

West Cooling Area

Project for Modernisation of the Building 378

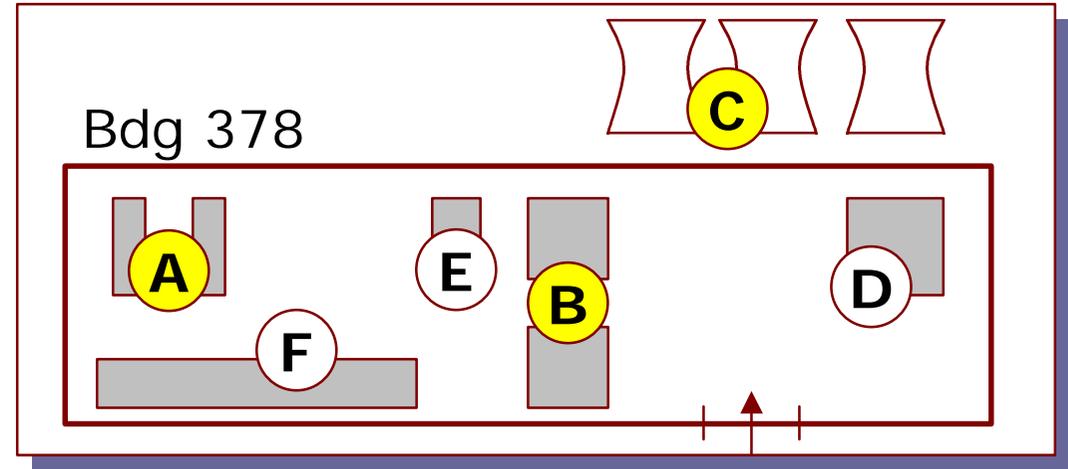
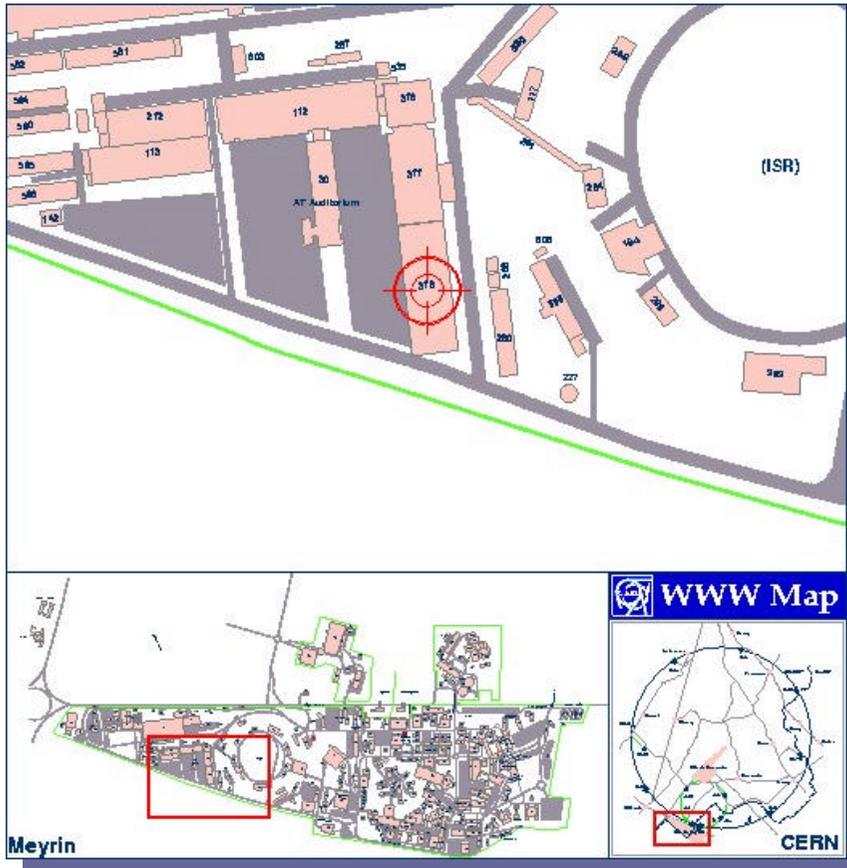


Agenda

- **The project**
- **Water chiller**
- **Demineralised Water Installation**
- **Cooling Tower**
- **Sum up**

The West Cooling Area project concern some installations of building 378

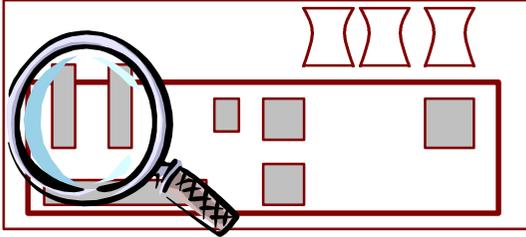
Building Location at CERN



- A - Water chillers
- B – Demineralised Water installations
- C – Cooling Towers
- D – Mixed Bed Cartridges Regeneration Plant
- E – Heat Exchangers
- F – Pumping Station

Some of these installations need to be renovated

The Water Chillers are more than 30 years old....



The Plant

- Actually two groups York (Freon R11) still in service
- About 1 MW/each of cooling power
- Installed on » 1970

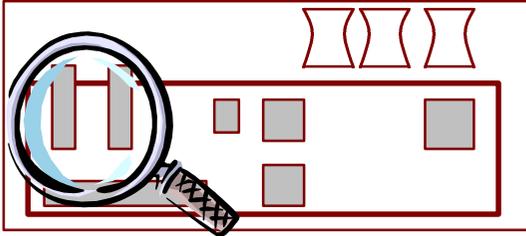
The Users

- Air conditioning of buildings 378, 357, 30, 801, 802, 281-8
- Electrical test cooling in building 377
- TOF Project cooling
- Total cooling power needed = 4 MW

Future development

- The same heat charges up to 2010

....they would need huge maintenance works



System weak points

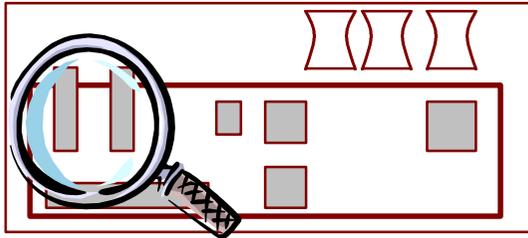
- the electrical network needs a complete renewal
- 3000V motors
 - ✓ Obsolete switches
 - ✓ Spare parts
- R11 cooling refrigerant has to be replaced before 2005 (Montreal Treat)



The Project

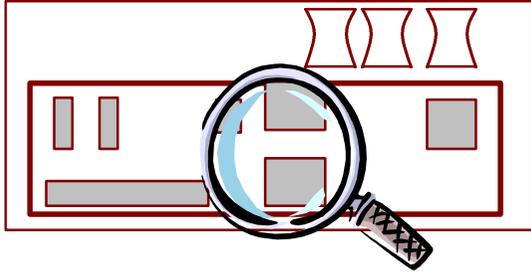
- Dismantling of two old chillers
- Installation of two new ones
- Electrical network renewal
- New control system
- Installation of two new power transformers

The operation will take more than 2 years from the moment of the contract award



Activity	Budget [kCHF]	2001	2002	2003	2004
Dismantling of two old chillers	40		[Bar spanning 2002-2003]		
Installation of two new ones	700		[Bar spanning 2002-2003]		
Electrical renewal	350		[Bar spanning 2002-2003]		
New control system	400	[Bar spanning 2001-2002]			
Installation of two new power transformers	130		[Bar spanning 2002-2003]		
TOTAL	1.620	50	900	500	170

The Demineralised Water Installation has still the performance required, it just need a modernisation



The Plant

- One installation of 25 m³/h, double redundancy
- Installed on » 1970

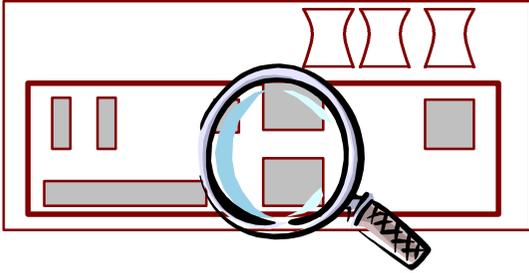
The Users

- SPS magnets circuit
- Building 287 and 377
- Meyrin and Preveessin Heating Networks

Future development

- LHC ring

The control system is 30 years old and no spare parts make it critic



System weak points

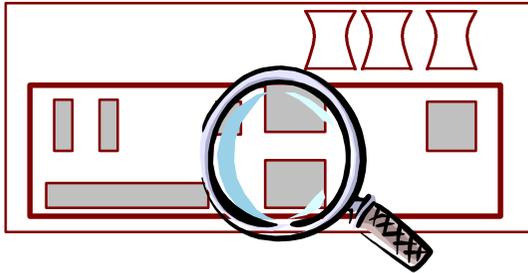
- Control system: obsolete
- Valves revision: all the valves of the circuits have to be revised.
- NaOH and HCl network in bad conditions



The Project

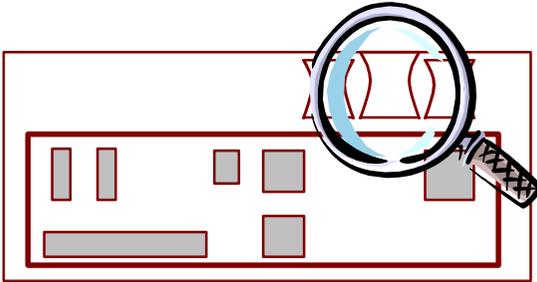
- Control system renewal with a PLC system
- Valves revision
 - ✓ one new set of valves
 - ✓ reconstruction of other sets
- NaOH and HCl network renewal

With this intervention the Demineralise Installation will keep good performance during all the LHC life.



Activity	Budget [kCHF]	2001	2002	2003	2004
Control system renewal	100		██████████		
Valves: one new set of valves	20	██████████			
Valves: revision of other sets	30		██████████		
NaOH and HCl network renewal	50		██████████		
TOTAL	200	10	190		

The most part of the Cooling Towers have no more user...



The Plant

- One tower (white one) » 5 MW abandoned since many years
- Five other towers » 8 MW/each in very bad conditions. Just one running.

The Users

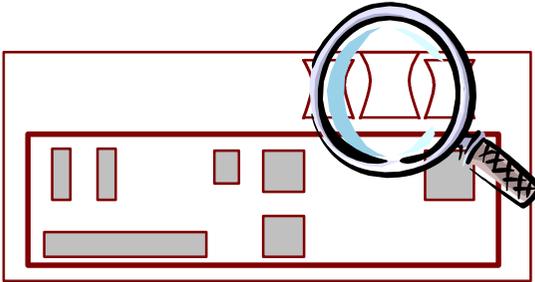
- Demineralised water cooling
- Chilled water production

Future development

- No expansion foreseen

Many towers can be removed and the area can be cleaned

....the THERMOTANK tower (white tower) would be enough for the system



System weak points

The THERMOTANK tower:

- It has the power requested.
- The exchange packing, metal structure and plastic lined concrete basin are in good condition.
- It needs a mechanical renewal.

The other towers:

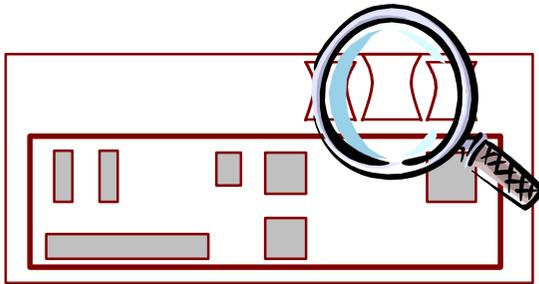
- They are in very bad conditions and have asbestos parts (Eternit)



The Project

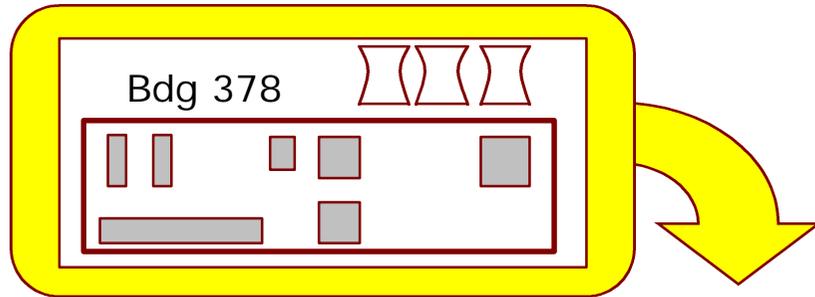
- Asbestos removal
- Dismantling of the five towers and cleaning up of the area
- New piping connection
- Motor and fan renewal of the THERMOTANK tower

The THERMOTANK cooling tower could be operative to serve the old cooling groups



Activity	Budget [kCHF]	2001	2002	2003	2004
Asbestos removal	300		300		
Dismantling of the old towers	150			150	
New piping connection to the THERMOTANK tower	50		50		
Motor and fan renewal of the THERMOTANK tower	70	70			
TOTAL	570	20	400	150	

The West Cooling Area Project would be ultimate in the first part of the 2004



Activity	Budget [kCHF]	2001	2002	2003	2004
Chilled Water Plant	1.620		[Bar spanning 2002 and 2003]		
Demineralised Water Plant	200		[Bar in 2002]		
Cooling Towers	570		[Bar spanning 2002 and 2003]		
TOTAL	2.390	80	1.490	650	170