March 2018

SolarEdge Inverter Efficiency, Europe & APAC

Background

Inverter efficiency is the ratio between inverter input power and inverter output power. High efficiency means lower losses, less heat to dissipate and higher reliability.
Like all inverters, SolarEdge inverters are characterized by two efficiency values:

- *Maximum efficiency* – the highest inversion efficiency at which the inverter can operate. This efficiency is attained at a specific inverter working point, typically at 50% of peak power.
- *Weighted efficiency* – this efficiency takes into account the changing environmental conditions to which the inverter is exposed throughout the day and over the year and is calculated by measuring the inverter efficiency at various power loads. This efficiency provides a more accurate inverter operating profile representation. The European weighting formula, optimized for mainland Europe irradiance conditions, is:

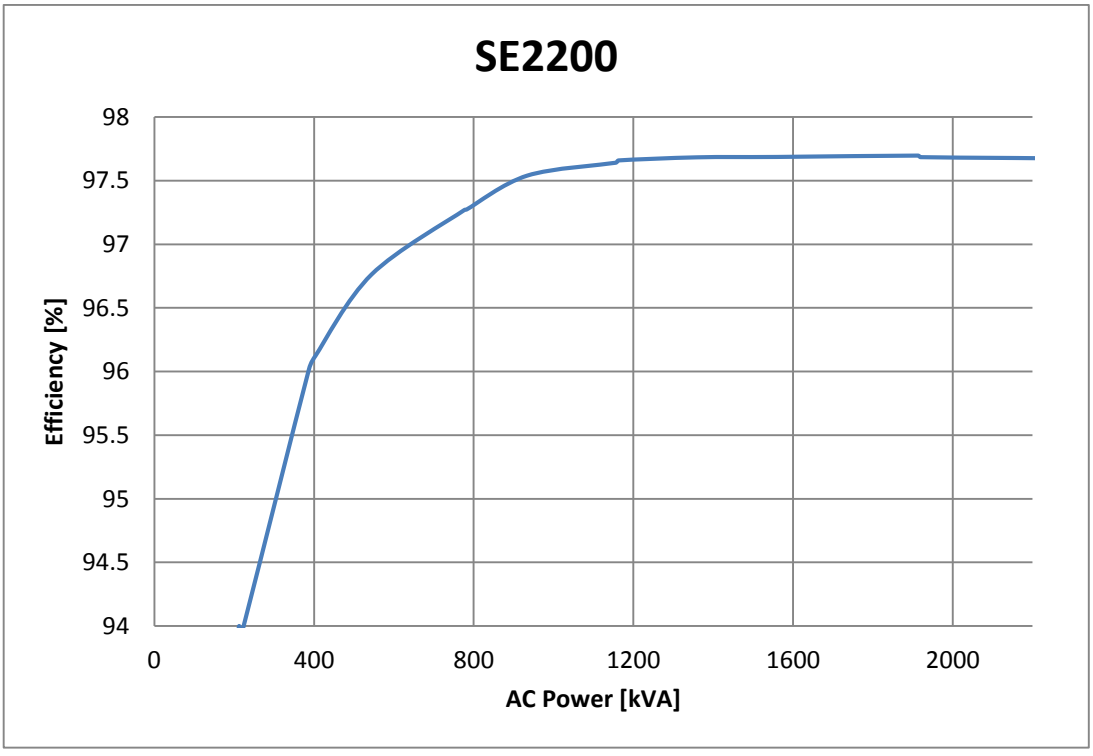
$$\eta = 0.2 \cdot \eta_{100\%} + 0.48 \cdot \eta_{50\%} + 0.1 \cdot \eta_{30\%} + 0.13 \cdot \eta_{20\%} + 0.06 \cdot \eta_{10\%} + 0.03 \cdot \eta_{5\%}$$

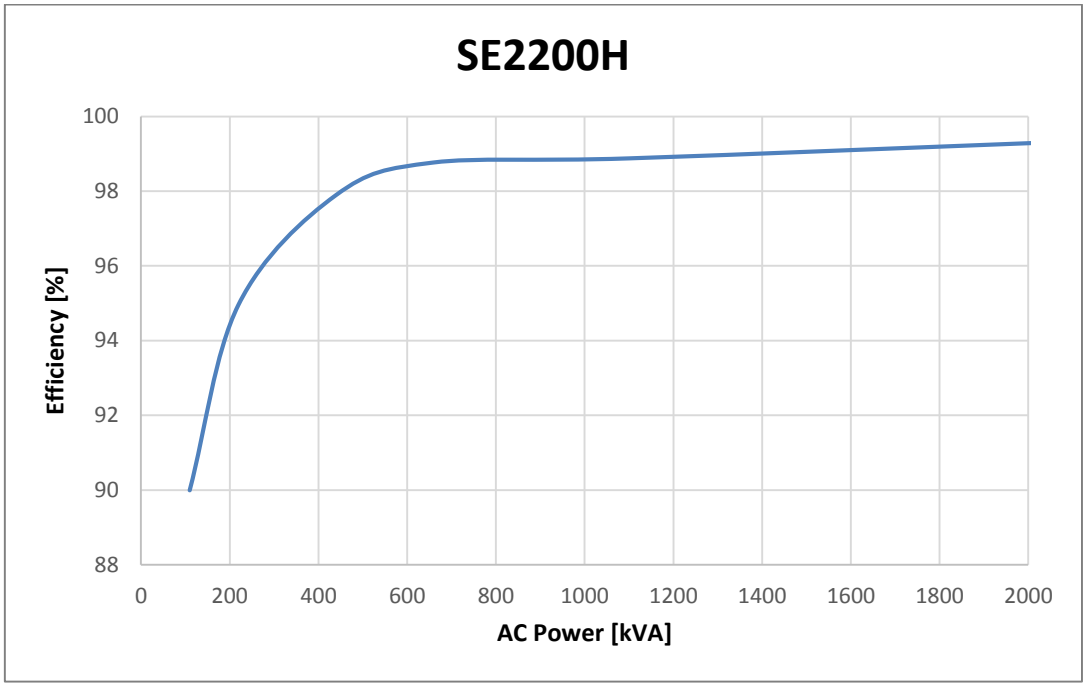
The weighted efficiency of traditional inverters depends on inverter input voltage and is typically measured for various voltages. Due to the fixed string voltage of the SolarEdge inverters they have just one efficiency curve. All measurements were done at a nominal AC grid voltage of $230V_{L-N}$.

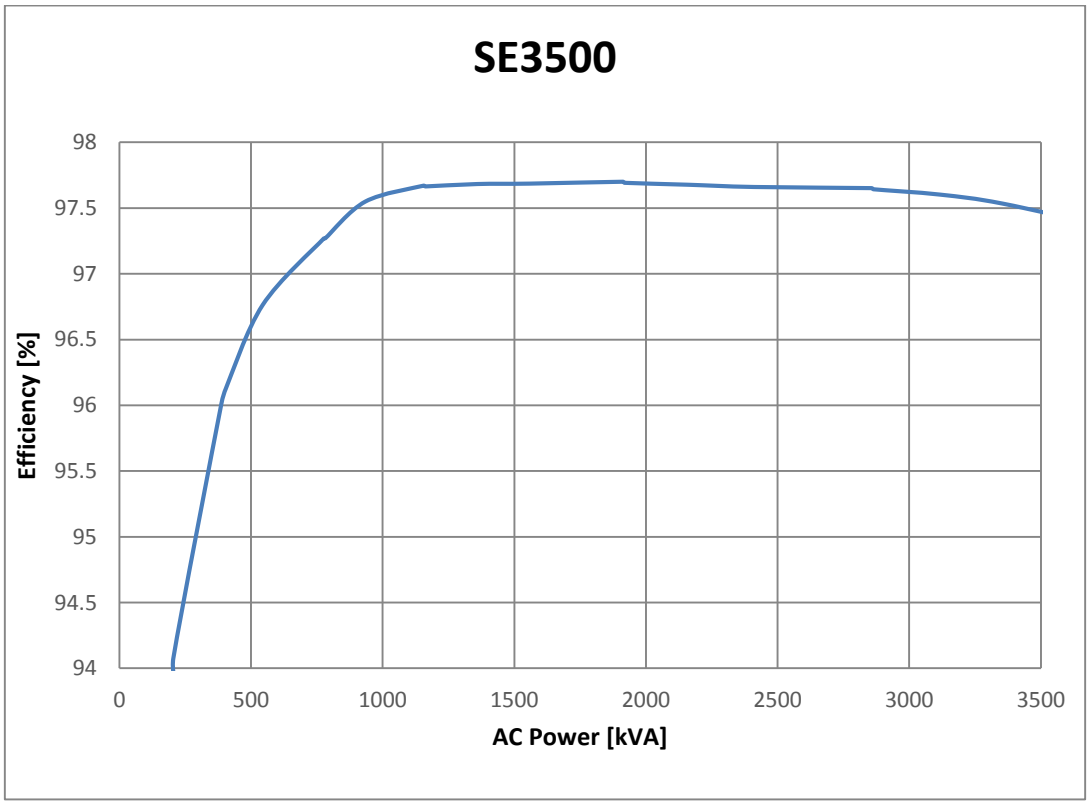
Efficiency Charts

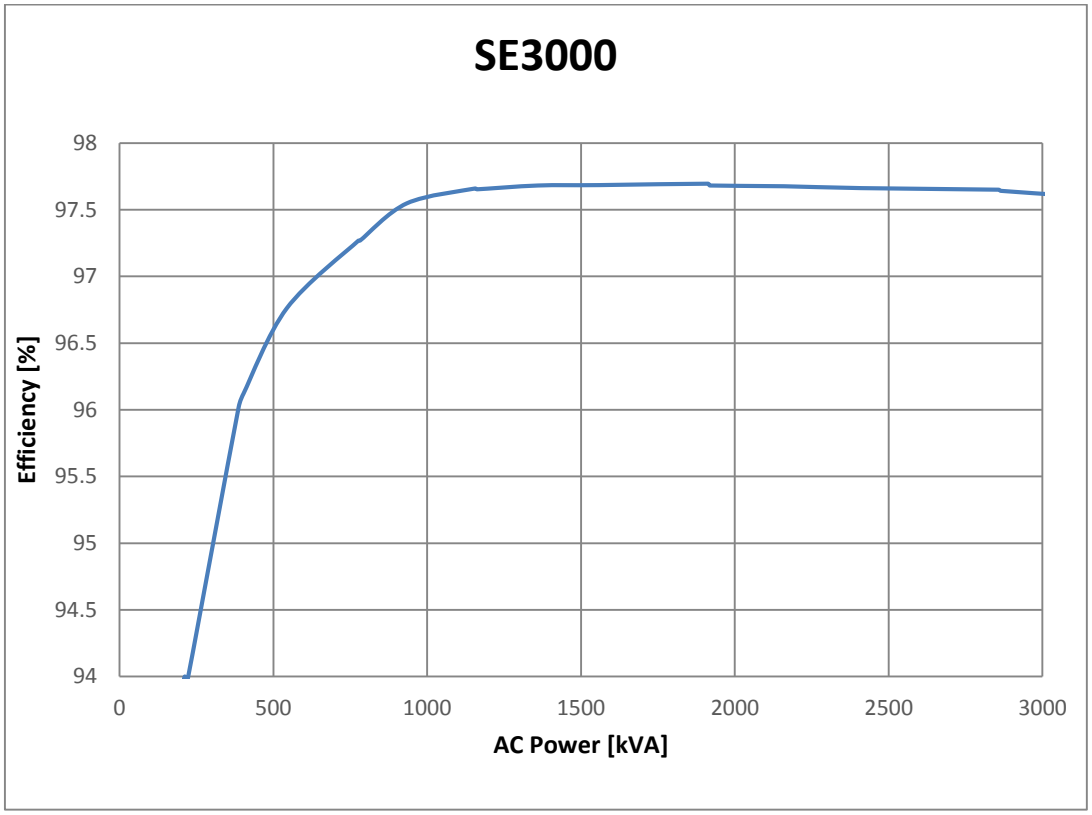
The weighted efficiencies of the SolarEdge inverters are detailed in the inverter datasheets.
The efficiency curves of the SolarEdge inverters are shown below.

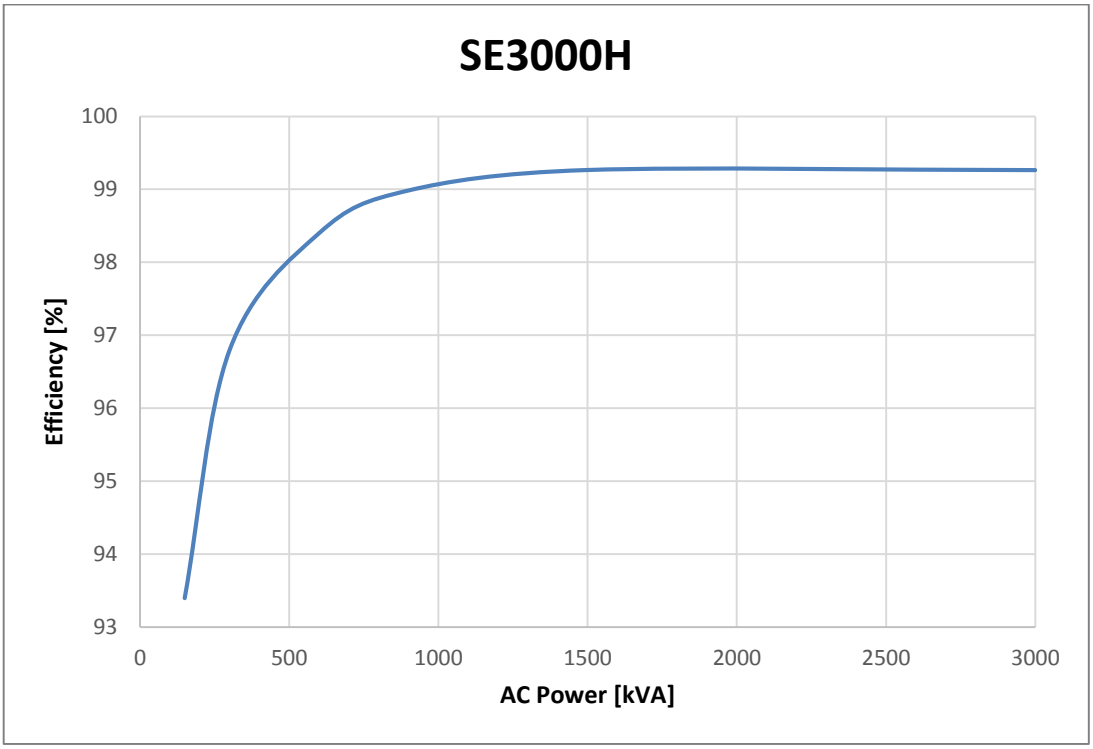
Single Phase Inverters



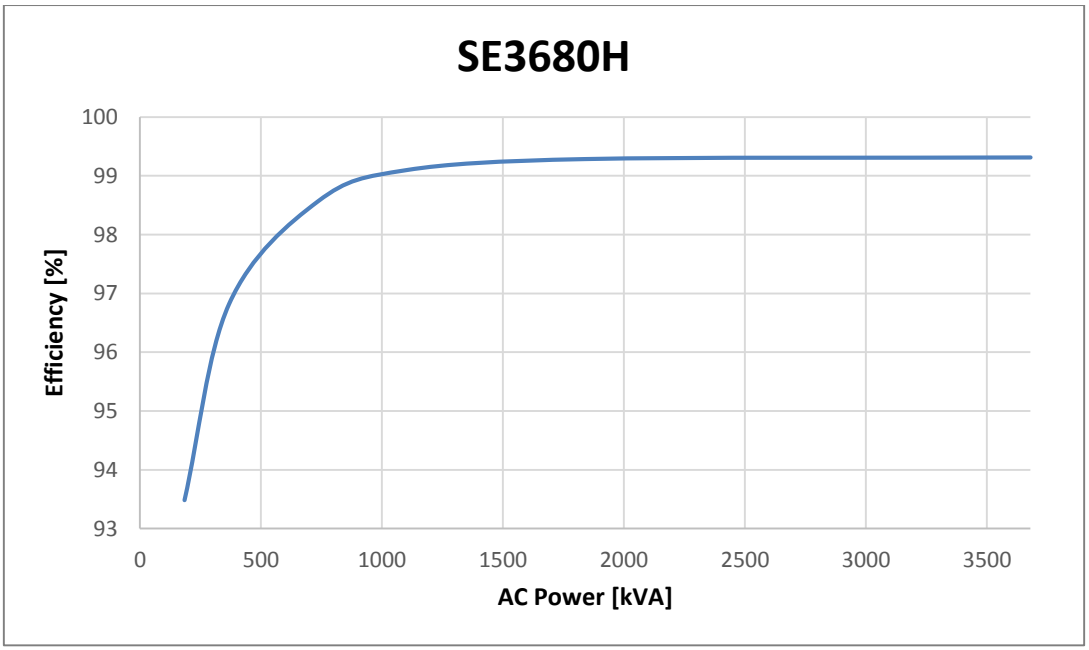

SE2200H
Efficiency [%]
100
98
96
94
92
90
88
0
200
400
600
800
1000
1200
1400
1600
1800
2000
AC Power [kVA]

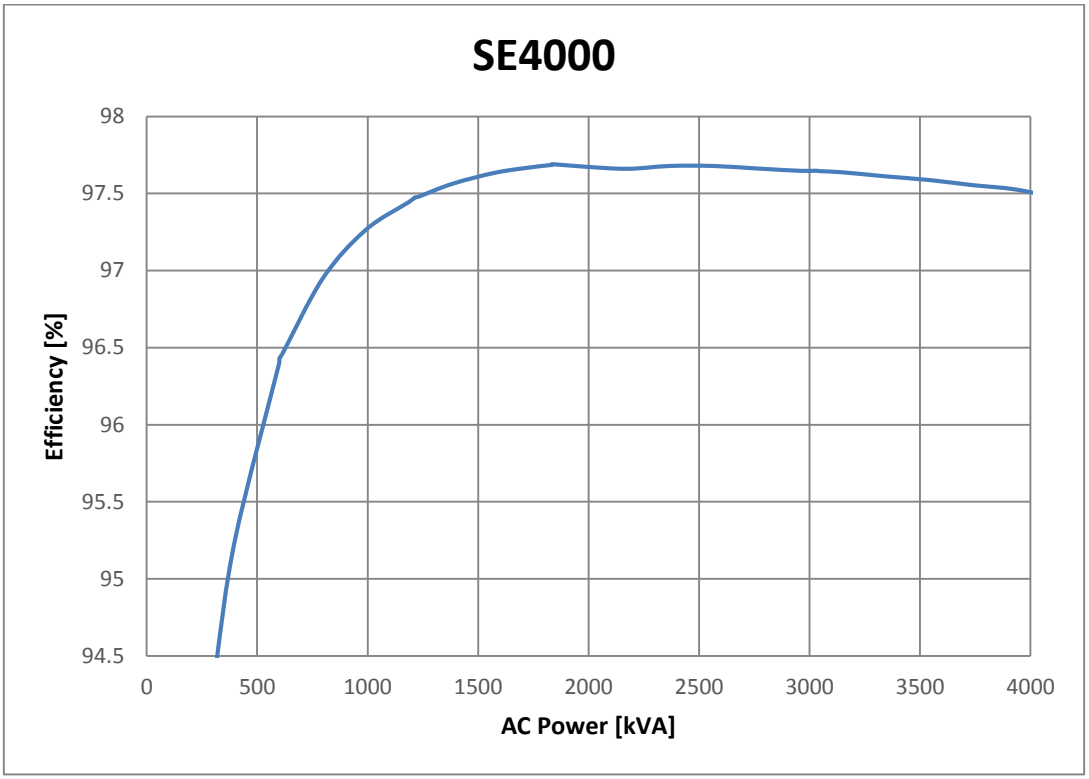

SE3500
Efficiency [%]
98
97.5
97
96.5
96
95.5
95
94.5
94
0
500
1000
1500
2000
2500
3000
3500
AC Power [kVA]

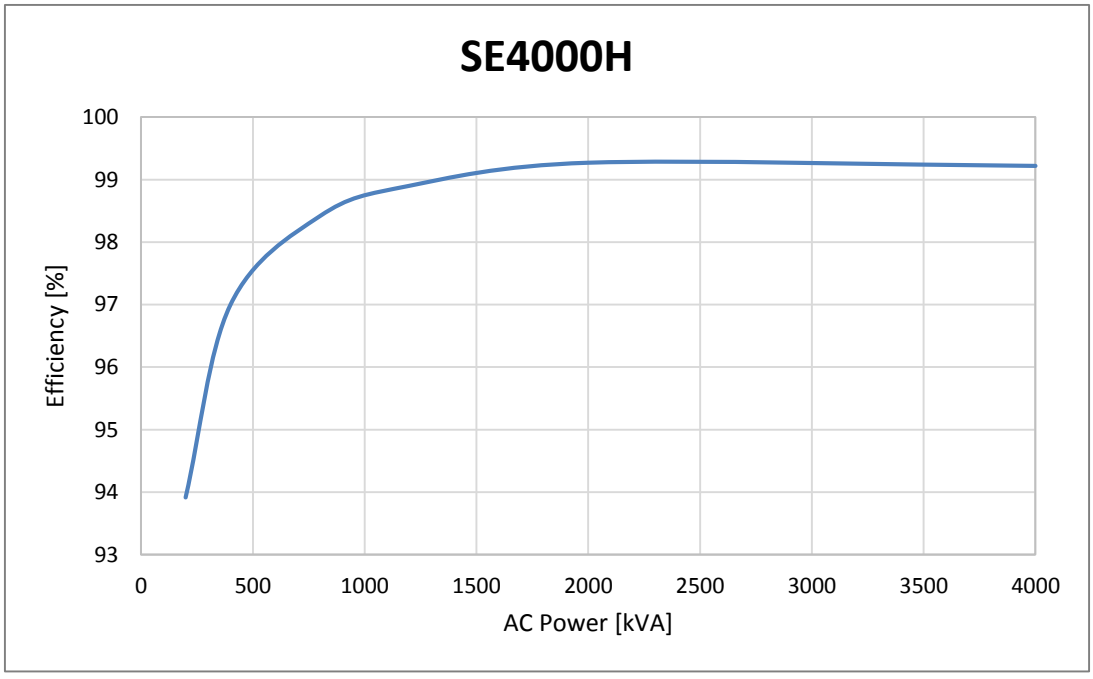

SE3000
98
97.5
97
96.5
96
95.5
95
94.5
94
Efficiency [%]
0
500
1000
1500
2000
2500
3000
AC Power [kVA]

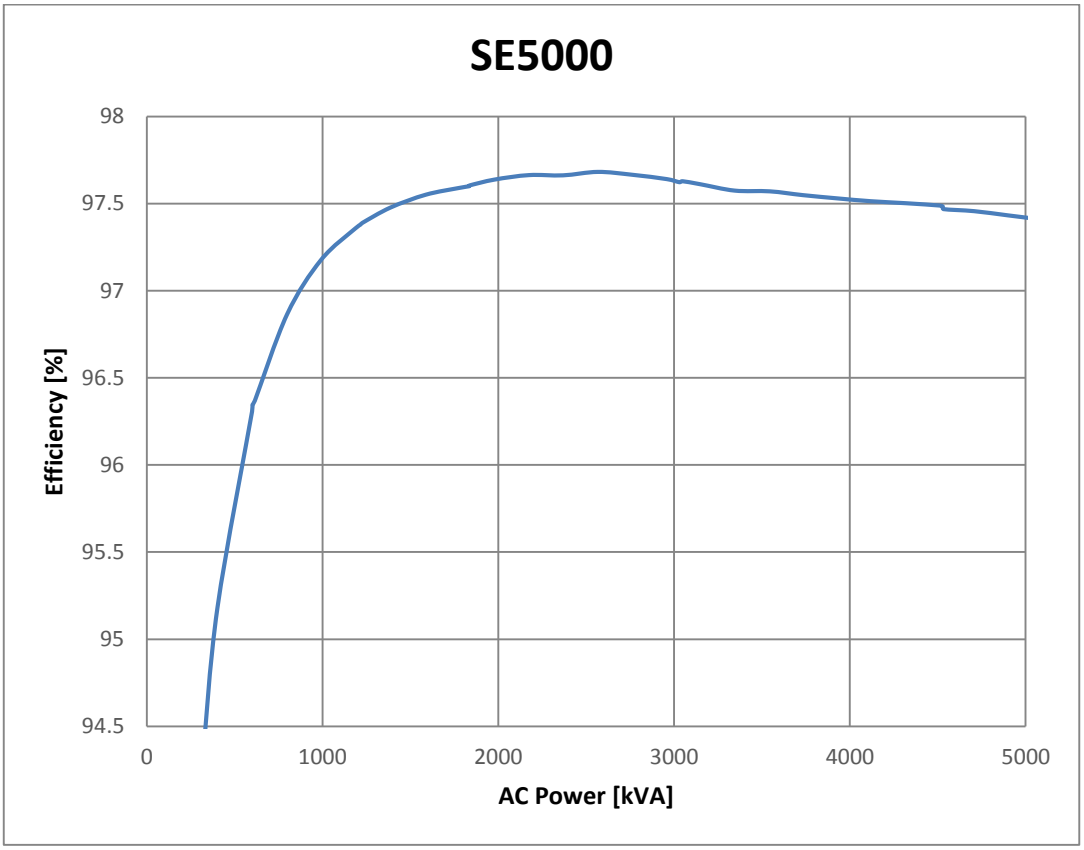

SE3000H
100
99
98
97
96
95
94
93
Efficiency [%]
0
500
1000
1500
2000
2500
3000
AC Power [kVA]

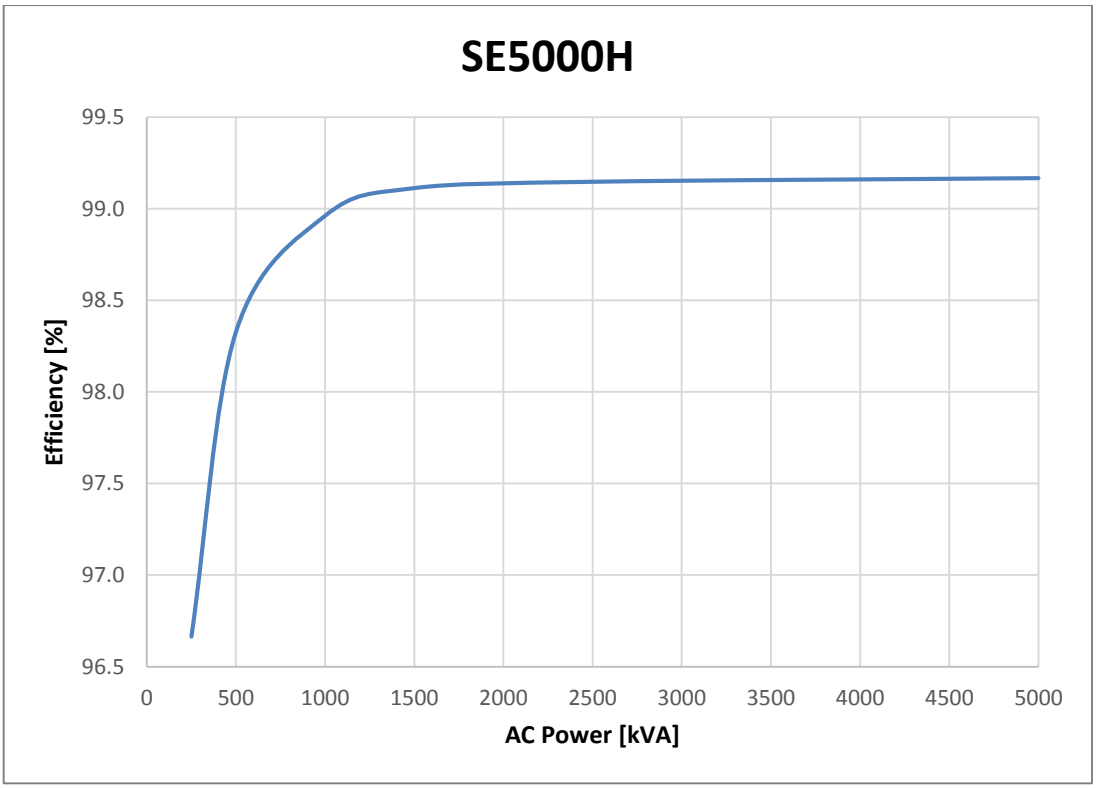

SE3500H
100
99
98
97
96
95
94
93
Efficiency [%]
0
500
1000
1500
2000
2500
3000
3500
AC Power [kVA]

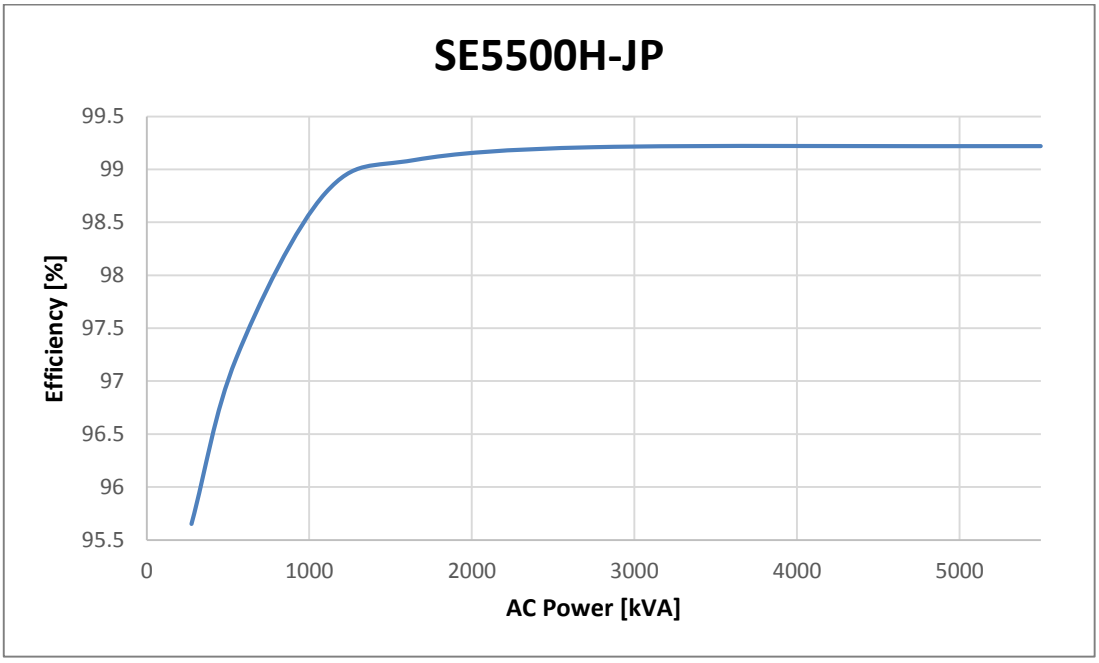

SE3680H
100
99
98
97
96
95
94
93
Efficiency [%]
0
500
1000
1500
2000
2500
3000
3500
AC Power [kVA]


SE4000
Efficiency [%]
98
97.5
97
96.5
96
95.5
95
94.5
0
500
1000
1500
2000
2500
3000
3500
4000
AC Power [kVA]

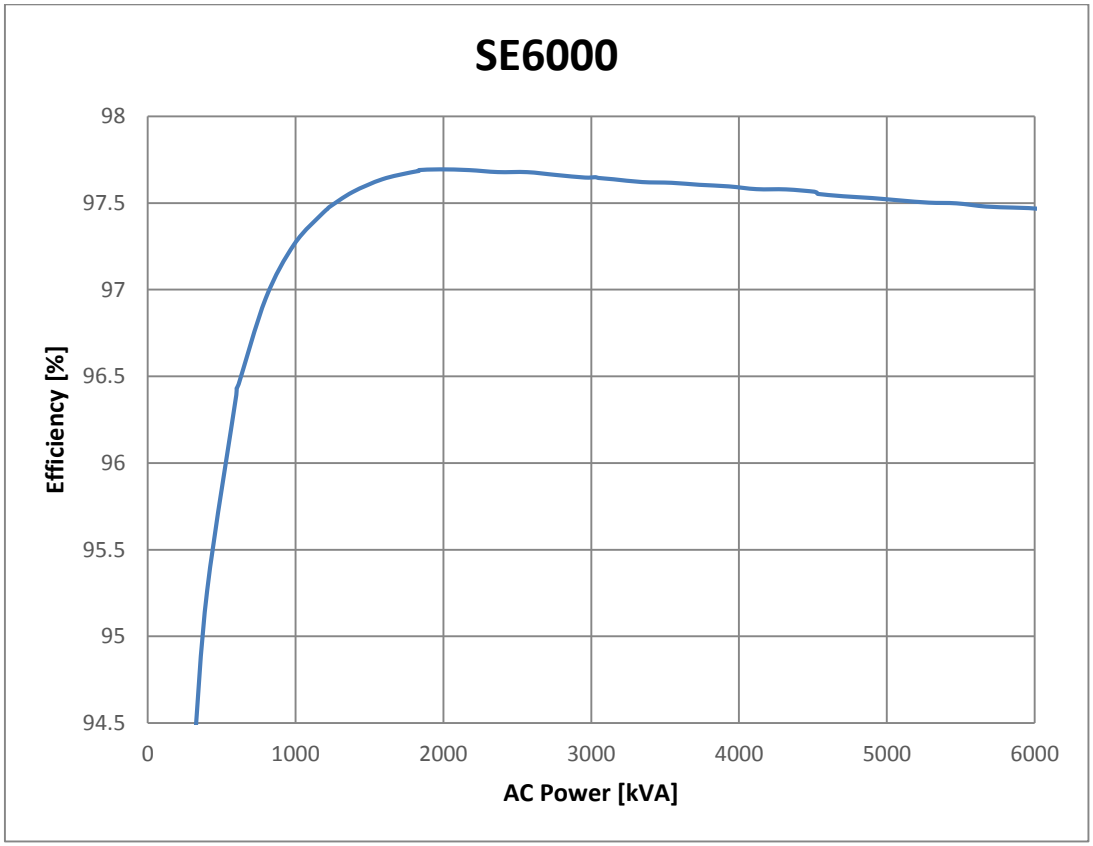

SE4000H
Efficiency [%]
100
99
98
97
96
95
94
93
0
500
1000
1500
2000
2500
3000
3500
4000
AC Power [kVA]

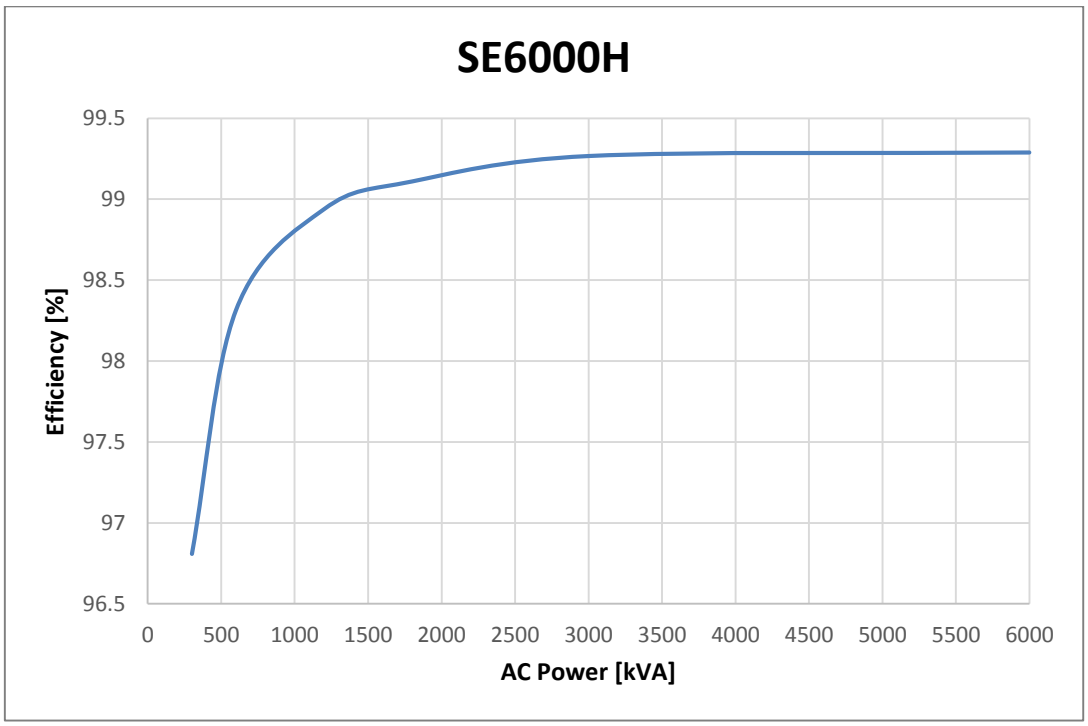

SE5000
98
97.5
97
96.5
96
95.5
95
94.5
Efficiency [%]
0
1000
2000
3000
4000
5000
AC Power [kVA]


SE5000H
99.5
99.0
98.5
98.0
97.5
97.0
96.5
Efficiency [%]
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
AC Power [kVA]

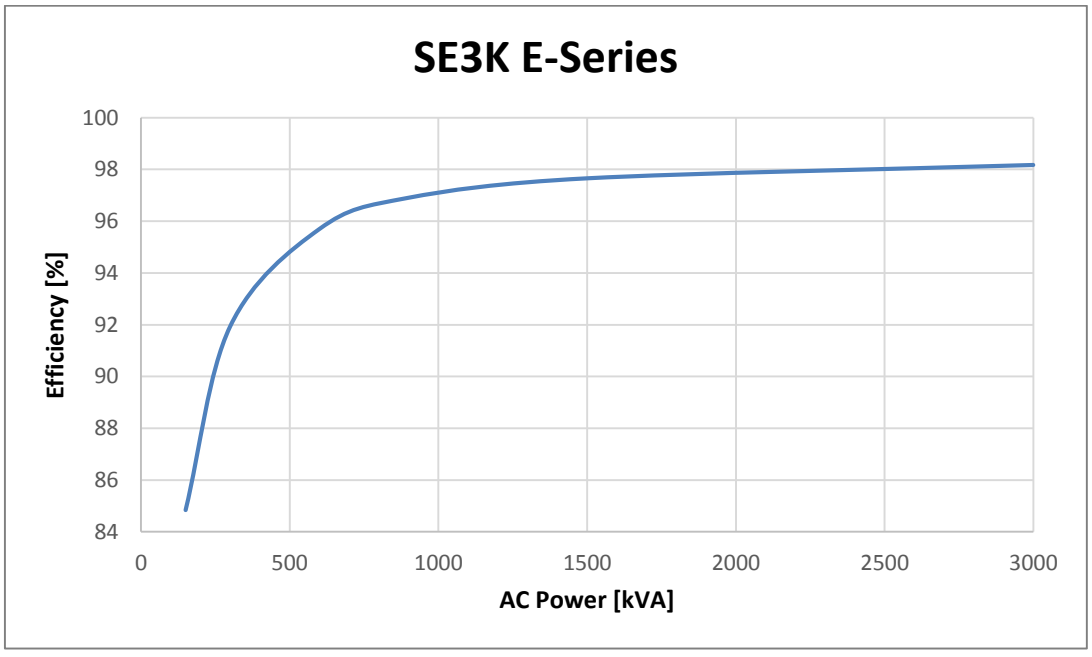


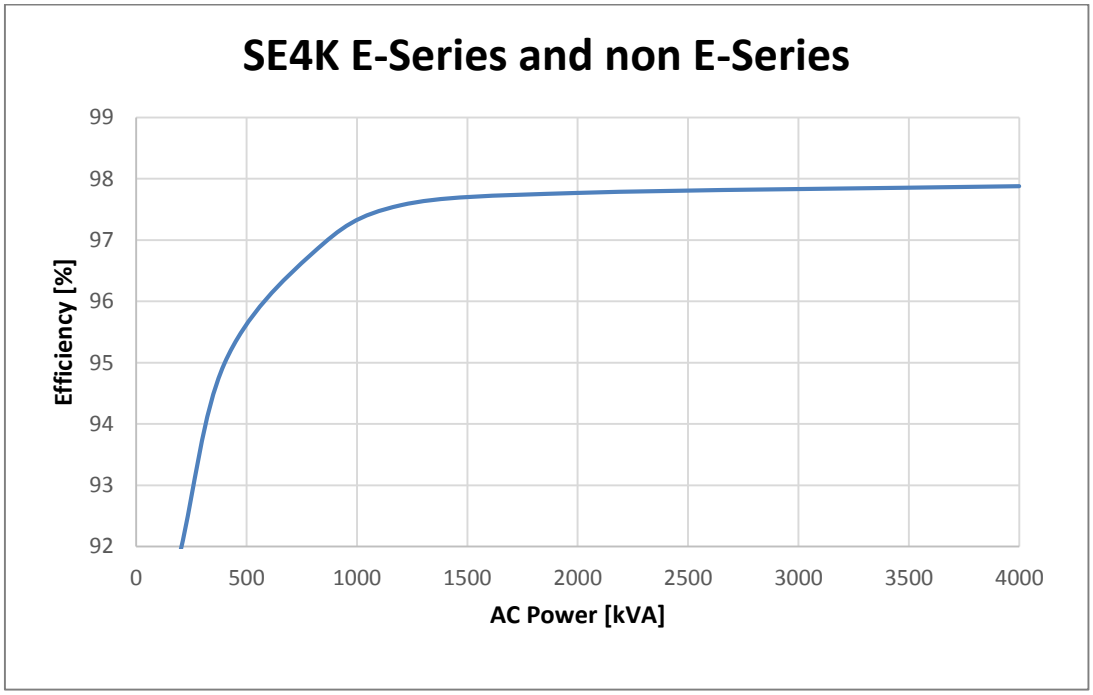
*The SE5500H-JP inverter model is available in Japan only

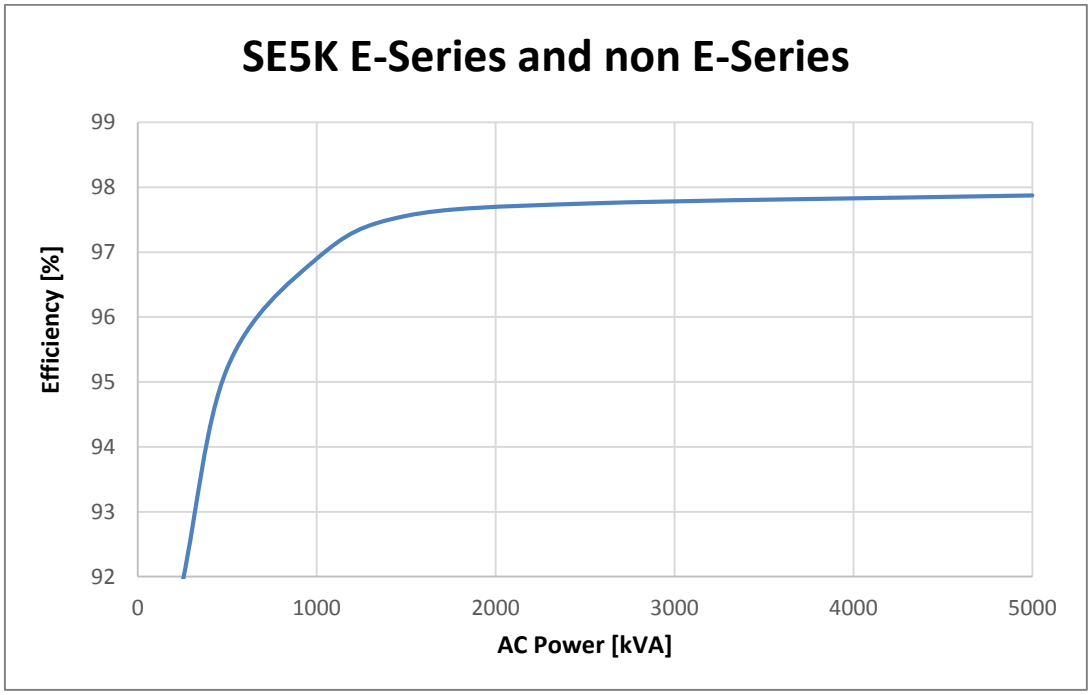


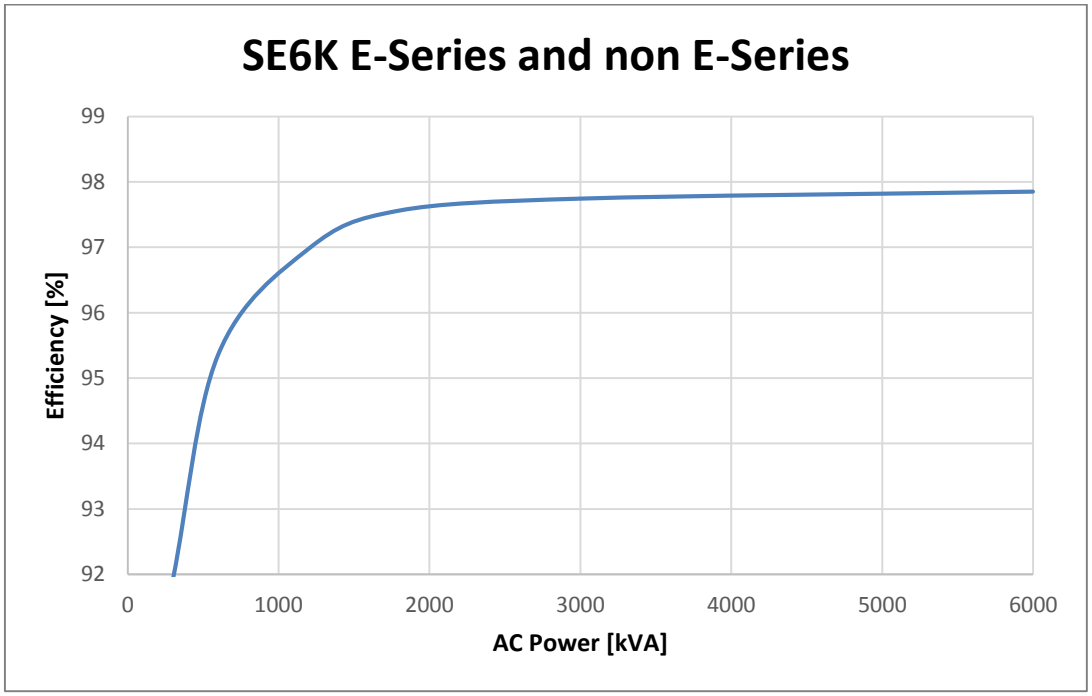


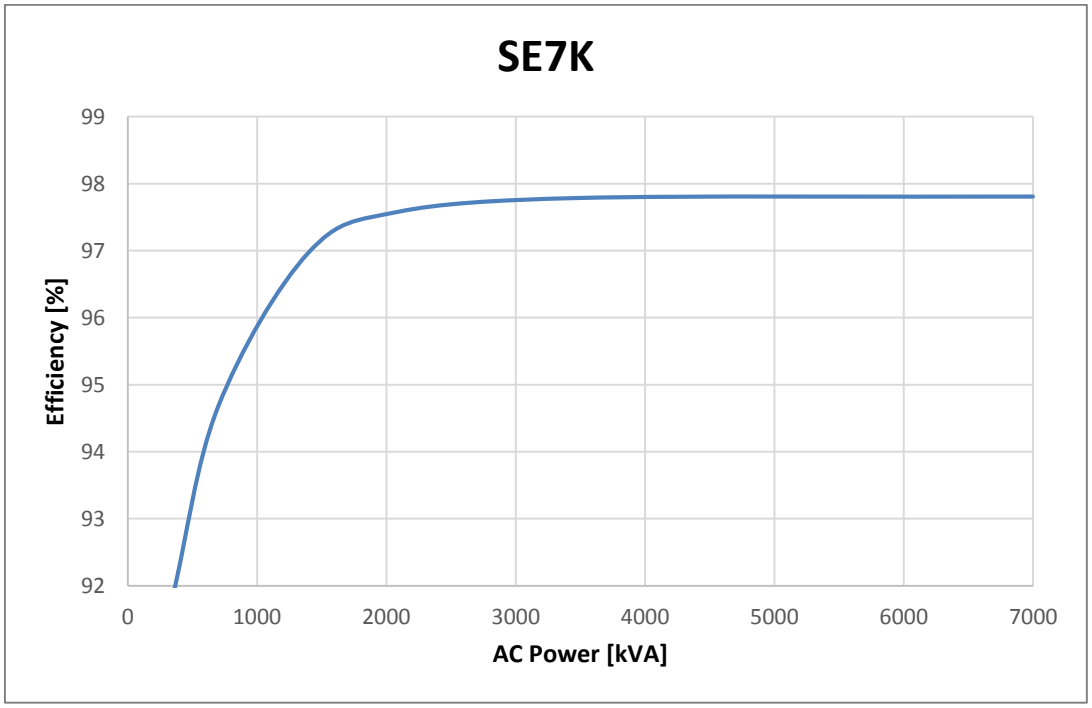
Three Phase Inverters

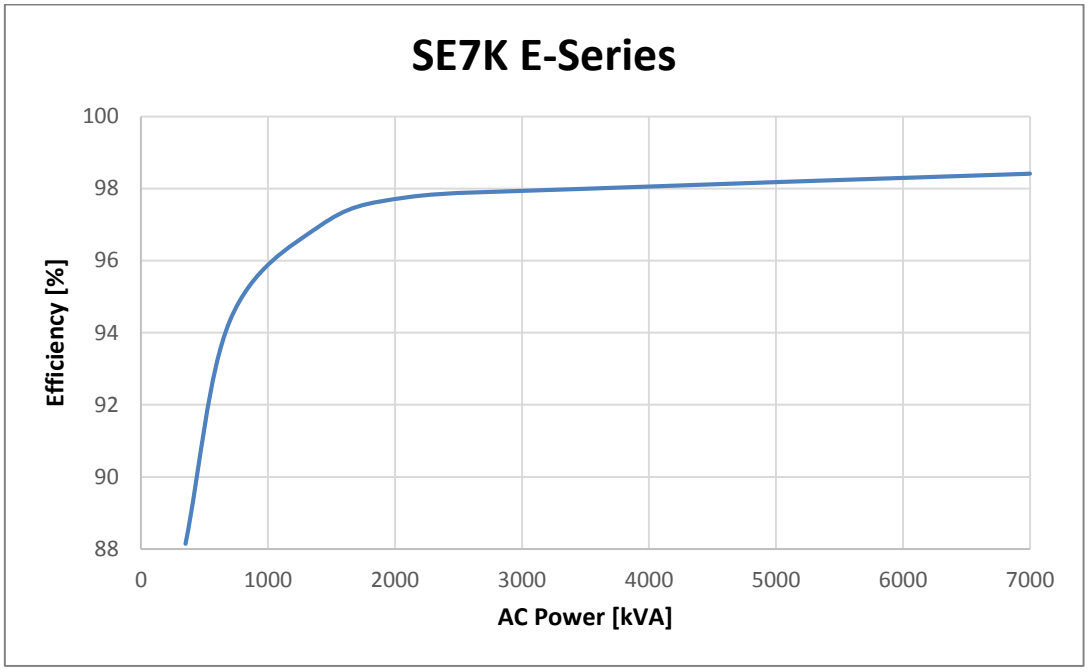


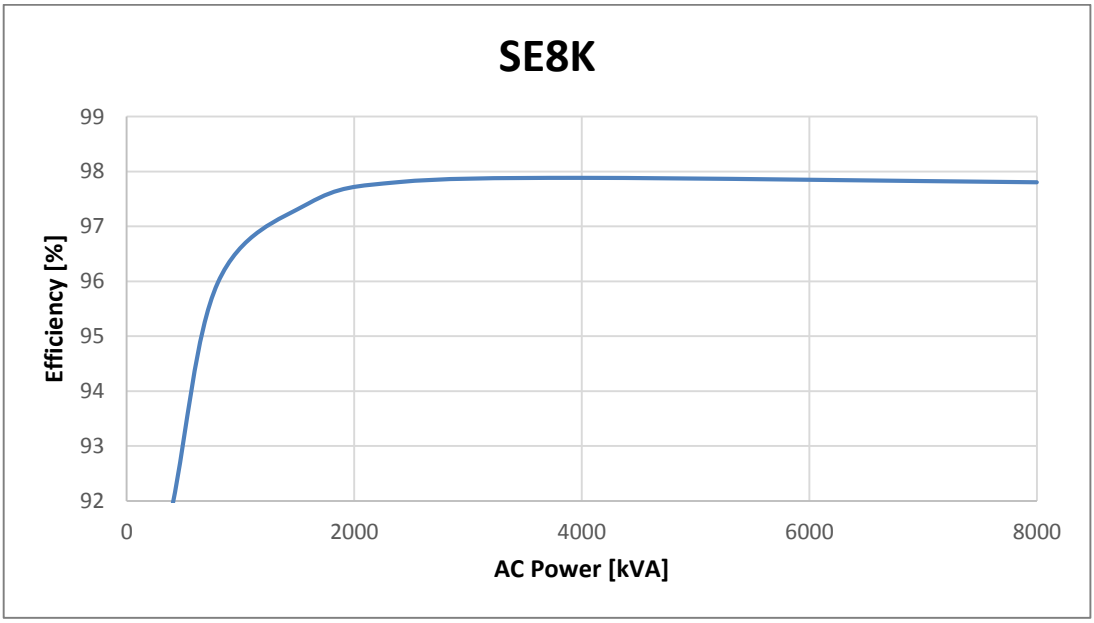

SE4K E-Series and non E-Series
Efficiency [%]
99
98
97
96
95
94
93
92
0
500
1000
1500
2000
2500
3000
3500
4000
AC Power [kVA]

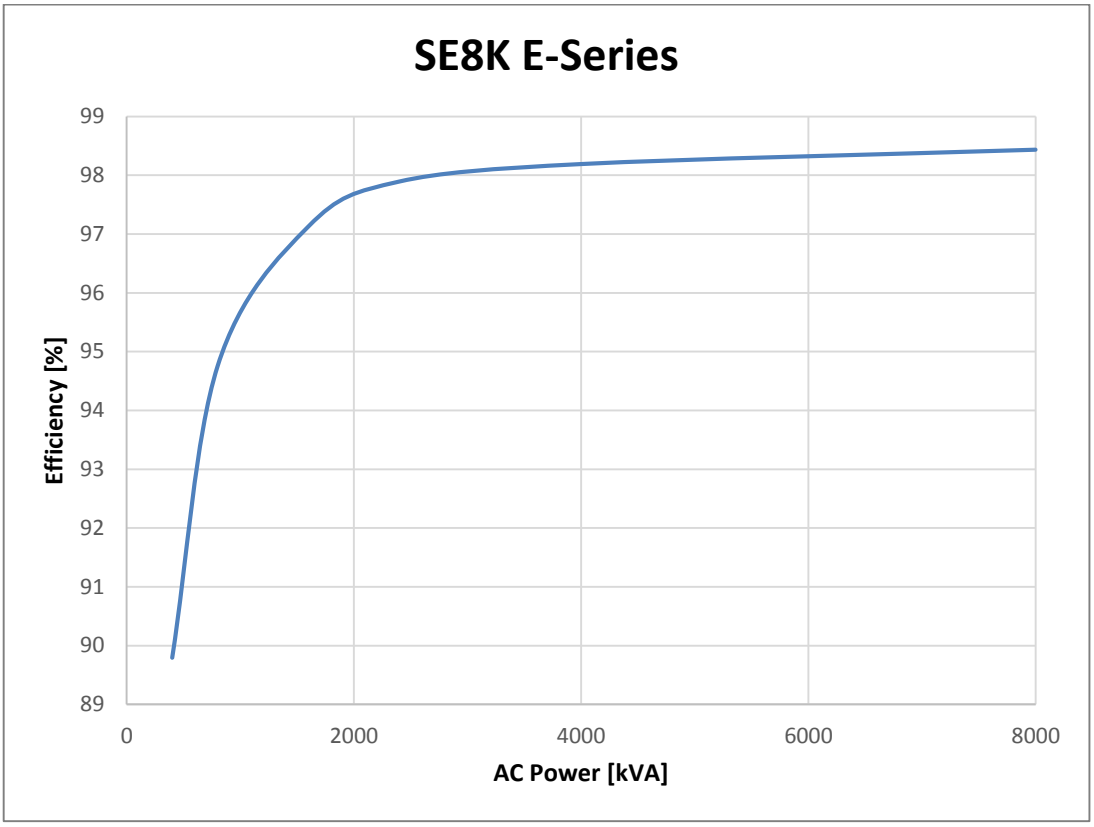

SE5K E-Series and non E-Series
Efficiency [%]
99
98
97
96
95
94
93
92
0
1000
2000
3000
4000
5000
AC Power [kVA]

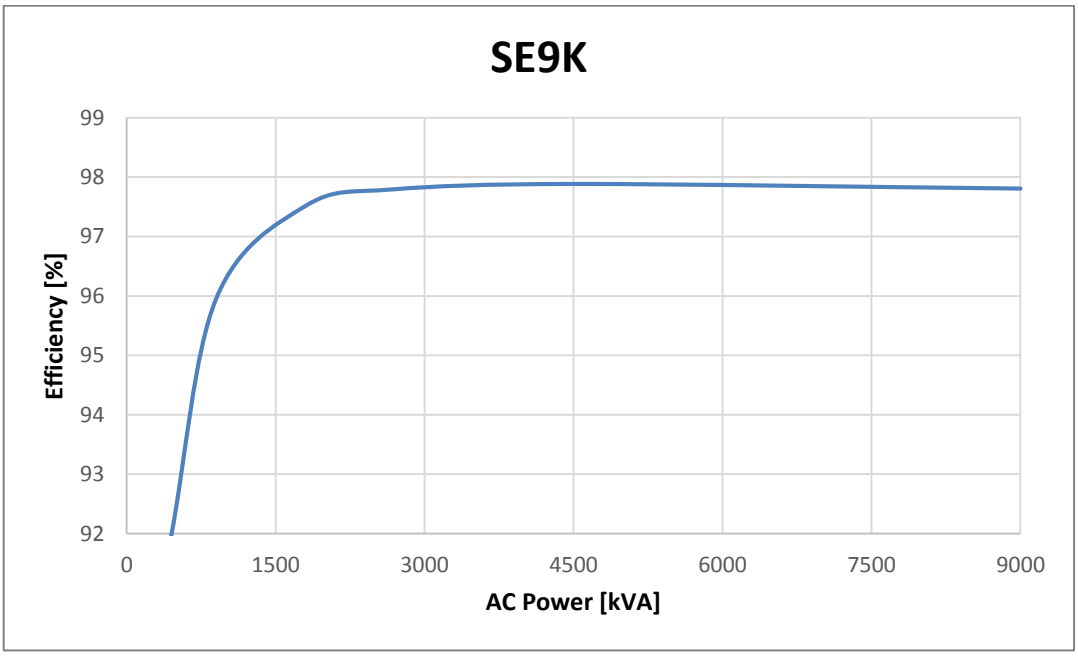

SE6K E-Series and non E-Series
Efficiency [%]
99
98
97
96
95
94
93
92
0
1000
2000
3000
4000
5000
6000
AC Power [kVA]

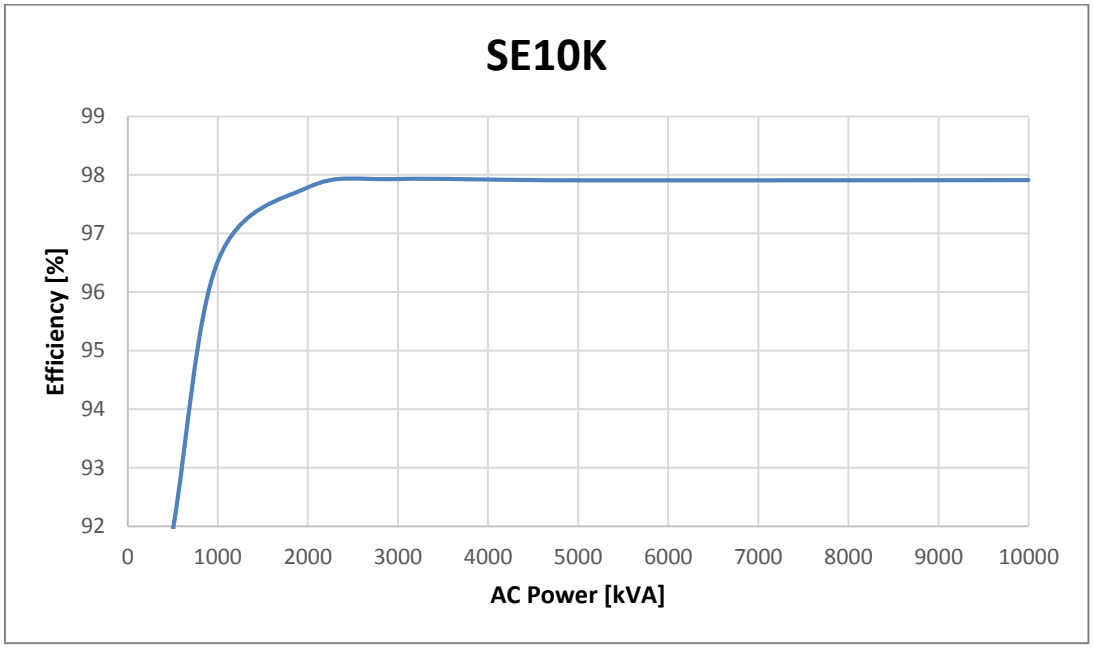

SE7K
Efficiency [%]
99
98
97
96
95
94
93
92
0
1000
2000
3000
4000
5000
6000
7000
AC Power [kVA]

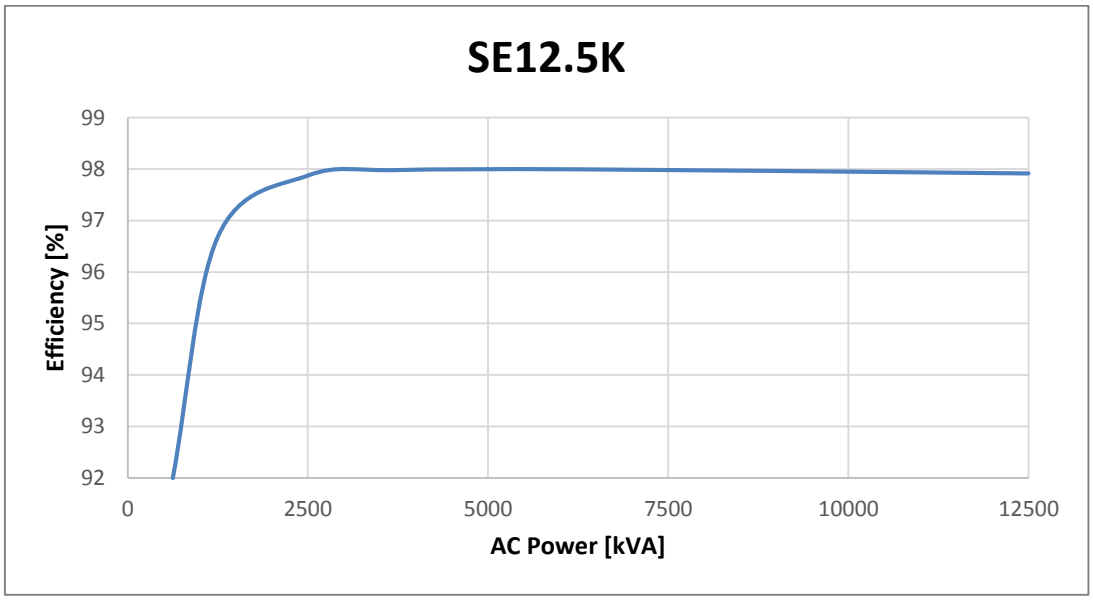

SE7K E-Series
Efficiency [%]
100
98
96
94
92
90
88
0
1000
2000
3000
4000
5000
6000
7000
AC Power [kVA]

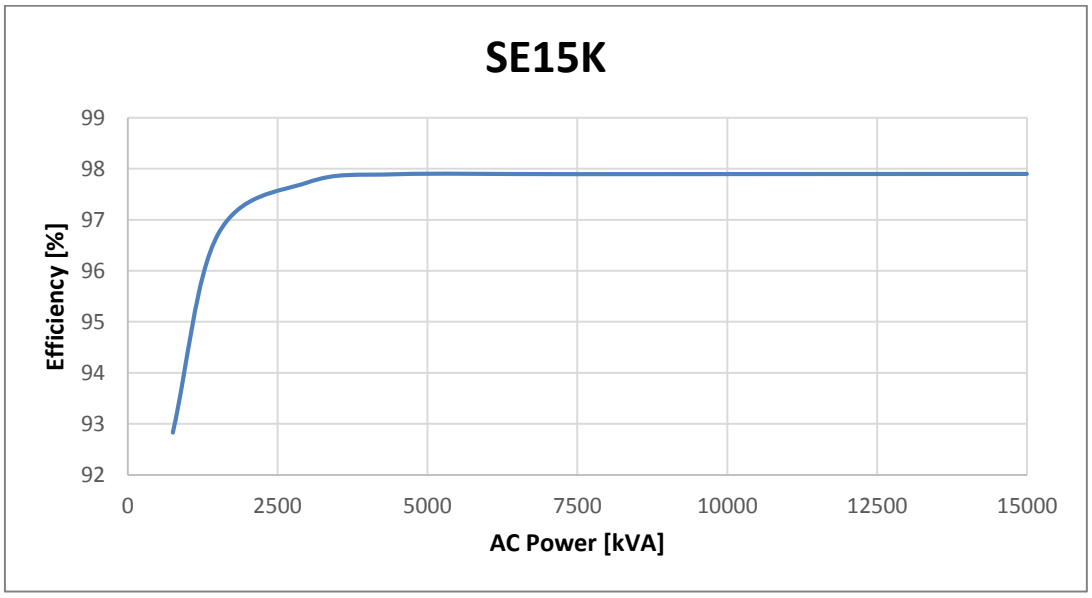

SE8K
Efficiency [%]
99
98
97
96
95
94
93
92
0
2000
4000
6000
8000
AC Power [kVA]

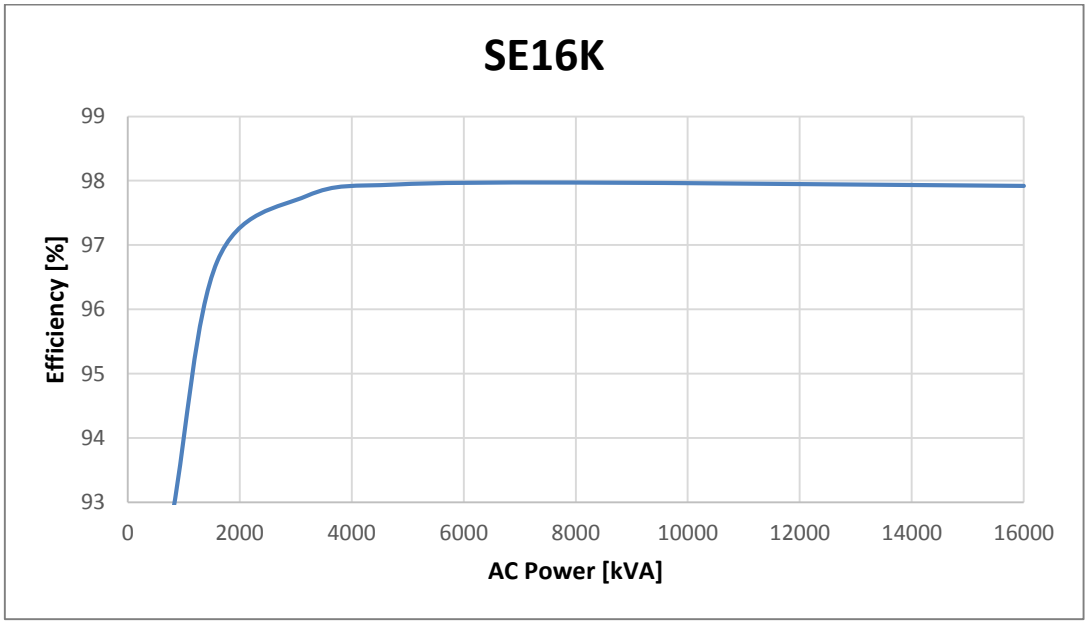

SE8K E-Series
Efficiency [%]
99
98
97
96
95
94
93
92
91
90
89
0
2000
4000
6000
8000
AC Power [kVA]

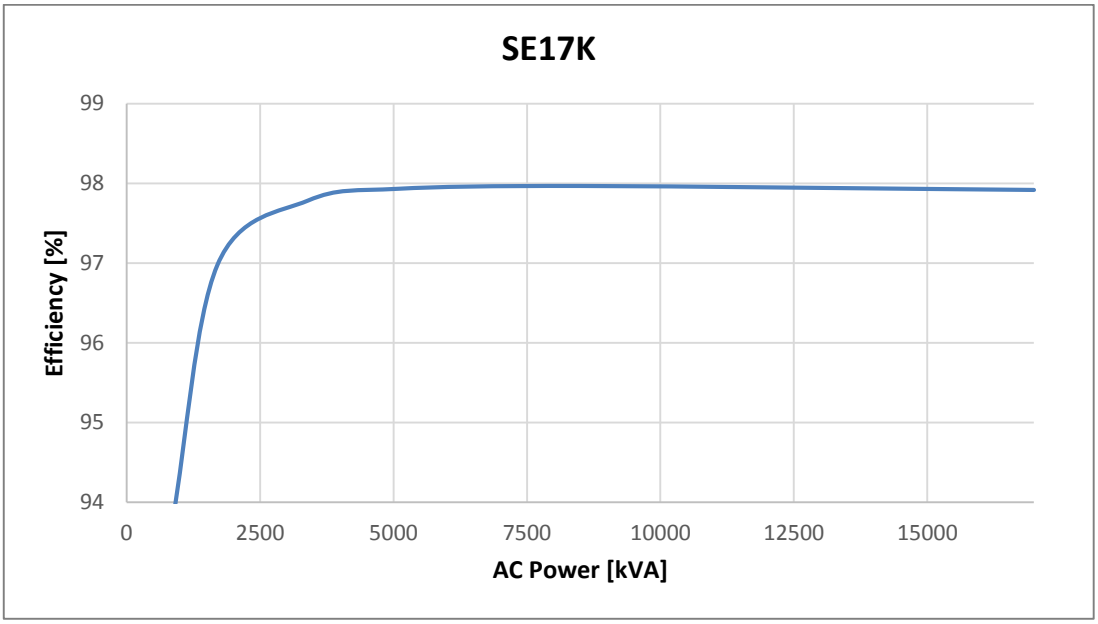

SE9K
Efficiency [%]
99
98
97
96
95
94
93
92
0
1500
3000
4500
6000
7500
9000
AC Power [kVA]

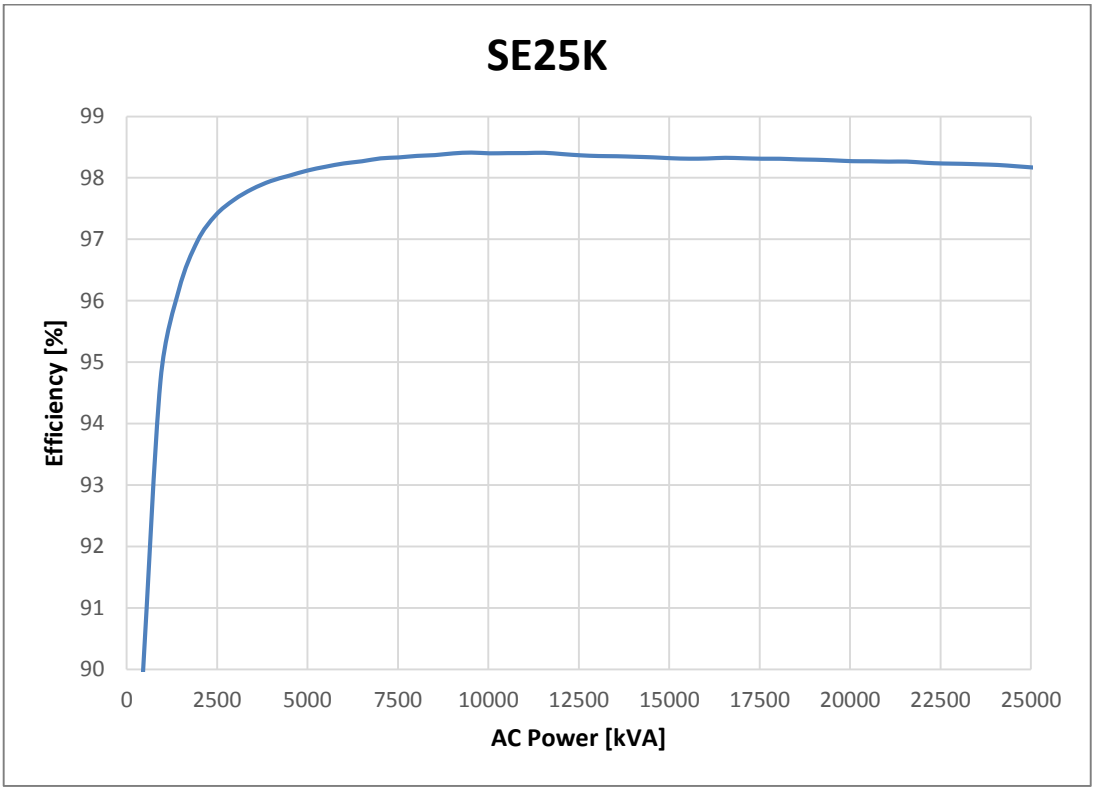

SE10K
Efficiency [%]
99
98
97
96
95
94
93
92
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
AC Power [kVA]

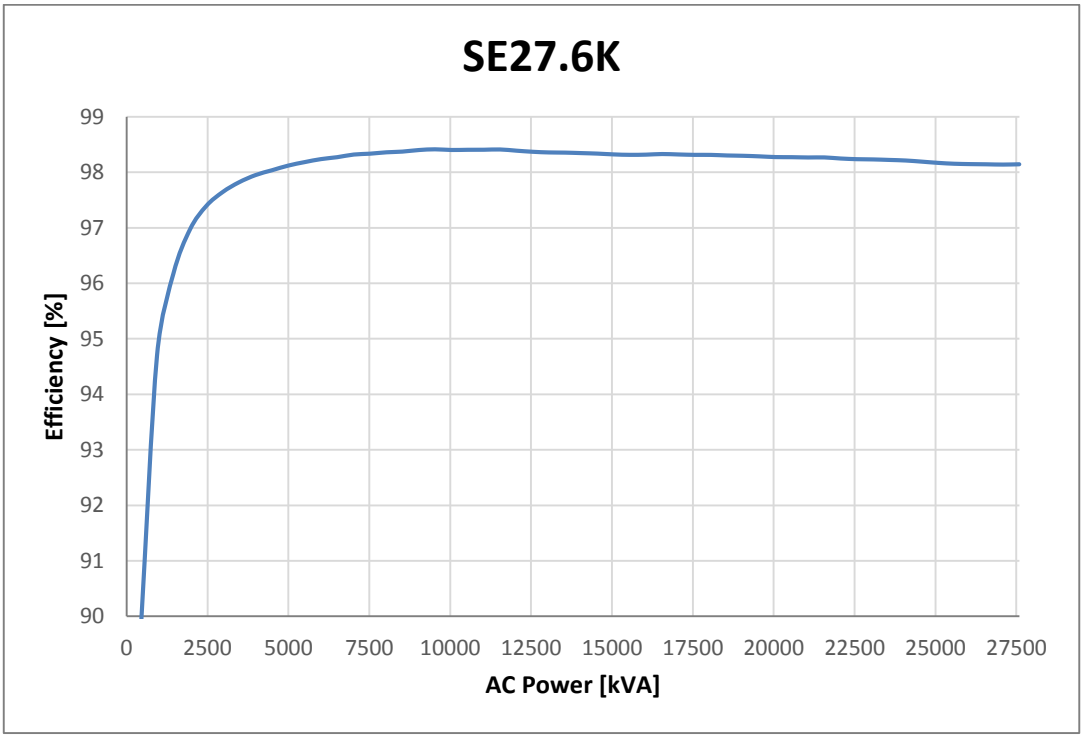

SE12.5K
Efficiency [%]
99
98
97
96
95
94
93
92
0
2500
5000
7500
10000
12500
AC Power [kVA]

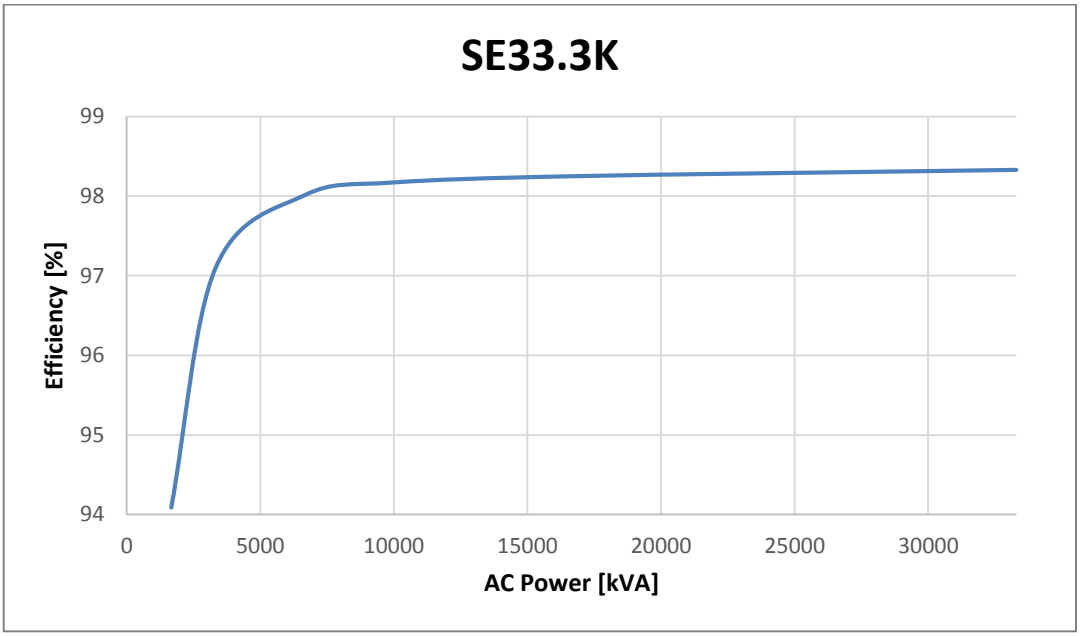

SE15K
Efficiency [%]
99
98
97
96
95
94
93
92
0
2500
5000
7500
10000
12500
15000
AC Power [kVA]

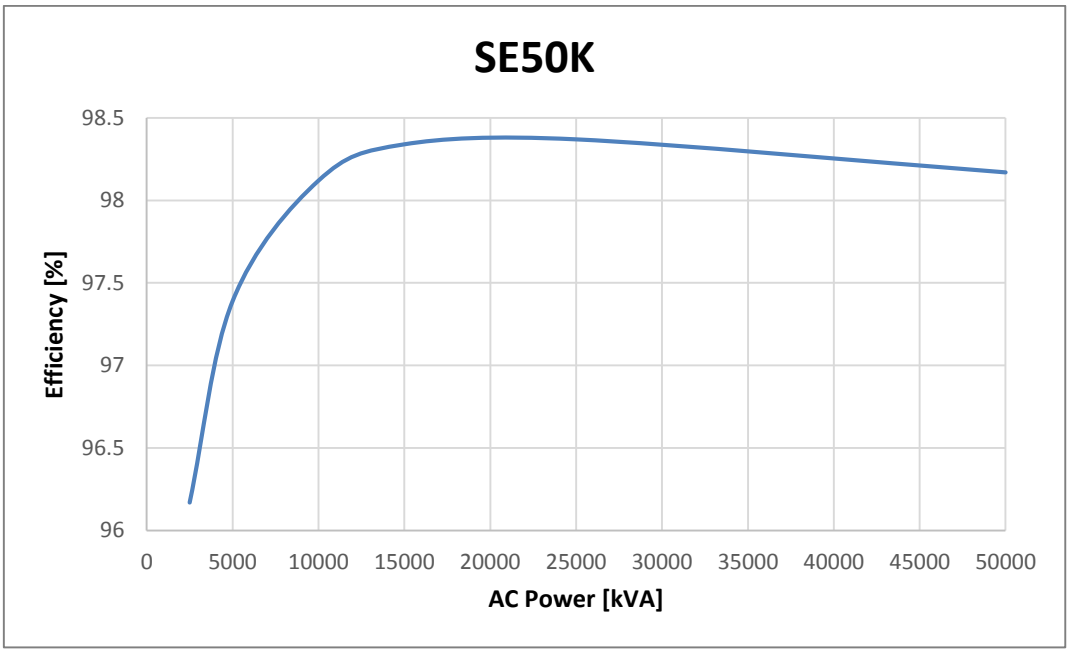

SE16K
Efficiency [%]
99
98
97
96
95
94
93
0
2000
4000
6000
8000
10000
12000
14000
16000
AC Power [kVA]

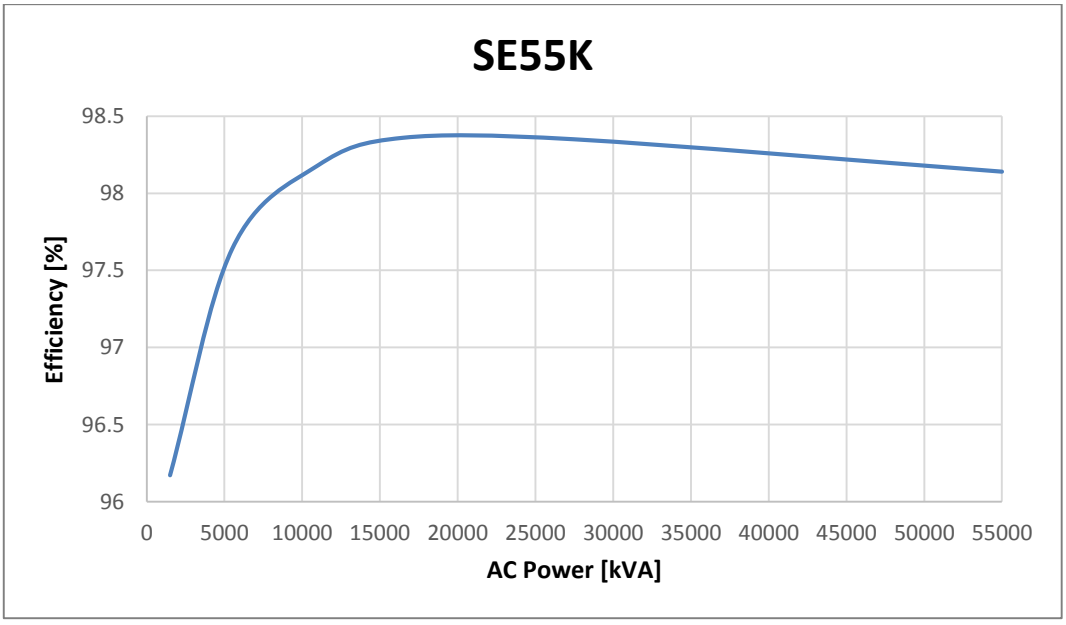

SE17K
Efficiency [%]
99
98
97
96
95
94
0
2500
5000
7500
10000
12500
15000
AC Power [kVA]

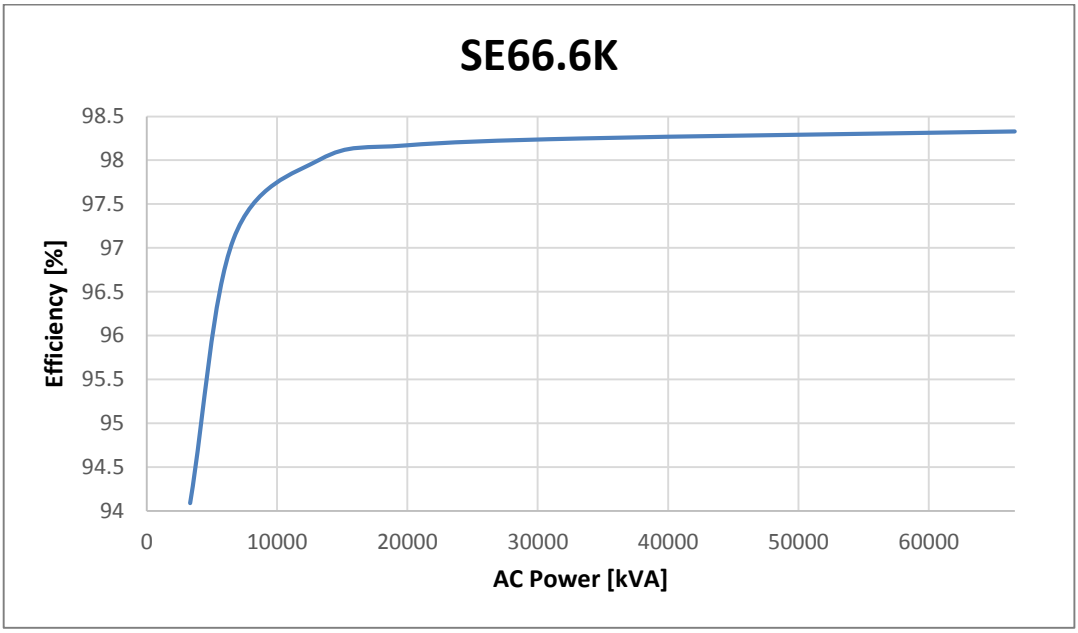

SE25K
Efficiency [%]
99
98
97
96
95
94
93
92
91
90
0
2500
5000
7500
10000
12500
15000
17500
20000
22500
25000
AC Power [kVA]

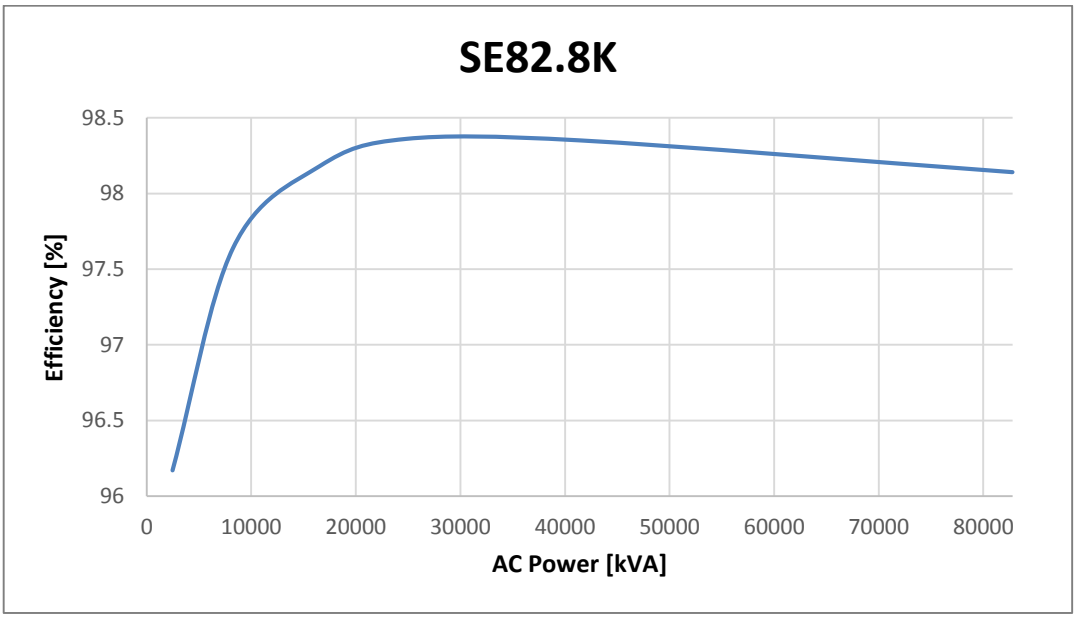

SE27.6K
Efficiency [%]
99
98
97
96
95
94
93
92
91
90
0
2500
5000
7500
10000
12500
15000
17500
20000
22500
25000
27500
AC Power [kVA]

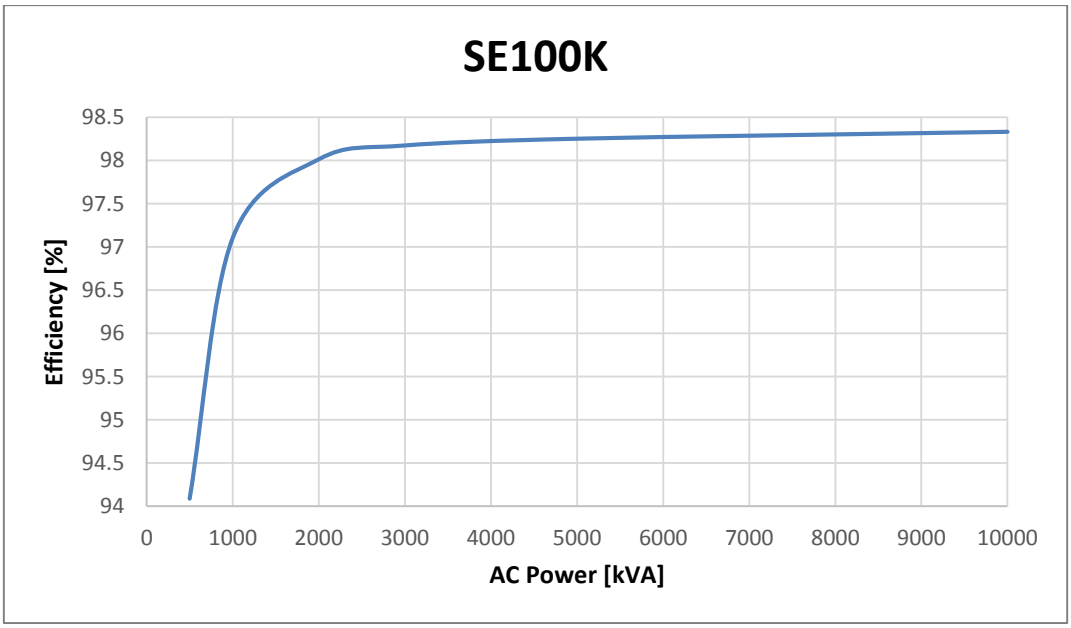

SE33.3K
Efficiency [%]
99
98
97
96
95
94
0
5000
10000
15000
20000
25000
30000
AC Power [kVA]


SE50K
Efficiency [%]
98.5
98
97.5
97
96.5
96
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
AC Power [kVA]


SE55K
Efficiency [%]
98.5
98
97.5
97
96.5
96
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
AC Power [kVA]


SE66.6K
Efficiency [%]
98.5
98
97.5
97
96.5
96
95.5
95
94.5
94
0
10000
20000
30000
40000
50000
60000
AC Power [kVA]


SE82.8K
Efficiency [%]
98.5
98
97.5
97
96.5
96
0
10000
20000
30000
40000
50000
60000
70000
80000
AC Power [kVA]


SE100K
Efficiency [%]
98.5
98
97.5
97
96.5
96
95.5
95
94.5
94
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
AC Power [kVA]