



# **CERN Civil Engineering Business Forum**

## **SAM IN Section HVAC and Electricity**

**25-26 May 2023**

# Mandate

**SCE-SAM-IN** section is in charge of the **design, specification, tendering, works follow up, tests, acceptance, operation, and maintenance**, in the following fields:

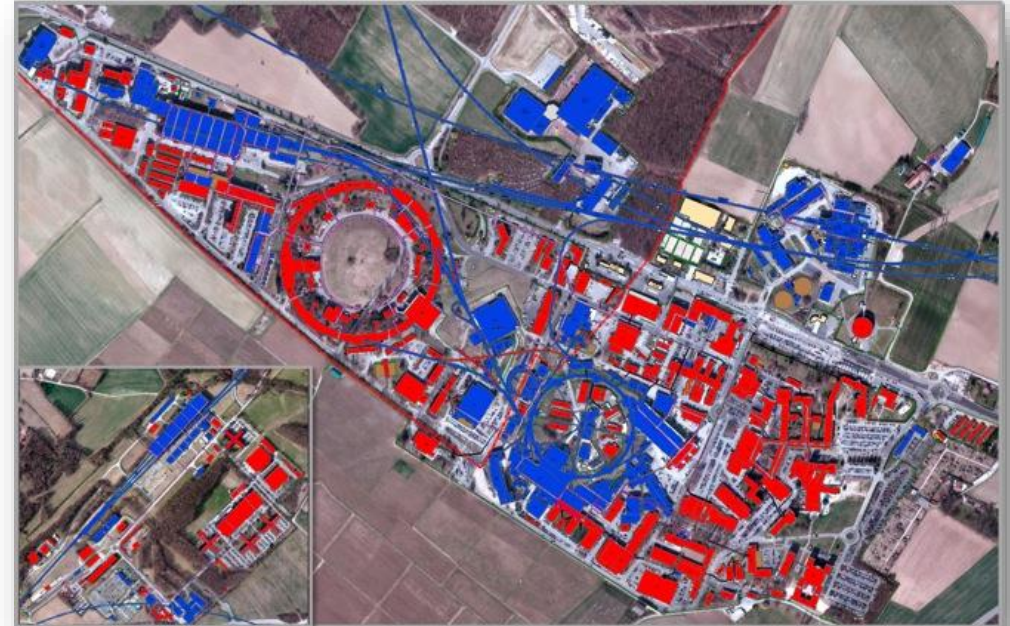
**HVAC** (Heating, Ventilation, Cooling, air conditioning, specific extraction)

**Fluids** (water cooling, compressed air, gas, fire fighting, filling)

**Electricity** (power distribution, lighting, machine powering)

**Sanitary** (drinking water, domestic water, solar panels, water fountains, safety)

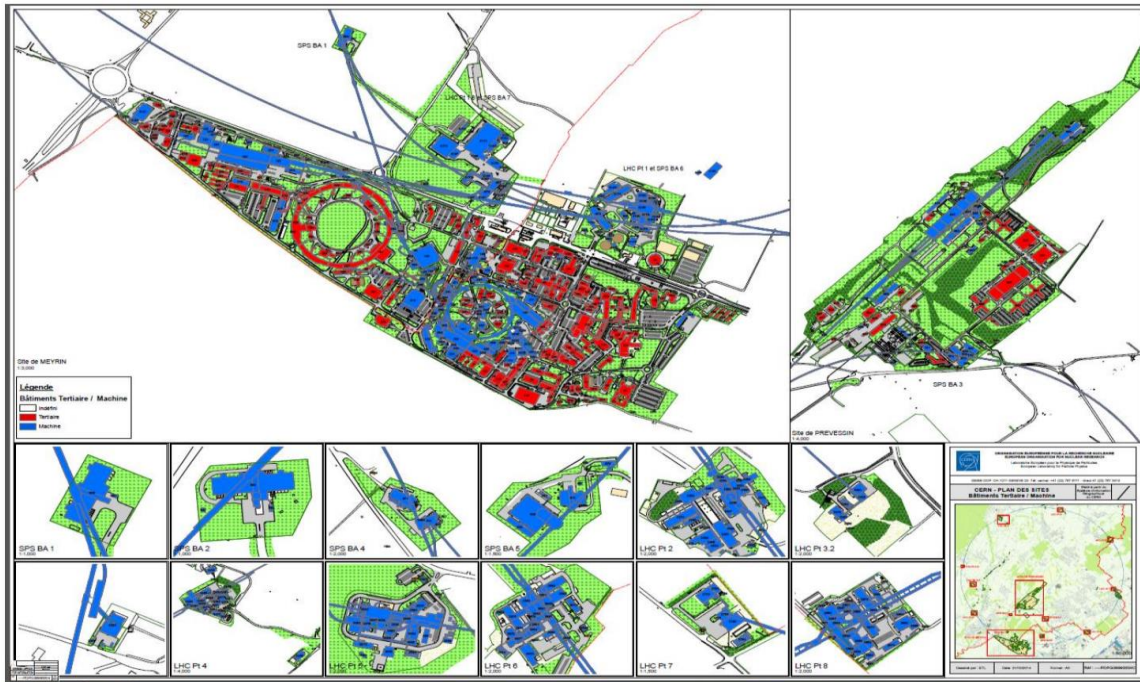
For CERN «**tertiary**» buildings



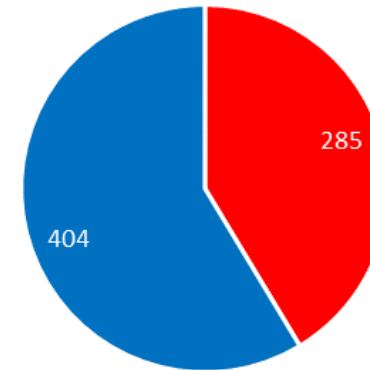
# CERN "Tertiary" Buildings



CERN buildings: **machine** and **tertiary** buildings

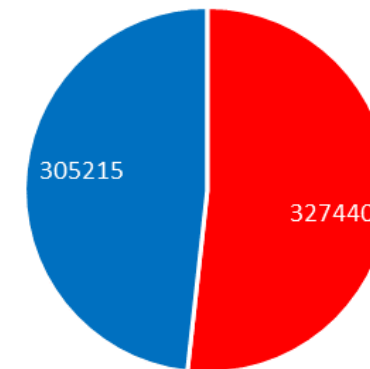


Number of buildings



+ 75 galleries  
+ 77 baraques

Total net area of CERN buildings [m<sup>2</sup>]



■ Tertiary ■ Machine



# Technical installations



350 structures and baraques,  
75 technical galleries

1 children school, 3 restaurants, 3 hotels (495 rooms)  
10 cafeterias, 150 meeting & conference rooms  
100 workshops, 400 labs  
30 clean rooms, 20 RP areas and source labs.

2 heating plants, 6 boilers.  
27 km district heating.

100 heating sub-stations  
200 domestic hot water productions  
200 radiators circuits  
100 000 lighting points  
500 AHUs, 350 extraction fans  
30 humidifiers  
70 chillers, 500 split systems  
100 solar panels  
1000 electric boards,  
300 PLCs  
30 000 sensors.



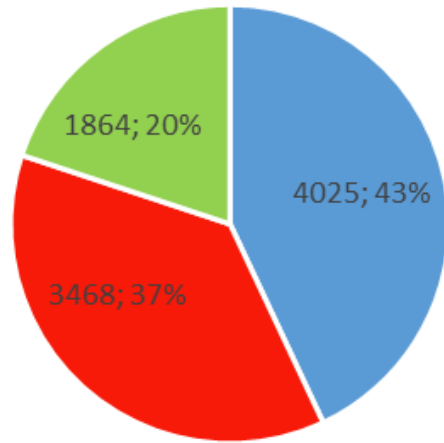
# HVAC, SANITARY & ELECTRICAL Domains



- Heating plants, district heating and heating circuits,
- Chilled water productions and a/c units,
- Ventilation systems,
- Compressed air distribution,
- Fire fighting systems,
- Hot domestic water production,
- Water distribution, sanitary devices, solar panels,
- Electrical power and control boards and plcs,
- Indoor lighting and public lighting,
- Electrical power systems and sockets.

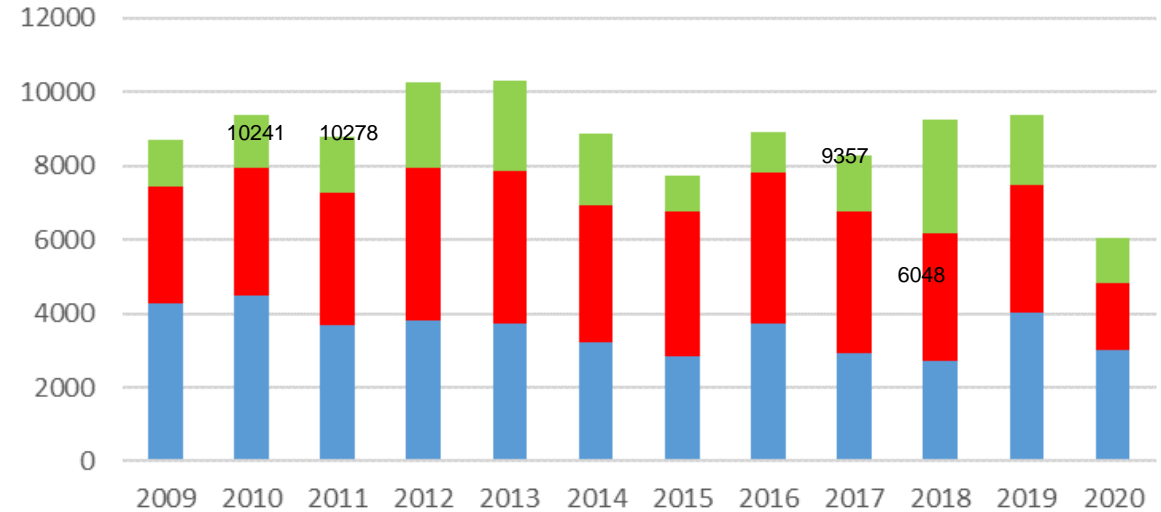
# Service: number of odms (<> tickets)

Total number of odms in 2019: **9357 odms**

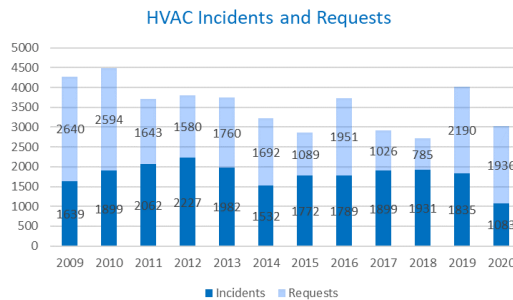


■ HVAC ■ ELEC ■ SANITARY

Total number of odm / year



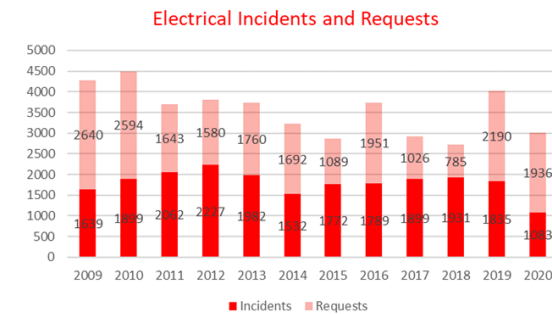
■ HVAC ■ ELEC ■ SANITARY



HVAC Incidents and Requests

■ Incidents ■ Requests

- Incidents
- Technical questions
- Preventive maintenance
- Works and modifications
- Consolidation
- Projects, new buildings



Electrical Incidents and Requests

■ Incidents ■ Requests

# 2 main Service contract

## 1 Service contract for HVAC and Sanitary:

- Incidents, operations
  - Preventive maintenance
- } ~2.200kCHF/year
- Works and modifications
  - Consolidation
- } ~ 4.000kCHF/year

**Total HVAC service contract**

**~ 6.200kCHF/year**

## 1 Service contract for Electricity:

- Incidents, operations
  - Preventive maintenance
- } ~ 900kCHF/year
- Works and modifications
  - Consolidation
- } ~2.100kCHF/year

**Total Elec service contract**

**~ 3.000kCHF/year**



# HVAC consolidation works tender

**Tender for HVAC consolidation works.**

Exemple in 2023 :

- Renovation of cooling production building 40.
- Construction of a new cooling production building 153.

**Total ~ 1.200kCHF/year**



Before



After

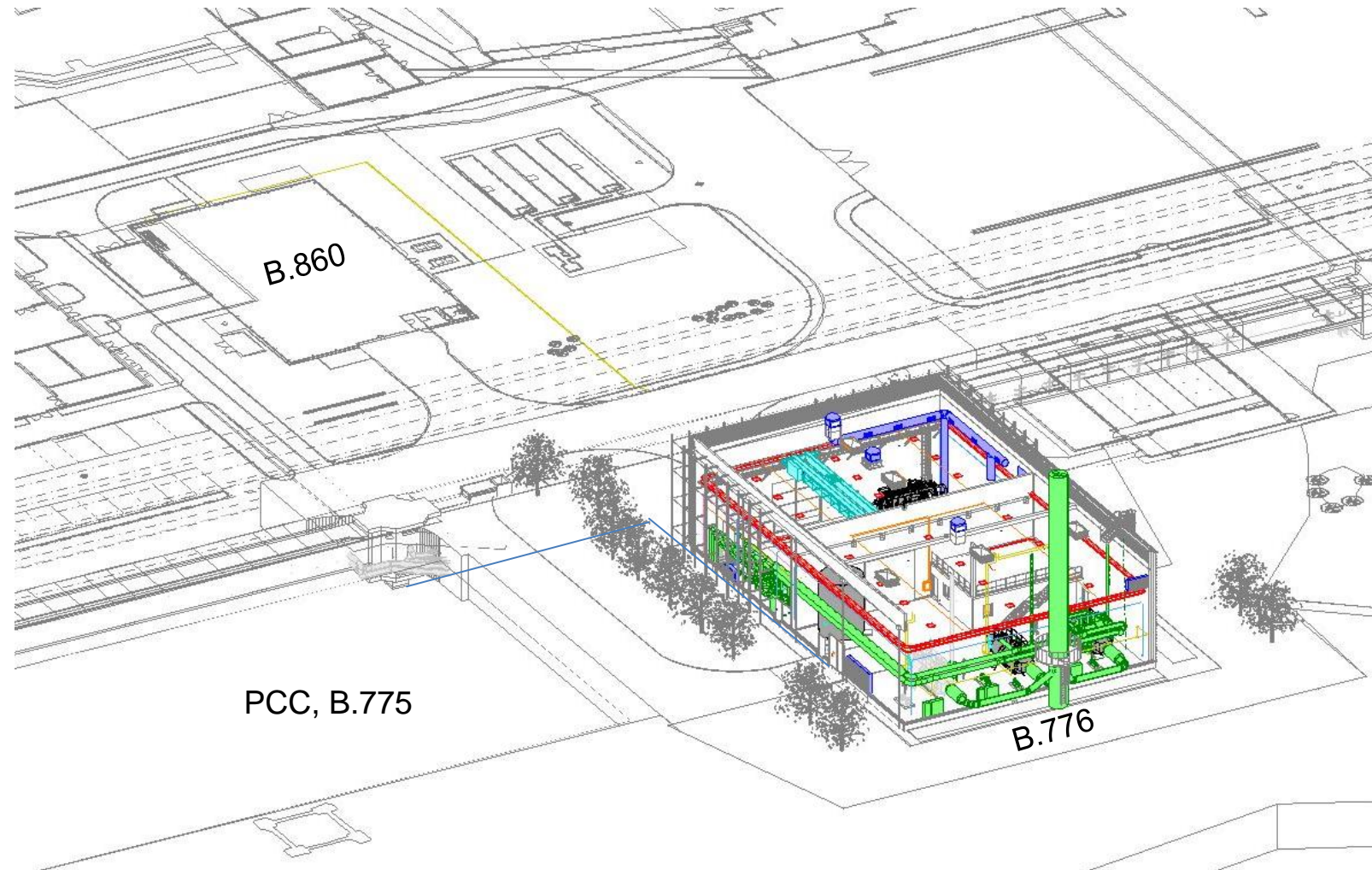




# Preveessin new heating plant project and schedule

## Objectives:

1. Create the new B.776 for housing the heating plant
2. Install the new heating plant with gas boilers and heat pump
3. Dismantle the current heating installation in B.860.
4. Delivery winter season 2026-2027.

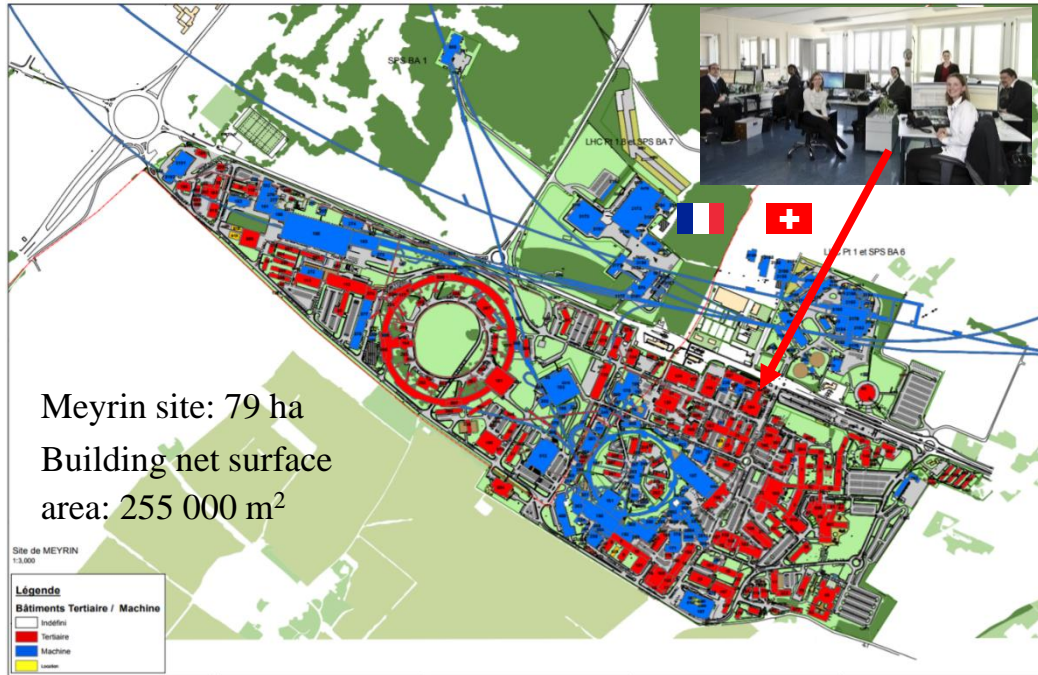


# Questions





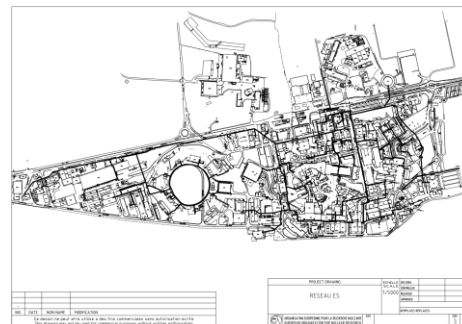
# Meyrin site



- 232 tertiary buildings & 51 barracks,
- Heating plant: 3 x 15 MW.
- 20 km district heating.
- DG building.
- 2 restaurants, 1 kindergarten.
- 3 hotels.
- 5 public buildings, medical services, fire brigade.
- Exhibitions halls, training center, globe.
- ISR.
- Office, lab and industrial buildings.

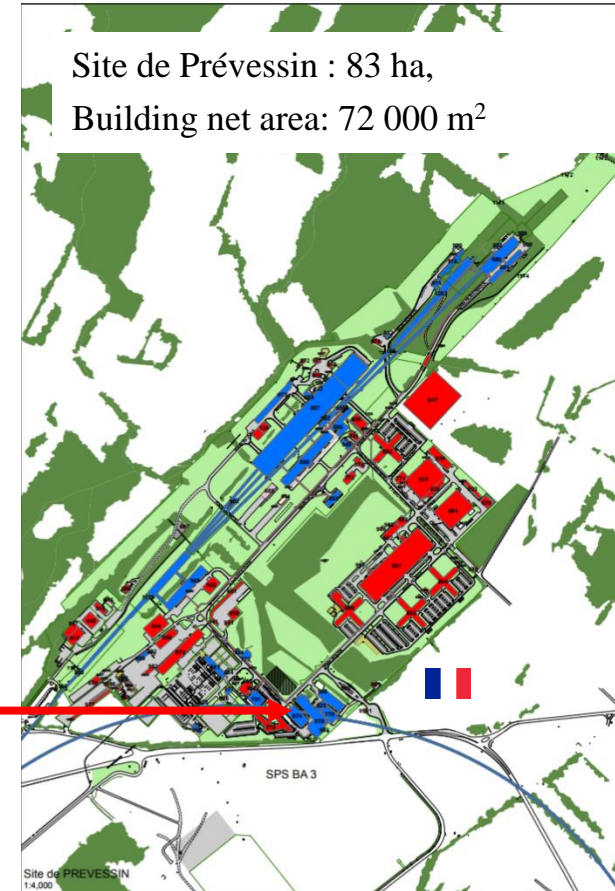
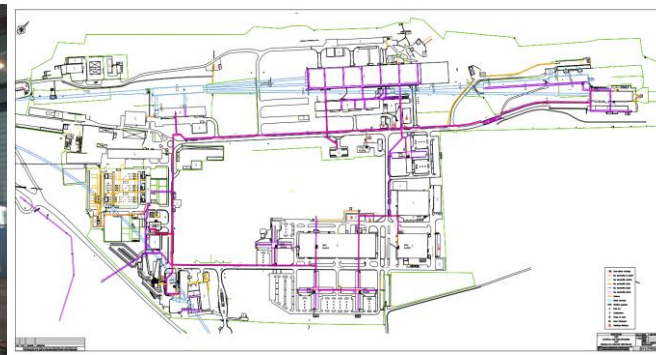
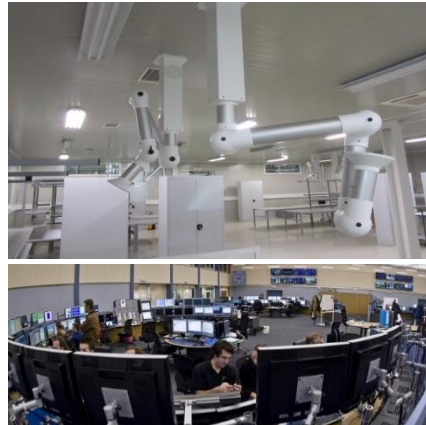


Heating function !



# Preveessin site

- Préveessin : 53 tertiary buildings & 26 barracks.
- Heating plant: 3x 5 MW.
- 5 km district heating.
- 1 restaurant.
- 1 training center.
- Office, lab and industrial buildings.



Heating function !