

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

| | | | | | |
|-----------------------|--------------|-------------|--------------|--------------------|--|
| NAMEPLATE DATA | 2 | POLE | 50 | HZ / CYCLES | 7,50 KW |
| K132S-2 | FRAME | 3 | PHASE | F | INS.CLASS 88,10 EFF(IE2) |
| 400 | VOLTS | 13,0 | AMPS | DELTA | CONNECTION IC411 IC |
| 2910 | RPM | S1 | DUTY | | |

| MAJOR CONTENTS | UNIT | TEST VALUE | STANDARD VALUE |
|-------------------------------------|-------|------------|----------------|
| (95°C) PHASE RESISTANCE OF WINDING | OHM | 1,4538 | |
| NO LOAD CURRENT | AMP | 3,540 | |
| NO LOAD INPUT | kW | 252,8 | |
| CORE LOSS(Pfe) | kW | 158,1 | |
| WINDAGE FRICTION LOSS(Pfw) | kW | 79,5 | |
| STATOR WINDING LOSS(Pcu1) | kW | 250,8 | |
| ROTOR WINDING LOSS(Pcu2) | kW | 296,3 | |
| STRAY LOAD LOSS(Ps) | kW | 40,6 | |
| LOCKED ROTOR CURRENT | A | 90,6 | |
| LOCKED ROTOR INPUT @ FULL LOAD | W | 38178,2 | |
| LOCKED ROTOR TORQUE | N.m | 54,2 | |
| PULL OUT TORQUE | N.m | 78,9 | |
| LOCKED ROTOR CURRENT/RATED CURRENT | P.U. | 6,97 | |
| LOCKED ROTOR TORQUE/RATED TORQUE | P.U. | 2,20 | |
| PULL OUT TORQUE/RATED TORQUE | P.U. | 3,18 | |
| FULL LOAD TORQUE | N.m | 24,8 | |
| FULL LOAD CURRENT | A | 13,136 | |
| FULL LOAD SLIP | % | 3,737 | |
| INPUT @ FULL LOAD | KW | 8,338 | |
| FULL LOAD SPEED | r/min | 2888 | |
| EFFICIENCY @ FULL LOAD | % | 89,9 | |
| EFFICIENCY @ 75%LOAD | % | 90,8 | |
| POWER FACTOR @ FULL LOAD | | 0,92 | |
| STATOR WINDING TEMPERATURE RISE | K | 59 | |
| D.E. BEARINGS TEMPERATURE BY PT100 | °C | 55,9 | |
| SOUND PRESSURE LEVEL | dB(A) | 62 | |
| VIBRATION | mm/s | 0,8 | |

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| 2910 | RPM | S1 | DUTY | | | |

NO LOAD TEST

| V (unit) | mul. | HZ | A1 (unit) | A2 (unit) | A3 (unit) | mul. | W1 (unit) | W2 (uni t) | mul. | RESISTANCE |
|---------------|------|----|----------------|----------------|----------------|------|----------------|-----------------|------|------------|
| 474,0 | 1 | 50 | 2,6 | 3,2 | 2,9 | 2 | -536,0 | 736,5 | 2 | 0,84650 |
| 442,5 | 1 | 50 | 2,1 | 2,5 | 2,3 | 2 | -398,6 | 560,5 | 2 | 0,84650 |
| 411,7 | 1 | 50 | 1,7 | 2,2 | 2,0 | 2 | -277,5 | 414,2 | 2 | 0,84650 |
| 366,4 | 1 | 50 | 1,9 | 1,6 | 1,5 | 2 | -195,9 | 310,8 | 2 | 0,84650 |
| 319,4 | 1 | 50 | 1,1 | 1,5 | 1,3 | 2 | -109,2 | 203,0 | 2 | 0,84650 |
| 278,1 | 1 | 50 | 0,9 | 1,3 | 1,2 | 2 | -88,6 | 172,7 | 2 | 0,84650 |
| 230,3 | 1 | 50 | 0,8 | 1,1 | 1,0 | 2 | -49,5 | 124,0 | 2 | 0,84650 |
| 181,5 | 1 | 50 | 0,6 | 0,9 | 0,8 | 2 | -18,4 | 85,9 | 2 | 0,84650 |
| 135,2 | 1 | 50 | 0,5 | 0,7 | 0,7 | 2 | -0,6 | 55,9 | 2 | 0,84650 |
| 86,6 | 1 | 50 | 0,5 | 0,6 | 0,7 | 2 | 11,5 | 41,3 | 2 | 0,84650 |

data calculation of no load

| V% | U0/UN | I0 | P0 | (U0/UN)^2 | P0cu1 | P0' |
|--------|-------|-------|-------|-----------|-------|--------|
| 118,5% | 1,19 | 5,811 | 400,8 | 1,404 | 42,87 | 357,97 |
| 110,6% | 1,11 | 4,635 | 323,8 | 1,224 | 27,28 | 296,56 |
| 102,9% | 1,03 | 3,847 | 273,5 | 1,059 | 18,79 | 254,67 |
| 91,6% | 0,92 | 3,340 | 230,0 | 0,839 | 14,16 | 215,80 |
| 79,9% | 0,80 | 2,601 | 187,6 | 0,638 | 8,59 | 179,00 |
| 69,5% | 0,70 | 2,247 | 168,3 | 0,483 | 6,41 | 161,88 |
| 57,6% | 0,58 | 1,885 | 149,1 | 0,331 | 4,51 | 144,57 |
| 45,4% | 0,45 | 1,561 | 134,9 | 0,206 | 3,09 | 131,77 |
| 33,8% | 0,34 | 1,293 | 110,6 | 0,114 | 2,12 | 108,49 |

RESULTS AT: 400 Volts

| | | | |
|----------------|-----------------|-----------------------------|----------------------|
| N.L.AMP | N.L.LOSS | WINDAGE/FRICTION Pfw | CORE LOSS Pfe |
| 3,540 | 252,805 | 79,5 | 158,1 |

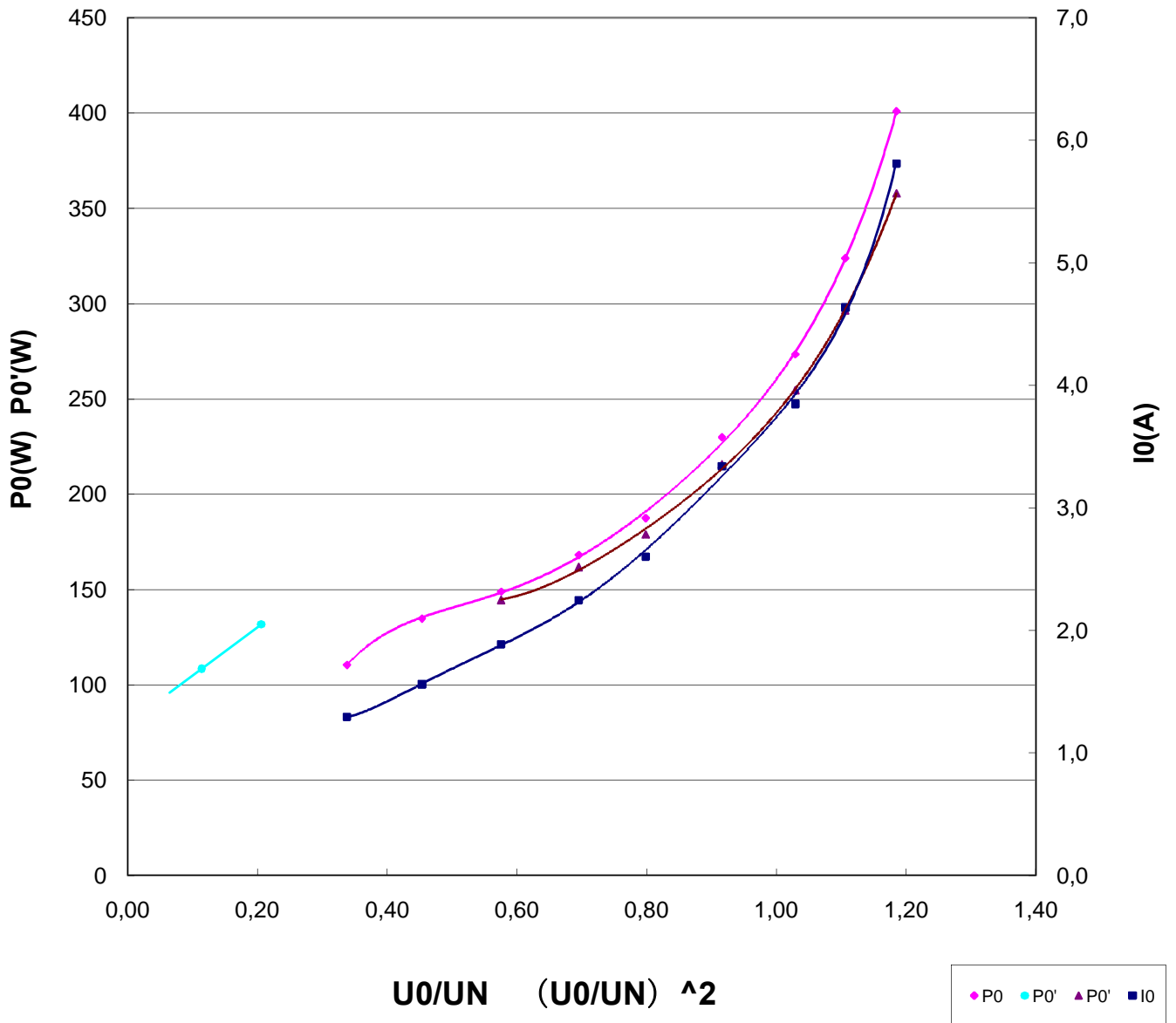
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| K132S-2 | FRAME | 3 | PHASE | F | INS.CLASS | 88,10 |
| 400 | VOLTS | 13,0 | AMPS | DELTA | CONNECTION | IC411 |
| 2910 | RPM | S1 | DUTY | | | |

NO LOAD



VALIADIS S.A.

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NO LOAD

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| NAMEPLATE DATA | | 2 | POLE | 50 | HZ / CYCLES | 7,5 KW | | | | |
|--|-------------------|----------------|---------------------|----------------|-------------------------------|----------------|----------------|--------------------|-------------------|--|
| K132S-2 | FRAME | 3 | PHASE | F | INS.CLASS | 88,10 EFF(IE2) | | | | |
| 400 | VOLTS | 13,0 | AMPS | DELTA | CONNECTION | IC411 IC | | | | |
| 2910 | RPM | S1 | DUTY | | | | | | | |
| LOCKED ROTOR TEST | | | | | | | | | | |
| V (unit) | mul. | A1 (unit) | A2 (unit) | A3 (unit) | mul. | W1 (unit) | W2 (unit) | mul. | TORQUE (Kg.m) | |
| 410,7 | 1 | 4,7 | 4,6 | 4,7 | 20 | -7,1 | 2022,8 | 20 | 5,83 | |
| 364,3 | 1 | 4,1 | 4,0 | 4,1 | 20 | 4,4 | 1548,2 | 20 | 4,52 | |
| 330,0 | 1 | 3,6 | 3,5 | 3,6 | 20 | 3,2 | 1228,2 | 20 | 3,68 | |
| 282,7 | 1 | 2,9 | 2,9 | 2,9 | 20 | -8,2 | 859,5 | 20 | 2,55 | |
| 231,5 | 1 | 2,3 | 2,2 | 2,3 | 20 | -17,8 | 538,7 | 20 | 1,52 | |
| 186,3 | 1 | 3,5 | 3,4 | 3,4 | 10 | -41,0 | 654,6 | 10 | 0,91 | |
| 146,2 | 1 | 2,6 | 2,5 | 2,6 | 10 | -35,6 | 374,7 | 10 | 0,57 | |
| 95,5 | 1 | 1,6 | 1,6 | 1,6 | 10 | -19,0 | 148,9 | 10 | 0,20 | |
| 73,0 | 1 | 1,2 | 1,2 | 1,2 | 10 | -11,3 | 84,4 | 10 | 0,11 | |
| data calculation of locked rotor | | | | | | | | | | |
| UK V | IK A | PK KW | TK N.m | cosφ | LOG UK | LOG IK | LOGPK | LOG TK | | |
| 410,7 | 93,57 | 40,314 | 57,15 | 0,606 | 2,6135 | 1,9711 | 1,6055 | 1,7570 | | |
| 364,3 | 80,80 | 31,052 | 44,31 | 0,609 | 2,5615 | 1,9074 | 1,4921 | 1,6465 | | |
| 330,0 | 70,96 | 24,628 | 36,08 | 0,607 | 2,5185 | 1,8510 | 1,3914 | 1,5573 | | |
| 282,7 | 58,20 | 17,026 | 24,98 | 0,597 | 2,4513 | 1,7649 | 1,2311 | 1,3976 | | |
| 231,5 | 45,11 | 10,418 | 14,93 | 0,576 | 2,3646 | 1,6543 | 1,0178 | 1,1741 | | |
| 186,3 | 34,43 | 6,136 | 8,94 | 0,552 | 2,2702 | 1,5370 | 0,7879 | 0,9515 | | |
| 146,2 | 25,51 | 3,391 | 5,54 | 0,525 | 2,1649 | 1,4068 | 0,5303 | 0,7434 | | |
| 95,5 | 15,72 | 1,299 | 1,91 | 0,500 | 1,9800 | 1,1964 | 0,1136 | 0,2820 | | |
| 73,0 | 11,81 | 0,731 | 1,03 | 0,490 | 1,8633 | 1,0721 | -0,1361 | 0,0147 | | |
| performance collection of locked rotor | | | | | | | | | | |
| | at rated volts | | at rated current | | at 2.5 times rated current | | at 100V | | | |
| VOLTS (V) | 400 | | 80,059 | | 177,0 | | 100,0 | | | |
| AMPS (A) | 90,6 | | 13,0 | | 32,50 | | 16,757 | | | |
| INPUT (KW) | 38,178 | | 0,881 | | 5,7 | | 1,625 | | | |
| TORQUE (N.m) | 54,192 | | 1,254 | | | | | | | |
| VALIADIS S.A. | | | | | Manufacturing Date | | | Manufacturing Code | | |
| | | | | | Test Date | | | Report Number | | |

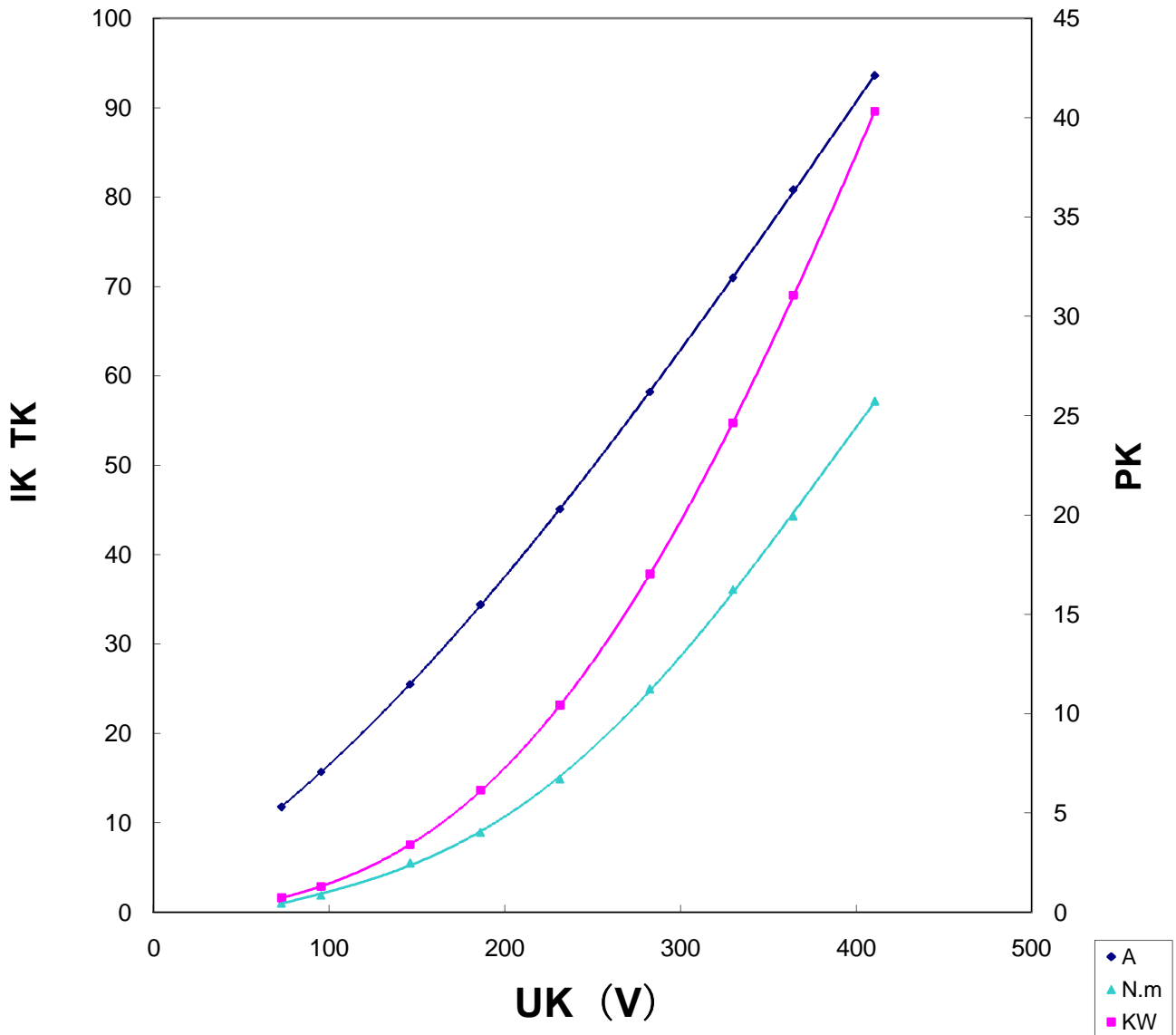
LOCKED ROTOR TEST

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| K132S-2 | FRAME | 3 | PHASE | F | INS.CLASS | 88,10 EFF(IE2) |
| 400 | VOLTS | 13,0 | AMPS | DELTA | CONNECTION | IC411 IC |
| 2910 | RPM | S1 | DUTY | | | |

LOCKED



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LOCKED

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| | | | | | |
|----------------|-------|------|-------|-------------|--------------------------|
| NAMEPLATE DATA | 2 | POLE | 50 | HZ / CYCLES | 7,5 KW |
| YX3-132S2-2 | FRAME | 3 | PHASE | F | INS.CLASS 88,10 EFF(IE2) |
| 400 | VOLTS | 13,0 | AMPS | DELTA | CONNECTION IC411 IC |
| 2910 | RPM | S1 | DUTY | | |

TEMPERATURE RISE TEST

| TIME (h:min) | V | A1 (unit) | A1 (unit) | A1 (unit) | mul. | W1 (unit) | W2 (unit) | mul. | T1 °C | T2 °C | T3 °C | T4 °C |
|--|-------|-----------|-----------|-----------|------|-----------|-----------|------|-------|-------|-------|-------|
| 18:00 | 402,4 | 1,3 | 1,3 | 1,3 | 10,0 | 832,0 | | 10 | 53,1 | | 60,4 | 22,6 |
| 18:30 | 399,5 | 1,3 | 1,3 | 1,3 | 10,0 | 812,8 | | 10 | 50,8 | | 56,9 | 22,8 |
| 19:00 | 398,8 | 1,3 | 1,3 | 1,3 | 10,0 | 799,1 | | 10 | 50,1 | | 56 | 22,9 |
| 19:30 | 400 | 1,3 | 1,3 | 1,3 | 10,0 | 804,0 | | 10 | 50,2 | | 55,9 | 23,10 |
| 20:00 | 403 | 1,3 | 1,3 | 1,3 | 10,0 | 800,5 | | 10 | 50,6 | | 55,8 | 23,6 |
| average value of the last three points | | | | 12,72 A | | 8012 | | W | 50,3 | | 55,9 | 23,2 |

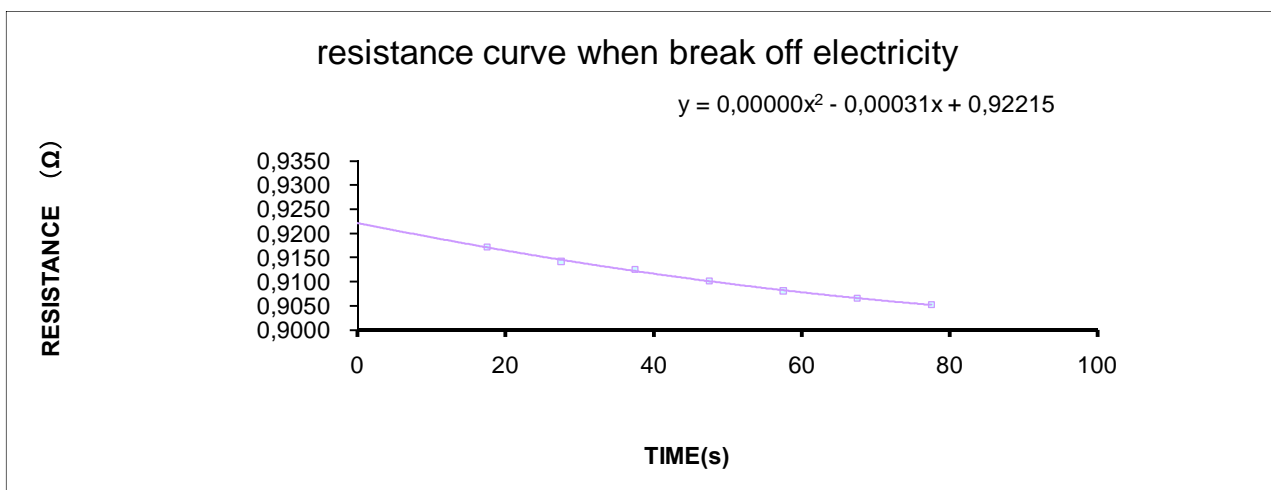
T1 : CORE TEMPERATRE
 T2 : DE WINDING TEMPERATURE
 T3 : DE BEARING TEMPERATURE
 T4 : AMBIENT TEMPERATURE

WINDING RESISTANCE (HOT) AT END OF TEMPERATURE RISE TEST

| | | | | | | | | | | | | |
|------------------|--------|--------|--------|--------|--------|--------|--------|--|--|--|--|--|
| TIMES (S) | 17,5 | 27,5 | 37,5 | 47,5 | 57,5 | 67,5 | 77,5 | | | | | |
| RESISTANCE (Ω) | 0,9172 | 0,9142 | 0,9125 | 0,9101 | 0,9081 | 0,9066 | 0,9052 | | | | | |

WINDING RESISTANCE(COLD)

| Δ | U1 to V1 | U1 to W1 | V1 to W1 | AVERAGE RESISTANCE | MINIMUM RESISTANCE | AMBIENT TEMPERATURE |
|---|----------|----------|----------|--------------------|--------------------|---------------------|
| | 0,76010 | 0,7529 | 0,7611 | 0,7580333 | 0,7529 | 23,1 |
| Y | U | V | W | AVERAGE RESISTANCE | MINIMUM RESISTANCE | AMBIENT TEMPERATURE |
| | | | | | 0 | |



| | | | |
|---------------------------|----------|----------------------------------|-------|
| resistance value at 0 sec | 0,92215 | calculation value of temp.rising | 57,92 |
| 30 S (Ω) | 0,914046 | calculation value of temp.rising | 55,14 |
| full load curent | 13,14 A | modify value of temp. rising | 59 |

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| K132S-2 | FRAME | 3 | PHASE | F | INS.CLASS | 88,10 EFF(IE2) | | | |
| 400 | VOLTS | 13,0 | AMPS | DELTA | CONNECTION | IC411 IC | | | |
| 2910 | RPM | S1 | DUTY | | | | | | |

LOAD TEST

| V | HZ | A1 (unit) | A2 (unit) | A3 (unit) | mul. | W1 (unit) | W2 (unit) | mul. | RPM |
|-----|----|----------------|----------------|----------------|------|----------------|-------------|------|--------|
| 400 | 50 | 1,736 | 1,791 | 1,841 | 10 | 423,8 | 715,1 | 10 | 2848,0 |
| 400 | 50 | 1,541 | 1,622 | 1,693 | 10 | 375,3 | 646,6 | 10 | 2864,0 |
| 400 | 50 | 1,316 | 1,357 | 1,411 | 10 | 324,3 | 544,0 | 10 | 2888,0 |
| 400 | 50 | 1,072 | 1,141 | 1,185 | 10 | 260,7 | 457,8 | 10 | 2910,0 |
| 400 | 50 | 0,913 | 0,958 | 1,010 | 10 | 214,4 | 386,5 | 10 | 2926,0 |
| 400 | 50 | 0,700 | 0,733 | 0,770 | 10 | 151,5 | 293,9 | 10 | 2947,0 |
| 400 | 50 | 0,486 | 0,548 | 0,580 | 10 | 76,9 | 211,2 | 10 | 2965,0 |
| 400 | 50 | 0,361 | 0,458 | 0,458 | 10 | 24,7 | 169,4 | 10 | 2978,0 |
| 400 | 50 | 0,308 | 0,385 | 0,392 | 10 | 3,2 | 126,6 | 10 | 2986,0 |

| | | | | | | | |
|-----------|--|---------------|----------|-------------------|-----------|------------------|----------|
| 95 | (°C) PHASE RESISTANCE OF WINDING | 1,4538 | Ω | Pfe= 158,1 | W | Pfw= 79,5 | W |
| | θ= | 57,92 | K | t2= 23,2 | °C | | |

| Calculated Results | OUTPUT W | INPUT W | AMPS A | Pcu1 W | SLIP % | Pcu2 W | Ps W | EFF % | P.F. |
|--------------------|-------------|------------|-----------|-----------|-----------|-----------|---------|----------|-------|
| 133,9 | 10040,2 | 11388,6 | 17,89 | 465,3 | 5,2964 | 570,2 | 75,4 | 88,16 | 0,919 |
| 121,1 | 9080,0 | 10219,0 | 16,19 | 381,0 | 4,739 | 458,7 | 61,7 | 88,85 | 0,911 |
| 104,1 | 7810,1 | 8683,0 | 13,61 | 269,4 | 3,903 | 322,2 | 43,6 | 89,95 | 0,921 |
| 86,9 | 6516,8 | 7185,7 | 11,33 | 186,5 | 3,136 | 214,5 | 30,2 | 90,69 | 0,916 |
| 72,9 | 5468,1 | 6008,8 | 9,60 | 134,1 | 2,579 | 147,4 | 21,7 | 91,00 | 0,903 |
| 54,0 | 4047,2 | 4453,8 | 7,34 | 78,4 | 1,847 | 77,9 | 12,7 | 90,87 | 0,875 |
| 34,2 | 2561,6 | 2880,8 | 5,38 | 42,1 | 1,220 | 32,7 | 6,8 | 88,92 | 0,773 |
| 22,1 | 1659,6 | 1941,3 | 4,26 | 26,3 | 0,767 | 13,5 | 4,3 | 85,49 | 0,658 |

| % LOAD | OUTPUT W | INPUT W | AMPS A | Pcu1 W | SLIP % | Pcu2 W | Ps W | EFF % | P.F. |
|------------|-------------|------------|-----------|-----------|-----------|-----------|---------|----------|-------|
| 125 | 9375 | 10580,0 | 16,69 | 405,0 | 4,91 | 491,7 | 65,63 | 88,61 | 0,915 |
| 110 | 8250 | 9215,2 | 14,50 | 305,6 | 4,19 | 366,7 | 49,52 | 89,53 | 0,917 |
| 100 | 7500 | 8338,1 | 13,14 | 250,8 | 3,737 | 296,3 | 40,64 | 89,95 | 0,916 |
| 75 | 5625 | 6193,4 | 9,9 | 141,8 | 2,667 | 157,2 | 22,98 | 90,82 | 0,905 |
| 50 | 3750 | 4151,2 | 7,04 | 72,1 | 1,753 | 68,7 | 11,68 | 90,33 | 0,851 |
| 25 | 1875 | 2165,7 | 4,53 | 29,8 | 0,875 | 17,3 | 4,82 | 86,58 | 0,691 |

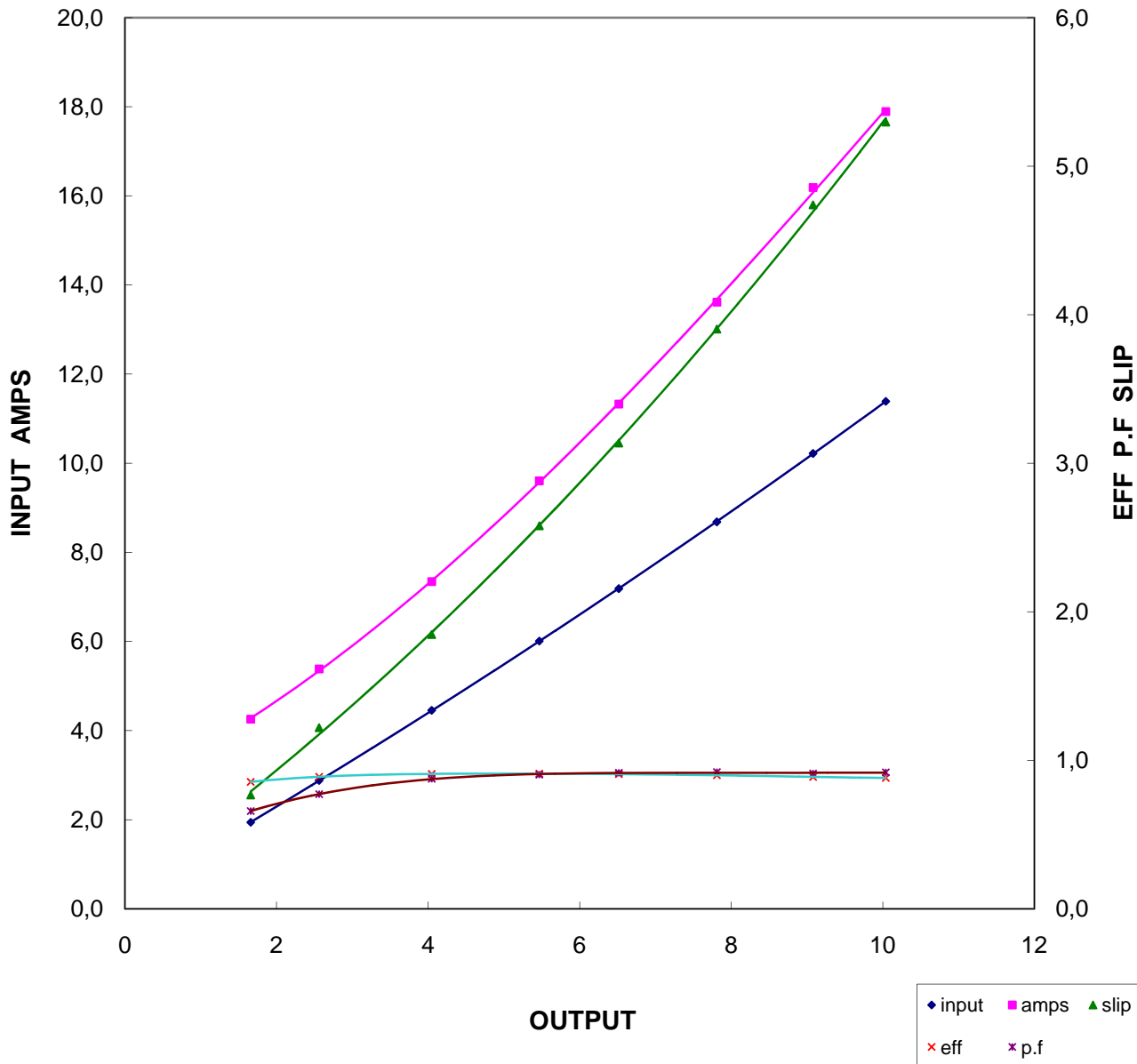
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| 2910 RPM | S1 | DUTY | | | |

LOAD CURVE



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