



## ENERGY

# SERVICES FOR SOLAR HYBRID POWER PLANTS

Adding solar energy to a conventional power plant can boost the electrical output of the plant during day time - when usually extra power is needed - without any additional emissions. Integration of a solar field in a (existing) combined cycle requires less investment, less space and creates more flexibility than a full size solar power plant with the same capacity. There is no need for expensive storage of heat or electricity to guarantee day around power supply! The integration can be realized relatively simple, with conservation of the possibility to run the conventional power plant independently.

The main benefits for integration solar energy in a conventional power plant are:

- Increased sustainability
- Reduced gas consumption
- Increased power production
- Day round dispatch of power without expensive storage facility

The proposed Solar Hybrid concept is applicable to boiler steam type power plants as well as for combined cycle power plants. In general, integration in a combined cycle power plant is more effective than integration in a boiler steam type power plant which is due to different integration possibilities.

The ISCC (Integrated Solar Combined Cycle) solution is well suited to retrofit an existing combined heat and power plant or the power block at a desalination plant. Integration of a solar field can optimize the steam turbine load or can reduce gas consumption during day time when most electricity is needed. Both options will result in gas savings and makes the power plant more sustainable and profitable. More integration options can are possible and DNV GL can help you as a power plant owner, operator or investor, to choose the best option and to determine the optimum solar capacity and integration mode for the new built or existing combined cycle plant, resulting in the optimal mix of sustainability, profit and costs.

Based on extensive experience in the power industry, DNV GL will help power plant owners to minimize investment risk with:

- Techno-economic feasibility study
- Assists in tendering and supplier selection
- Basic design
- Witnessing a performance test
- Carry out a performance test with own calibrated equipment

For example, DNV GL has supplied services for the Shams concentrated solar power plant (CSP) in Abu Dhabi, where it provided commissioning support and performance testing of the 100 MW CSP plant.



## ABOUT DNV GL

Driven by its purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. DNV GL provides classification and technical assurance along with software and independent expert advisory services to the maritime, oil & gas and energy industries. It also provides certification services to customers across a wide range of industries. DNV GL, whose origins go back to 1864, operates globally in more than 100 countries with its 16,000 professionals dedicated to helping their customers make the world safer, smarter and greener.

### In the Energy industry

In DNV GL we unite the strengths of DNV, KEMA, Garrad Hassan, and GL Renewables Certification. DNV GL's 2,500 energy experts support customers around the globe in delivering a safe, reliable, efficient, and sustainable energy supply. We deliver world-renowned testing, certification and advisory services to the energy value chain including renewables and energy efficiency. Our expertise spans onshore and offshore wind power, solar, conventional generation, transmission and distribution, smart grids, and sustainable energy use, as well as energy markets and regulations. Our testing, certification and advisory services are delivered independent from each other.

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