CASE STUDY

1MW Installation in Germany

OVERVIEW

Installer: REGETEC GmbH

Installation Date: Sep. 2012

Location: Kaisersesch, Germany

Modules: 4092 x Conergy 240P

Power Optimizers:
4092 x OP250-LV

Inverters: 6 x SE15k;
19 x SE16k; 32 x SE17k

"Our community will rely on this plant increasingly in the next twenty years to balance the rising costs for conservative energy. To fulfill its future responsibility, it needs to rely on the most advanced technology available today. And that is module-level power optimization." says Thomas Rink, Managing Director, Renew Handelsgesellschaft mbH

67% DC BoS Cost Saving through Flexible Design

SolarEdge inverters allow the connection of unequal string length layouts and up to 50 modules per string. The construction of longer strings allowed the installer to reduce the amount of cables and other Balance of System components in the system. The result: **DC wiring cost reduction of 67%** compared to the same system layout with a traditional inverter.

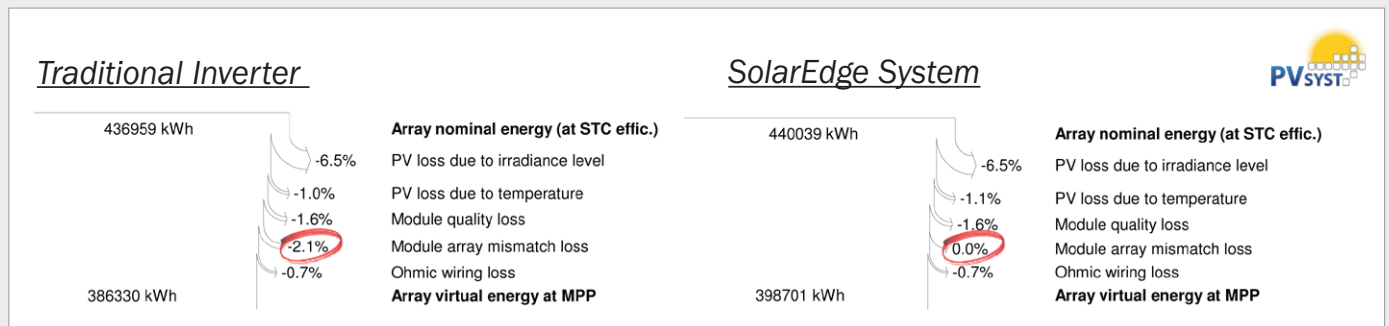*Comparison of a SolarEdge system to an identical system with a leading traditional inverter.*

	SolarEdge	Global Leading Inverter
DC power	982kW	982kW
AC power	938kW	921kW
# of modules	4,092 x 240W	4,092 x 240W
# of strings	114	198
# of modules/string	33-38	17-24
# of combiner boxes	18 AC	18 AC + 32 DC
6mm² DC cable length (m)	36	5688
10mm² DC cable length (m)	2630	1394
15mm² DC cable length (m)	1044	1597
35mm² DC cable length (m)	0	1448
Cable & combiner boxes cost	33%	100%

AC cable lengths are similar in both systems

Maximum Energy Yield through Module-Level MPPT

Even if a system was carefully designed, initial manufacturing module mismatch, non-linear aging mismatch, differential soiling and temperature variations may cause significant energy losses in an installation with over 4000 modules. As opposed to traditional inverter systems, SolarEdge power optimizers perform per module maximum power point tracking (MPPT) and are able to mitigate mismatch losses leading to more energy production.

Traditional Inverter		SolarEdge System	
436959 kWh	Array nominal energy (at STC effic.)	440039 kWh	Array nominal energy (at STC effic.)
-6.5%	PV loss due to irradiance level	-6.5%	PV loss due to irradiance level
-1.0%	PV loss due to temperature	-1.1%	PV loss due to temperature
-1.6%	Module quality loss	-1.6%	Module quality loss
-2.1%	Module array mismatch loss	0.0%	Module array mismatch loss
-0.7%	Ohmic wiring loss	-0.7%	Ohmic wiring loss
386330 kWh	Array virtual energy at MPP	398701 kWh	Array virtual energy at MPP

Energy output simulation with PVsyst, independent design & simulation software, showing a **2.1% mismatch loss for the traditional inverter system** *and* **0% mismatch loss** *for the SolarEdge system.*
With uneven module degradation the energy gain is expected to grow each year.