

Wels, January 16th 2018

INVERTER EFFICIENCY FRONIUS SYMO HYBRID

Fronius International GmbH

confirms that the PV to grid efficiency of the following inverters

/ Fronius Symo Hybrid 3.0-3-S – 5.0-3-S

has been measured in our laboratories. The following values have been measured for $U_{MPP\ min}$, nominal input voltage $U_{dc,r}$ and $U_{MPP\ max}$.

Symo Hybrid 3.0-3-S:

| Percent of nominal power | 5 % | 10 % | 20 % | 25 % | 30 % | 50 % | 75 % | 100 % |
|------------------------------|------|------|------|------|------|------|------|-------|
| η at $U_{MPP\ min}$ [%] | 78.5 | 83.1 | 90.0 | 91.2 | 92.4 | 94.5 | 95.1 | 95.4 |
| η at $U_{dc,r}$ [%] | 77.3 | 83.8 | 93.0 | 93.9 | 94.7 | 96.7 | 97.3 | 97.7 |
| η at $U_{MPP\ max}$ [%] | 66.9 | 76.6 | 90.6 | 91.9 | 93.3 | 96.0 | 96.6 | 97.0 |

Symo Hybrid 4.0-3-S:

| Percent of nominal power | 5 % | 10 % | 20 % | 25 % | 30 % | 50 % | 75 % | 100 % |
|------------------------------|------|------|------|------|------|------|------|-------|
| η at $U_{MPP\ min}$ [%] | 80.1 | 86.2 | 91.6 | 93.2 | 93.9 | 94.9 | 95.4 | 95.6 |
| η at $U_{dc,r}$ [%] | 79.5 | 88.1 | 94.2 | 95.3 | 96.2 | 97.1 | 97.7 | 97.9 |
| η at $U_{MPP\ max}$ [%] | 70.1 | 83.2 | 92.4 | 94.2 | 95.1 | 96.4 | 97.0 | 97.3 |

Symo Hybrid 5.0-3-S:

| Percent of nominal power | 5 % | 10 % | 20 % | 25 % | 30 % | 50 % | 75 % | 100 % |
|------------------------------|------|------|------|------|------|------|------|-------|
| η at $U_{MPP\ min}$ [%] | 81.6 | 89.2 | 93.2 | 94.0 | 94.5 | 95.3 | 95.6 | 95.8 |
| η at $U_{dc,r}$ [%] | 81.6 | 92.5 | 95.3 | 96.5 | 96.7 | 97.5 | 97.9 | 97.9 |
| η at $U_{MPP\ max}$ [%] | 73.4 | 89.7 | 94.2 | 95.3 | 96.0 | 96.8 | 97.3 | 97.5 |

Fronius International GmbH

Business Unit Solar Energy
Froniusplatz 1
A-4600 Wels



DI Dr. Martin Heidl
Head of System Technology