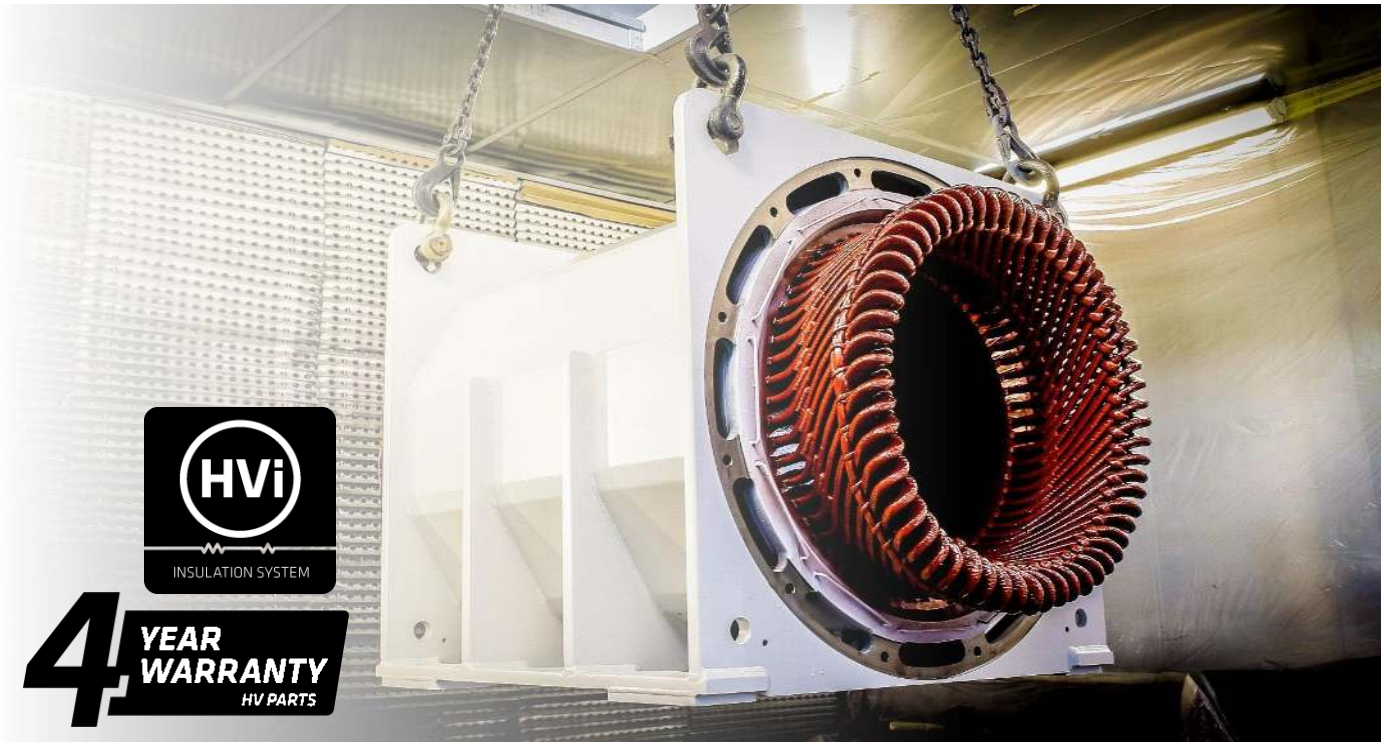
mecc alte Power Products

The X-TYPE Series

# ECO 43 - 46 - 47 - 49 X-TYPE
## Mecc Alte Medium and High Voltage Alternators
## Power Products Standard Alternator Range | Brushless AVR - 4 Pole
## *Quick selection guide*

## *ANNEX A: Low Voltage Alternator up to 5MVA (ECO47LV & ECO49LV)*
## *Low / Medium / High Voltage Alternator IP55 IC611 Heat Exchanger*

mecc alte | POWER FROM WITHIN




**The scope of this guide is to provide a simple tool for generators selection.**
**For the complete datasheets please refer to Mecc Alte DDS at http://support.meccalte.com/dds-46.**
**Prices & specifications may be subject to change without notice, quick reference ratings is for guidance only**
**It is the responsibility of the user to ensure that they are using the latest revision and validity of this document**

**For a complete overview of Mecc Alte Power Products - MV-HV X-Type range, please refer to our web site**
**https://www.meccalte.com/en/products/power-products-mvhv**
**http://xtype.meccalte.com/**

## 3kV - 3,5kV

50Hz

| Type | 5/6th WINDING PITCH | | | | | | 2/3rd WINDING PITCH | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | |
| | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 |
| ECO43MV-1VL/4 | 900 | 810 | 720 | 972 | 930 | 918 | 810 | 728 | 648 | 874 | 838 | 826 |
| ECO43MV-2VL/4 | 1000 | 900 | 800 | 1080 | 1034 | 1020 | 900 | 810 | 720 | 972 | 930 | 918 |
| ECO43MV-1XL/4 | 1100 | 990 | 880 | 1188 | 1138 | 1122 | 1000 | 900 | 800 | 1080 | 1034 | 1020 |
| ECO43MV-2XL/4 | 1300 | 1170 | 1040 | 1404 | 1344 | 1326 | 1170 | 1052 | 936 | 1262 | 1210 | 1192 |
| ECO46MV-1L/4 | 1500 | 1350 | 1200 | 1620 | 1552 | 1530 | 1290 | 1160 | 1032 | 1393 | 1335 | 1314 |
| ECO46MV-2L/4 | 1650 | 1480 | 1320 | 1780 | 1700 | 1682 | 1420 | 1278 | 1136 | 1534 | 1469 | 1448 |
| ECO46MV-3L/4 | 1800 | 1600 | 1440 | 1944 | 1863 | 1836 | 1550 | 1395 | 1240 | 1674 | 1604 | 1580 |
| ECO46MV-1VL/4 | 2100 | 1900 | 1680 | 2268 | 2173 | 2142 | 1810 | 1630 | 1448 | 1955 | 1873 | 1846 |
| ECO46MV-2VL/4 | 2300 | 2050 | 1840 | 2480 | 2380 | 2346 | 1980 | 1760 | 1584 | 2138 | 2049 | 2018 |
| ECO46MV-3VL/4 | 2500 | 2250 | 2000 | 2700 | 2588 | 2550 | 2150 | 1935 | 1720 | 2322 | 2224 | 2192 |
| ECO46MV-2XL/4* | 2750 | 2500 | 2200 | 2970 | 2846 | 2804 | 2365 | 2128 | 1892 | 2554 | 2446 | 2412 |
| ECO47MV-1M/4B | 3230 | 2906 | 2584 | 3488 | 3342 | 3294 | 3060 | 2754 | 2448 | 3304 | 3166 | 3120 |
| ECO47MV-2M/4B | 3695 | 3324 | 2956 | 3990 | 3824 | 3768 | 3460 | 3114 | 2768 | 3736 | 3580 | 3528 |
| ECO47MV-1L/4B | 4175 | 3756 | 3340 | 4508 | 4320 | 4258 | 3750 | 3374 | 3000 | 4050 | 3880 | 3824 |
| ECO49MV-L/4 | 4250 | 3825 | 3400 | 4590 | 4398 | 4334 | 3820 | 3438 | 3056 | 4125 | 3953 | 3896 |
| ECO49MV-VL/4 | 4670 | 4203 | 3736 | 5043 | 4833 | 4762 | 4200 | 3780 | 3360 | 4536 | 4347 | 4284 |
| ECO49MV-XL/4 | 5090 | 4581 | 4072 | 5497 | 5268 | 5190 | 4580 | 4122 | 3664 | 4946 | 4740 | 4670 |

## 6kV - 6,6kV

50Hz

| Type | 5/6th WINDING PITCH | | | | | | 2/3rd WINDING PITCH | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | |
| | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | ClassB (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 |
| ECO43MV-1VL/4 | 900 | 810 | 720 | 972 | 930 | 918 | 810 | 728 | 648 | 874 | 838 | 826 |
| ECO43MV-2VL/4 | 1000 | 900 | 800 | 1080 | 1034 | 1020 | 900 | 810 | 720 | 972 | 930 | 918 |
| ECO43MV-1XL/4 | 1100 | 990 | 880 | 1188 | 1138 | 1122 | 1000 | 900 | 800 | 1080 | 1034 | 1020 |
| ECO43MV-2XL/4 | 1300 | 1170 | 1040 | 1404 | 1344 | 1326 | 1170 | 1052 | 936 | 1262 | 1210 | 1192 |
| ECO46MV-1L/4 | 1620 | 1450 | 1296 | 1750 | 1675 | 1652 | 1500 | 1350 | 1200 | 1620 | 1552 | 1530 |
| ECO46MV-2L/4 | 1780 | 1600 | 1424 | 1920 | 1840 | 1814 | 1650 | 1480 | 1320 | 1780 | 1700 | 1682 |
| ECO46MV-3L/4 | 1940 | 1740 | 1552 | 2095 | 2005 | 1978 | 1800 | 1600 | 1440 | 1944 | 1863 | 1836 |
| ECO46MV-1VL/4 | 2270 | 2040 | 1816 | 2450 | 2350 | 2314 | 2100 | 1900 | 1680 | 2268 | 2173 | 2142 |
| ECO46MV-2VL/4 | 2480 | 2230 | 1984 | 2680 | 2565 | 2528 | 2300 | 2050 | 1840 | 2480 | 2380 | 2346 |
| ECO46MV-3VL/4 | 2700 | 2430 | 2160 | 2915 | 2795 | 2754 | 2500 | 2250 | 2000 | 2700 | 2588 | 2550 |
| ECO46MV-2XL/4* | 2970 | 2672 | 2376 | 3206 | 3072 | 3028 | 2750 | 2500 | 2200 | 2970 | 2846 | 2804 |
| ECO47MV-1M/4B | 3230 | 2906 | 2584 | 3488 | 3342 | 3294 | 3100 | 2790 | 2480 | 3348 | 3208 | 3162 |
| ECO47MV-2M/4B | 3735 | 3360 | 2988 | 4032 | 3864 | 3808 | 3580 | 3222 | 2864 | 3866 | 3704 | 3650 |
| ECO47MV-1L/4B | 4240 | 3816 | 3392 | 4578 | 4388 | 4324 | 4060 | 3654 | 3248 | 4384 | 4202 | 4140 |
| ECO49MV-L/4 | 4250 | 3825 | 3400 | 4590 | 4398 | 4334 | 3820 | 3438 | 3056 | 4125 | 3953 | 3896 |
| ECO49MV-VL/4 | 4670 | 4203 | 3736 | 5043 | 4833 | 4762 | 4200 | 3780 | 3360 | 4536 | 4347 | 4284 |
| ECO49MV-XL/4 | 5090 | 4581 | 4072 | 5497 | 5268 | 5190 | 4580 | 4122 | 3664 | 4946 | 4740 | 4670 |

## 10kV - 12kV

50Hz

| Type | 5/6th WINDING PITCH | | | | | | 2/3rd WINDING PITCH | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | |
| | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 |
| ECO43HV-1VL/4 | 900 | 810 | 720 | 972 | 930 | 918 | 810 | 728 | 648 | 874 | 838 | 826 |
| ECO43HV-2VL/4 | 1000 | 900 | 800 | 1080 | 1034 | 1020 | 900 | 810 | 720 | 972 | 930 | 918 |
| ECO43HV-1XL/4 | 1100 | 990 | 880 | 1188 | 1138 | 1122 | 1000 | 900 | 800 | 1080 | 1034 | 1020 |
| ECO43HV-2XL/4 | 1300 | 1170 | 1040 | 1404 | 1344 | 1326 | 1170 | 1052 | 936 | 1262 | 1210 | 1192 |
| ECO46HV-1L/4 | 1500 | 1350 | 1200 | 1620 | 1552 | 1530 | 1290 | 1160 | 1032 | 1393 | 1335 | 1314 |
| ECO46HV-2L/4 | 1650 | 1480 | 1320 | 1780 | 1700 | 1682 | 1420 | 1278 | 1136 | 1534 | 1469 | 1448 |
| ECO46HV-3L/4 | 1800 | 1600 | 1440 | 1944 | 1863 | 1836 | 1550 | 1395 | 1240 | 1674 | 1604 | 1580 |
| ECO46HV-1VL/4 | 2100 | 1900 | 1680 | 2268 | 2173 | 2142 | 1810 | 1630 | 1448 | 1955 | 1873 | 1846 |
| ECO46HV-2VL/4 | 2300 | 2050 | 1840 | 2480 | 2380 | 2346 | 1980 | 1760 | 1584 | 2138 | 2049 | 2018 |
| ECO46HV-3VL/4 | 2500 | 2250 | 2000 | 2700 | 2588 | 2550 | 2150 | 1935 | 1720 | 2322 | 2224 | 2192 |
| ECO46HV-2XL/4* | 2750 | 2500 | 2200 | 2970 | 2846 | 2804 | 2365 | 2128 | 1892 | 2554 | 2446 | 2412 |
| ECO47HV-1M/4B | 3160 | 2844 | 2528 | 3412 | 3270 | 3222 | 2750 | 2474 | 2200 | 2970 | 2846 | 2804 |
| ECO47HV-2M/4B | 3600 | 3240 | 2880 | 3888 | 3726 | 3672 | 3100 | 2790 | 2480 | 3348 | 3208 | 3162 |
| ECO47HV-1L/4B | 4000 | 3600 | 3200 | 4320 | 4140 | 4080 | 3530 | 3176 | 2824 | 3812 | 3652 | 3600 |
| ECO49HV-L/4 | 4050 | 3645 | 3240 | 4374 | 4191 | 4130 | 3640 | 3276 | 2912 | 3931 | 3767 | 3712 |
| ECO49HV-VL/4 | 4450 | 4005 | 3560 | 4806 | 4605 | 4538 | 4000 | 3600 | 3200 | 4320 | 4140 | 4080 |
| ECO49HV-XL/4 | 4850 | 4365 | 3880 | 5238 | 5019 | 4946 | 4360 | 3924 | 3488 | 4708 | 4512 | 4446 |

***Only double bearing configuration**

**Prices & specifications may be subject to change without notice, quick reference ratings is for guidance only.**

**It is the responsibility of the user to ensure that they are using the latest revision and validity of this document**

## 3,6kV-4,16kV

60Hz

| Type | 5/6th WINDING PITCH | | | | | | 2/3rd WINDING PITCH | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | |
| | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 |
| ECO43MV-1VL/4 | 1080 | 972 | 864 | 1166 | 1116 | 1100 | 972 | 872 | 776 | 1048 | 1004 | 990 |
| ECO43MV-2VL/4 | 1200 | 1080 | 960 | 1296 | 1240 | 1224 | 1080 | 972 | 864 | 1166 | 1116 | 1100 |
| ECO43MV-1XL/4 | 1320 | 1188 | 1056 | 1424 | 1364 | 1346 | 1200 | 1080 | 960 | 1296 | 1240 | 1224 |
| ECO43MV-2XL/4 | 1560 | 1404 | 1248 | 1684 | 1612 | 1590 | 1404 | 1262 | 1122 | 1514 | 1452 | 1430 |
| ECO46MV-1L/4 | 1800 | 1620 | 1440 | 1944 | 1870 | 1836 | 1548 | 1392 | 1238 | 1672 | 1602 | 1576 |
| ECO46MV-2L/4 | 1980 | 1780 | 1584 | 2140 | 2040 | 2018 | 1704 | 1534 | 1363 | 1840 | 1763 | 1736 |
| ECO46MV-3L/4 | 2160 | 1920 | 1728 | 2332 | 2236 | 2202 | 1860 | 1674 | 1488 | 2009 | 1924 | 1896 |
| ECO46MV-1VL/4 | 2520 | 2280 | 2016 | 2722 | 2608 | 2570 | 2172 | 1956 | 1738 | 2346 | 2247 | 2214 |
| ECO46MV-2VL/4 | 2760 | 2460 | 2208 | 2980 | 2860 | 2814 | 2376 | 2136 | 1901 | 2566 | 2458 | 2420 |
| ECO46MV-3VL/4 | 3000 | 2700 | 2400 | 3240 | 3105 | 3060 | 2580 | 2322 | 2064 | 2786 | 2669 | 2630 |
| ECO46MV-2XL/4* | 3300 | 3000 | 2640 | 3564 | 3414 | 3364 | 2838 | 2552 | 2270 | 3064 | 2934 | 2894 |
| ECO47MV-1M/4B | 3876 | 3486 | 3100 | 4184 | 4010 | 3952 | 3672 | 3304 | 2936 | 3964 | 3798 | 3744 |
| ECO47MV-2M/4B | 4434 | 3988 | 3546 | 4788 | 4588 | 4520 | 4152 | 3736 | 3320 | 4482 | 4296 | 4232 |
| ECO47MV-1L/4B | 5010 | 4506 | 4008 | 5408 | 5184 | 5108 | 4500 | 4048 | 3600 | 4860 | 4656 | 4588 |
| ECO49MV-L/4 | 5100 | 4590 | 4080 | 5508 | 5277 | 5200 | 4584 | 4125 | 3667 | 4950 | 4743 | 4675 |
| ECO49MV-VL/4 | 5604 | 5043 | 4483 | 6051 | 5799 | 5714 | 5040 | 4536 | 4032 | 5443 | 5216 | 5140 |
| ECO49MV-XL/4 | 6108 | 5497 | 4886 | 6596 | 6321 | 6228 | 5496 | 4946 | 4396 | 5935 | 5688 | 5604 |

## 7,2kV-7,92kV

60Hz

| Type | 5/6th WINDING PITCH | | | | | | 2/3rd WINDING PITCH | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | |
| | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 |
| ECO43MV-1VL/4 | 1080 | 972 | 864 | 1166 | 1116 | 1100 | 972 | 872 | 776 | 1048 | 1004 | 990 |
| ECO43MV-2VL/4 | 1200 | 1080 | 960 | 1296 | 1240 | 1224 | 1080 | 972 | 864 | 1166 | 1116 | 1100 |
| ECO43MV-1XL/4 | 1320 | 1188 | 1056 | 1424 | 1364 | 1346 | 1200 | 1080 | 960 | 1296 | 1240 | 1224 |
| ECO43MV-2XL/4 | 1560 | 1404 | 1248 | 1684 | 1612 | 1590 | 1404 | 1262 | 1122 | 1514 | 1452 | 1430 |
| ECO46MV-1L/4 | 1940 | 1740 | 1552 | 2095 | 2005 | 1982 | 1800 | 1620 | 1440 | 1944 | 1870 | 1836 |
| ECO46MV-2L/4 | 2140 | 1920 | 1712 | 2310 | 2215 | 2176 | 1980 | 1780 | 1584 | 2140 | 2040 | 2018 |
| ECO46MV-3L/4 | 2330 | 2100 | 1864 | 2515 | 2410 | 2372 | 2160 | 1920 | 1728 | 2332 | 2236 | 2202 |
| ECO46MV-1VL/4 | 2720 | 2440 | 2176 | 2940 | 2815 | 2776 | 2520 | 2280 | 2016 | 2722 | 2608 | 2570 |
| ECO46MV-2VL/4 | 2970 | 2670 | 2376 | 3210 | 3075 | 3032 | 2760 | 2460 | 2208 | 2980 | 2860 | 2814 |
| ECO46MV-3VL/4 | 3240 | 2910 | 2592 | 3500 | 3355 | 3304 | 3000 | 2700 | 2400 | 3240 | 3105 | 3060 |
| ECO46MV-2XL/4* | 3564 | 3206 | 2850 | 3846 | 3686 | 3632 | 3300 | 3000 | 2640 | 3564 | 3414 | 3364 |
| ECO47MV-1M/4B | 3876 | 3486 | 3100 | 4184 | 4010 | 3952 | 3720 | 3348 | 2976 | 4016 | 3848 | 3794 |
| ECO47MV-2M/4B | 4482 | 4032 | 3584 | 4838 | 4636 | 4568 | 4296 | 3866 | 3436 | 4638 | 4444 | 4380 |
| ECO47MV-1L/4B | 5088 | 4578 | 4070 | 5492 | 5264 | 5188 | 4872 | 4384 | 3896 | 5260 | 5042 | 4968 |
| ECO49MV-L/4 | 5100 | 4590 | 4080 | 5508 | 5277 | 5200 | 4584 | 4125 | 3667 | 4950 | 4743 | 4675 |
| ECO49MV-VL/4 | 5604 | 5043 | 4483 | 6051 | 5799 | 5714 | 5040 | 4536 | 4032 | 5443 | 5216 | 5140 |
| ECO49MV-XL/4 | 6108 | 5497 | 4886 | 6596 | 6321 | 6228 | 5496 | 4946 | 4396 | 5935 | 5688 | 5604 |

## 11,4kV-13,8kV

60Hz

| Type | 5/6th WINDING PITCH | | | | | | 2/3rd WINDING PITCH | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | | PRP / COP RATING 40°C 0.8pf [kVA] | | | STANDBY RATING [kVA] | | |
| | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 | Class H (ΔT= 125 °C) | Class F (ΔT= 105 °C) | Class B (ΔT= 80 °C) | Temp Rise / Amb °C 163 / 27 | 150 / 40 | 130 / 40 |
| ECO43HV-1VL/4 | 1080 | 972 | 864 | 1166 | 1116 | 1100 | 972 | 872 | 776 | 1048 | 1004 | 990 |
| ECO43HV-2VL/4 | 1200 | 1080 | 960 | 1296 | 1240 | 1224 | 1080 | 972 | 864 | 1166 | 1116 | 1100 |
| ECO43HV-1XL/4 | 1320 | 1188 | 1056 | 1424 | 1364 | 1346 | 1200 | 1080 | 960 | 1296 | 1240 | 1224 |
| ECO43HV-2XL/4 | 1560 | 1404 | 1248 | 1684 | 1612 | 1590 | 1404 | 1262 | 1122 | 1514 | 1452 | 1430 |
| ECO46HV-1L/4 | 1800 | 1620 | 1440 | 1944 | 1870 | 1836 | 1548 | 1392 | 1238 | 1672 | 1602 | 1576 |
| ECO46HV-2L/4 | 1980 | 1780 | 1584 | 2140 | 2040 | 2018 | 1704 | 1534 | 1363 | 1840 | 1763 | 1736 |
| ECO46HV-3L/4 | 2160 | 1920 | 1728 | 2332 | 2236 | 2202 | 1860 | 1674 | 1488 | 2009 | 1924 | 1896 |
| ECO46HV-1VL/4 | 2520 | 2280 | 2016 | 2722 | 2608 | 2570 | 2172 | 1956 | 1738 | 2346 | 2247 | 2214 |
| ECO46HV-2VL/4 | 2760 | 2460 | 2208 | 2980 | 2860 | 2814 | 2376 | 2136 | 1901 | 2566 | 2458 | 2420 |
| ECO46HV-3VL/4 | 3000 | 2700 | 2400 | 3240 | 3105 | 3060 | 2580 | 2322 | 2064 | 2786 | 2669 | 2630 |
| ECO46HV-2XL/4* | 3300 | 3000 | 2640 | 3564 | 3414 | 3364 | 2838 | 2552 | 2270 | 3064 | 2934 | 2894 |
| ECO47HV-1M/4B | 3792 | 3412 | 3032 | 4094 | 3924 | 3866 | 3300 | 2968 | 2640 | 3564 | 3414 | 3364 |
| ECO47HV-2M/4B | 4320 | 3888 | 3456 | 4664 | 4470 | 4406 | 3720 | 3348 | 2976 | 4016 | 3848 | 3794 |
| ECO47HV-1L/4B | 4800 | 4320 | 3840 | 5184 | 4968 | 4896 | 4236 | 3810 | 3388 | 4574 | 4382 | 4320 |
| ECO49HV-L/4 | 4860 | 4374 | 3888 | 5248 | 5029 | 4956 | 4368 | 3931 | 3494 | 4717 | 4520 | 4454 |
| ECO49HV-VL/4 | 5340 | 4806 | 4272 | 5767 | 5526 | 5445 | 4800 | 4320 | 3840 | 5184 | 4968 | 4896 |
| ECO49HV-XL/4 | 5820 | 5238 | 4656 | 6285 | 6022 | 5935 | 5232 | 4708 | 4185 | 5649 | 5414 | 5335 |

***Only double bearing configuration**

**Prices & specifications may be subject to change without notice, quick reference ratings is for guidance only.**

**It is the responsibility of the user to ensure that they are using the latest revision and validity of this document**

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Power Products

# ECO 43 - 46 - 47 - 49 Medium and High Voltage Alternators
## Final Price to Customer for Accessories

X-TYPE

| Type of Construction and Mounting Arrangements (IM CODE) | ECO43 | ECO46 | ECO47 | ECO49 |
|---|---|---|---|---|
| Single Bearing B3/B14 mounting configuration with SAE/Disc (IM 1001) | STD | STD | POA | POA |
| Double Bearing B3/B14 mounting configuration (IM1001) | STD | POA | STD | STD |
| Single or double bearing B20 (IM1101) or other custom IM configuration | POA | POA | POA | POA |
| SAE Adapter - Bell House SAE 00-00 (0) - length 200mm for ECO43-46, length 250mm for ECO47, length 300mm for ECO49 | POA | POA | POA | POA |
| SAE Adapter - Bell House SAE 00-00 - length or flange SAE custom dimension | POA | POA | POA | POA |

| Type of cooling system (IC CODE) and protection degree (IP CODE) | ECO43 | ECO46 | ECO47 | ECO 49 |
|---|---|---|---|---|
| IP23 Protection (Deep proof) and IC01 Cooling System | STD | STD | STD | STD |
| Up to IP43 Protection screens | POA | POA | POA | POA |
| Cooling system IC611 - Heat exchanger Air / Air - Alternator protection IP44 or higher | POA | POA | POA | POA |
| Cooling system IC616 - Heat exchanger Air / Air - Alternator protection IP44 or higher | POA | POA | POA | POA |
| Cooling system IC81W - Heat exchanger Air / Water - Alternator protection IP44 or higher | POA | POA | POA | POA |

| Excitation and Regulation Systems | ECO43 | ECO46 | ECO47 | ECO 49 |
|---|---|---|---|---|
| Digital AVR Mecc Alte DER2A (three phase sensing, USB connection, high dynamic response, voltage regulation accurancy +/- 0.5%) | STD | STD | STD | STD |
| PMG - Permanent Magnet Generator excitation system | STD | STD | STD | STD |
| Reinforced varistor (Silicon carbide surge protection - 1400 Vpeak - 5,5kJ) | NA | NA | STD | STD |
| Basler DECS 100 -B11 or B15 Enhanced digital Excitation Control System +/- 0.25%, VAR/PF control, etc | POA | POA | POA | POA |
| Basler DECS 150-1NS2V1N1S Enhanced digital excitation control system +/- 0.25%, PF regulation, droop control, Diode Failure, etc | TBA | TBA | TBA | TBA |
| Basler DECS 250-CN1CN1N Enhanced digital excitation control system+/- 0.25%, PF regulation, droop control, Diode Failure (LOOSE SUPPLIED | POA | POA | POA | POA |
| ABB Unitrol 1005 Light - 5A, AVR/FCR/PF/VAR, Rotating diode monitoring, Modbus TPC remote control, etc | POA | POA | POA | POA |
| ABB Unitrol 1010 Light - 10A, AVR/FCR/PF/VAR, Rotating diode monitoring, Modbus TPC remote control, etc | POA | POA | POA | POA |
| ABB Unitrol 1010 Basic - 10A, AVR/FCR/PF/VAR, Rotating diode monitoring, autom. Synchr., reactive load sharing, motor start support, etc | POA | POA | POA | POA |
| Hot-swap redundancy excitation control system with Basler DUAL DECS or ABB DUAL UNITROL on mounting plate | POA | POA | POA | POA |

| Sensing | ECO43 | ECO46 | ECO47 | ECO 49 |
|---|---|---|---|---|
| No. 6 PT100 RTD (3-wires) on stator winding - 2 x PT100 each phase | STD | STD | STD | STD |
| No. 1 PT100 RTD (3-wires) on NDE bearing - single bearing mounting configuration | POA | POA | POA | POA |
| No. 1 PT100 RTD (3-wires) each bearing - NDE + DE bearing - double bearing mounting configuration | POA | POA | POA | POA |
| PT100 RTD 4-wires type or DUPLEX (6-wires) type applicable on stator winding and/or bearings | POA | POA | POA | POA |
| Mechanical predisposition for vibration sensors (1 horizontal and 1 vertical sensor DE + 1 horizontal sensor NDE) - wiring upon request | POA | POA | POA | STD |
| No.1 vibration sensor VSA001 and No.1 controller VSE002 - special requests to be defined | POA | POA | POA | POA |
| Arrangement for Rotor-earth protection (Ansi 64F) | NA | NA | POA | POA |

| Operating Environment and Alternator Features | ECO43 | ECO46 | ECO47 | ECO 49 |
|---|---|---|---|---|
| Mecc Alte HVi class H insulation system (impregnation with class H solid epoxy resin and VPI process) | STD | STD | STD | STD |
| Epoxy overcoating for windings protection for the main stator and exciter stator (harsh and marine environments) | STD | STD | STD | STD |
| Epoxy overcoating for windings protection for the main rotor and the exciter rotor (harsh and marine environments) | POA | POA | STD | STD |
| Amagnetic side panels for cable exit | STD | STD | STD | STD |
| Full stainless-steel terminal box | POA | POA | POA | POA |
| Cable box hood for cable entry in alternator terminal box- left side or right side | POA | POA | POA | POA |
| Anti-condensation Heaters, 250W (2 X 125W) 230VAC | STD | NA | NA | NA |
| Anti-condensation Heaters, 300W (2 X 150W) 230VAC | NA | STD | NA | NA |
| Anti-condensation Heaters, 600W (4 X 150W) 230VAC | NA | NA | STD | STD |
| External painting, RAL7021 dark grey | STD | STD | STD | STD |
| External painting, customized RAL | POA | POA | POA | POA |
| Separate terminal boxes for star point and main line | POA | POA | POA | POA |

| Bearings Insulation and Shaft Grounding | ECO43 | ECO46 | ECO47 | ECO 49 |
|---|---|---|---|---|
| Insulated NDE bearing - bearing ceramic coating | POA | POA | POA | NA |
| Insulated DE bearing - bearing ceramic coating | POA | POA | POA | NA |
| Insulated NDE bearing - fiberglass ring | NA | NA | NA | POA |
| Insulated DE bearing - fiberglass ring | NA | NA | NA | POA |
| Shaft grounding with AEGIS® ring | POA | POA | POA | POA |

| Current and Voltage Transformers - CTs and VTs | ECO43 | ECO46 | ECO47 | ECO 49 |
|---|---|---|---|---|
| No. 1 VT Ph-Ph single secondary for measuring: Un/100V - 15 VA - cl.0.5 (for alternator voltage regulation and for customer measure) | STD | STD | STD | STD |
| No. 1 CT single secondary for measuring: In/1A - 15VA - cl.0.5 - FS10 (available for customer integration: e.g. external droop controller ) | STD | STD | STD | STD |
| Set of No. 3 CTs single secondary winding for measuring: In/1A - 15VA - cl.0.5 - FS10 | POA | POA | POA | POA |
| Set of No. 3 CTs double secondary winding for measuring and protection: In/1A - 15VA - cl.0.5 - FS10 / 1A - 15VA - 5P10 | POA | POA | POA | POA |
| Set of No. 3 CTs double secondary winding for measuring and protection (differential 87G): In/1A - 15VA -c l.0.5 - FS10 / 1A - 15VA - 5P10 | POA | POA | POA | POA |
| Set of No. 3 VTs Ph-Grd single secondary winding for measuring: Un:√3/100V:√3 - 15 VA - cl.0.5 | POA | POA | POA | POA |
| Set of No. 3 VTs Ph-Grd double secondary winding for measuring and protection: Un:√3/100:√3 - 15VA - cl.0.5 /100:√3 - 15VA - 3P | POA | POA | POA | POA |
| No.1 Neutral CT, single secondary winding for protection fitted inside terminal box (terminal box larger than standard): In/1A-15VA-5P10 | POA | POA | POA | POA |
| Set of CTs and VTs with different features (measuremnet and protection burden, class) and configuration upon request | POA | POA | POA | POA |

| Marine Certification | ECO43 | ECO46 | ECO47 | ECO 49 |
|---|---|---|---|---|
| Marine Certification (Lloyds, DNV etc.) | POA | POA | POA | POA |

| Warranty* | ECO43 | ECO46 | ECO47 | ECO49 |
|---|---|---|---|---|
| 2 years warranty for the whole alternator from shipment | STD | STD | STD | STD |
| 4 years warranty for the main stators (main stators wound and power cables) of alternators with output voltage higher than 3kV* | STD | STD | STD | STD |
| 2 years warranty period to be restarted after successful genset's FAT or Commissioning | POA | POA | POA | POA |
| 3rd year warranty extension (or more years) | POA | POA | POA | POA |

| Alternator Packing for Shipping | ECO43 | ECO46 | ECO47 | ECO49 |
|---|---|---|---|---|
| Pallet packing, suitable for truck transport (standard packing) | STD | STD | STD | STD |
| Seaworthy packing, suitable for sea freight (wood box and barrier bag) | POA | POA | POA | POA |

*validity subjected to maintenance/preservation according to Mecc Alte Power Products documentation.

| | |
|---|---|
| STD = Standard Included in Generator Price | |
| POA = Price on Application | NA = Not Available |
| TBA = To Be Advised | |

**Price and specifications may be subject to change without notice, quick reference above is for guidance only.**

# Power Products Alternator Range 4 pole | Brushless AVR - Medium and High Voltage

AC Alternators, AVR Controlled, Brushless, 1500/1800RPM, 50/60HZ (6wires)

| Standard Production Test | |
|---|---|
| Each and every alternator produced is subjected to a routine test (Static and Dynamic Tests), which is conducted in accordance with IEC EN 60034-1: 2004 Section 9.1 "Routine Tests". Mecc Alte Power Products will issue a test report for each alternator. Below list is for reference only, test feasibility is subjected to the final operating conditions of alternator. | |
| **Static Routine Test** | **Code Test** |
| Surge test (before and post impregnation) | TES01 |
| Winding resistance at cold condition | TES02 |
| Polarization Index (PI) | TES03 |
| Insulation resistance + D.A.R. | TES04 |
| Withstand high voltage test | TES05 |
| **Dynamic Routine Tests** | **Code Test** |
| Overspeed test (120%) for 2 minutes | TES06 |
| Phase sequence rotation viewed from DE side | TES07 |
| X-axis radial vibration measurement during no load test | TES08 |
| AVR setting - No load voltage regulation test of AVR | TES09 |
| Zero power factor test | TES10 |
| No load losses at unity power factor | TES11 |

| Type Tests (Upon Request) | |
|---|---|
| Additional tests are performed upon customer or consultant specific requirement only. Such tests will be conducted within the Mecc Alte technical office test area in Italy, and may be subjected to additional costs based on the required tests. If type tests are required a thorough report will be issued. | |
| **Static and Dynamic Type Test** | **Code Test** |
| Thermal test at PF = 0 | TES12 |
| Voltage balance test | TES13 |
| Momentary overload at PF0 (only for ECO43 and ECO46 models, based on test room capability) | TES14 |
| Open circuit characteristic (OCC) and losses | TES15 |
| Short circuit characteristic (SCC) and losses | TES16 |
| Sustained short circuit 3xIn per 10 sec (only for ECO43 and ECO46 models with DECS-150) | TES17 |
| Simulated step response at no load (only with DECS-150) | TES18 |
| Shaft Voltage at no load | TES19 |
| Dynamic Impedance for main rotor during generator manufacturing | TES20 |
| Waveform distortion factor (THD) - waveform analysis at no load L-L, L-N | TES21 |
| Telephone harmonic factor (THF) - for 50Hz alternator | TES22 |
| Telephone influence factor (TIF) - for 60Hz alternator | TES23 |
| Full load losses (Separation method) | TES24 |
| Generator efficiency (Separation method) | TES25 |
| Airflow | TES26 |
| Reactance measurement (Xdq, Xq', Xdq'', X0, X2) unsaturated | TES27 |
| Temperature rise at zero power factor | TES28 |
| Sound level measurement (no load) | TES29 |
| Tan Delta (tanδ) | TES30 |
| Partial Discharge | TES31 |
| Other test available if clearly specified and requested by customer - to be defined during engineering phase | TES32 |

| Witnessed Tests |
|---|
| Possibility on request to attend the tests with an extra cost to be defined with the customer. |

Information and specifications may be subject to change without notice, quick reference above is for guidance only.

**Alternators are available in a wide range of voltage throughout three main voltage classes.**

**Special and dedicated windings for specifc voltages and frequencies available upon request: 5,5kV@50Hz - 2,4kV@60Hz etc.**

| | Winding code | Winding code | | |
|---|---|---|---|---|
| **3 kV - 4,16kV** | **T63M5S6** PITCH 5/6 | **T63M5S3** PITCH 2/3 | **3 kV** 50 Hz | **3,6 kV** 60 Hz |
| | **T64M5S6** PITCH 5/6 | **T64M5S3** PITCH 2/3 | **3,3 ÷ 3,5 kV** 50 Hz | **3,96 ÷ 4,16 kV** 60 Hz |
| **6 kV - 7,92kV** | **T66M5S6** PITCH 5/6 | **T66M5S3** PITCH 2/3 | **6 kV** 50 Hz | **7,2 kV** 60 Hz |
| | **T67M5S6** PITCH 5/6 | **T67M5S3** PITCH 2/3 | **6,3 ÷ 6,6 kV** 50 Hz | **7,56÷ 7,92 kV** 60 Hz |
| **10 kV - 13,8kV** | **T60H5S6** PITCH 5/6 | **T60H5S3** PITCH 2/3 | **10 ÷ 10,5 ÷ 11 kV** 50 Hz | **12 ÷ 12,47 ÷ 13,2 kV** 60 Hz |
| | **T61H5S6** PITCH 5/6 | **T61H5S3** PITCH 2/3 | **11,5 ÷ 12 kV** 50 Hz | **13,8 kV** 60 Hz |
| | **T62H5S6** PITCH 5/6 | **T62H5S3** PITCH 2/3 | **N.A.** 50 Hz | **11,4 kV** 60 Hz |

**Basic delivery time for MV/HV range**

| | |
|---|---|
| **ECO43** | **Alternators available starting from 12 - 13 calendar weeks *** |
| **ECO46** | **Alternators available in 12 - 13 calendar weeks *** |
| **ECO47** | **Alternators available in 14 - 15 calendar weeks *** |
| **ECO49** | **Alternators available in 17 - 18 calendar weeks *** |

* If August or Christmas in the period, please add +2 calendar weeks.
*Detailed delivery schedule to be verified and agreed at order placement. It's recommended for Customer to contact MAPP before placing the order.

Information and specifications may be subject to change without notice, quick reference above is for guidance only.

## ECO47LV - ECO49LV

### Extended standard series low voltage alternator

### Standard alternator range | Brushless AVR - 4 Pole

| *LOW VOLTAGE | 2/3rd WINDING PITCH | | | | | | | | EURO [€] |
|---|---|---|---|---|---|---|---|---|---|
| | PRP / COP RATING 0.8pf [kVA] | | | | | | | | |
| | Temperature Rise class H (ΔT= 125 °C) / Ambient Temperature 40°C | | | | | | | | |
| Type | 50 Hz | | | | 60 Hz | | | | |
| | 220/380 V | 230/400 V | 240/415 V | 254/440 V | 240/415 V | 254/440 V | 265/460 V | 277/480 V | |
| ECO47LV-1S/4B | 2898 | 3056 | *2898* | *2773* | *3164* | 3355 | 3508 | 3667 | Ask MAPP |
| ECO47LV-2S/4B | 3088 | 3250 | *3088* | *2955* | *3372* | 3575 | 3738 | 3900 | Ask MAPP |
| ECO47LV-2M/4B | 3325 | 3500 | *3325* | *3182* | *3631* | 3850 | 4025 | 4200 | Ask MAPP |
| ECO47LV-1L/4B | 3924 | 4130 | *3924* | *3755* | *4285* | 4543 | 4750 | 4956 | Ask MAPP |
| ECO49LV-L/4* | 3990 | 4200 | *3990* | *3818* | *4358* | 4620 | 4830 | 5040 | Ask MAPP |
| ECO49LV-VL/4* | 4389 | 4620 | *4389* | *4200* | *4793* | 5082 | 5313 | 5544 | Ask MAPP |
| ECO49LV-XL/4* | 4779 | 5030 | *4779* | *4573* | *5219* | 5533 | 5785 | 6036 | Ask MAPP |

* Nominal power on the table above is only for reference. Please contact MAPP for any proper alternator sizing and quotation.
Dedicated electrical and magnetical features upon custom request (for example suitable reactances for datacenter application X"d<12%).
Please contact your local representative or Mecc Alte directly for more information.

## Low / Medium / High Voltage Alterntor IP55 IC611 Air to Air Heat Exchanger cooling system

### TECHNICAL INFORMATION

- Options are available to satisfy detailed customer requirements, up to achieving a 'Totally Enclosed' alternator with up to IP55 rated enclosures. These require heat exchangers to cool the captive air circuit by another medium in an external circuit. The heat exchangers are mounted onto the alternator to allow the internal region encasing the electrical wound assemblies to be sealed off from local environmental.
- Reasons for this range from, protecting internal components from an aggressive external environment – ie corrosive and/or saline related air borne. Another possible reason is that the installed area does not have sufficient volume of cooling air and the secondary cooling medium is 'imported' (ducted) into the alternator.
- The heat exchangers can be based on water cooling identified by the term Cooling Air Cooling Water (CACW), or air cooling identified by Cooling Air Cooling Air (CACA), or IC616/IC611. Defined as per IEC 60034-6:
  - with IC611, the primary fluid (air) is driven by an internal fan mounted at NDE side shaft
  - with IC616, the air is driven by an additional forced ventilation

  in both cases the internal air is moved by a fan mounted at the DE side shaft.



### FEATURES AND BENEFITS

- Suitable for Oil and Gas application
- Class H power – 0.5MVA and 3MVA (full Class H rise and 40°C ambient).
- Protection on internal circuit to IP55.
- Separate terminal boxes – one for neutral point and one for line side.
- Ideal where operating environment presents a risk to internal components.

*Mecc Alte has been awarded with the ADNOC qualification and has finalised the data for the series of LV/MV/HV IP55 alternators, which are available via a project basis.*
*Please contact your local representative or Mecc Alte Power Products directly for more information.*

Prices & specifications may be subject to change without notice, quick reference ratings is for guidance only.
It is the responsibility of the user to ensure that they are using the latest revision and validity of this document