Wärtsilä Hybrid Power Plants for powering isolated grids

The combination of Wärtsilä engines and energy storage can provide owners and operators with both cost savings and enhanced performance. It is the means to unleash the full potential of your power system.

This hybrid generating solution, integrated with Energy Management System (EMS), is particularly feasible for industrial applications in isolated grids. Energy storage can provide low cost spinning reserves, or can act as a peaking unit to during high demand periods. The hybrid power plant has superior response capability to load fluctuations and to be used for stabilising an isolated grid to secure industrial production processes.

Hybrid power plant configuration example
- Internal combustion engines ........60 MW
- Energy storage ...........................10 MW/2.5 MWh
- Hybrid output.............................-10...+70 MW

1 Energy storage building
2 Engine hall
3 Electrical equipment building
4 Fuel treatment building
5 Administration building
6 Workshop and warehouse
Hybrid solutions create interesting new opportunities

Battery technology has made tremendous advances in recent years, resulting in both far greater storage capacity, longer life time of the batteries and lower prices. Hybrid power plants combining internal combustion engines, energy storage and an energy management system to integrate and optimise the operation will, therefore, have a significant role in future power generation markets.

- **Bankability:** Energy storage has the potential to create notable fuel cost and maintenance savings by replacing spinning reserve capacity from the engines to the energy storage. This is especially true in remote locations, like mine and island installations where fuel prices tend to be high.

- **Green electricity:** The demand for ‘greener’ electricity production continues to increase. This is normally achieved by adding renewable sources, notably wind and solar, to the generation mix. However, since the output from these sources is inherently intermittent, the flexibility provided by fast-starting Wärtsilä engines is essential to balance the network. Thus, by optimising the thermal power plant with energy storage, the complete system can be operated with greater efficiency and stability. Furthermore, since less fuel is being burned to create the same amount of energy, environmental impact will be smaller.

- **Providing peace of mind:** In the case of a generating unit trip, energy storage has the capacity to provide back-up capacity for the required time, for example 15 mins. This is more than enough time to start a stand-by combustion engine to take over the load. The energy storage can, therefore, replace the spinning reserve capacity requirement. The overall benefit is peace of mind for the operator and additional instant power capacity in the system without burning fuel.