

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



|                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                             |                            |                                                                                                                            |                     |          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
| Customer :                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                             |                            |                                                                                                                            |                     |          |
| Product line : MULTIMOUNTING                                                                                                                                                                                                                                                           | Product code : 12562180                                                                                                                                                                                                     |                            |                                                                                                                            |                     |          |
| Frame : 160M/L<br>Insulation class : F<br>Duty cycle : S1<br>Ambient temperature : -20°C to +40°C<br>Altitude : 1000 m.a.s.l.<br>Protection degree : IP55<br>Design : N                                                                                                                | Cooling method : IC411 - TEFC<br>Mounting : B3T<br>Rotation <sup>1</sup> : Both (CW and CCW)<br>Starting method : Direct On Line<br>Approx. weight <sup>2</sup> : 110 kg<br>Moment of inertia (J) : 0.0565 kgm <sup>2</sup> |                            |                                                                                                                            |                     |          |
| 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]                                                                                                                                                                                                                                                                      | 28.8/16.6                                                                                                                                                                                                                   | 28.4/16.5                  | 28.4                                                                                                                       | 24.9                |          |
| L. R. Amperes [A]                                                                                                                                                                                                                                                                      | 239/138                                                                                                                                                                                                                     | 256/148                    | 270                                                                                                                        | 256                 |          |
| LRC [A]                                                                                                                                                                                                                                                                                | 8.3                                                                                                                                                                                                                         | 9.0                        | 9.5                                                                                                                        | 10.3                |          |
| No load current [A]                                                                                                                                                                                                                                                                    | 11.3/6.51                                                                                                                                                                                                                   | 12.7/7.36                  | 14.1                                                                                                                       | 11.5                |          |
| 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                        | 310                                                                                                                        | 320                 |          |
| Breakdown torque [%]                                                                                                                                                                                                                                                                   | 300                                                                                                                                                                                                                         | 340                        | 370                                                                                                                        | 390                 |          |
| 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>                                                                                                                                                                                                                                                               | 70.0 dB(A)                                                                                                                                                                                                                  | 70.0 dB(A)                 | 70.0 dB(A)                                                                                                                 | 75.0 dB(A)          |          |
| Efficiency (%)                                                                                                                                                                                                                                                                         | 25%                                                                                                                                                                                                                         |                            |                                                                                                                            |                     |          |
|                                                                                                                                                                                                                                                                                        | 50%                                                                                                                                                                                                                         | 90.0                       | 89.0                                                                                                                       | 88.0                |          |
|                                                                                                                                                                                                                                                                                        | 75%                                                                                                                                                                                                                         | 91.0                       | 90.5                                                                                                                       | 90.0                |          |
|                                                                                                                                                                                                                                                                                        | 100%                                                                                                                                                                                                                        | 91.9                       | 91.9                                                                                                                       | 91.9                |          |
| Power Factor                                                                                                                                                                                                                                                                           | 25%                                                                                                                                                                                                                         |                            |                                                                                                                            |                     |          |
|                                                                                                                                                                                                                                                                                        | 50%                                                                                                                                                                                                                         | 0.74                       | 0.67                                                                                                                       | 0.62                |          |
|                                                                                                                                                                                                                                                                                        | 75%                                                                                                                                                                                                                         | 0.83                       | 0.78                                                                                                                       | 0.74                |          |
|                                                                                                                                                                                                                                                                                        | 100%                                                                                                                                                                                                                        | 0.86                       | 0.83                                                                                                                       | 0.80                |          |
| Losses at normative operating points (speed;torque), in percentage of rated output power                                                                                                                                                                                               |                                                                                                                                                                                                                             |                            |                                                                                                                            |                     |          |
| Losses (%)                                                                                                                                                                                                                                                                             | P1 (0,9;1,0)                                                                                                                                                                                                                | 8.6                        | 8.6                                                                                                                        | 8.6                 | 9.6      |
|                                                                                                                                                                                                                                                                                        | P2 (0,5;1,0)                                                                                                                                                                                                                | 7.0                        | 7.0                                                                                                                        | 7.0                 | 7.9      |
|                                                                                                                                                                                                                                                                                        | P3 (0,25;1,0)                                                                                                                                                                                                               | 6.4                        | 6.4                                                                                                                        | 6.4                 | 7.2      |
|                                                                                                                                                                                                                                                                                        | P4 (0,9;0,5)                                                                                                                                                                                                                | 4.6                        | 4.6                                                                                                                        | 4.6                 | 5.1      |
|                                                                                                                                                                                                                                                                                        | P5 (0,5;0,5)                                                                                                                                                                                                                | 3.0                        | 3.0                                                                                                                        | 3.0                 | 3.4      |
|                                                                                                                                                                                                                                                                                        | P6 (0,5;0,25)                                                                                                                                                                                                               | 2.1                        | 2.1                                                                                                                        | 2.1                 | 2.4      |
|                                                                                                                                                                                                                                                                                        | P7 (0,25;0,25)                                                                                                                                                                                                              | 1.4                        | 1.4                                                                                                                        | 1.4                 | 1.6      |
| Bearing type                                                                                                                                                                                                                                                                           | Drive end : 6309 ZZ C3                                                                                                                                                                                                      | Non drive end : 6209 ZZ C3 | Foundation loads                                                                                                           |                     |          |
| Sealing                                                                                                                                                                                                                                                                                | V'Ring                                                                                                                                                                                                                      | V'Ring                     | Max. traction                                                                                                              | : 196 kgf           |          |
| Lubrication interval                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                                           | -                          | Max. compression                                                                                                           | : 307 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 |
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# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_

Notes

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# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_

### 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

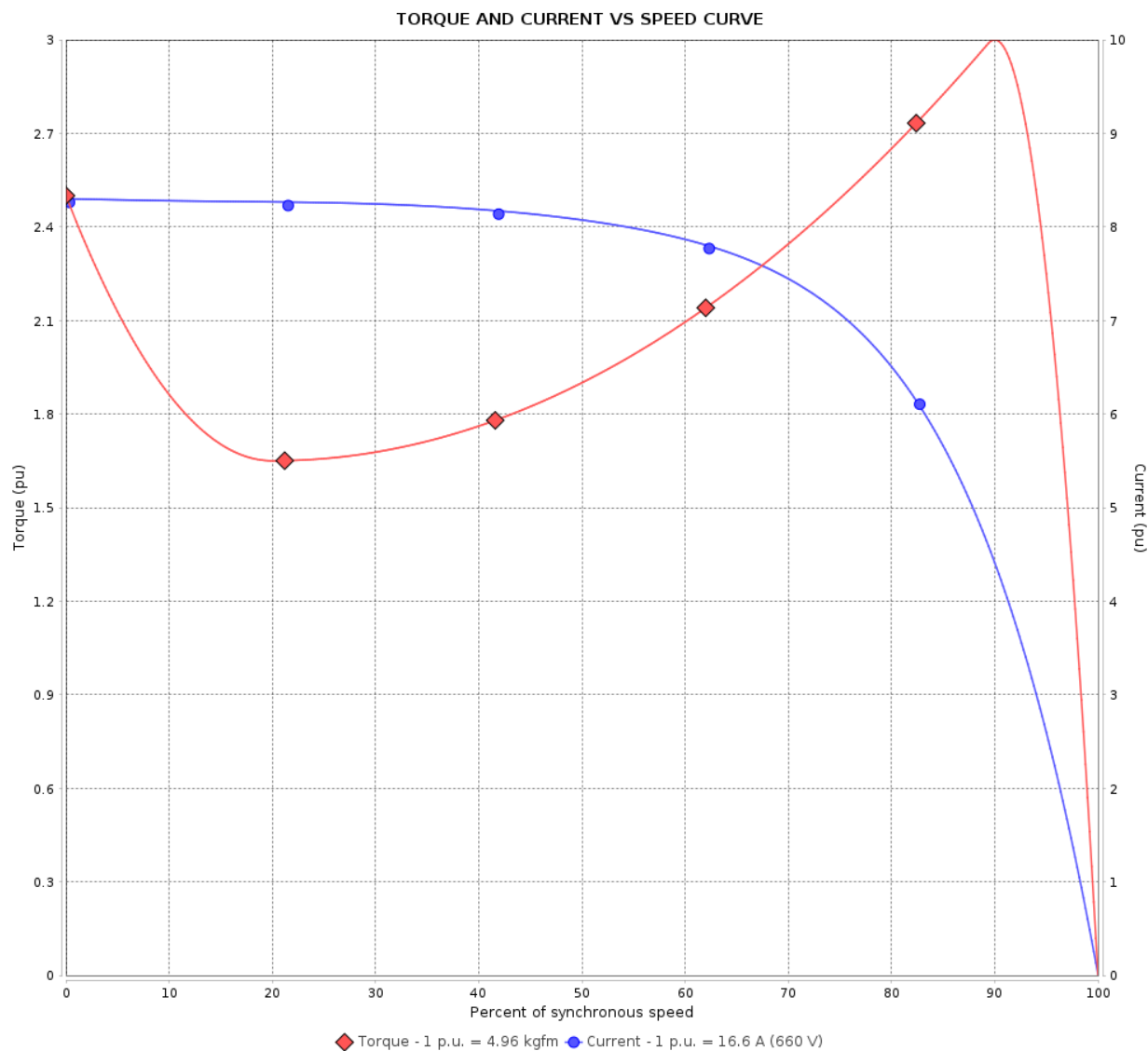
Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 380/660 V 50 Hz 2P

Rated current : 28.8/16.6 A  
 LRC : 8.3  
 Rated torque : 4.96 kgfm  
 Locked rotor torque : 250 %  
 Breakdown torque : 300 %  
 Rated speed : 2945 rpm

Moment of inertia (J) : 0.0565 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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

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# TORQUE AND CURRENT VS SPEED CURVE

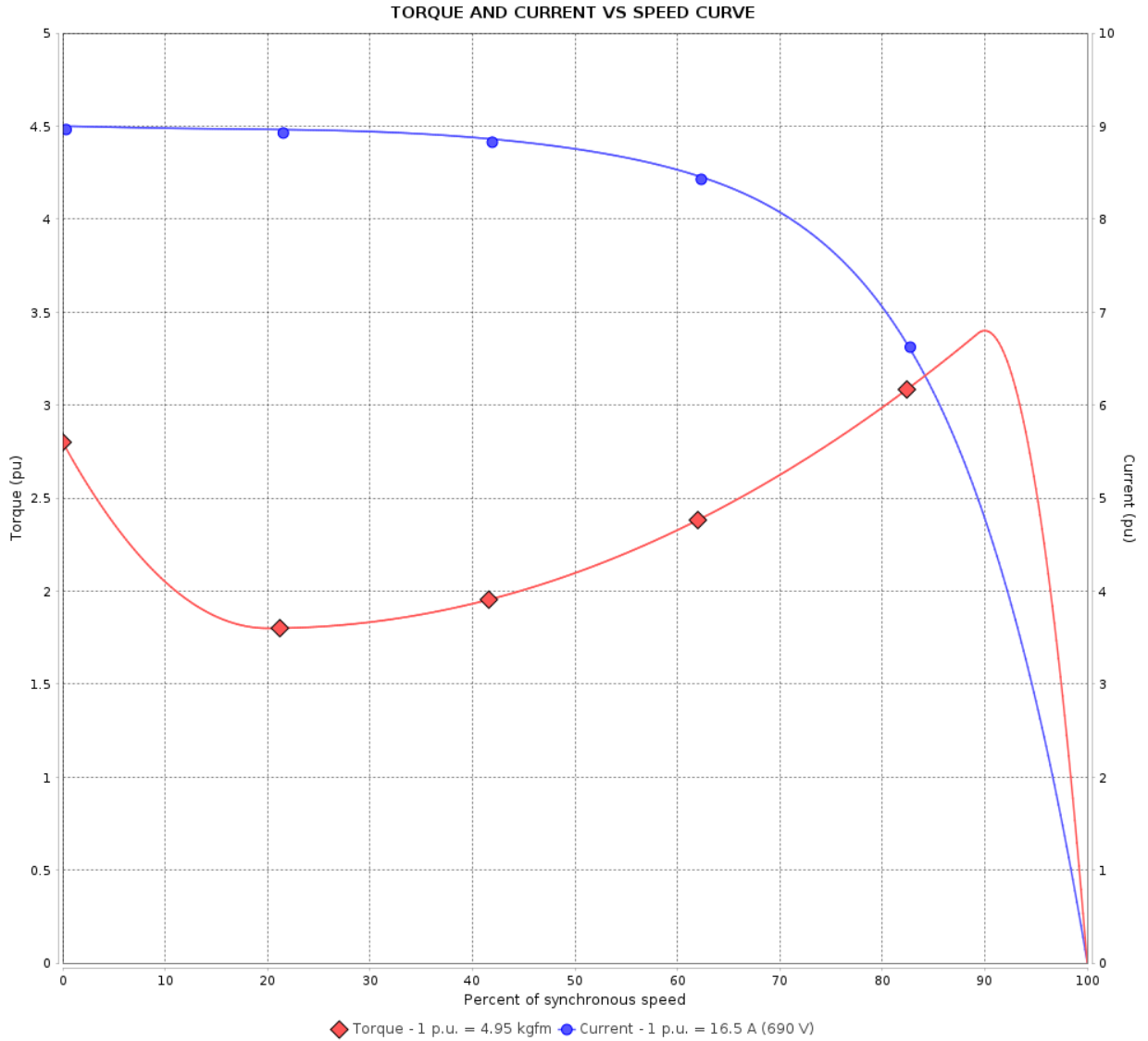
Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 400/690 V 50 Hz 2P

Rated current : 28.4/16.5 A  
 LRC : 9.0  
 Rated torque : 4.95 kgfm  
 Locked rotor torque : 280 %  
 Breakdown torque : 340 %  
 Rated speed : 2950 rpm

Moment of inertia (J) : 0.0565 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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

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

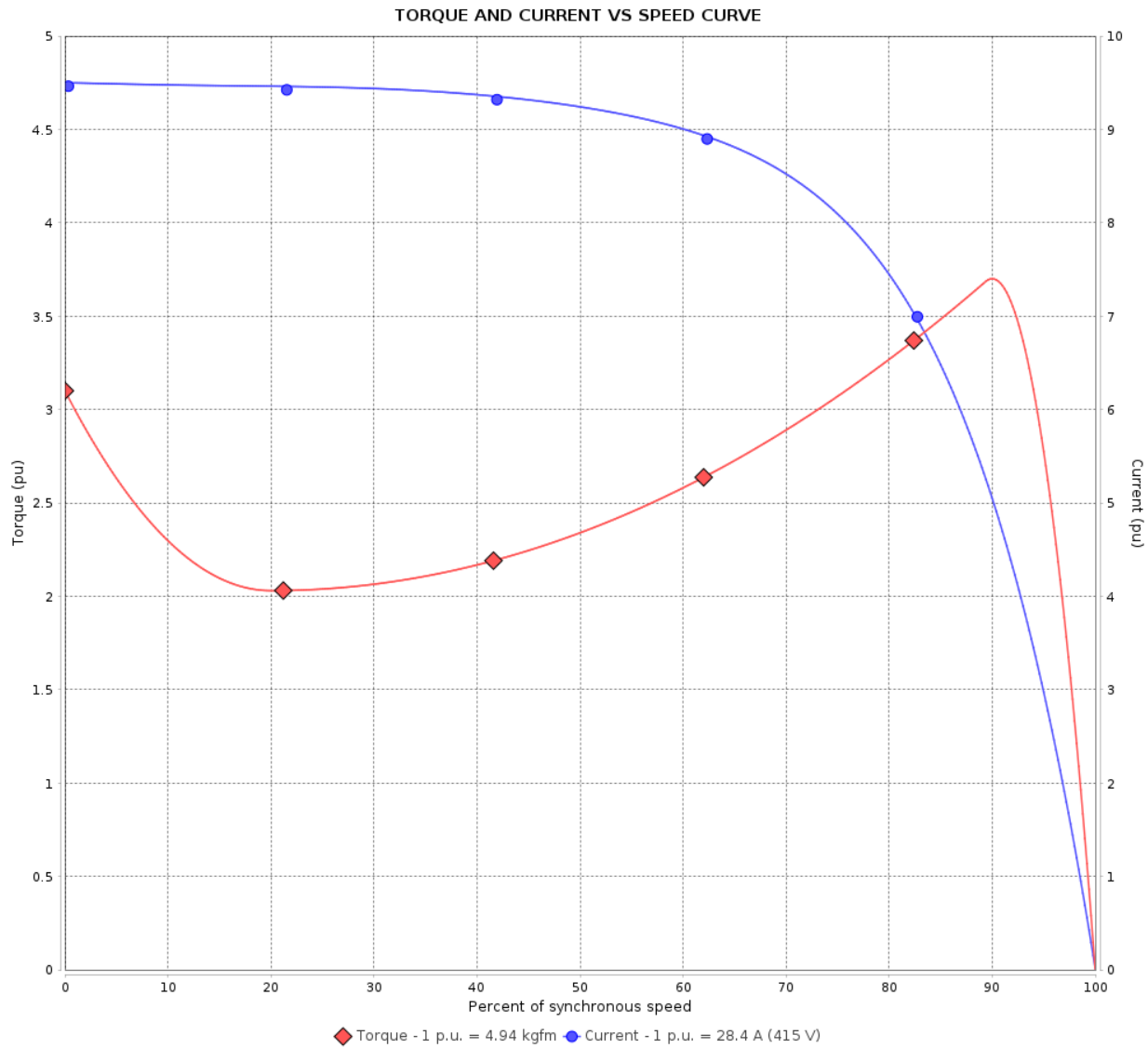
Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 415 V 50 Hz 2P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 28.4 A    | Moment of inertia (J) | : 0.0565 kgm <sup>2</sup> |
| LRC                 | : 9.5       | Duty cycle            | : S1                      |
| Rated torque        | : 4.94 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 310 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 370 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 2955 rpm  | Design                | : N                       |

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

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

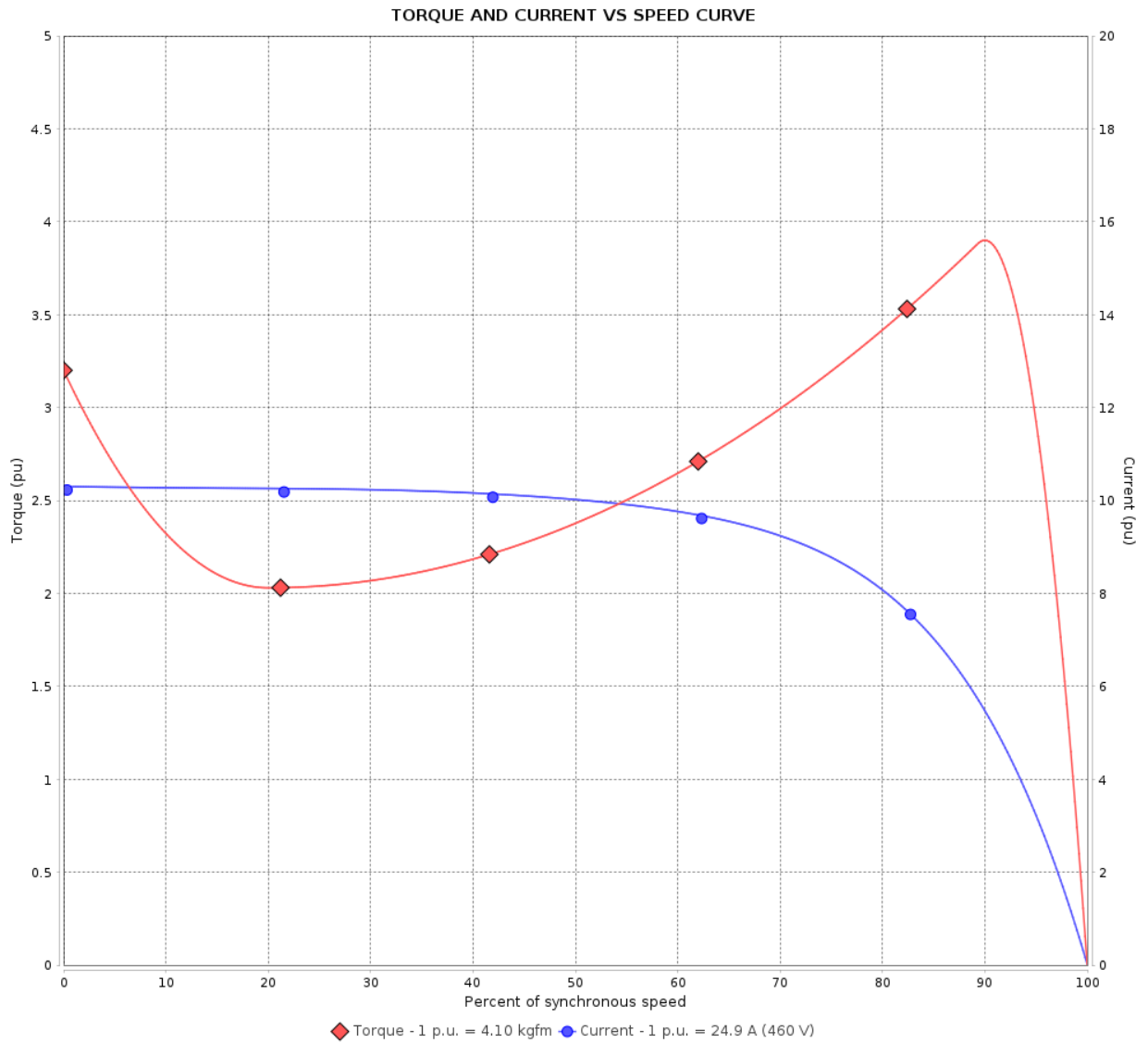
Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 460 V 60 Hz 2P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 24.9 A    | Moment of inertia (J) | : 0.0565 kgm <sup>2</sup> |
| LRC                 | : 10.3      | Duty cycle            | : S1                      |
| Rated torque        | : 4.10 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 320 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 390 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 3560 rpm  | Design                | : N                       |

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

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

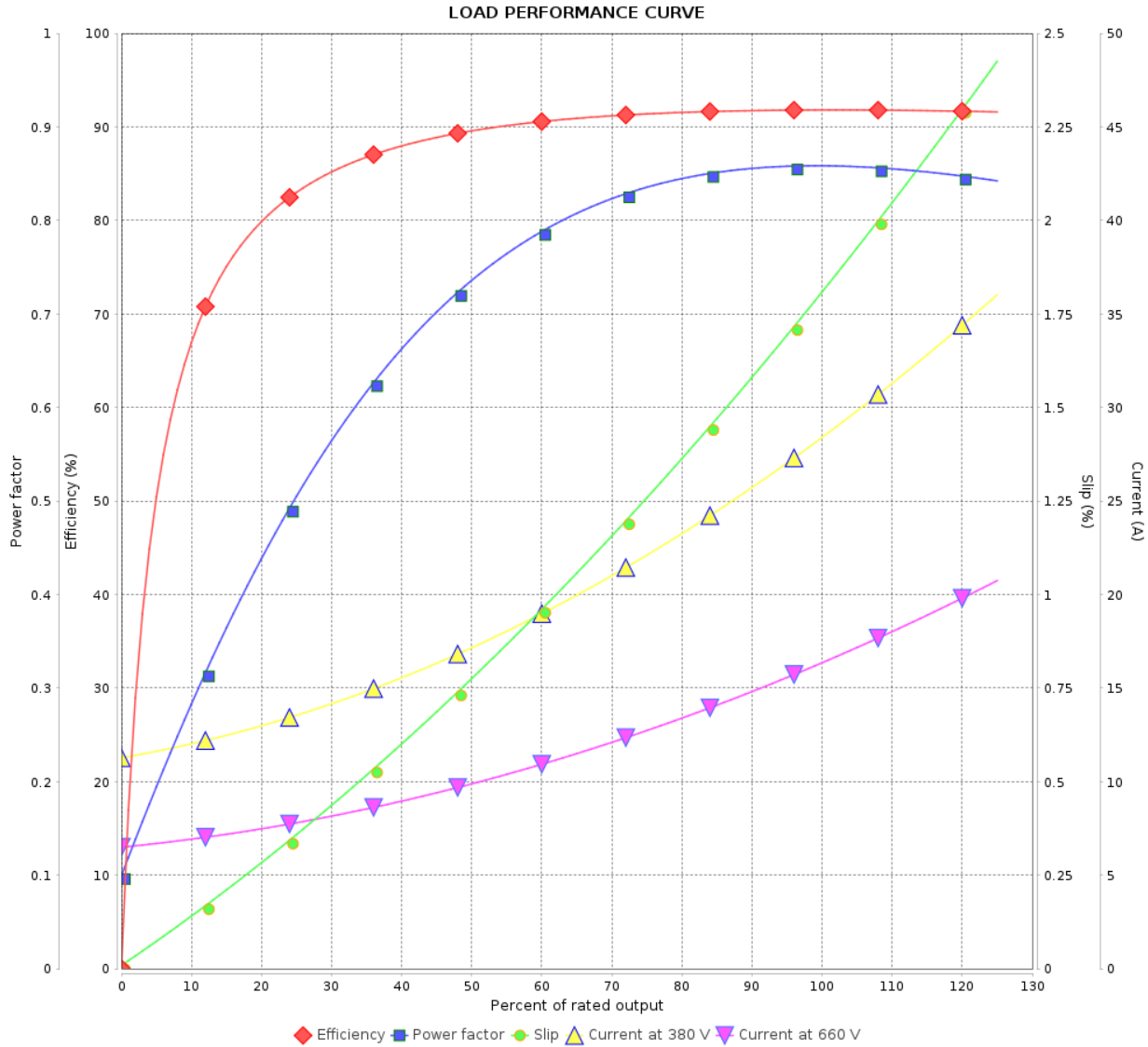
Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 380/660 V 50 Hz 2P

Rated current : 28.8/16.6 A  
 LRC : 8.3  
 Rated torque : 4.96 kgfm  
 Locked rotor torque : 250 %  
 Breakdown torque : 300 %  
 Rated speed : 2945 rpm

Moment of inertia (J) : 0.0565 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

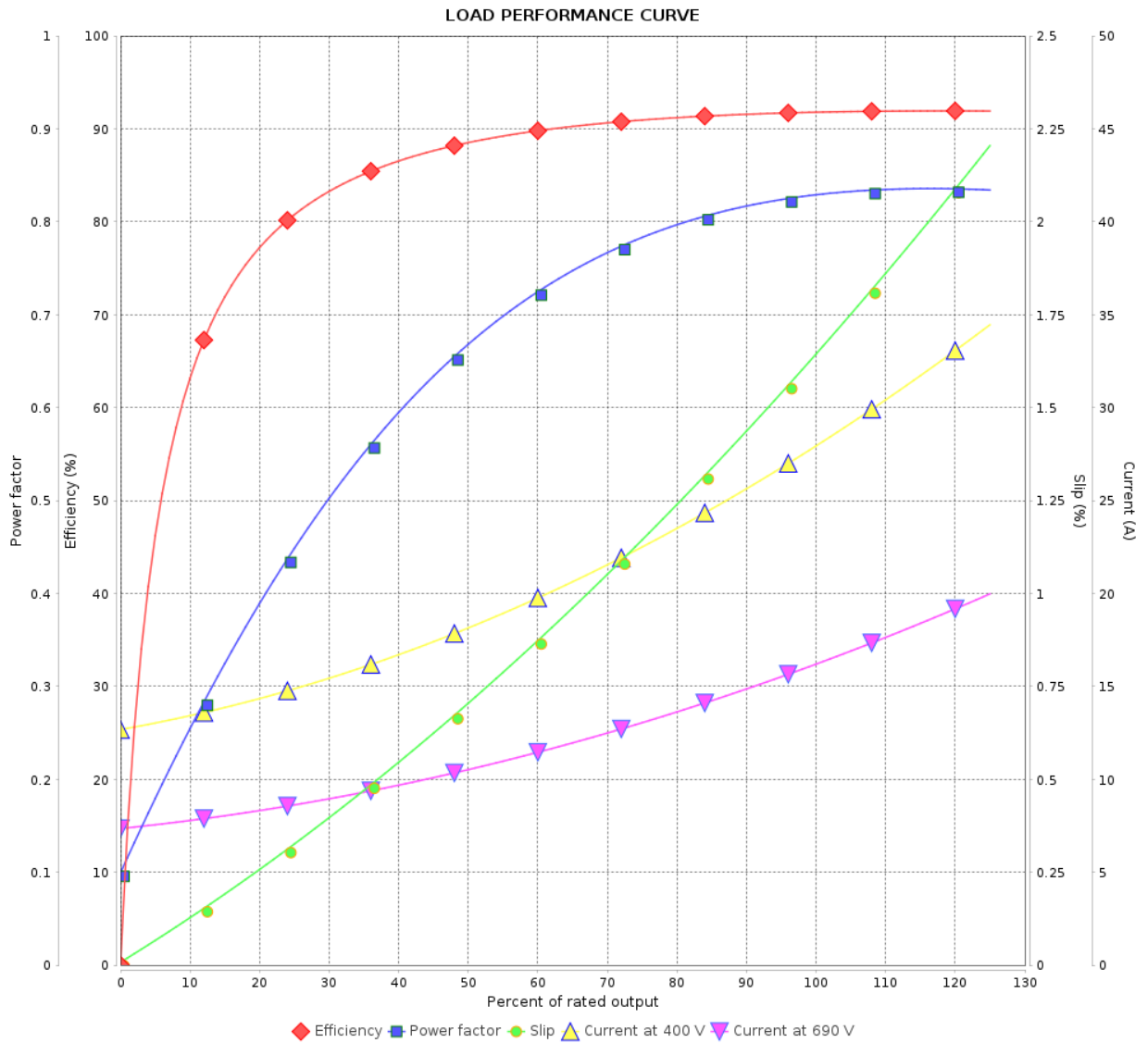
Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 400/690 V 50 Hz 2P

Rated current : 28.4/16.5 A  
 LRC : 9.0  
 Rated torque : 4.95 kgfm  
 Locked rotor torque : 280 %  
 Breakdown torque : 340 %  
 Rated speed : 2950 rpm

Moment of inertia (J) : 0.0565 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

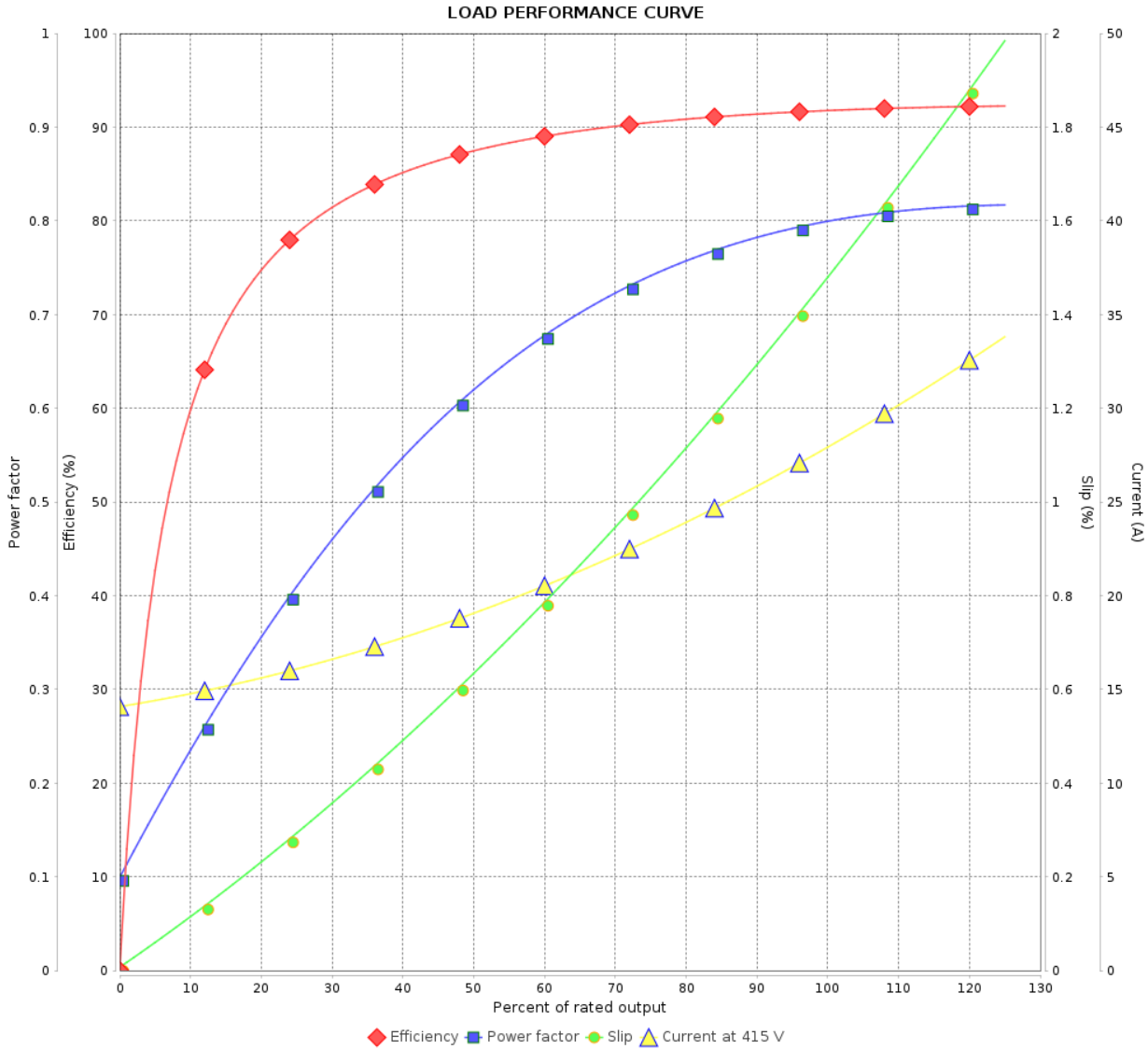
Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 415 V 50 Hz 2P

Rated current : 28.4 A  
 LRC : 9.5  
 Rated torque : 4.94 kgfm  
 Locked rotor torque : 310 %  
 Breakdown torque : 370 %  
 Rated speed : 2955 rpm

Moment of inertia (J) : 0.0565 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

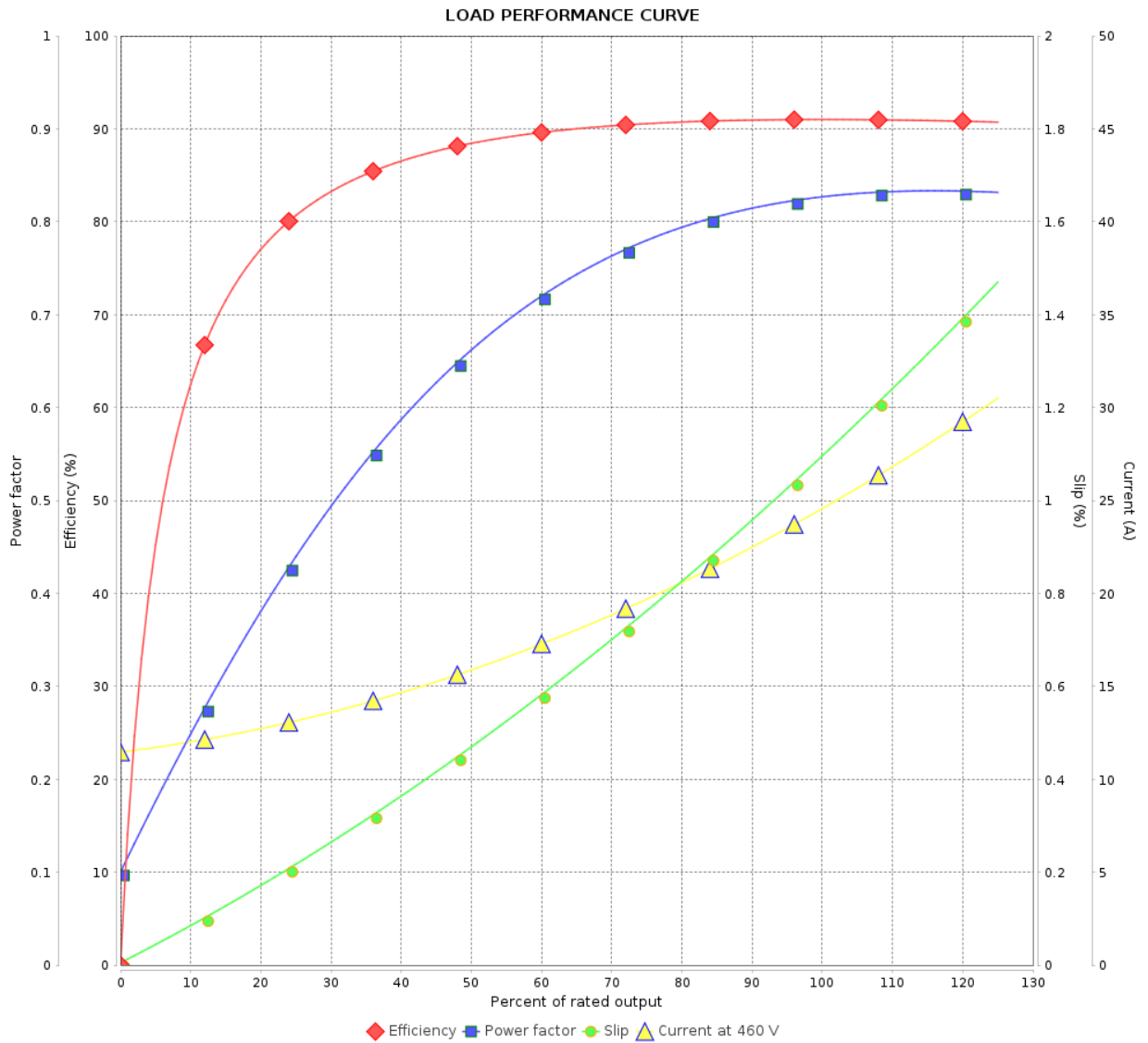
Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 460 V 60 Hz 2P

Rated current : 24.9 A  
 LRC : 10.3  
 Rated torque : 4.10 kgfm  
 Locked rotor torque : 320 %  
 Breakdown torque : 390 %  
 Rated speed : 3560 rpm

Moment of inertia (J) : 0.0565 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

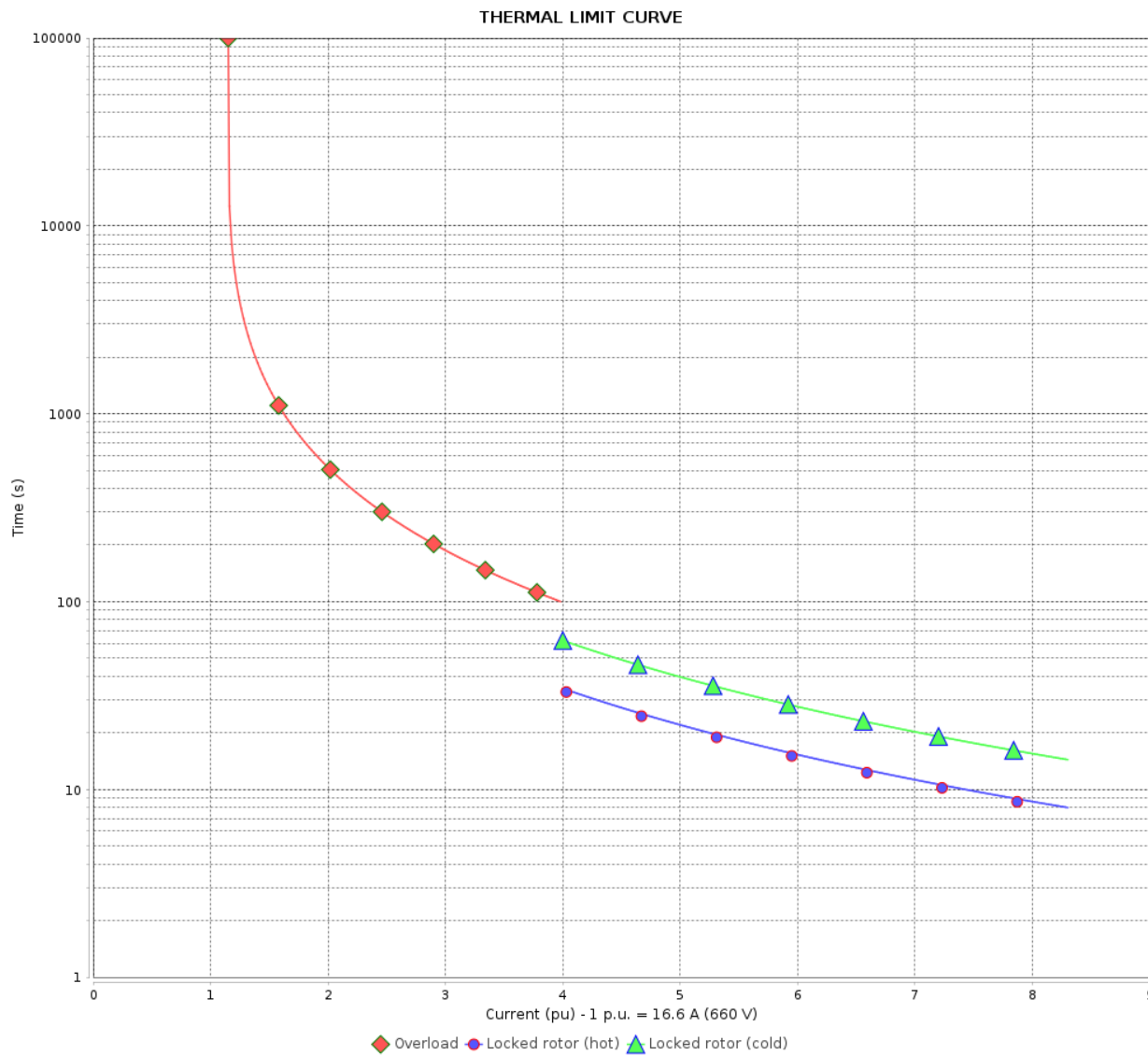
Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 380/660 V 50 Hz 2P

Rated current : 28.8/16.6 A  
 LRC : 8.3  
 Rated torque : 4.96 kgfm  
 Locked rotor torque : 250 %  
 Breakdown torque : 300 %  
 Rated speed : 2945 rpm

Moment of inertia (J) : 0.0565 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

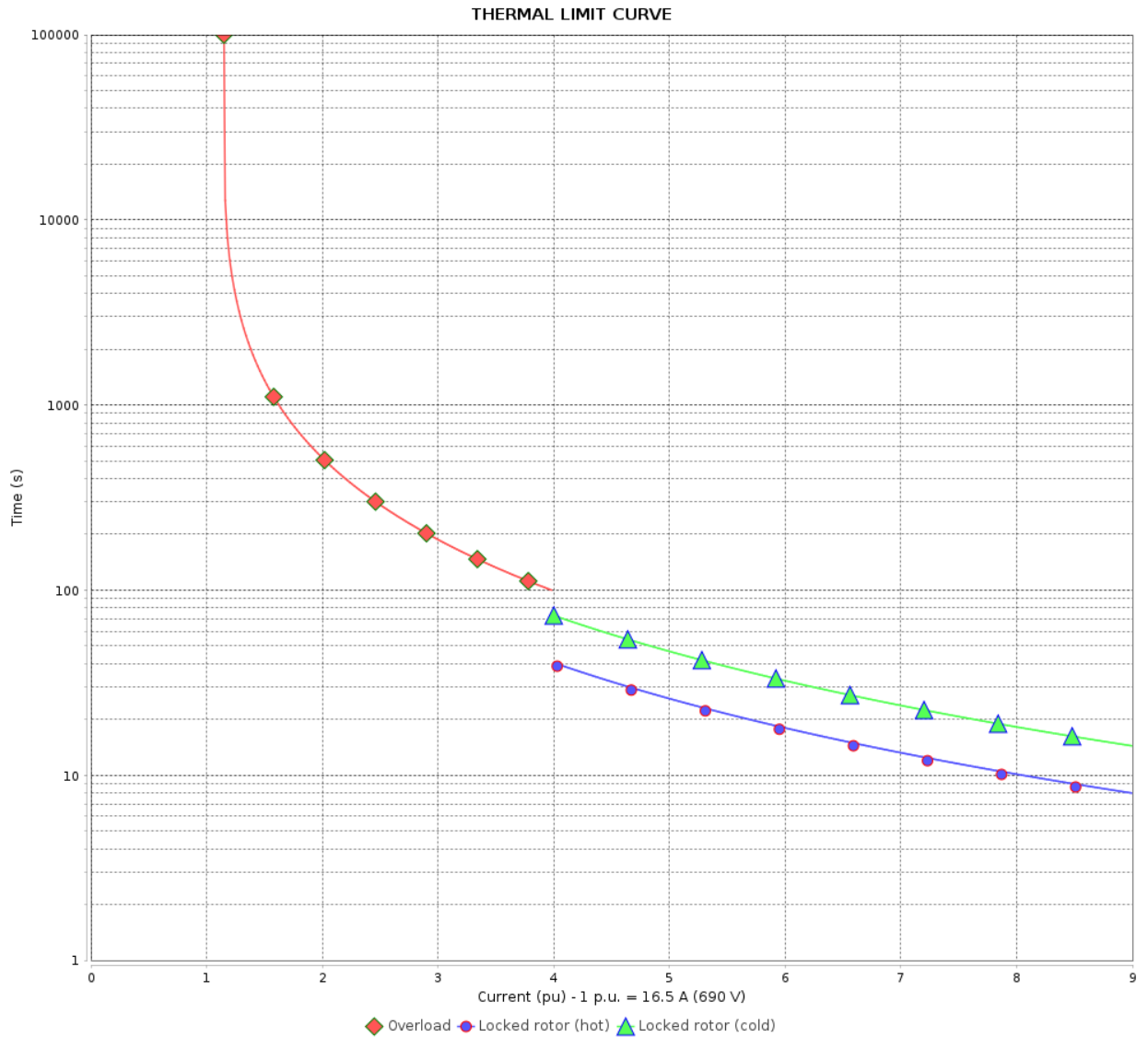
Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 400/690 V 50 Hz 2P

Rated current : 28.4/16.5 A  
 LRC : 9.0  
 Rated torque : 4.95 kgfm  
 Locked rotor torque : 280 %  
 Breakdown torque : 340 %  
 Rated speed : 2950 rpm

Moment of inertia (J) : 0.0565 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

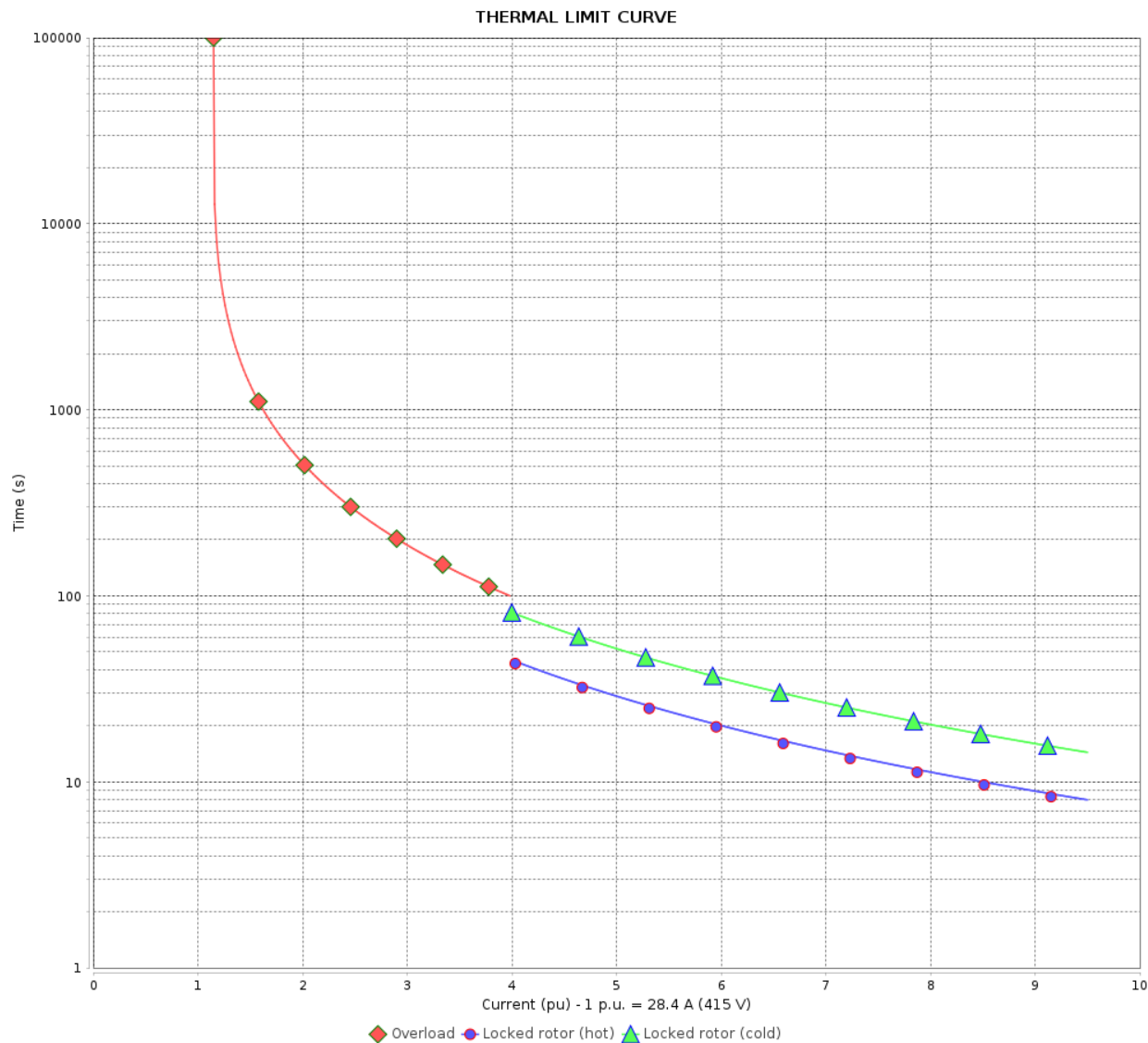
Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 415 V 50 Hz 2P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 28.4 A    | Moment of inertia (J) | : 0.0565 kgm <sup>2</sup> |
| LRC                 | : 9.5       | Duty cycle            | : S1                      |
| Rated torque        | : 4.94 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 310 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 370 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 2955 rpm  | Design                | : N                       |

Heating constant

Cooling constant

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

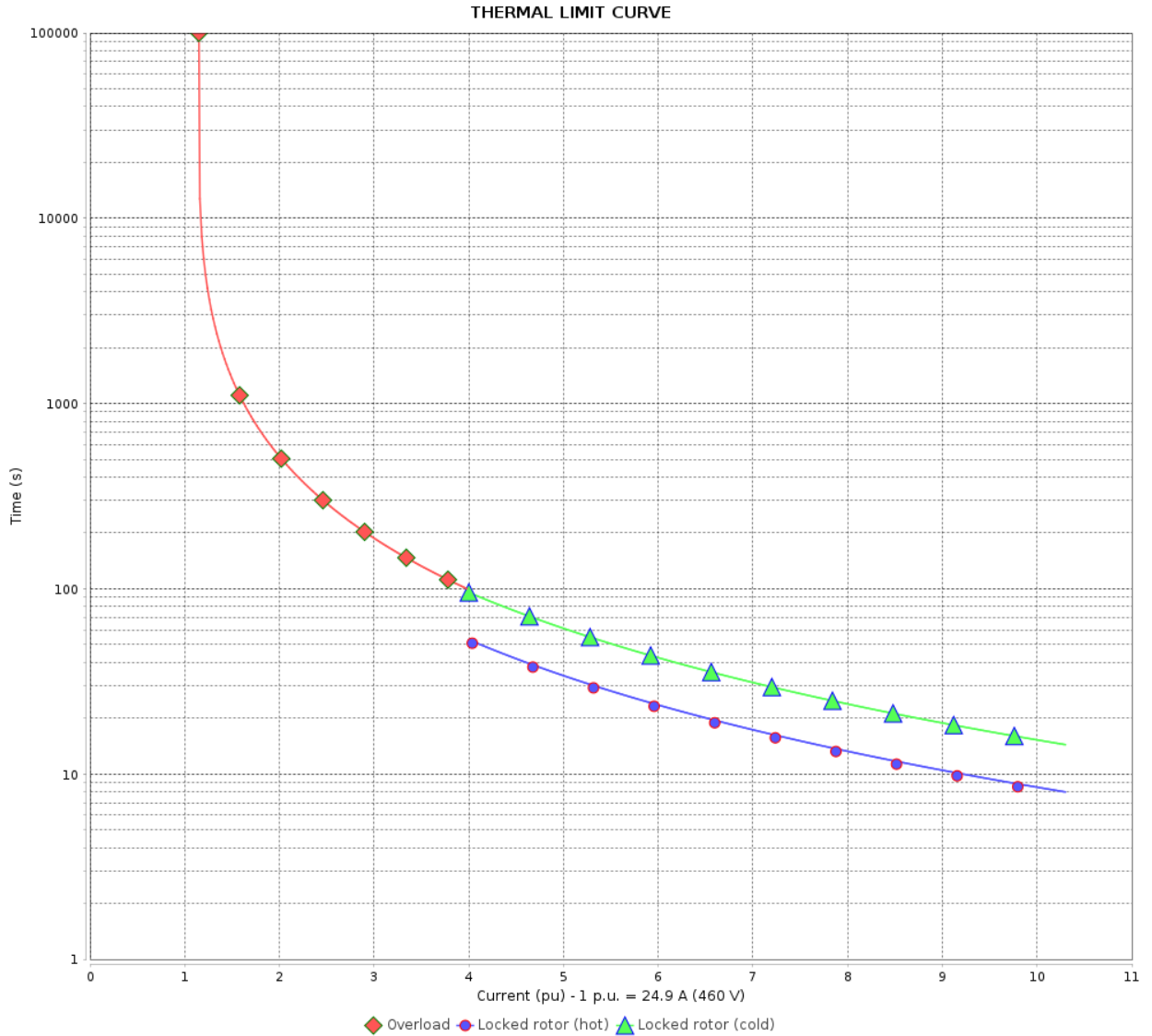
Three Phase Induction Motor - Squirrel Cage



Customer :

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 460 V 60 Hz 2P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 24.9 A    | Moment of inertia (J) | : 0.0565 kgm <sup>2</sup> |
| LRC                 | : 10.3      | Duty cycle            | : S1                      |
| Rated torque        | : 4.10 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 320 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 390 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 3560 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

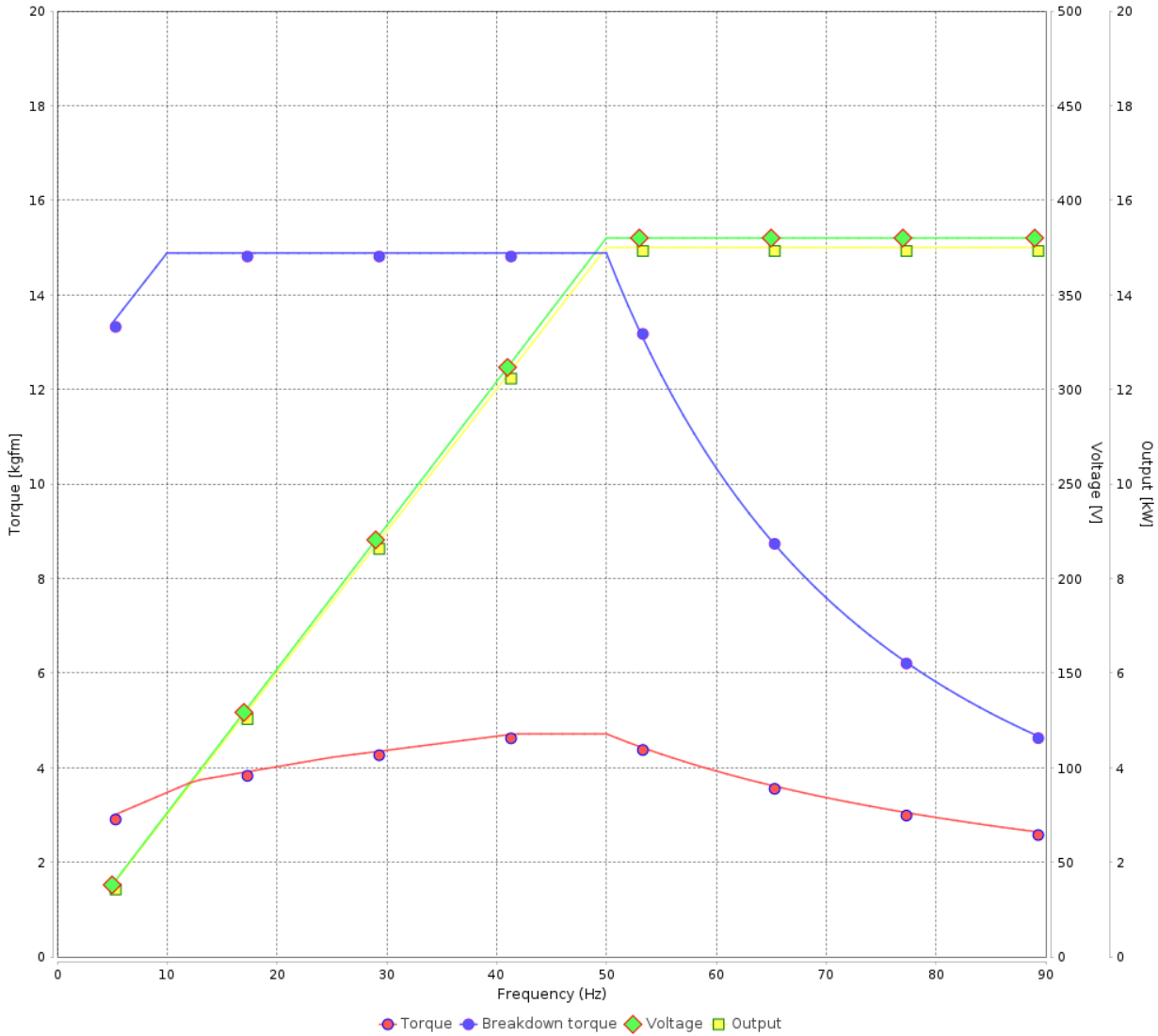


Customer :

Product line : MULTIMOUNTING

Product code : 12562180

VFD OPERATION CURVE



Performance : 380/660 V 50 Hz 2P

Rated current : 28.8/16.6 A  
 LRC : 8.3  
 Rated torque : 4.96 kgfm  
 Locked rotor torque : 250 %  
 Breakdown torque : 300 %  
 Rated speed : 2945 rpm

Moment of inertia (J) : 0.0565 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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| Date         |                 |           |         |          |



# VFD OPERATION CURVE

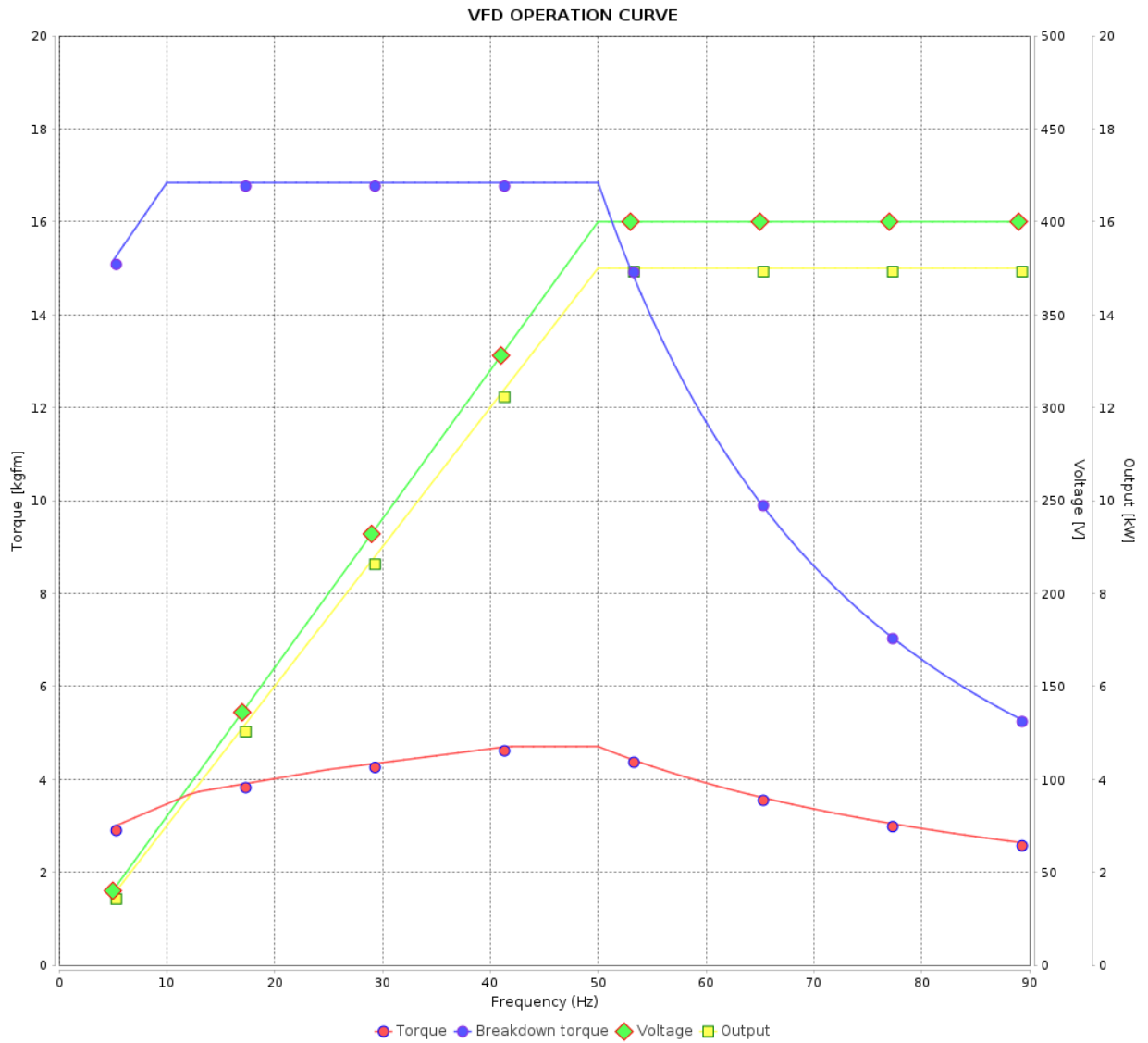
Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 400/690 V 50 Hz 2P

Rated current : 28.4/16.5 A  
 LRC : 9.0  
 Rated torque : 4.95 kgfm  
 Locked rotor torque : 280 %  
 Breakdown torque : 340 %  
 Rated speed : 2950 rpm

Moment of inertia (J) : 0.0565 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>17 / 19 | Revision |
| Checked by   |                 |           |                 |          |
| Date         | 17/04/2023      |           |                 |          |

# VFD OPERATION CURVE

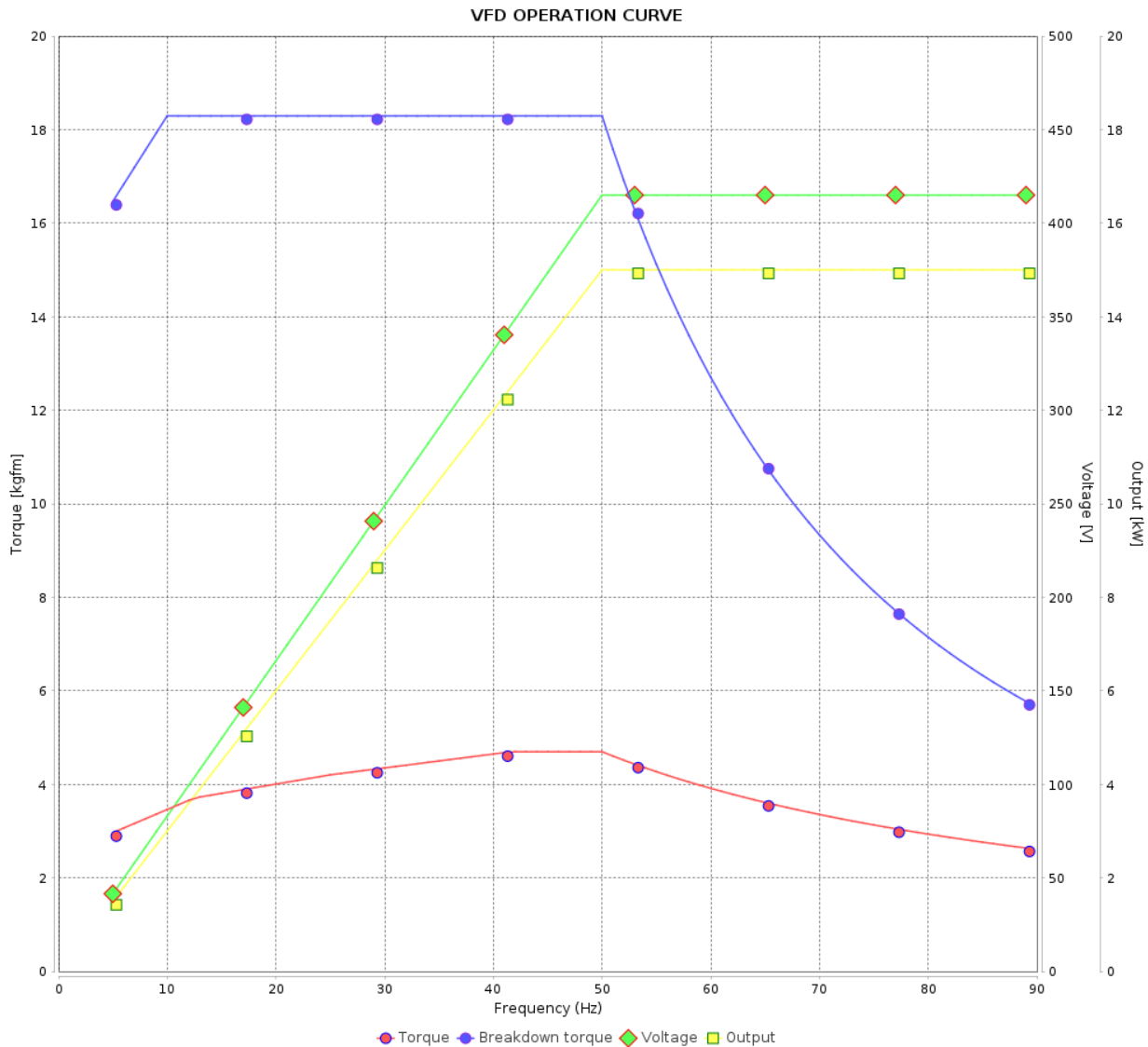
Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 415 V 50 Hz 2P

|                     |             |                       |                           |
|---------------------|-------------|-----------------------|---------------------------|
| Rated current       | : 28.4 A    | Moment of inertia (J) | : 0.0565 kgm <sup>2</sup> |
| LRC                 | : 9.5       | Duty cycle            | : S1                      |
| Rated torque        | : 4.94 kgfm | Insulation class      | : F                       |
| Locked rotor torque | : 310 %     | Service factor        | : 1.00                    |
| Breakdown torque    | : 370 %     | Temperature rise      | : 80 K                    |
| Rated speed         | : 2955 rpm  | Design                | : N                       |

| Rev.         | Changes Summary | Performed | Checked         | Date     |
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| Date         | 17/04/2023      |           |                 |          |

# VFD OPERATION CURVE

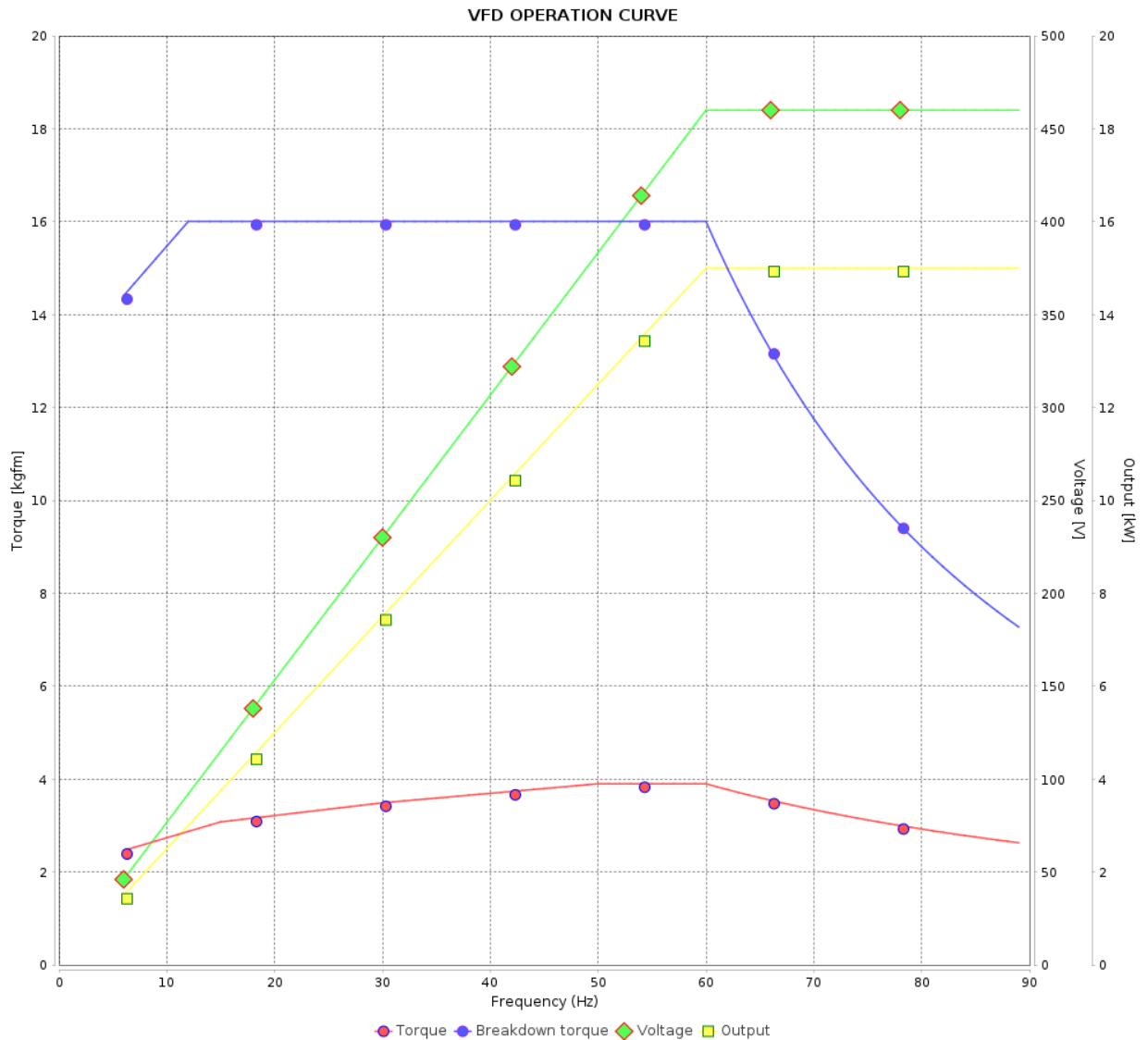
Three Phase Induction Motor - Squirrel Cage



Customer : \_\_\_\_\_

Product line : MULTIMOUNTING

Product code : 12562180



Performance : 460 V 60 Hz 2P

Rated current : 24.9 A  
 LRC : 10.3  
 Rated torque : 4.10 kgfm  
 Locked rotor torque : 320 %  
 Breakdown torque : 390 %  
 Rated speed : 3560 rpm

Moment of inertia (J) : 0.0565 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         |                 | 17/04/2023 |         |          |