

## Media release

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# Milestone for the once-in-a-century 'Linthal 2015' project: first machine group at the Limmern pumped-storage power plant successfully synchronised with the grid for the first time

Today – for the first time – the first machine group at the Limmern pumped-storage power plant in the Glarus Alps has been successfully synchronised with the electricity grid. This represents a crucial milestone for the construction project. The Limmern pumped-storage power plant's total pumping and total turbine capacity are each rated at 1,000 MW. This will increase the output of the Linth-Limmern power plants from its current level of 480 MW to 1,480 MW. Axpo remains on schedule with 'Linthal 2015' which is currently the biggest construction project within the Swiss energy sector. The highly flexible plant will make an important contribution towards grid stability – and therefore security of supply – for both Switzerland and Europe.

After some ten years of planning and construction, the CHF 2.1 billion construction project in the Glarus Alps is now on the home straight. Having successfully synchronised the first of a total of four machine groups in Linthal with the grid, Axpo has reinforced its reputation as a hydro power pioneer with 100 years of expertise behind it. 'This represents a milestone for Axpo and an important contribution towards ensuring a secure supply of electricity, both for Switzerland and at a European level,' explains Axpo CEO Andrew Walo. The significant fluctuations associated with the production of wind and solar energy mean there is greater demand for balancing energy. 'This is where our highly flexible plant comes into its own,' asserts CEO Andrew Walo. 'The Limmern pumped-storage power plant makes an important contribution towards grid stability, particularly at a time when the market environment is changing.'

### Limmern pumped-storage power plant combines high output with great flexibility

Pumped-storage power plants are the 'batteries' of the Alps. The Limmern pumped-storage power plant will be able to produce large amounts of electricity within a matter of minutes, as well as accommodating any surplus electricity and storing it for future use. Fluctuations may be caused by temporary overproduction due to high levels of solar radiation or windier spells, as well as temporary production outages attributable to cloudy skies or windless conditions. The balancing energy needed to even out these sometimes massive fluctuations is required at short notice and

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at highly unpredictable times. Pumped-storage power plants like the one at Limmern work like a 'battery', which creates a competitive advantage in terms of cross-border electricity trading.

### **Pioneering construction project sets new records – but remains on schedule and within budget**

Inside the mountain, construction of the interior has forged ahead over the past few months. The rotors for the four machine groups have been assembled inside the generator gallery directly, because their overall weight of 330 tonnes each when fully assembled would have made them too heavy to transport. At around 220 tonnes each, the transformers were the heaviest individual components to be transported inside the mountain. They were transported in stages using a specially built cableway (over 4 km long) and installed inside the transformer gallery. The gravity dam on the Muttentalp was completed slightly ahead of schedule during the autumn of 2014 thanks to favourable weather conditions. It is the longest dam wall in Switzerland at 1,050 m long, and the highest in Europe at 2,500 m above sea level. Most of the excavated material used for its construction was taken from the caverns and tunnels – a masterstroke from a materials logistics perspective. 'I am proud that we have achieved an important milestone in this once-in-a-century project, thanks to the outstanding work and effort of all involved,' enthuses Jörg Huwyler, Head of Axpo Hydro Energy. 'We have kept our promise: Linthal 2015 is part of the grid!'

### **First damming of the Muttsee scheduled for summer 2016**

All four machine groups will be synchronised with the grid in stages over the coming months. The commissioning and subsequent test runs for the individual machine groups will involve a highly complex procedure, during which the numerous systems and processes will be tested over several months. The Muttsee will be dammed for the first time during the summer months of 2016. This first damming operation will be performed in collaboration with the Swiss Federal Office of Energy. Among other things, it will need to be proven that the dam wall behaves exactly as specified in the calculations used for modelling purposes. The operating team for the Limmern pumped-storage power plant is to be increased by a further 15 people, taking the total headcount to 50. The four 250 MW machine groups are to be controlled from the Axpo Grid Control Centre in Baden.

### **Dismantling of Alpine construction site almost complete**

Much of the Muttentalp where the dam wall is located – and which has accommodated huge concrete plants, a camp for workers and numerous other installations for several years – has already been re-naturalised. Other aspects, such as the dismantling of the construction cableways and the re-naturalisation of the two installation sites at Ochsenstäfeli near the Limmernsee and at Tierfehld, are to be completed in the course of 2017/2018.



### Key figures for the Limmern pumped-storage power plant

Total costs for 'Linthal 2015'	CHF 2.1 billion	
Turbine and pumping capacity	1,000 MW each (four machine groups, each delivering 250 MW)	
Dam wall (consisting of 68 blocks, each 15 m long)	1,025 m long, max. 36 m high	225,000 m <sup>3</sup> of concrete
Water level at the Muttsee when fully backed up	2,474 m above sea level	
Previous water capacity (Muttsee)	9 million m <sup>3</sup>	
Water capacity when work complete (Muttsee)	25 million m <sup>3</sup>	
Concrete used in m <sup>3</sup>	630,000 m <sup>3</sup>	
Tunnel system in km	approx. 10 km	
<b>Cableway transport logistics 2010-2015</b>		
Number of journeys:	~ 320,000	
Number of people:	~ 1.4 million	
Total tonnes transported:	~ 3.5 million t	
Average per day:	~ 3,000 t	
Employees (highest headcount during construction period) From around twelve different countries	~ 700	
Employees used for operation and maintenance of the facility, including existing facilities (shift system = 24-hour monitoring)	~ 50	

Photographic and film material: [www.axpo.com/limmern](http://www.axpo.com/limmern)





### **Further information**

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### **About Axpo**

The Axpo Group produces, trades and distributes energy reliably for more than 3 million people and several thousand companies in Switzerland and in over 30 countries throughout Europe. Around 4,500 employees combine the expertise from 100 years of climate-friendly power production with innovative strength for a sustainable energy future. Axpo is an international leader in energy trading and in the development of tailor-made energy solutions for its customers.

