New technology generates new power
The proportions of hydropower production plants may seem enormous. They are! But hydropower production is based on technology and technology never stands still. Developing and enhancing the efficiency of existing plants has enormous potential. Simply by optimising the hydroelectric power stations currently in existence, we can increase production by up to 10 per cent. However, such developments are dependent on political support.

E-CO Energi
E-CO Energi is one of Norway's leading energy groups. Its core business is the ownership and management of hydroelectric power stations. E-CO Energi is owned by the municipality of Oslo. The other operations are organised under the auspices of E-CO Vannkraft and Oslo Lysverker.

E-CO Vannkraft is Norway's second-largest hydropower producer
With a mean annual production of 11 TWh, E-CO Vannkraft is one of Norway's largest hydropower producers. We own and operate 29 power-production facilities in southern Norway, including Norway's third-largest power station, Aurland I.

All E-CO's facilities are controlled from a power centre in Gol. The interaction between the power centre, planned maintenance and production planning helps ensure optimal utilisation of the available reservoirs.

Besides these facilities, E-CO Vannkraft is part owner of Oppland Energi, Opplandskraft, Embretsfosskraftverkene and Norsk Grønnkraft.

E-CO

Pure power. Pure value creation
www.e-co.no

SOLBERGFOSS

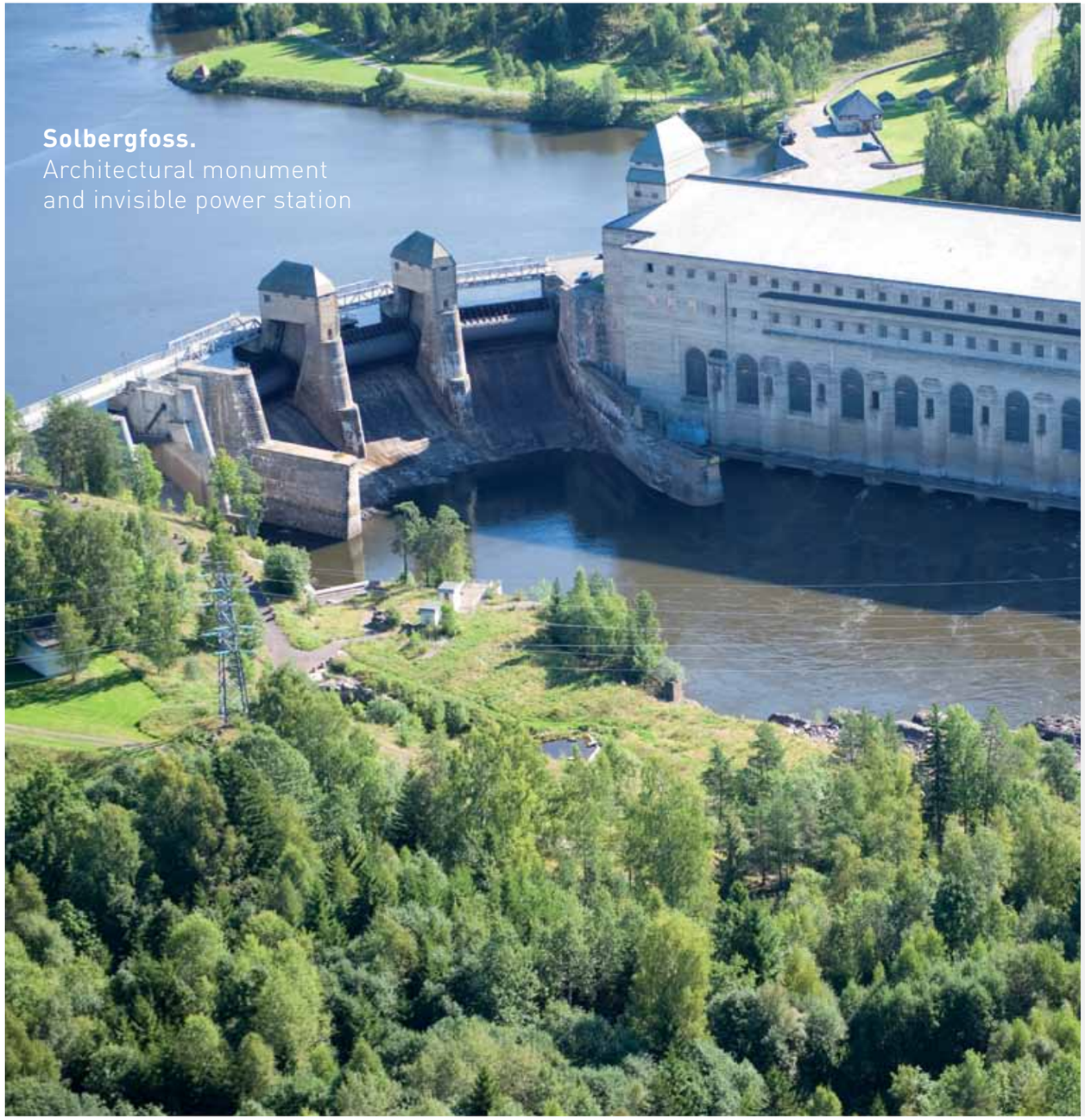
Old and new hydropower technologies meet

Old culture meets new
Norway's hydropower has been developed by people with a time perspective completely different from what we have today. These pioneers from Norway's past thought at least 50 years ahead. They thought in terms of what we might call 'the infinite future'. The power stations built by these people have generated electricity more or less continuously since start-up and some plants have been in operation for nearly 100 years.

All energy production leaves a footprint on the environment. For example, hydropower production encroaches on the environment during construction. Nowadays, construction work is carried out carefully to allow nature to recover rapidly once a facility has been completed.

Hydropower technology may be more future-oriented now than ever before. Hydroelectricity is clean green power - clean to make and clean to use. Not least, it is created in a clean natural environment. The future depends on green power. That is what makes hydropower eternal.

E-CO



Solbergfoss.
Architectural monument
and invisible power station

Solbergfoss is a hydraulic power plant. This means the turbines are run by power produced by the huge through-flow of water rather than by high waterfalls. The stations currently consist of two different power plants that were built at different times and based on different cultures.

Work on the Solbergfoss I power station commenced back in 1913. No one had ever built such a large plant before, and no one was completely sure it would work. To optimise the plant's location and through-flow factors, a life-like model was built on a scale of 1:25 in Nordmarka, the green belt north of Oslo. This allowed ideas to be tested in actual practice.

The project was gigantic and involved a considerable amount of pioneering work. More than 800 men worked on it at times. Although they used the most modern construction machinery available, it would seem like simple equipment today. Most of the work was based on muscle power and sheer brute strength.

The building was designed by Brede Greve, one of that period's great architects, and it was the focus of a major architectural competition. Solbergfoss I was built at a time when people were proud to demonstrate their architectural and engineering talents. It is now a cultural monument.

The stately Solbergfoss power station was opened in 1924. However, the demand for electricity grew steadily. In 1979, planning therefore began on a new power station to augment the old one. Solbergfoss II is a completely modern power station featuring a single large turbine that has the same capacity as all 13 turbines in the old station combined. This means that the entire River Glomma can pass through a single turbine.

The Kaplan turbine is more or less like a ship's propeller with four adjustable blades. It is still one of the largest of its kind in Europe. It has a diameter of 8.3 metres and weighs 170 metric tonnes. Transporting and installing this giant was a feat in itself.

The turbine in Solbergfoss II is like an enormous ship's propeller with a diameter of 8.3 metres.

Solbergfoss II began to feed into the grid in the spring of 1985. The new power station was built in accordance with modern-day standards. A small building at the edge of a grassy bank is the only visible result. Everything else is underground.

The Solbergfoss power station produces a total of some 900 million kWh during a normal year. This is equivalent to the annual consumption of 45 000 single-family houses heated with electricity, and accounts for 1 per cent of Norway's total electricity supply.

The plant is a symbol of both the range of and interaction between old and new hydropower technology.

This hydraulic power plant is run by large amounts of water flowing through it, rather than by water falling from great heights.

A runner from Solbergfoss I. Before and after World War I, most of the work was carried out manually and based on sheer brute strength.