## Tour 2:

### Technical Visit to the Plavinas HPP, the largest hydropower plant in the Baltics and one of the largest in the European Union

Latvenergo Group generates most of its electricity at the three largest HPPs in the country: Kegums HPP, Plavinas HPP (located 81 km from city centre) and Riga HPP, which together form the Daugava HPP cascade and ensure environmentally friendly electricity generation. They operate on water – a renewable energy source. Although the capacity of the Daugava HPPs is high, their ability to generate electricity depends on the water inflow in the Daugava River. The Daugava HPPs operate at full capacity during the spring flooding season, which lasts for about one to two months annually. Water inflow in the Daugava River during this time may exceed water inflow during low water periods, which occur mainly in summer, more than 10 times. During the spring flooding, Latvenergo Group is able to cover the entire customer demand for electricity. The Daugava HPPs provide for the possibility to accumulate water and generate electricity when the demand and prices on the exchange increase.

Plavinas HPP and Riga HPP can also operate in synchronous compensator mode (adjusting the voltage in high-voltage electric networks), allowing the transmission system operator to ensure the voltage quality.
In 2017, the Daugava HPPs generated a total of 4,270 GWh of electricity, which constituted 59% of the total amount of electricity consumed in Latvia. Due to higher water inflow in the Daugava River, the amount of electricity generated was 74% higher compared to the previous year.

Plavinas HPP plays an essential role in the power system of Latvia. With ten hydropower units featuring a total capacity of 894 MW, this is the largest hydropower plant in the Baltics and one of the largest in the European Union. The plant was launched in 1968. This building is unique in its own way: in construction of the HPP, it was shown for the first time in practice that it was possible to build a medium-head hydropower plant on soft ground. The plant building was constructed across the Daugava River's old valley floor, filled with soft moraine sediments with a thickness of more than 130 m, while the water spillway with 10 gates is located above the power plant building. The gates are lifted using two heavy duty gantry cranes (2x210t).
The Plavinas HPP dam consists of a right bank dyke (1,220.5 m long), a reinforced concrete power plant structure with a spillway (254.4 m long), a riverbed dam (665.1 m long) and a left bank dyke (1,892 m long).

The scheduled renovation of five hydropower units was carried out in the period from 1991 to 2001, and three more hydropower units were renovated during the reconstruction process from 2007 to 2010. On 16 December 2013, the reconstruction of the remaining two hydropower units was started, and one of the hydropower units has now been commissioned. The reconstruction of the hydropower units has resulted in the improved efficiency rates of the plant and, consequently, contributed to an increase in the amount of energy generated from renewable sources (Hydroturbine 95.4% and generator 98.3%).
In 2017, Plavinas HPP generated about 2,434 GWh of electricity, which is 57% of the total electricity output by the Daugava HPPs.


# Technical program

Departure from Kipsala International Exhibition Centre: **8:00**
Time at the Plavinas HPP: **9:30 – 10:30**
Arrival at Kipsala International Exhibition Centre: **12:00**

After a short presentation including a description of the Latvian power grid and the role of the HPP in the electricity mix of Latvia and the technical details and achievements of the power station, participants will be lead to visit the outside and inside of the power station, dam and water spillways, main hall, halls with power converters, generators, pumps and turbines, automation. + description from Latvenergo

Please be aware of the access restrictions below.

# Limiting factors in regard to health condition of the attendees of the EPE Conference when visiting Latvenergo AS facilities at CHPP-2 and HPP

| No. | Possible health issues | Possible limiting factors | Notes |
|---|---|---|---|
| | **HPP, CHPP-2** | | |
| 1. | Persons with reduced mobility who use technical aids (such as a wheelchair) to move around | 1) Problems with movement when passing through the checkpoint of the facility's production areas | It will not be possible to pass through the security checkpoint turnstile and use the stairs in a wheelchair. CHPP-2 has low access possibilities. *Moving around the machine hall at the HPP where the hydropower units are being reconstructed is limited.* |
| | | 2) Exposure to occupational risk factors (noise, vibration) | We provide the following personal protective equipment: a high visibility vest, a helmet and earplugs (if needed). |
| 2. | Persons with impaired vision | 1) Moving around the facility's production areas unaccompanied | *Moving around the machine hall at the HPP where the hydropower units are being reconstructed is limited.* |
| | | 2) Exposure to occupational risk factors (noise, vibration) | LE may provide personal protective equipment (a high visibility vest, a helmet and earplugs (if needed)). |
| 3. | Persons with impaired hearing | 1) Exposure to occupational risk factors (noise, vibration) | We provide the following personal protective equipment: a high visibility vest, a helmet and earplugs (if needed). |
| | | 2) Moving around the HPP production areas unaided | Safety signs must be obeyed at all times. *Moving around the machine hall at the HPP where the hydropower units are being reconstructed is limited.* |
| 4. | Persons with heart disorders, cardiac pacemakers or metal implants (devices that may be implanted in the human body for medical reasons) | 1) Possibility to move around the production areas, as EMF levels near power units may be increased | The duration of stay in the EMF exposure area (next to the operating power units/turbines) should be limited as far as possible. Safety signs must be obeyed at all times. *Moving around the machine hall at the HPP where the hydropower units are being reconstructed is limited.* |
| | | 2) Persons with active cardiac pacemakers or metal implants in the body are denied access to the operating power units at the facility |     Persons with active cardiac pacemakers implanted in the body are denied access! Persons with metal implants in the body are denied access! |
| | | 3) Exposure to occupational risk factors (noise, vibration) | We provide the following personal protective equipment: a high visibility vest, a helmet and earplugs (if needed). |

For the visitors of Latvenergo AS facilities at CHPP-2 and HPP flat shoes are required.