How to get full value out of your investment
Getting more out of what you’ve got

Gone are the days when power companies could relax and rely on a captive customer base for secure revenue. Worldwide, deregulation is rapidly transforming power markets into fiercely competitive jungles. At the same time, political and social demands to use energy more efficiently are growing.

Solutions tailored to your specific needs

This is where ABB Power Systems comes in. Our analysis, design, engineering, installation and commissioning experience means we can tailor solutions to your specific needs. Solutions that squeeze more power out of both scheduled and existing transmission systems at a fraction of the cost of constructing a new line. And by adopting a standardized, modular approach to control and protection, every ABB solution is guaranteed to be extremely reliable and virtually maintenance free.

New age, new thinking

Constructing new lines and substations has been the traditional way to boost a transmission network to achieve a higher transfer capability between generation and consumption. But today's tighter political and environmental regulations means you cannot rely on gaining planning approval for new lines. And if you do, the entire process is likely to be long drawn out.

Advantages

Enhancing your existing systems with ABB Power Systems FACTS (Flexible AC Transmission System) technologies is a cost effective, flexible and reliable alternative to building new lines. In short, squeezing more power out of your existing lines makes sound investment and environmental sense.

ABB Power Systems has developed a portfolio of FACTS solutions from which we can select the one most suitable for each particular case. For instance, inserting a Series Capacitor bank in a line can raise the active power transfer by over 35 per cent at one tenth the overall cost of building a new line. And without the risk of adversely affecting your company’s public image.

Series Compensation employs series capacitors to compensate the inductive reactance of a transmission line. Suitable for both new and existing lines, series compensation increases power transfer capability by raising the transient stability limit. As a rule of thumb, two compensated lines will deliver the same active power output as three uncompensated lines. Another important benefit is reduced transmission system losses.
and active power sharing between parallel lines. Which all adds up to a highly effective and economical means of improving power transfer.

Technologies such as Static Var Compensation (SVC) and Static Synchronous Compensator (STATCOM) are other means of optimizing power output by continuous or step wise dynamic voltage control. SVC and STATCOM are shunt connected devices generating or absorbing reactive power at the point of connection. Increase of transient stability margin, damping of power oscillations, reducing temporary overvoltages and other benefits achieved by SVC or STATCOM make these technologies outstanding for network improvement and cost efficiency.

**Retain your customers**

ABB Power Systems FACTS technology will help your company achieve your business goals. Such as retaining existing customers and attracting new ones. Our exclusive know how and intelligent solutions will enable you to provide premium power delivery. In other words, what is good for your customers is good for you.

**Customer benefits**

A key customer demand on a power provider is to deliver power whenever and wherever it is needed - twenty-four hours a day, 365 days a year. A reliable and stable network that performs smoothly even when power loads change and mechanical and environmental disturbances occur, will do exactly this.

**Image boosting**

Optimizing the active power transfer process is not only a key to reliability, cost efficiency and competitiveness, it also creates an environment friendly corporate image.

Seeking planning permission to build new transmission and distribution lines is a complicated and exhaustive process which often alienates public opinion. Not to mention the ever spiraling costs of the application process, land and the lines themselves. Increasing active power output in your existing lines is a far more immediate and compelling alternative.
This success story concerns the planning of a long distance power transmission system in Argentina. The planning process began in the early 1970s and has led to a reliable and economic transfer of cost effective and environment friendly hydro power from the Comahue area to Buenos Aires, a distance of more than 1 000 km.

Transmission is via series compensated 500 kV AC lines running in parallel. As power transfer capacity is limited by transient stability requirements in a long distance HVAC transmission system, reactive power compensation was installed to enhance stability while increasing the capability and availability of the line.

**Design options**
At the first stage, two design options were considered:

**Option A:**
Two parallel 500 kV lines with 40 per cent series compensation.

**Option B:**
Three parallel 500 kV lines without series compensation.

After extensive financial and technical analysis, option A was chosen as the cost was some 35 per cent lower than B. The series capacitors were around 10 per cent of the total cost.

**Efficient transmission planning**
The system comprised two parallel circuits erected on independent structures. The first line was commissioned in 1973 and the second a year later. In 1977, two series capacitor banks were installed approximately one third the distance from each end of both lines. The banks boosted transfer capacity from 800 to 1 650 MW.

In the late 1980s a third 500 kV circuit was built to link the system with a thermal power station at Bahia Blanca. This extension increased the power transfer capacity to 2 600 MW.

Five years later four series capacitor banks were installed in the third circuit to enhance the stability limit by an additional 300 MW.

In 1996 the existing banks in the first two circuits were replaced by new capacitors with a higher current capacity. This upgrade boosted the transmission capability up to 3 300 MW in total.

A fourth 500 kV line, also series compensated, will be put in operation in 1999. This will ultimately increase the system capacity to 4 600 MW from the original 800 MW.

The Argentinian story is just one of many similar success stories worldwide. To find out how we can help you, including technical and economic evaluations of different scenarios, however complex, please contact us.