

**Danvest and Pon Power Denmark Present the New
COST EFFICIENT COMPACT HYBRID SYSTEM FOR SOLAR-DIESEL MICROGRIDS**



The system is able to run at 100% solar power during daytime when solar radiation is highest. The fast acting 'Low-load' generator responds to any drop in solar output or any power demand increase, at all times providing a reliable spinning reserve with near to zero fuel consumption.

Compact Solar Diesel Power Modules	
New Compact Series	
Model	Rating
HSD-220	220kWe
HSD-400	400kWe
HSD-500	508kWe
HSD-650	648kWe

- Fully automatic hybrid system for Solar-Diesel
- Highly flexible 'Low-load' generator with fast response capability
- Direct fuel savings are 30 to 40% per year before storage*
- Storage systems and additional Solar/PV can always be added
 - └ Danvest's smart operation improves battery life and battery operation

* These fuel savings increase when demand is mainly during the day

Operational Principle:

The Danvest Low-load genset operates with the Solar/PV system during the day. At defined set points, a signal from the dump-load system requests the Solar Controller to ramp up or to ramp down Solar/PV output. This functionality will be coordinated with the supplier of the solar system;

- When solar power reduces the Danvest Low-load genset below the 30% load threshold, the hybrid Low-load equipment activates to enable low-loading and fast response of the engine.
- When solar power covers 100% consumption, the Danvest Low-load genset goes into reverse power while fuel consumption continues to go towards zero.
- When solar power draws the genset into minus 10-11% load, the frequency will raise to 50.3 Hz and the dumpload controlling takes over the power balancing. In this operation mode, fuel consumption is at zero or near to zero, with the rotating Low-load genset and the dumped solar surplus as fast spinning reserve ready to respond to solar drops and or to demand increases.
- At further solar surplus, above a set point, the Danvest dumpload controller sends a signal to the Solar Controller to ramp down Solar/PV output. When solar power decreases, a similar set point activates to ramp up Solar/PV output.
- The fast dumpload controlling is at all times – in parallel to the gensets – ready to assist the gensets at fast solar and/or consumer fluctuations, to smoothen the genset operation and to compensate genset overrating at fast respond (worst case) events especially during low-load or reverse power operation.

Standard gensets can serve as automatic backup. At a 24-hours operation profile, it is possible to have the Danvest Low-load gensets operate for the day-hours, while standard gensets will operate during the nights.

