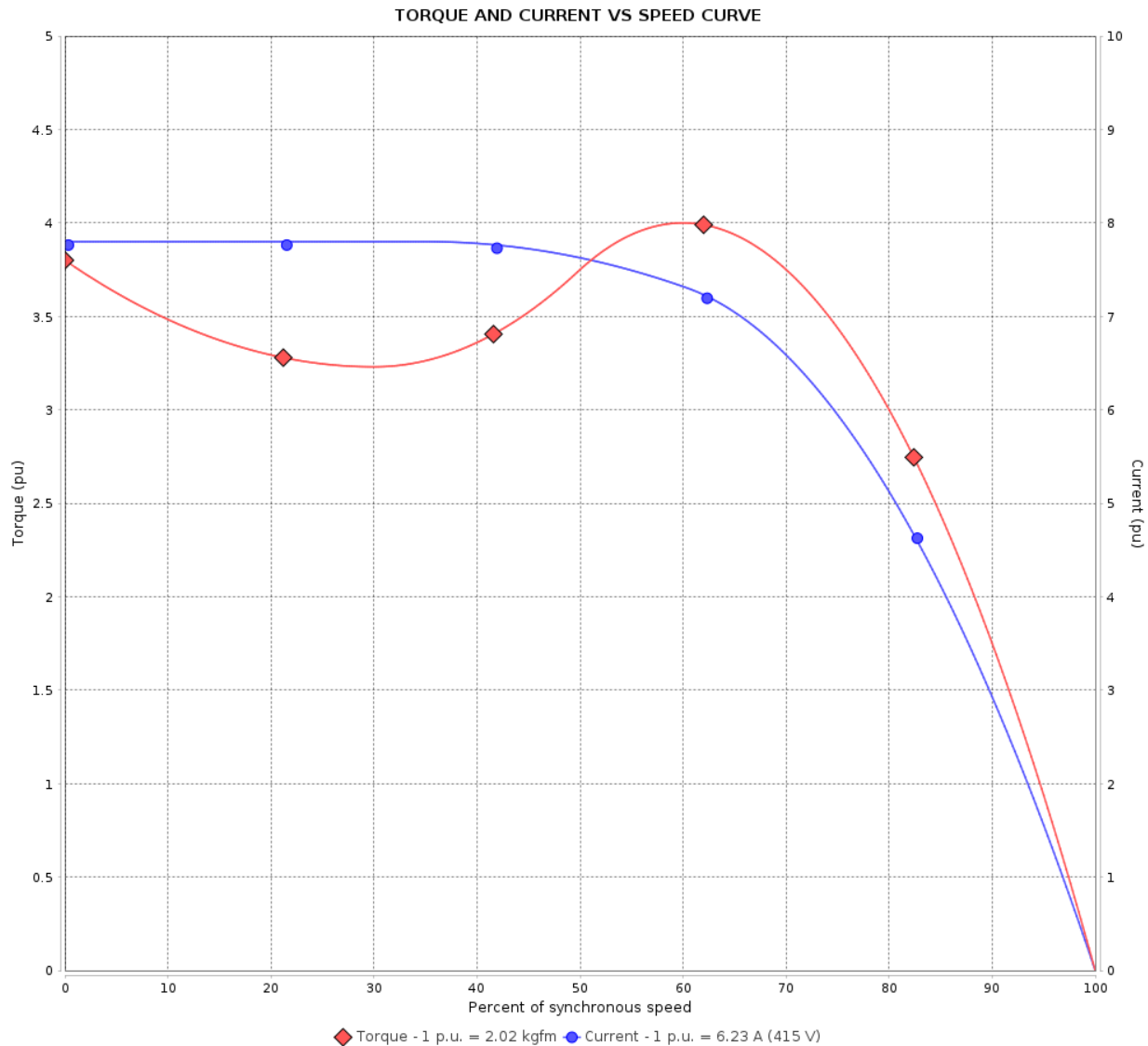
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 240/415 V 50 Hz 4P

|                     |               |                       |                           |
|---------------------|---------------|-----------------------|---------------------------|
| Rated current       | : 10.8/6.23 A | Moment of inertia (J) | : 0.0120 kgm <sup>2</sup> |
| LRC                 | : 7.8         | Duty cycle            | : S1                      |
| Rated torque        | : 2.02 kgfm   | Insulation class      | : F                       |
| Locked rotor torque | : 380 %       | Service factor        | : 1.00                    |
| Breakdown torque    | : 400 %       | Temperature rise      | : 80 K                    |
| Rated speed         | : 1445 rpm    | Design                | : N                       |

Locked rotor time : 27s (cold) 15s (hot)

| Rev.         | Changes Summary | Performed | Checked        | Date     |
|--------------|-----------------|-----------|----------------|----------|
|              |                 |           |                |          |
| Performed by |                 |           | Page<br>6 / 19 | Revision |
| Checked by   |                 |           |                |          |
| Date         | 31/05/2023      |           |                |          |

# TORQUE AND CURRENT VS SPEED CURVE

Three Phase Induction Motor - Squirrel Cage

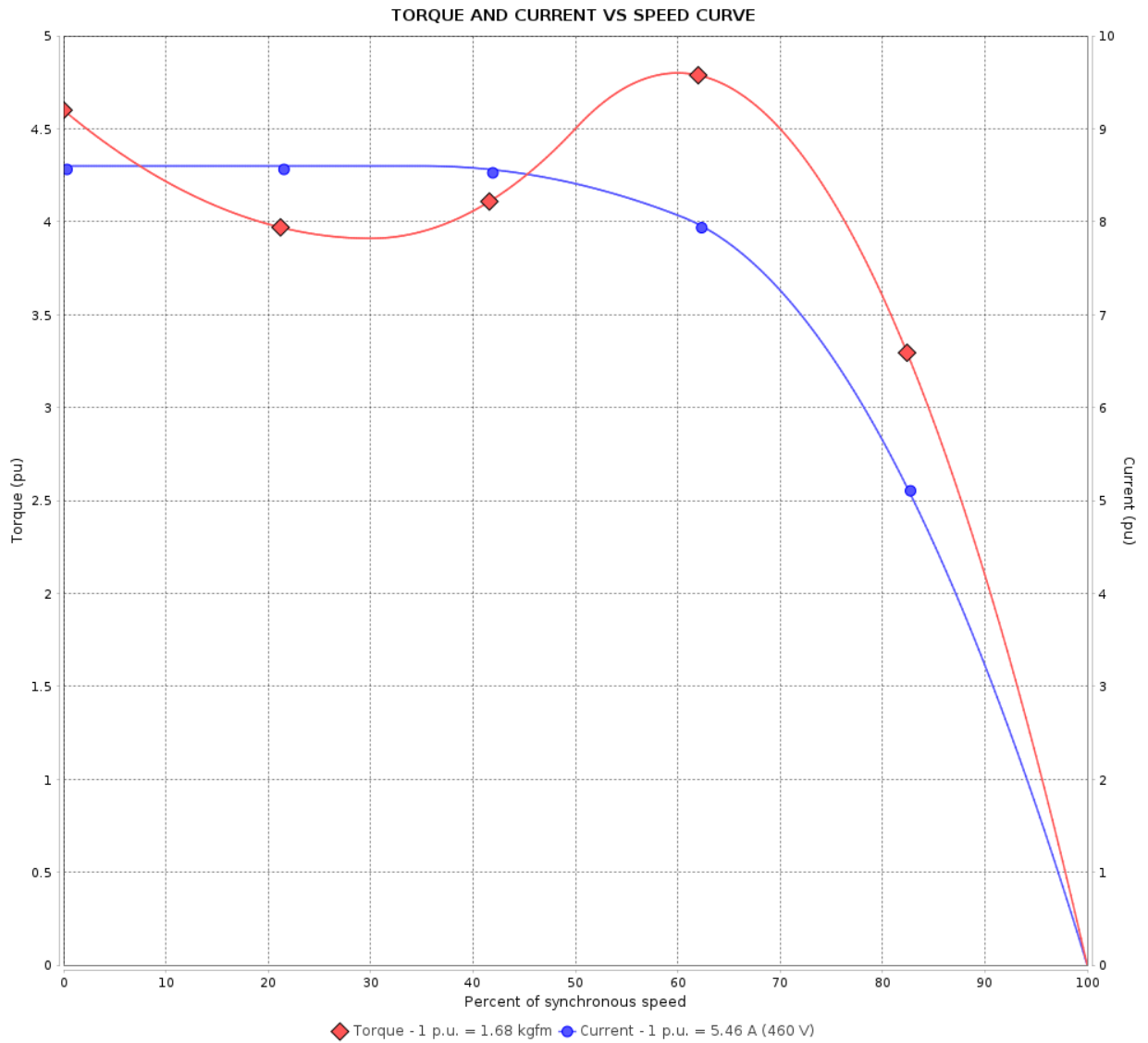


Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code :

13760753



Performance : 460 V 60 Hz 4P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 5.46 A    | Moment of inertia (J) | : 0.0120 kgm <sup>2</sup> |
| LRC                 | : 8.6       | Duty cycle            | : S1                      |
| Rated torque        | : 1.68 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 459 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 480 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 1740 rpm  | Design                | : N                       |

Locked rotor time : 32s (cold) 18s (hot)

| Rev.         | Changes Summary | Performed | Checked        | Date     |
|--------------|-----------------|-----------|----------------|----------|
|              |                 |           |                |          |
| Performed by |                 |           | Page<br>7 / 19 | Revision |
| Checked by   |                 |           |                |          |
| Date         | 31/05/2023      |           |                |          |

# LOAD PERFORMANCE CURVE

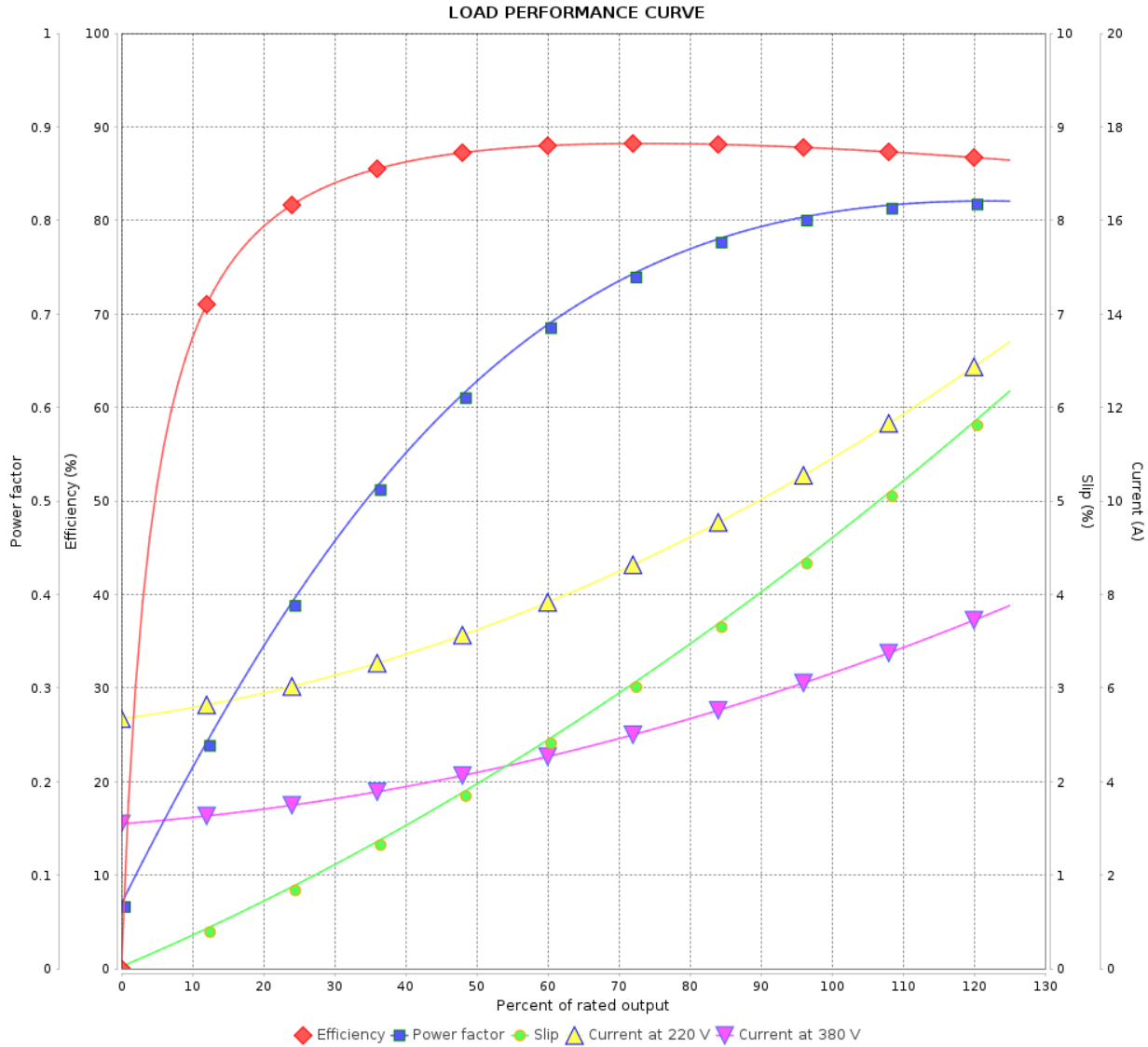
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 220/380 V 50 Hz 4P

Rated current : 11.1/6.42 A  
 LRC : 7.8  
 Rated torque : 2.04 kgfm  
 Locked rotor torque : 310 %  
 Breakdown torque : 330 %  
 Rated speed : 1430 rpm

Moment of inertia (J) : 0.0120 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<br>8 / 19 | Revision |
| Checked by   |                 |           |                |          |
| Date         | 31/05/2023      |           |                |          |

# LOAD PERFORMANCE CURVE

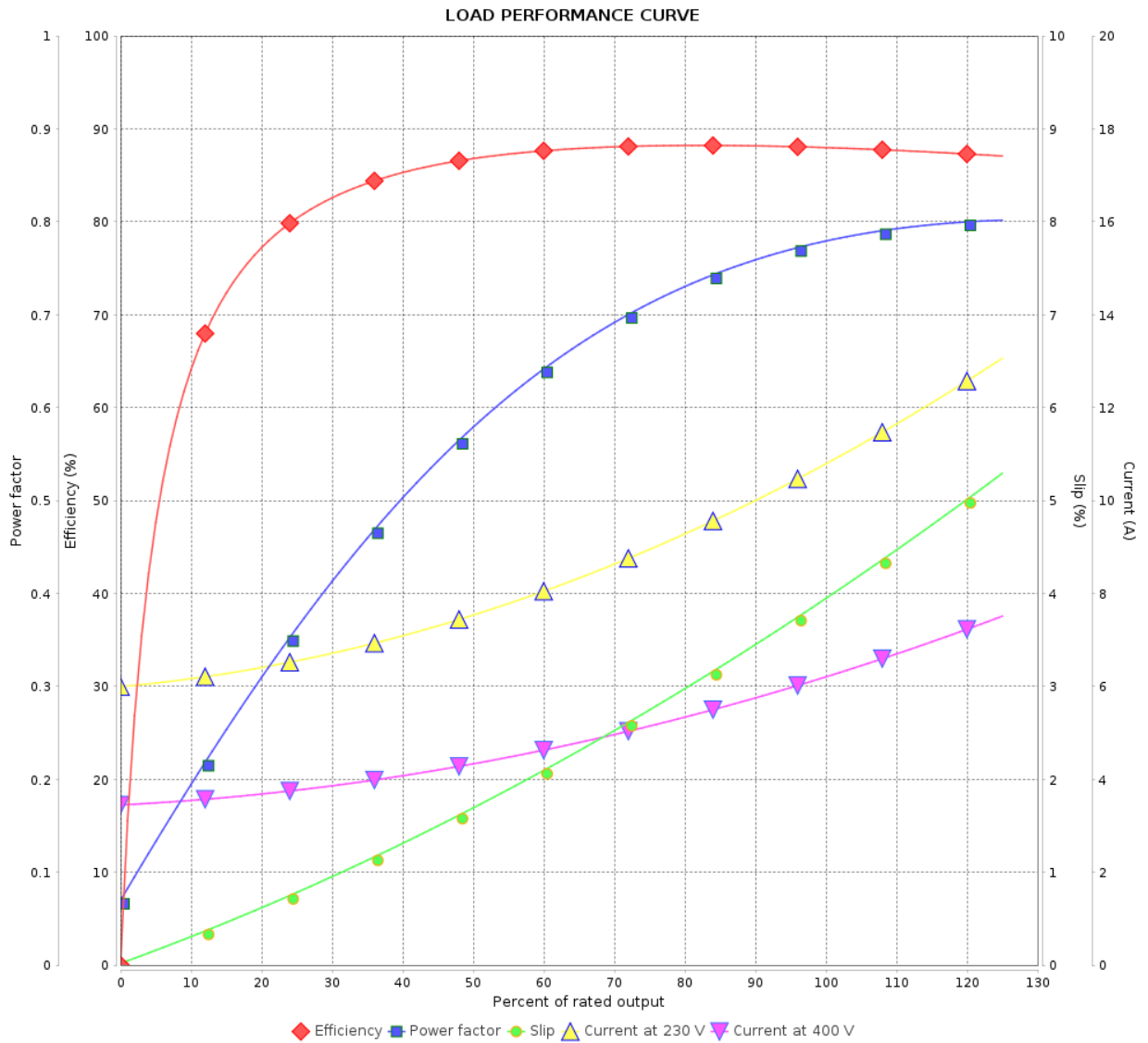
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 230/400 V 50 Hz 4P

Rated current : 11.0/6.31 A  
 LRC : 7.8  
 Rated torque : 2.03 kgfm  
 Locked rotor torque : 350 %  
 Breakdown torque : 370 %  
 Rated speed : 1440 rpm

Moment of inertia (J) : 0.0120 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   |                 |           |         |          |
| Date         |                 |           |         |          |

# LOAD PERFORMANCE CURVE

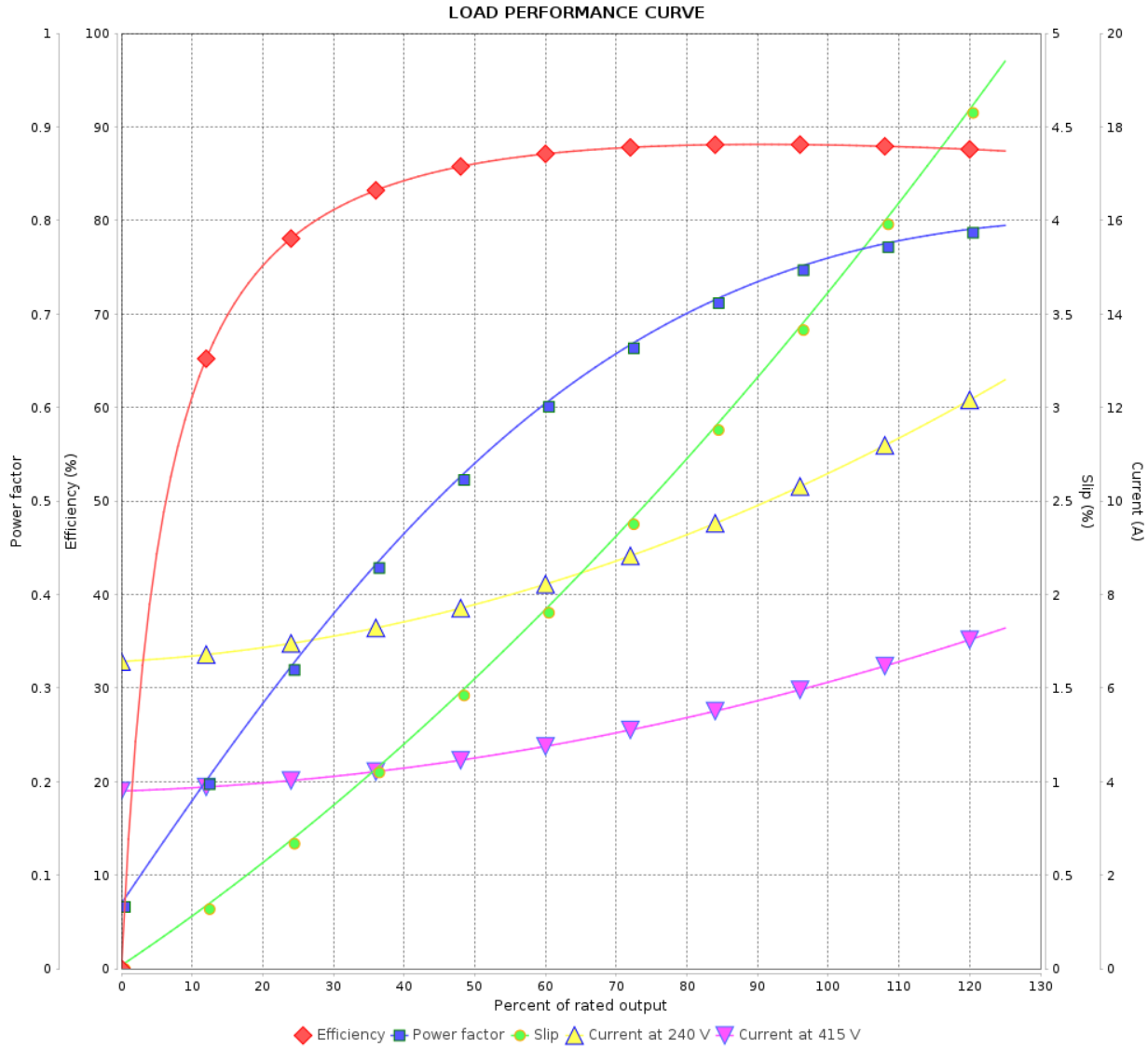
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 240/415 V 50 Hz 4P

Rated current : 10.8/6.23 A  
 LRC : 7.8  
 Rated torque : 2.02 kgfm  
 Locked rotor torque : 380 %  
 Breakdown torque : 400 %  
 Rated speed : 1445 rpm

Moment of inertia (J) : 0.0120 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<br>10 / 19 | Revision |
| Checked by   |                 |           |                 |          |
| Date         | 31/05/2023      |           |                 |          |

# LOAD PERFORMANCE CURVE

## Three Phase Induction Motor - Squirrel Cage

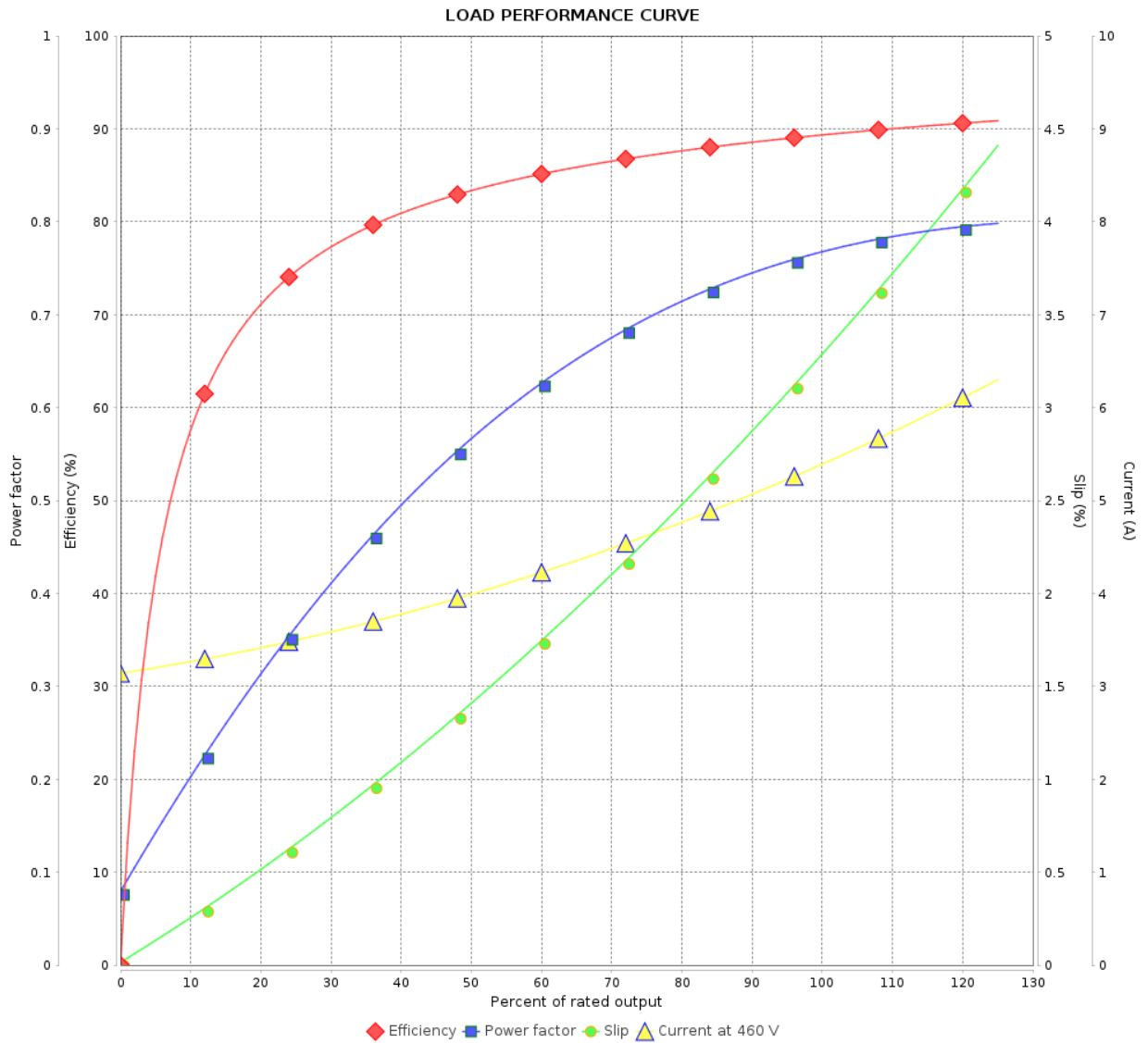


Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code :

13760753



Performance : 460 V 60 Hz 4P

Rated current : 5.46 A  
 LRC : 8.6  
 Rated torque : 1.68 kgfm  
 Locked rotor torque : 459 %  
 Breakdown torque : 480 %  
 Rated speed : 1740 rpm

Moment of inertia (J) : 0.0120 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   |                 | 11 / 19    |         |          |
| Date         |                 | 31/05/2023 |         |          |

# THERMAL LIMIT CURVE

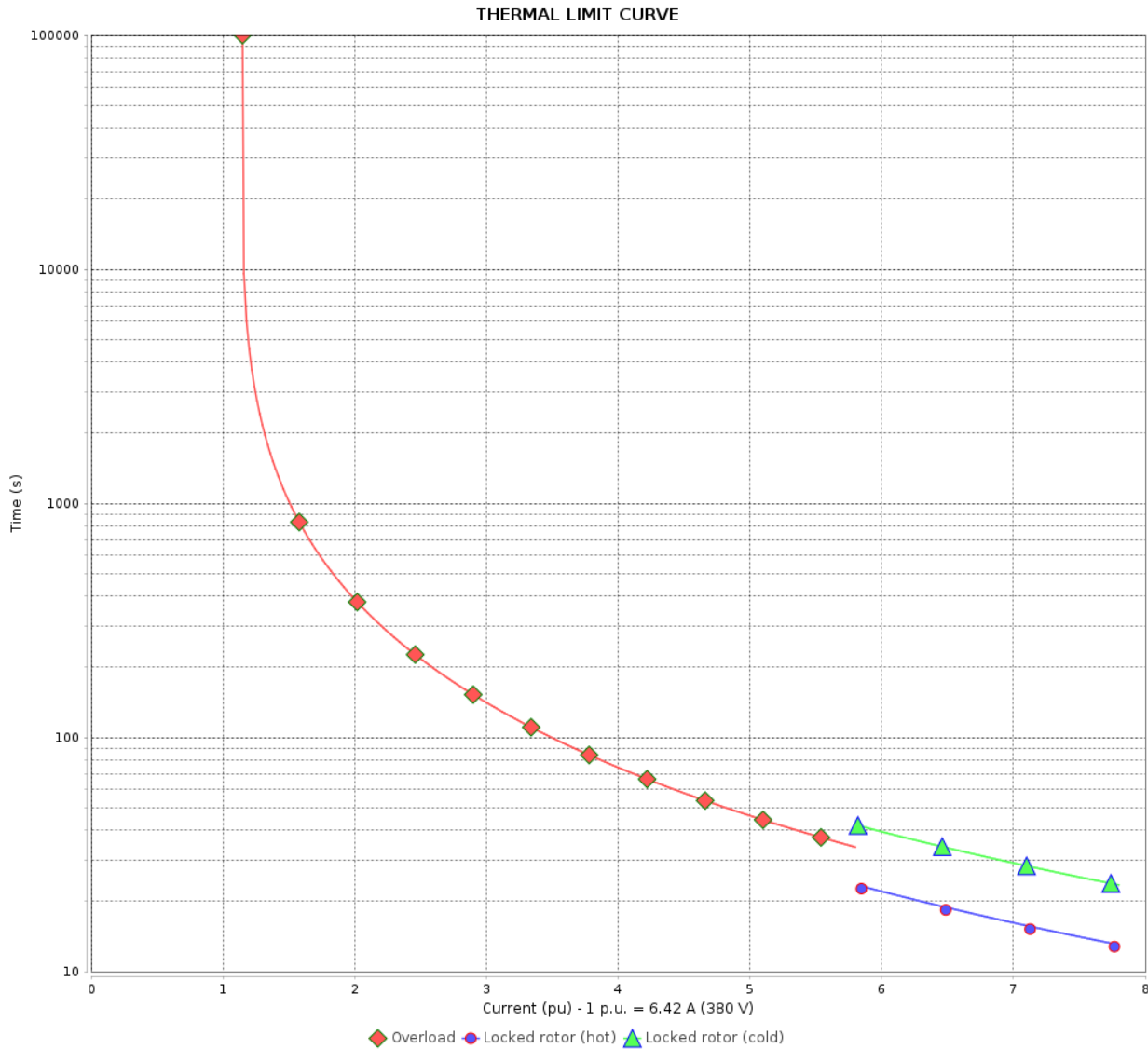
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 220/380 V 50 Hz 4P

Rated current : 11.1/6.42 A  
 LRC : 7.8  
 Rated torque : 2.04 kgfm  
 Locked rotor torque : 310 %  
 Breakdown torque : 330 %  
 Rated speed : 1430 rpm

Moment of inertia (J) : 0.0120 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     |
|--------------|-----------------|-----------|---------|----------|
|              |                 |           |         |          |
| Performed by |                 | Page      |         | Revision |
| Checked by   |                 |           |         |          |
| Date         |                 |           |         |          |

# THERMAL LIMIT CURVE

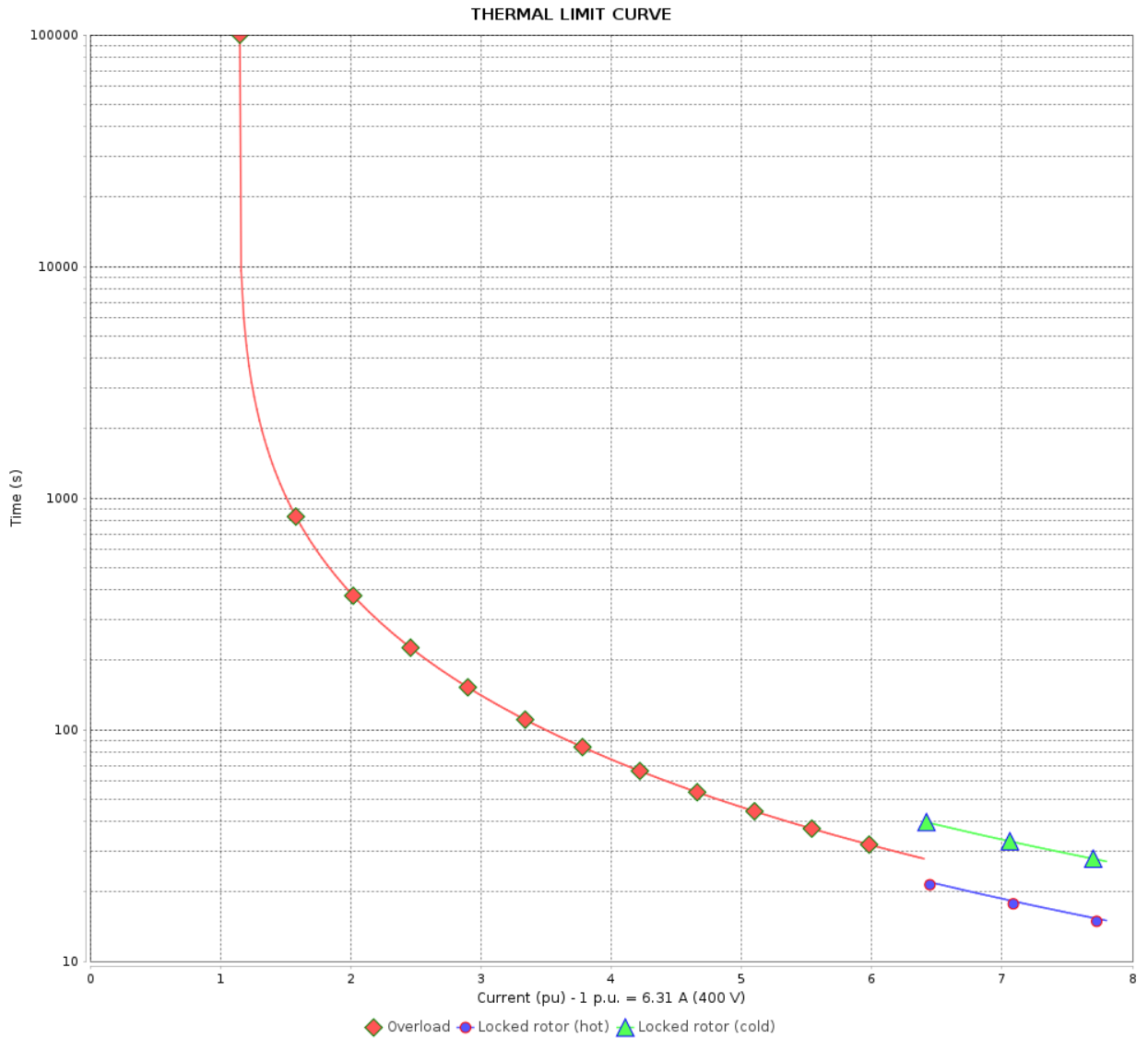
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 230/400 V 50 Hz 4P

Rated current : 11.0/6.31 A  
 LRC : 7.8  
 Rated torque : 2.03 kgfm  
 Locked rotor torque : 350 %  
 Breakdown torque : 370 %  
 Rated speed : 1440 rpm

Moment of inertia (J) : 0.0120 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 |
|--------------|-----------------|-----------|----------|------|
|              |                 |           |          |      |
| Performed by |                 |           |          |      |
| Checked by   |                 |           |          |      |
| Date         |                 |           |          |      |
|              |                 | Page      | Revision |      |
|              |                 | 13 / 19   |          |      |

# THERMAL LIMIT CURVE

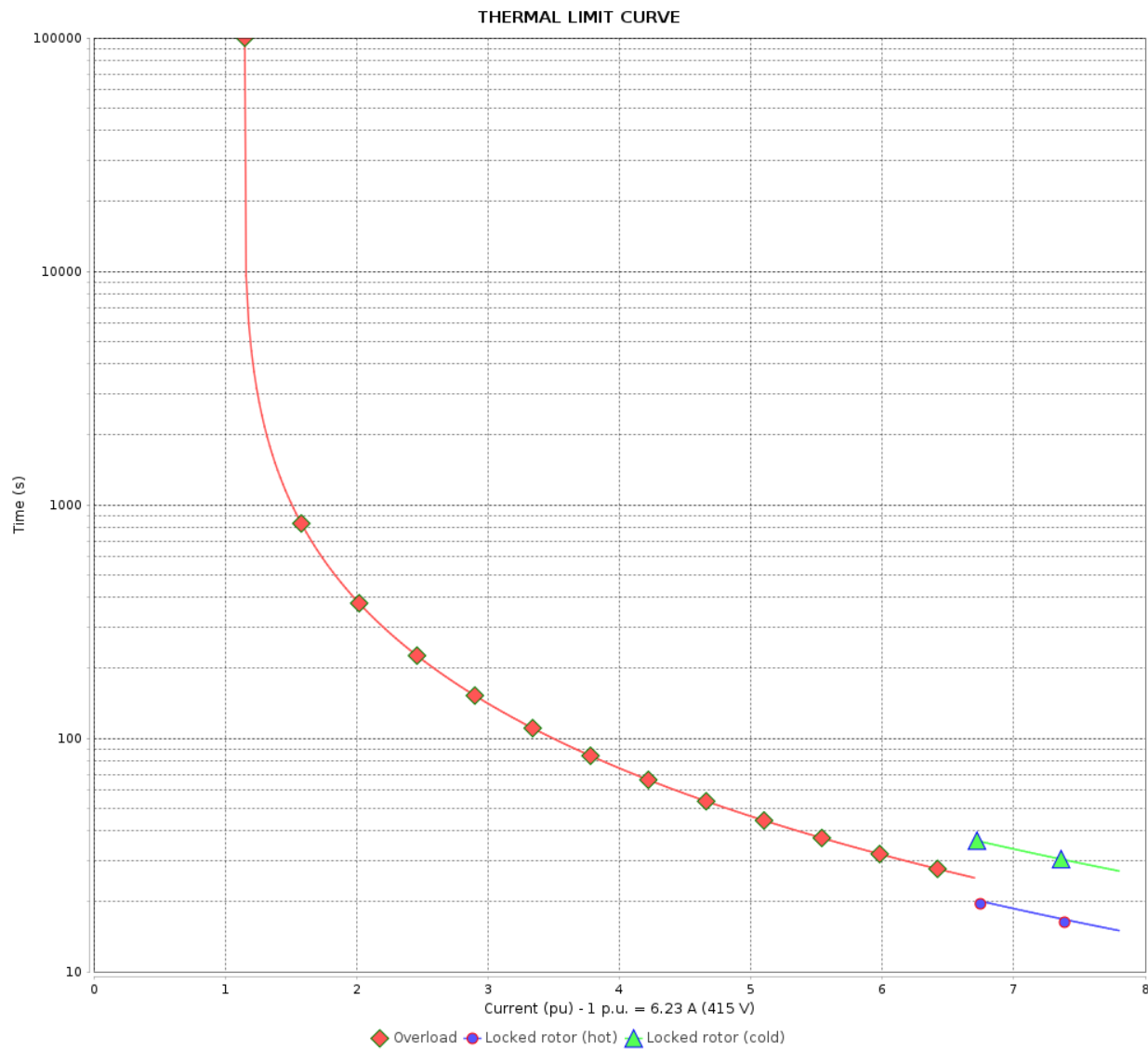
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 240/415 V 50 Hz 4P

Rated current : 10.8/6.23 A  
 LRC : 7.8  
 Rated torque : 2.02 kgfm  
 Locked rotor torque : 380 %  
 Breakdown torque : 400 %  
 Rated speed : 1445 rpm

Moment of inertia (J) : 0.0120 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     |
|--------------|-----------------|-----------|---------|----------|
|              |                 |           |         |          |
| Performed by |                 | Page      |         | Revision |
| Checked by   |                 |           |         |          |
| Date         |                 |           |         |          |

# THERMAL LIMIT CURVE

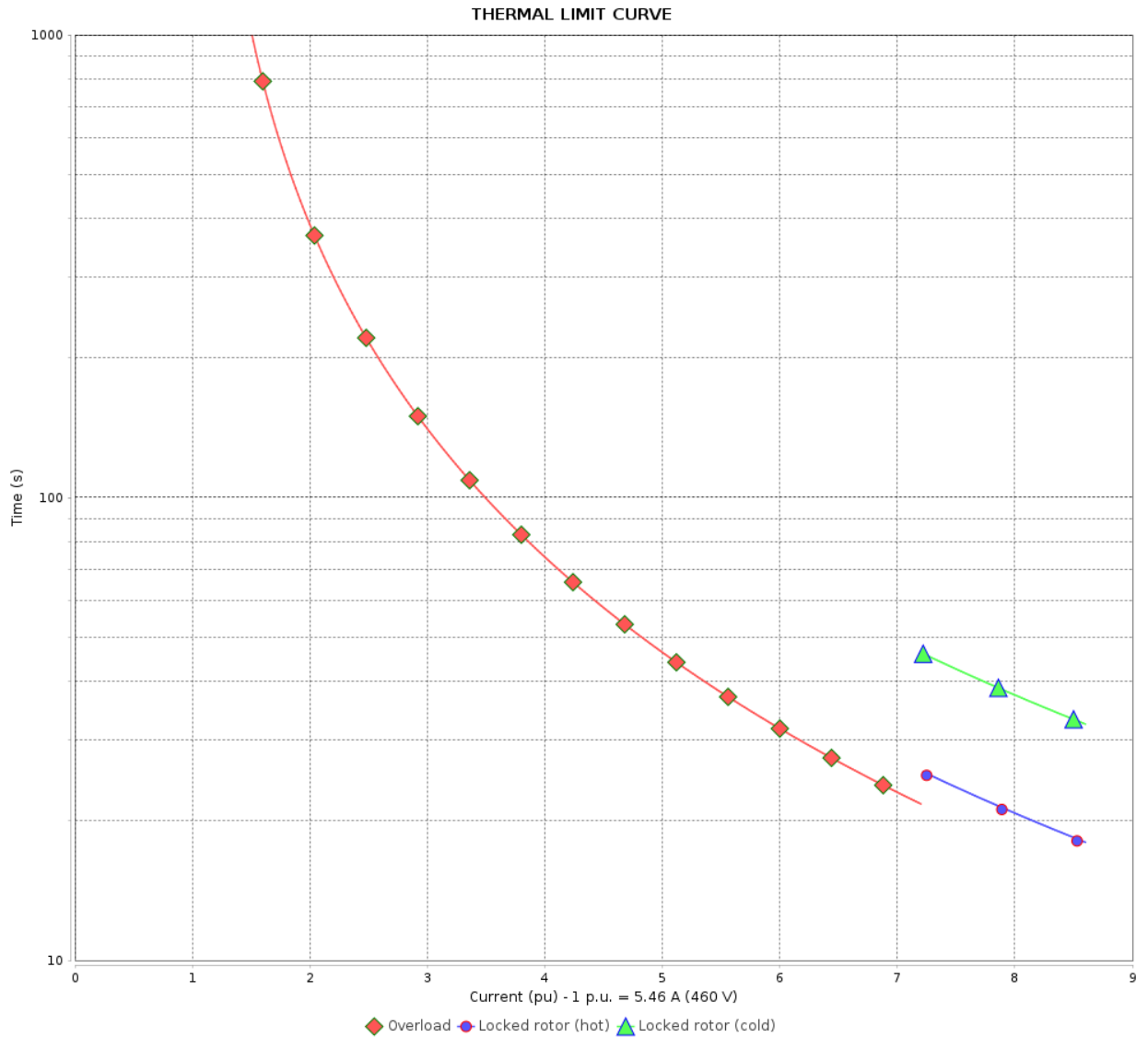
## Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 460 V 60 Hz 4P

Rated current : 5.46 A  
 LRC : 8.6  
 Rated torque : 1.68 kgfm  
 Locked rotor torque : 459 %  
 Breakdown torque : 480 %  
 Rated speed : 1740 rpm

Moment of inertia (J) : 0.0120 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 |
|--------------|-----------------|-----------|----------|------|
|              |                 |           |          |      |
| Performed by |                 |           |          |      |
| Checked by   |                 |           |          |      |
| Date         |                 |           |          |      |
|              |                 | Page      | Revision |      |
|              |                 | 15 / 19   |          |      |

# VFD OPERATION CURVE

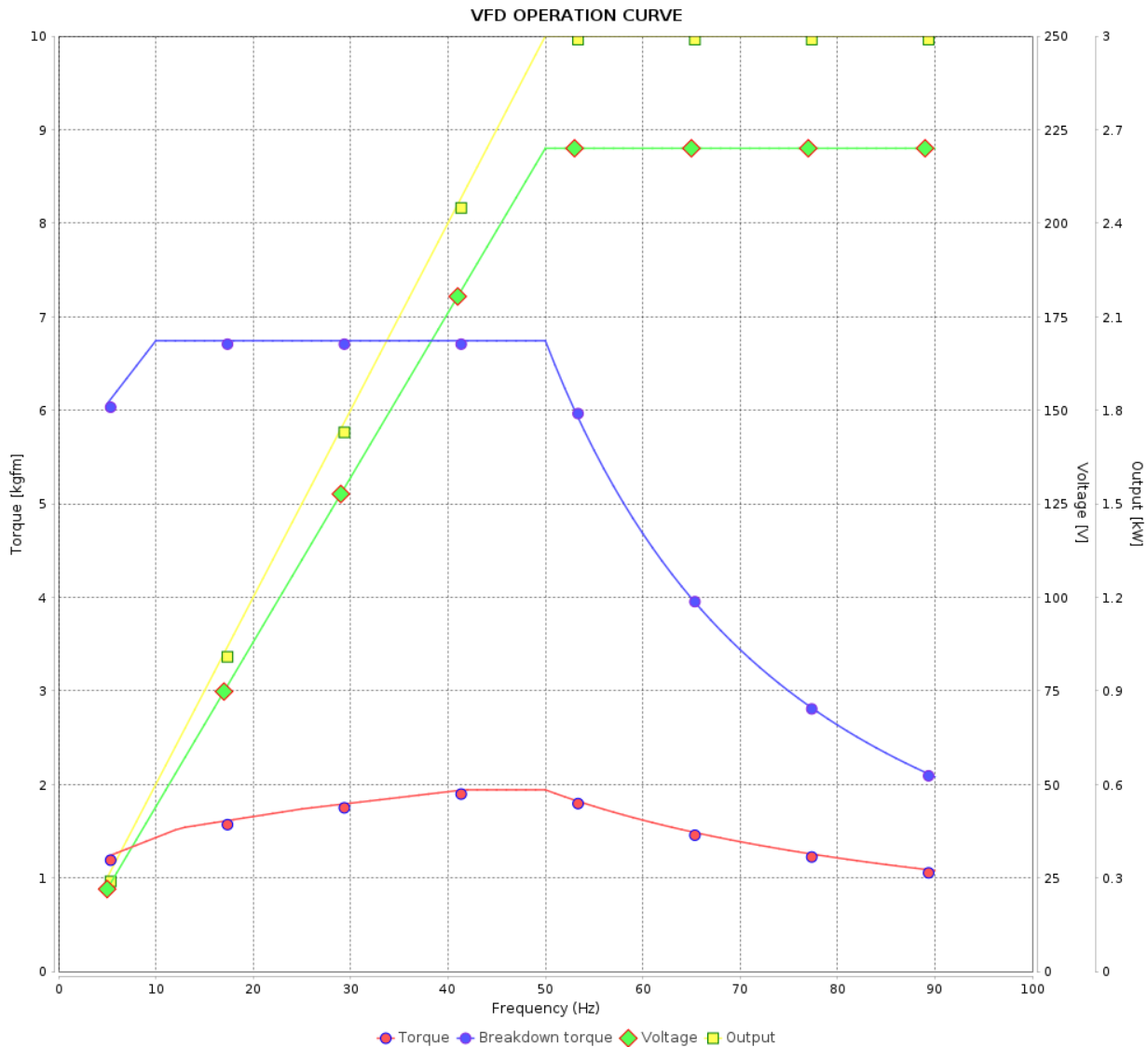
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 220/380 V 50 Hz 4P

Rated current : 11.1/6.42 A  
 LRC : 7.8  
 Rated torque : 2.04 kgfm  
 Locked rotor torque : 310 %  
 Breakdown torque : 330 %  
 Rated speed : 1430 rpm

Moment of inertia (J) : 0.0120 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<br>16 / 19 | Revision |
| Checked by   |                 |           |                 |          |
| Date         | 31/05/2023      |           |                 |          |

# VFD OPERATION CURVE

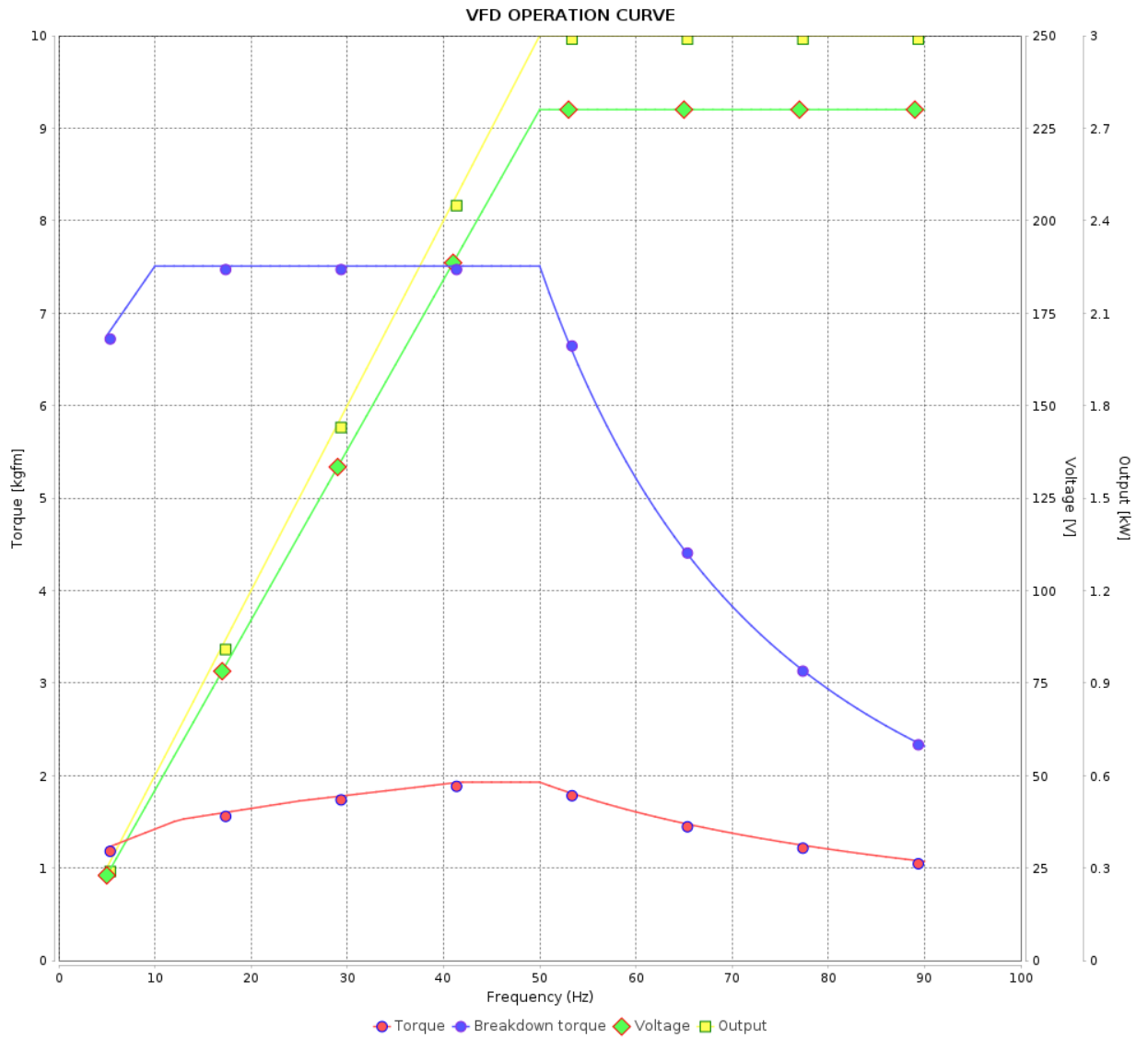
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 230/400 V 50 Hz 4P

Rated current : 11.0/6.31 A  
 LRC : 7.8  
 Rated torque : 2.03 kgfm  
 Locked rotor torque : 350 %  
 Breakdown torque : 370 %  
 Rated speed : 1440 rpm

Moment of inertia (J) : 0.0120 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   |                 | 17 / 19    |         |          |
| Date         |                 | 31/05/2023 |         |          |

# VFD OPERATION CURVE

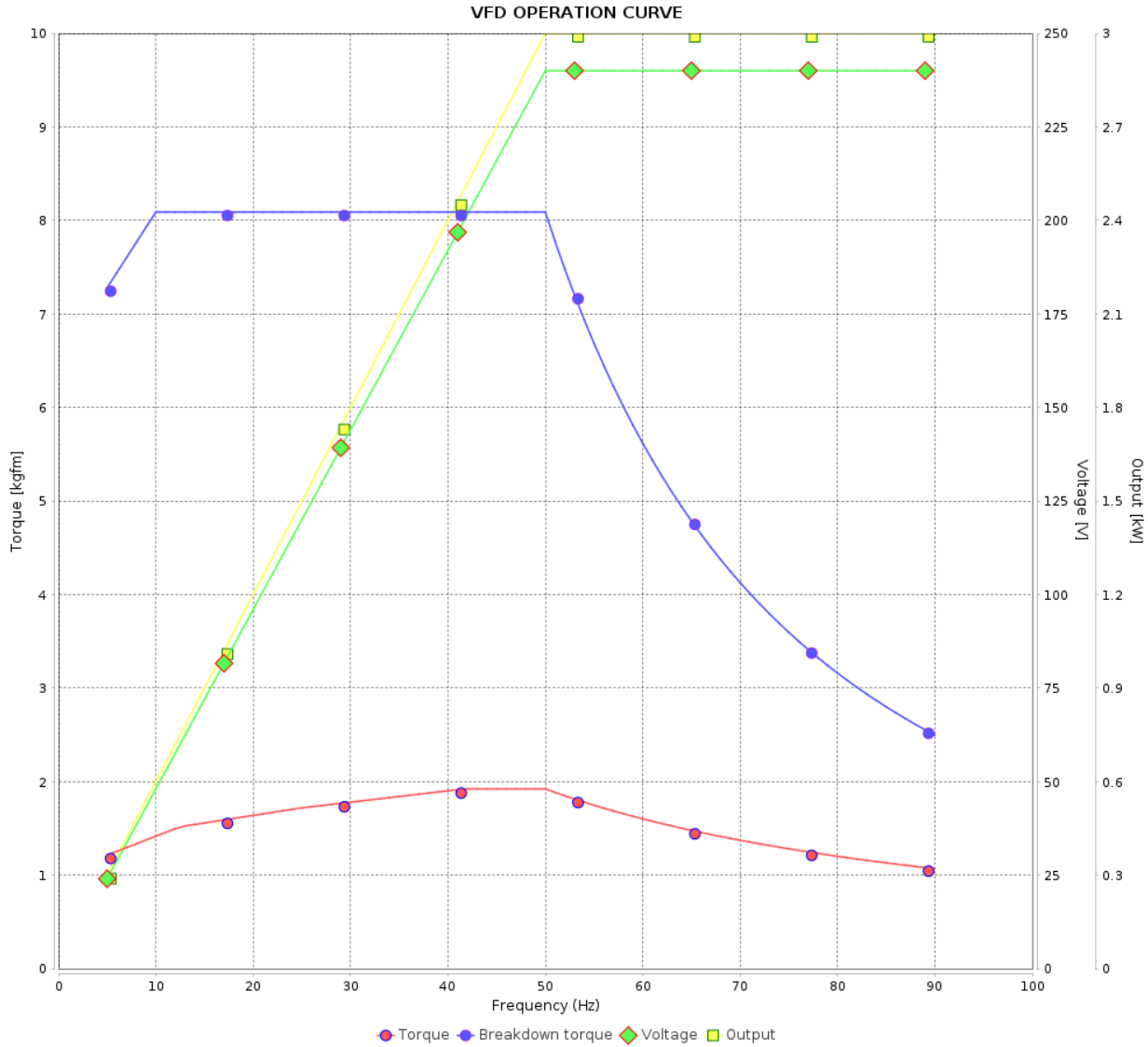
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 240/415 V 50 Hz 4P

Rated current : 10.8/6.23 A  
 LRC : 7.8  
 Rated torque : 2.02 kgfm  
 Locked rotor torque : 380 %  
 Breakdown torque : 400 %  
 Rated speed : 1445 rpm

Moment of inertia (J) : 0.0120 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   |                 |           |         |          |
| Date         |                 |           |         |          |

# VFD OPERATION CURVE

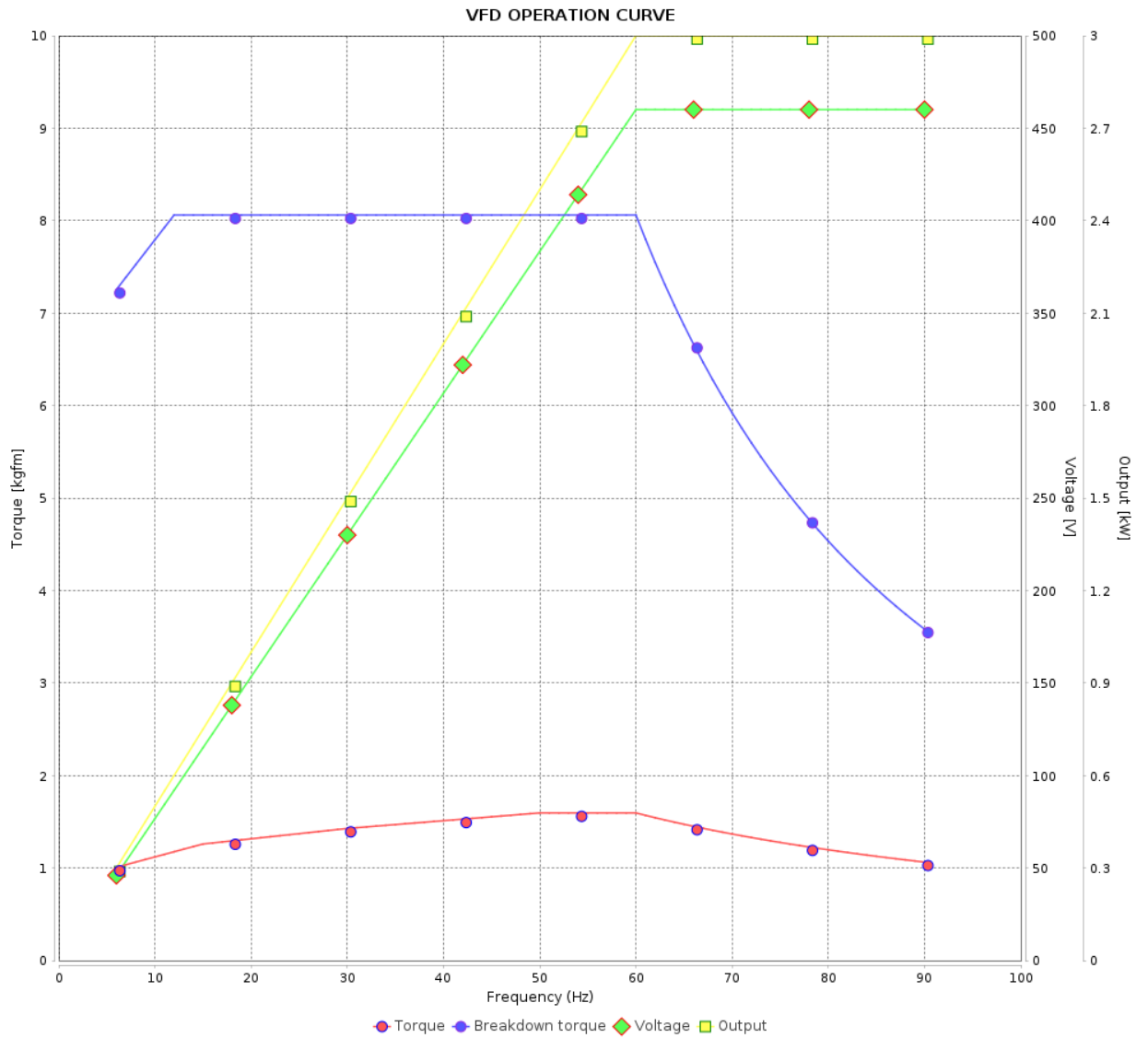
Three Phase Induction Motor - Squirrel Cage



Customer : Astraprom d.o.o.

Product line : Multimounting IE3 Three-Phase

Product code : 13760753



Performance : 460 V 60 Hz 4P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 5.46 A    | Moment of inertia (J) | : 0.0120 kgm <sup>2</sup> |
| LRC                 | : 8.6       | Duty cycle            | : S1                      |
| Rated torque        | : 1.68 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 459 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 480 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 1740 rpm  | Design                | : N                       |

| Rev.         | Changes Summary | Performed  | Checked | Date     |
|--------------|-----------------|------------|---------|----------|
|              |                 |            |         |          |
| Performed by |                 | Page       |         | Revision |
| Checked by   |                 | 19 / 19    |         |          |
| Date         |                 | 31/05/2023 |         |          |