

## 6.3 Media and infrastructure

### 6.3.1 Electrical Engineering

#### *Electricity supply*

The maximum electric power consumption is expected to be 4.5 MW.

#### **50 kV Voltage Level (HS, Hochspannung)**

The electrical utility supply for the SLS is fed from the PSI 50 kV substation WTSA. At this voltage level we have two feeds. One from the North (Beznau) with 970 MVA short circuit capacity and one from the South (Umiken) with 413 MVA short circuit capacity.

#### **16 kV Voltage Level (MS, Mittelspannung)**

The internal energy distribution is at the 16 kV voltage level. PSI owns two step down transformers.

The 16 MVA unit is used for the existing accelerator complex.

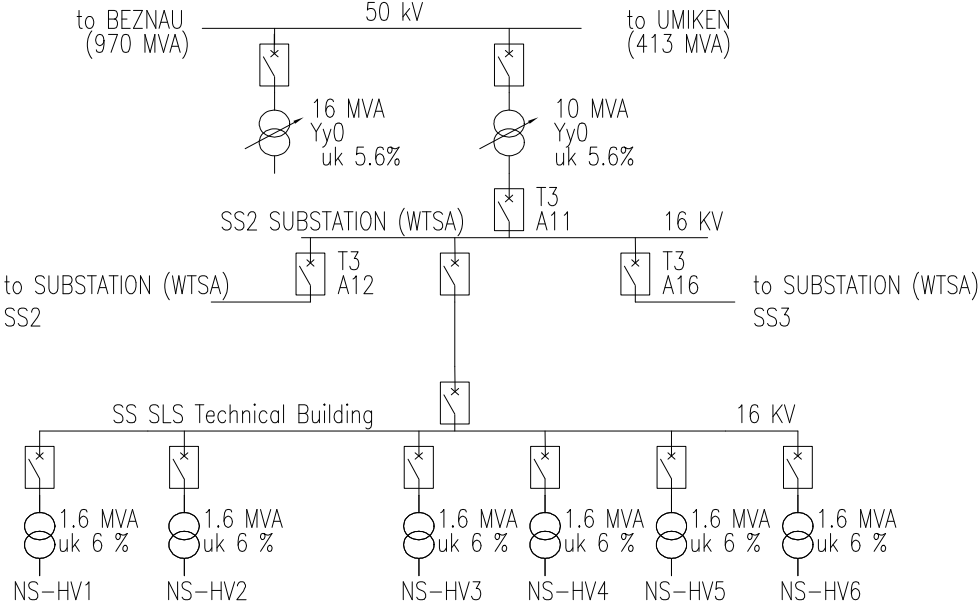
The 10 MVA transformer is used to transport the energy to the SLS Technical Building (Technikgebäude). It will provide a short circuit capacity of at least 124 MVA at the 16 kV voltage level. The medium voltage switchgear for the transformer's primaries are located in the Technical Building, ground floor.

#### **400 V Voltage Level (NS, Niederspannung)**

Six standard oil insulated 1.6 MVA utility step down transformers are provided to supply the various loads. The transformers are standard utility units with a short circuit impedance of 6% resulting in a short circuit capacity of 22 MVA.

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| Transformer 1 | It feeds the cooling infrastructures, such as water pumps, fans and the compressor of the refrigeration unit, hooked up to NS-HV1 within the Technical Building.   |
| Transformer 2 | The feeds all services within the technical building (lights, outlets, communications, LAN hubs, fire protection system etc.) hooked up to NS-HV2. A trunk line interconnects to the Lab/Office Building to NS-HV2.1 for experimental areas, office outlets, control room, interruptible power supply's input, local LAN-hubs etc. |
| Transformer 3 | It is located on the Technical Gallery for machine loads (to be defined) and feeds the motor control centre NS-HV3.  |
| Transformer 4 | It is located on the Technical Gallery for machine loads (to be defined) and feeds the motor control centre NS-HV4.  |
| Transformer 5 | It is located on the Technical Gallery for machine loads (to be defined) and feeds the motor control centre NS-HV5.  |

**Transformer 6** It is located on the Technical Gallery for machine loads (to be defined) and feeds the motor control centre NS-HV6.



**f631 a:** One-line diagram of the PSI - SLS 16 kV medium voltage utility distribution