

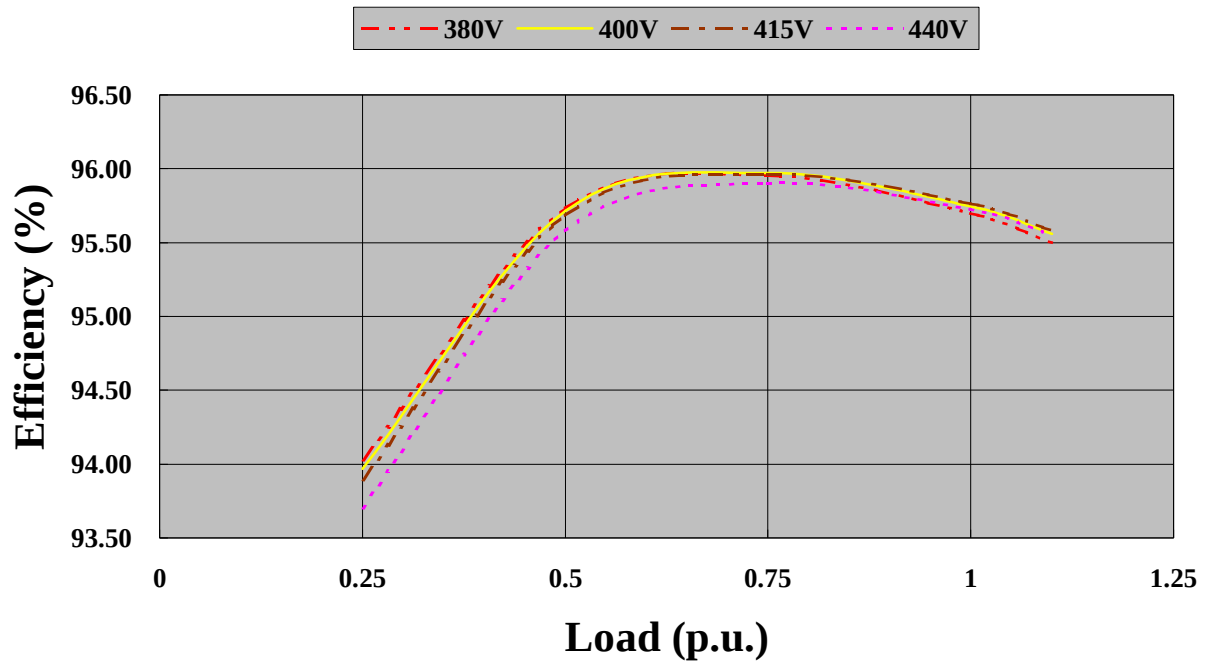
### THREE-PHASE SYNCHRONOUS GENERATOR 20141201

### Datasheet For 50Hz @ 1500rpm / 60Hz @ 1800rpm

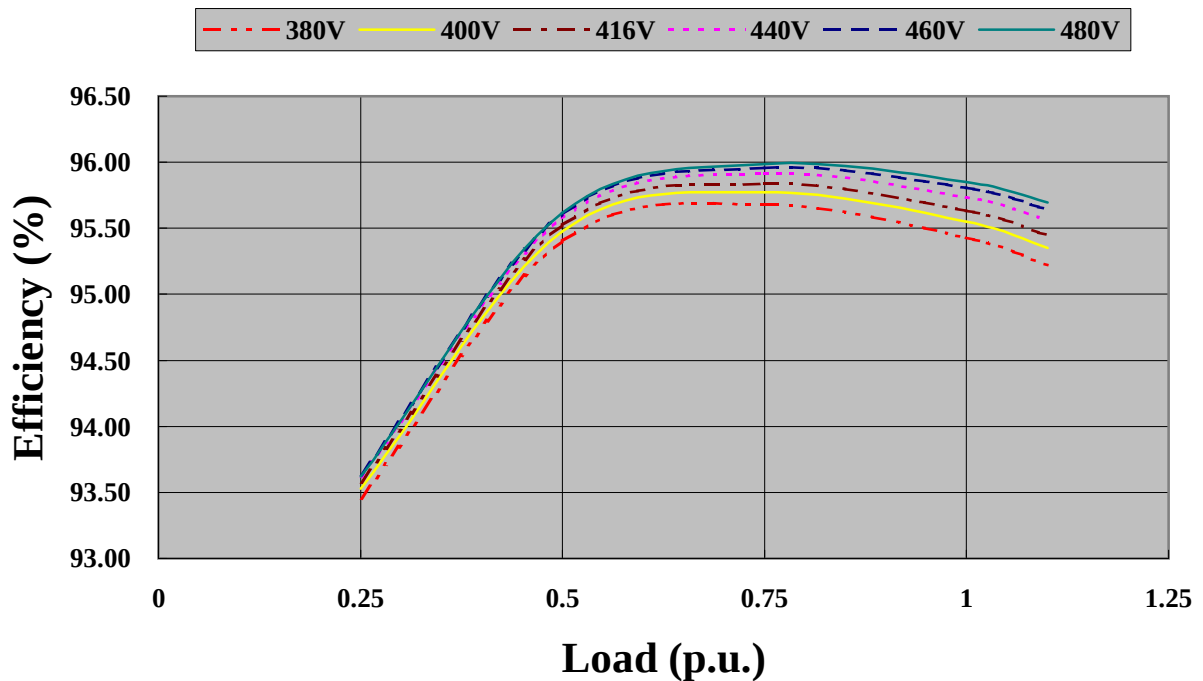
# EG450-1600N

| Frequency                                    | Hz                  | 50                                                      |        |        |        | 60     |        |        |        |        |        |
|----------------------------------------------|---------------------|---------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Rated capacity (kVA)                         | S                   | 1900                                                    | 2000   | 2075   | 2200   | 2090   | 2200   | 2288   | 2420   | 2530   | 2640   |
| Rated power (kW)                             | P                   | 1520                                                    | 1600   | 1660   | 1760   | 1672   | 1760   | 1830   | 1936   | 2024   | 2112   |
| Voltage (V)                                  | U                   | 380                                                     | 400    | 415    | 440    | 380    | 400    | 416    | 440    | 460    | 480    |
| Short-circuit ratio                          | Kcc                 | 0.394                                                   | 0.438  | 0.481  | 0.571  | 0.282  | 0.299  | 0.314  | 0.339  | 0.365  | 0.398  |
| Reactance                                    |                     |                                                         |        |        |        |        |        |        |        |        |        |
| Direct axis synchronous reactance            | Xd                  | 2.933                                                   | 2.786  | 2.686  | 2.533  | 3.872  | 3.678  | 3.536  | 3.344  | 3.198  | 3.065  |
| Direct axis transient reactance saturated    | X'd                 | 0.138                                                   | 0.131  | 0.126  | 0.119  | 0.182  | 0.173  | 0.166  | 0.157  | 0.15   | 0.144  |
| Direct axis subtransient reactance saturated | X''d                | 0.099                                                   | 0.094  | 0.091  | 0.086  | 0.131  | 0.124  | 0.119  | 0.113  | 0.108  | 0.104  |
| Quadrature axis synchronous reactance        | Xq                  | 1.306                                                   | 1.24   | 1.196  | 1.128  | 1.724  | 1.637  | 1.574  | 1.489  | 1.424  | 1.364  |
| Quadrature axis subtransient reactance       | X''q                | 0.122                                                   | 0.116  | 0.112  | 0.106  | 0.161  | 0.153  | 0.147  | 0.139  | 0.133  | 0.128  |
| Negative sequence reactance saturated        | X2                  | 0.11                                                    | 0.11   | 0.1    | 0.1    | 0.15   | 0.14   | 0.13   | 0.13   | 0.12   | 0.12   |
| Zero sequence reactance unsaturated          | X0                  | 0.006                                                   | 0.006  | 0.006  | 0.005  | 0.008  | 0.008  | 0.008  | 0.007  | 0.007  | 0.007  |
| Time constant                                |                     |                                                         |        |        |        |        |        |        |        |        |        |
| Open circuit time constant                   | T'd0                | 2.966                                                   | 2.966  | 2.966  | 2.966  | 2.966  | 2.966  | 2.966  | 2.966  | 2.966  | 2.966  |
| Short-circuit transient time constant        | T'd                 | 0.139                                                   | 0.139  | 0.139  | 0.139  | 0.139  | 0.139  | 0.139  | 0.139  | 0.139  | 0.139  |
| Subtransient time constant                   | T''d                | 0.003                                                   | 0.003  | 0.003  | 0.003  | 0.003  | 0.003  | 0.003  | 0.003  | 0.003  | 0.003  |
| Armature time constant                       | Ta                  | 0.027                                                   | 0.027  | 0.027  | 0.027  | 0.027  | 0.027  | 0.027  | 0.027  | 0.027  | 0.027  |
| No load losses                               | W                   | 18011                                                   | 18898  | 19593  | 20809  | 24222  | 25570  | 26275  | 27385  | 28357  | 29373  |
| Heat dissipation at full load at Class H     | W                   | 68319                                                   | 71090  | 73473  | 78578  | 80069  | 82000  | 83592  | 86222  | 88602  | 91444  |
| Efficiency                                   |                     |                                                         |        |        |        |        |        |        |        |        |        |
| PF=0.8    Efficiency of    25% load          | %                   | 94.03                                                   | 93.97  | 93.90  | 93.70  | 93.45  | 93.53  | 93.58  | 93.62  | 93.64  | 93.62  |
| 50% load                                     | %                   | 95.73                                                   | 95.72  | 95.69  | 95.58  | 95.40  | 95.48  | 95.53  | 95.58  | 95.61  | 95.62  |
| 75% load                                     | %                   | 95.95                                                   | 95.97  | 95.96  | 95.90  | 95.68  | 95.77  | 95.84  | 95.91  | 95.96  | 95.98  |
| 100% load                                    | %                   | 95.70                                                   | 95.75  | 95.76  | 95.73  | 95.43  | 95.55  | 95.63  | 95.74  | 95.81  | 95.85  |
| 110% load                                    | %                   | 95.50                                                   | 95.56  | 95.58  | 95.56  | 95.22  | 95.35  | 95.45  | 95.56  | 95.64  | 95.70  |
| PF=1        Efficiency of    25% load        | %                   | 94.41                                                   | 94.36  | 94.30  | 94.15  | 93.79  | 93.86  | 93.90  | 93.95  | 93.96  | 93.96  |
| 50% load                                     | %                   | 96.31                                                   | 96.30  | 96.28  | 96.22  | 95.95  | 96.01  | 96.04  | 96.09  | 96.12  | 96.13  |
| 75% load                                     | %                   | 96.73                                                   | 96.75  | 96.75  | 96.73  | 96.44  | 96.51  | 96.56  | 96.61  | 96.65  | 96.68  |
| 100% load                                    | %                   | 96.72                                                   | 96.76  | 96.78  | 96.79  | 96.44  | 96.53  | 96.59  | 96.66  | 96.71  | 96.76  |
| 110% load                                    | %                   | 96.63                                                   | 96.68  | 96.71  | 96.73  | 96.36  | 96.45  | 96.51  | 96.60  | 96.66  | 96.71  |
| No load excitation current                   | io(A)               | 1.6                                                     | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    | 1.6    |
| Full load excitation current                 | ic(A)               | 4.7                                                     | 4.7    | 4.7    | 4.7    | 4.7    | 4.7    | 4.7    | 4.7    | 4.7    | 4.7    |
| Full load excitation voltage                 | uc(V)               | 48                                                      | 48     | 48     | 48     | 48     | 48     | 48     | 48     | 48     | 48     |
| Short circuit current capacity               | %                   | >300I <sub>N</sub> 10s( with PMG or Auxiliary winding ) |        |        |        |        |        |        |        |        |        |
| Recovery time                                | Tr                  | 1s                                                      |        |        |        |        |        |        |        |        |        |
| Waveform : TIF                               |                     | <50                                                     |        |        |        |        |        |        |        |        |        |
| Waveform : THD                               |                     | <3%                                                     |        |        |        |        |        |        |        |        |        |
| Waveform : THF                               |                     | <2%                                                     |        |        |        |        |        |        |        |        |        |
| Winding pitch                                |                     | 2/3                                                     |        |        |        |        |        |        |        |        |        |
| Steady state voltage regulation              |                     | +/-1%                                                   |        |        |        |        |        |        |        |        |        |
| A.V.R. model                                 |                     | EVC600                                                  |        |        |        |        |        |        |        |        |        |
| Duty                                         |                     | Continuous                                              |        |        |        |        |        |        |        |        |        |
| Number of poles                              |                     | 4                                                       |        |        |        |        |        |        |        |        |        |
| Class of insulation                          |                     | H                                                       |        |        |        |        |        |        |        |        |        |
| Altitude                                     |                     | ≤1000m                                                  |        |        |        |        |        |        |        |        |        |
| Rated power factor                           |                     | 0.8                                                     |        |        |        |        |        |        |        |        |        |
| Excitation                                   |                     | Brushless                                               |        |        |        |        |        |        |        |        |        |
| Stator winding                               |                     | 6ends                                                   |        |        |        |        |        |        |        |        |        |
| Rotor                                        |                     | With damping cage                                       |        |        |        |        |        |        |        |        |        |
| Overload                                     | %                   | 110% rated load for 2 hour    per 24 hour               |        |        |        |        |        |        |        |        |        |
| Stator winding resistance (20℃)              | ohm                 | 0.0006                                                  | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 | 0.0006 |
| Rotor winding resistance (20℃)               | ohm                 | 0.987                                                   | 0.987  | 0.987  | 0.987  | 0.987  | 0.987  | 0.987  | 0.987  | 0.987  | 0.987  |
| Exciter resistance (20℃)                     | ohm                 | 10.3                                                    | 10.3   | 10.3   | 10.3   | 10.3   | 10.3   | 10.3   | 10.3   | 10.3   | 10.3   |
| Cooling air requirement                      | m <sup>3</sup> /min | 130                                                     | 130    | 130    | 130    | 158    | 158    | 158    | 158    | 158    | 158    |
| Energy storage constant ( H )                | sec.                | 0.409                                                   | 0.388  | 0.374  | 0.353  | 0.561  | 0.533  | 0.512  | 0.484  | 0.463  | 0.444  |
| Method of cooling                            |                     | IC 01                                                   |        |        |        |        |        |        |        |        |        |
| Ambient temperature                          |                     | 40℃                                                     |        |        |        |        |        |        |        |        |        |
| Sense of rotation                            |                     | Clockwise-DE                                            |        |        |        |        |        |        |        |        |        |
| Type of construction                         |                     | Single / Double bearing                                 |        |        |        |        |        |        |        |        |        |
| Degree of protection / enclosure             |                     | IP21 or IP23                                            |        |        |        |        |        |        |        |        |        |
| Maximum overspeed                            |                     | 2250 rpm    2minutes                                    |        |        |        |        |        |        |        |        |        |

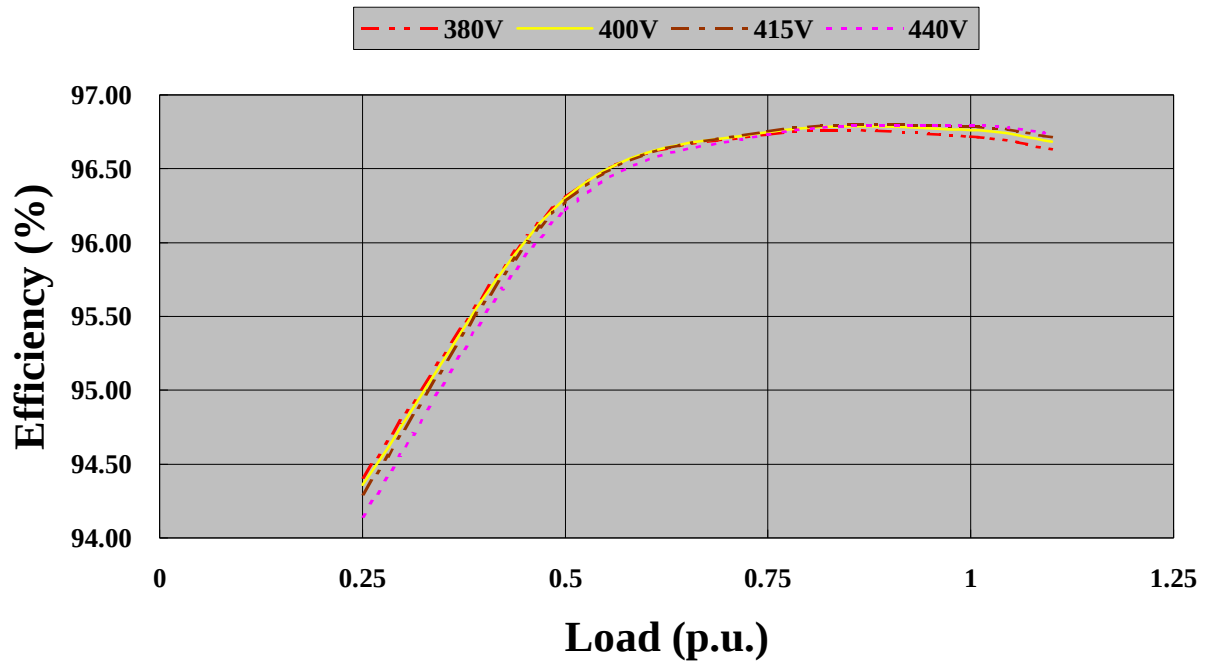
### EG450-1600N - 50Hz at 1500rpm PF 0.8



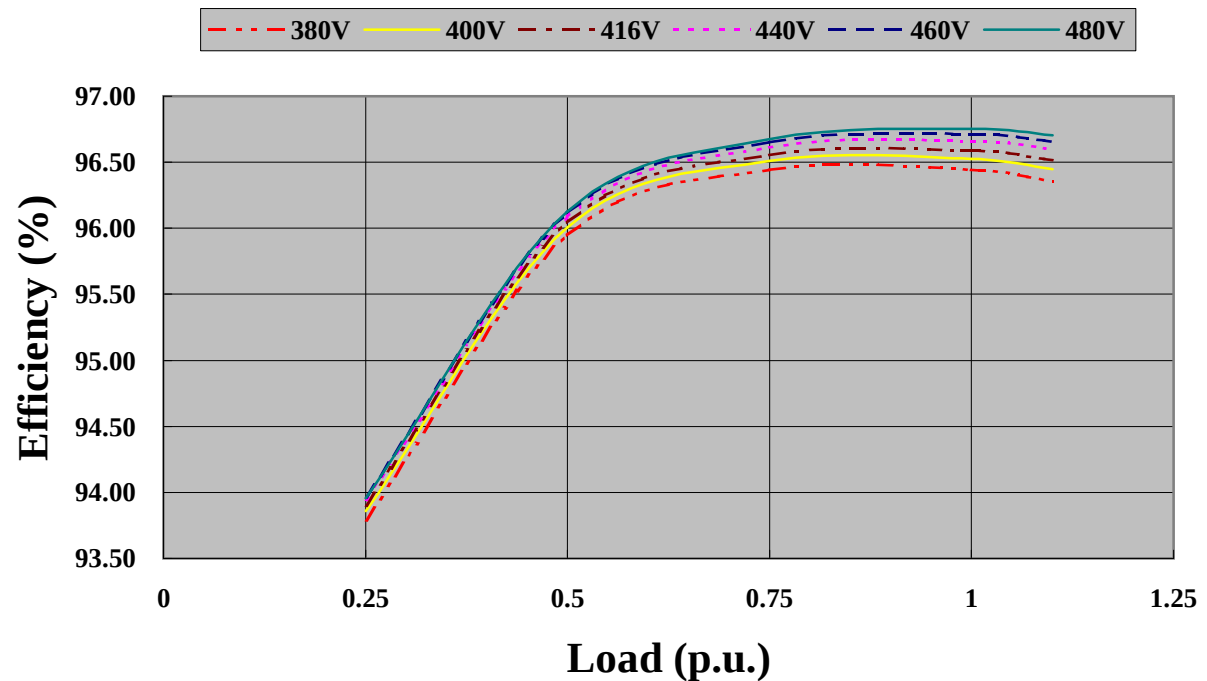
### EG450-1600N - 60Hz at 1800rpm PF 0.8



### EG450-1600N - 50Hz at 1500rpm PF 1

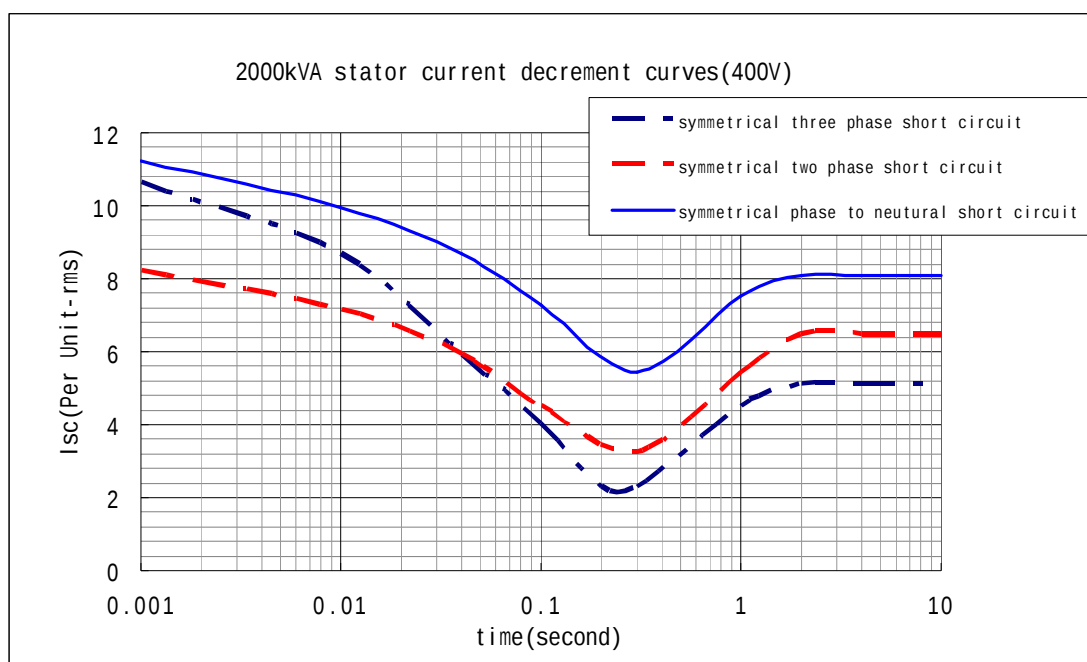


### EG450-1600N - 60Hz at 1800rpm PF 1



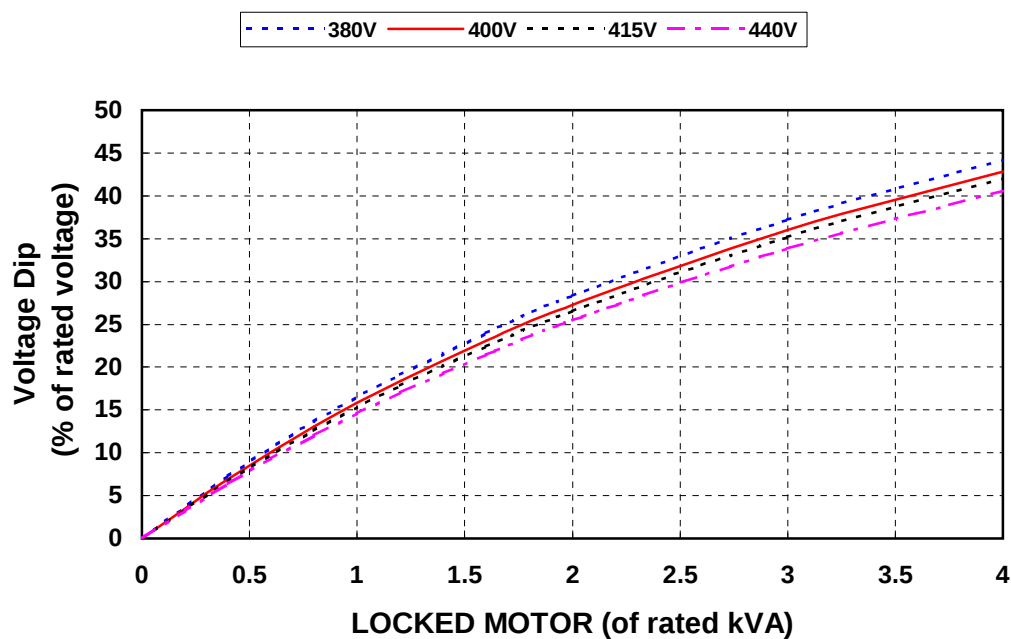
EG450-1600N

20140601



with PMG or Auxiliary winding

LOCKED ROTOR MOTOR STARTING CURVES AT 50Hz



LOCKED ROTOR MOTOR STARTING CURVES AT 60Hz

