

HVDC Light - a reliable power performer

ABB's HVDC Light (High Voltage Direct Current) is a unique and proven power transmission system, specially designed to transmit power underground and underwater.

It is particularly suitable for small- and medium-scale power transmission applications, and extends the economical power range of HVDC transmission systems from 90 megawatts to - for the first time in 2006 - 1 gigawatt.



Recent breakthroughs in technology components make HVDC Light systems economically attractive as well. Depending on distance, cable-laying conditions and grid stability in a given area, underground links can be even more economical than traditional AC overhead lines.


In addition to the traditional HVDC benefits, HVDC Light also offers so-called 'black start' capability, meaning that it can power up networks that have suffered 100 percent failure.

HVDC Light's compact and lightweight design, short installation and commissioning time, low operation and maintenance cost and superior control of voltages, active and reactive power make it an excellent choice for a variety of applications, including:

- **Connecting offshore platforms** - Troll A is the first offshore installation to receive power via an environmentally friendly HVDC Light link to Norway's mainland power network, making the platform emissions-free and reducing staff requirements compared to traditional fuel-powered power generator solutions for offshore installations.
- **Connecting offshore/onshore wind farms** - One factor preventing exploitation of many wind resources around the world are weak public electricity networks in areas most attractive for wind turbine installation. The basic problem is that transmission and distribution systems are designed to transport power to consumers, not to collect it. A grid must therefore be able to collect scattered sources of power, and at the same time withstand the unpredictable nature of renewable power output that can create network and equipment instability. High-



end technology like HVDC Light mitigates potential disturbances, such as “flicker,” and extends the economical power range of HVDC transmission down to just a few tens of MW, making it particularly suitable for small-scale power generation and transmission applications, such as the interconnection of offshore windfarms with the onshore grid.

- **Connecting islands** - In environmentally protected areas, increasing power generation to meet increasing power demand is not an option. One solution is to bolster an island grid with power from a mainland grid by means of an HVDC Light power system. It is no surprise that power on Long Island and in New York was quickly restored after the 2003 blackout, thanks to Cross Sound HVDC Light cable.

- **City infeeds** - As cities around the world expand their borders, they need more power. At the same time, there is opposition to building additional power plants inside or even close to these cities. At the same time, it is nearly impossible to get approval of HV power line into cities. HVDC Light is a solution - able to ship up to 1 gigawatt of power with just a pair of cables underground! In addition to the benefits of "invisibility," every HVDC Light system increases grid reliability.