Visit to the new Nant de Drance turbine pumping plant with one of the engineers in charge of the site and a production and risk planning manager from the Alpiq Group, the facility's main shareholder. This is the second most powerful turbine pumping station in Switzerland (900 MW, the capacity of a large nuclear plant), located between the two Emosson dams.

To round off all the impressive details of the project (an investment of CHF 2.3 billion, 17 km of galleries dug out of the mountain), here is some information on the current situation in the Swiss electricity market:

There are still 3 nuclear power plants left in Switzerland: Gösgen, the largest, with a capacity of 970 MW (8,720 GW generated on average), Beznau I and II (2x365 MW, for a total of 5826 GW generated on average).

At present, the main Swiss dams are filled to almost normal levels for the time of year, in particular the Grande Dixence dam, which has a reservoir of 400 m3 of water, a power capacity of 2,069 MW (that is, twice that of Gösgen!) but generates 2,000 GW of power (4x less than Gösgen: the fact is, a nuclear power plant produces an immediate and constant supply of electricity throughout the year, which is of course not the case with dams or solar and wind installations). There is also the Emosson dam (in addition to having become the spillway/reservoir for the Nant de Drance system, this dam is the second largest artificial water reservoir in Switzerland with 225 million m3 of water and 420 MW of power capacity). In general, the dams that are connected by collectors to mountain glaciers (sometimes many kilometres away, with the meltwater flowing through huge pipes) are full. This is less the case with what we could call rainwater dams. The role they all play will be critical this autumn.

The Nant de Drance plant will provide up to 900 MW of capacity (twice that of both Beznau plants together!) at a time when Switzerland needs it most. It takes less than five minutes to start the turbine. Conversely, this is the same time it takes to pump water up from the lower dam into the upper dam (this is done in periods when the price of electricity is low). It is therefore a giant battery, which is extremely welcome in the current situation.

Switzerland is a net exporter of electricity over the year but a net importer in winter (apart from a few exceptional years when the winter has been mild). The balance imported comes mainly from French nuclear power. This is a problem, as currently half of France's nuclear plants are out of service for various reasons: planned inspections, concerns about corrosion in several of the most powerful power stations, rivers whose water is currently too hot, etc. France should be able to restart some of these stations before winter, but not sufficiently to fully guarantee the amount it exports to Switzerland. This explains why France is in the process of bringing a coal-fired power plant back into commission (closed at the very beginning of the year) which can generate around 300 MW of continuous power.

Additional power generation in the very short term:
The aim of the Confederation is also to rapidly ensure a backup production of thermal electricity (at present there are no longer any thermal power plants in operation in Switzerland). The most advanced and realistic project in the current context (because it relies on fuel oil and not gas, which is likely to run out this winter), would be an 8x35 MW plant, i.e. generating 280 MW, which represents approximately 80% of a small nuclear power plant like Beznau. It would be able to generate this electricity at the end of winter when the dams have emptied because their capacity has been consumed.

Additional power generation in the short/medium term:

Switzerland has lagged behind in solar energy (around 5% of Swiss production compared with 10% in France or Germany) but the sector has enjoyed a definite boom since 2021. 700 MW of capacity was installed in 2021, and probably more than 1,000 MW will be installed this year and 1,500 MW in 2023. These additions are therefore significant in the short term (even if the actual power generated is much lower) and are expected to grow in the longer term when major projects come on stream (coverage of several kilometres of motorway, and several projects in the pipeline in Valais, Jura and Zürich) and a solar power plant is installed in Gando (which will have similar efficiency in both summer and winter). The potential of solar energy in Switzerland is therefore considerable (twice Switzerland's electricity needs, according to EPFL).

The Grimsel dam (which is 90 years old!) is currently being replaced. A new dam 23 metres higher is currently under construction 50 metres in front of the current dam. This will increase the reservoir basin from 94 million m3 to 169 million m3 and will therefore store more energy for the winter. Work began in 2019 and will be completed in 2025.

This winter:
What will influence production:

- The rain to fill the reservoirs of some Swiss dams
- The temperature this winter
- The amount of electricity that can be imported from France
- Whether or not the "temporary" oil-fired thermal power plant will come into production

So there are many unknowns. It should be noted that electricity-saving measures should to a great extent make it possible to withstand a lower supply as well. Having this giant 900 MW battery at Nant de Drance will also be a godsend!