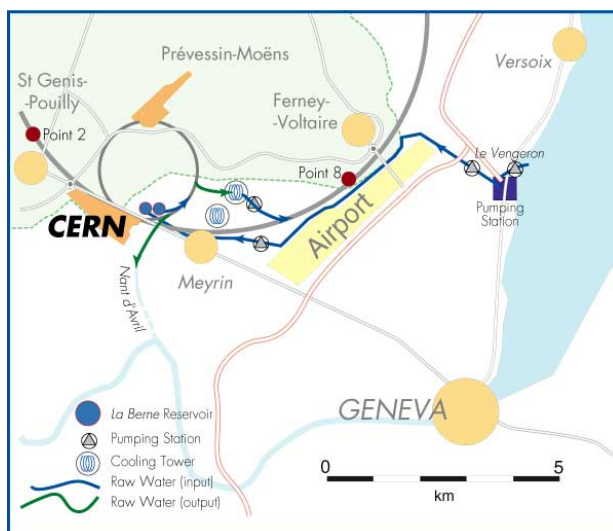


2015 CERN Water Consumption

Water is supplied to CERN from Lake Geneva by a pumping station located in Vengeron (CH) by the *Services Industriels de Genève* (SIG). On some SPS Points (BA2, BA4) and on all the LHC Points, drinking water is supplied by the local French network for sanitary use and to ensure redundancy on the fire extinction network.



The total water consumption in 2015 amounted to 4.2 Mm³. The overall consumption has increased after the Long Shutdown stop of 2014 due to the restart of the accelerator in 2015; if compared with 2012, when the accelerators run with a similar schedule, the consumption is lower by 800'000 cubic meters.

Water is used on the CERN sites for cooling purposes, industrial usage and for sanitary installations. The resulting effluents, together with natural meteoric and infiltration waters, are evacuated from the CERN sites in a controlled way.

Cooling water

The cooling water is either used as it is supplied (raw water), or is processed (demineralized water) and used in secondary circuits cooled by cooling towers using heat exchangers.

With the aim of limiting water consumption, the cooling water is circulated in closed loops that periodically require the addition of raw water to compensate for the evaporation in the cooling towers. Also, in case of excessive mineralization, the water in these circuits can be discharged and evacuated from the CERN site in a controlled way.

In addition, according to the legislation in force, water in the CERN atmospheric refrigerants is regularly checked for Legionella and preventive treatments with biocides, respecting the applicable standards for water quality protection, are carried out.

The Water Distribution Network

Three pumping stations, all located in Point 1 of the LHC opposite to the main entrance, ensure most of the water distribution to all the CERN sites. These are:

1. The pumping station (P1) dedicated to the SPS and serving all technical equipment in the SPS and its surface buildings. This is a pure circulation pumping system, which has circulated 19.2 Mm³ in the SPS during 2015.
2. The pumping station (P2) is dedicated to the LHC and serves all the technical equipment in the LHC and its surface buildings. It pumps water made available by the Vengeron pumping station owned by the *Services Industriels de Genève*.
3. The pumping station (P3) is for sanitary and technical needs in both the Meyrin and the Prévessin sites. Like the previous pumping station, it pumps water made available by the Vengeron pumping station owned by the *Services Industriels de Genève*.

In addition, the French (S4) and Swiss (S5) water distribution networks supply some of the SPS and LHC surface sites as detailed in the tables below.

| SPS - 2012 | Source | Origin | Total [m ³] |
|--------------|--------|--------|-------------------------|
| SPS BA2 | S4 | F | 617 |
| SPS BA4 | S4 | F | 948 |
| SPS BA5 | S5 | CH | 42 |
| Total | | | 1'607 |

The water consumption in the SPS Points is for sanitary use only. The water to compensate for the evaporation in the cooling towers is included in the following tables for the water consumption of the Meyrin and Prévessin sites.

| LHC - 2012 | Source | Origin | Total [m ³] |
|--------------------|--------|--------|----------------------------|
| LHC Complex | P2 | CH | 864'147 |
| LHC Point 2 | S4 | F | 3'228 |
| LHC Point 3.2, 3.3 | S4 | F | 511 |
| LHC Point 4 | S4 | F | 4'505 |
| LHC Point 5 | S4 | F | 4'046 |
| LHC Point 6 | S4 | F | 4'944 |
| LHC Point 7 | S4 | F | 100 |
| LHC Point 8 | S4 | F | 8'706 |
| Total | | | 890'187 |

The water consumption for the LHC Complex is mainly used to compensate for the evaporation in the cooling towers of the LHC Points of Access. The water consumption in the LHC Points, 26'040 m³ in total, is mainly for sanitary use and for backup of the surface network for the hydrants in case of fire.

The variations of water consumption in the LHC Points are due to the number of people present on the site and to occasional leaks.

| Meyrin & Prévessin 2015 | Source | Origin | Total [m ³] |
|--|--------|--------|-------------------------|
| Meyrin and Prévessin sites main supply, SPS BA1 and BA6, LHC Point 1 | P3 | CH | 3'421'812 |
| Safe supply | S5 | CH | 3'777 |
| Clubs | S5 | CH | 1'083 |
| Globe | S5 | CH | 536 |
| Total | | | 3'427'208 |

The first row of this table also includes the water to compensate for the evaporation in the cooling towers of the SPS.