

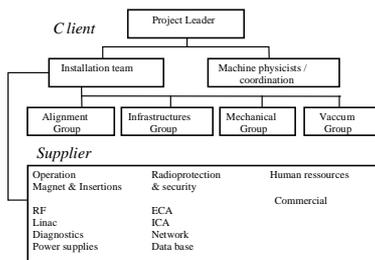
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## Organization

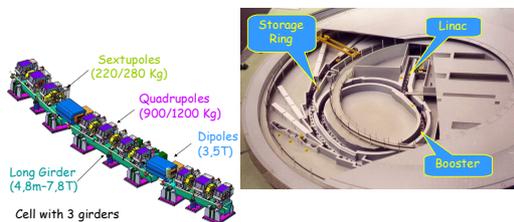
To carry these operations through a successful conclusion, a team dedicated to installation was set up, including 3 people of the Operation group (the group leader, his assistant and 1 operator), as well as 1 mechanic and the person responsible for Planning/Project methods. Throughout the installation, this team relied on technical skills of the various SOLEIL groups, the first of which being the Mechanical, Vacuum, Alignment, and Building groups (especially the crane operators).

Meetings were also systematically organised to follow the installation: an "evening review" was daily made to account for the operations advances; the coordination between all the building trades was made during the meeting "Interfaces Machine Installation" on each Monday. The installation constraints were discussed with the project leader and the persons in charge for programmes, in particular for the experimental program on each Friday.



**SOLEIL is a third generation Synchrotron radiation Source, under construction in France near Paris. The 354 m circumference storage ring is mainly composed of 32 (+1) dipoles, 160 quadrupoles, 120 sextupoles, 2 RF cryomodules, ~ 200 vacuum chambers, 6 injection equipments; 12 beamline front-ends and 4 insertion devices (initially).**

**The 157 m circumference Booster comprises 36 dipoles, 44 quadrupoles, 28 sextupoles, 1 RF cavity and 8 injection/extraction equipment**



## The planning base unit is a pair of cells.

The magnets (Quad and Sextu.) and their vacuum chambers are installed on the girders in the pre-assembly area:

2 days in average for a girder: Setting of magnets and vacuum chambers, vacuum tests and alignment.

56 days in total with 2 teams (2 mechanics, 2 vacuum tech., 1 store keeper, 1 crane operator)

Installation of a pair of cells (without straight sections):

1st week : Arcs & BL Front ends (roof Beams open)  
Girders, dipoles, pre-alignment, dipole VC, equipment and Front end transportation

2nd week : Arcs & BL Front ends (roof Beams closed)  
Vacuum equipment, Front End setting, Vacuum tests, Alignment

3th week : Fluids connecting

4th week : Magnet cabling

5th week : Equipment cabling

Straight sections are installed once all the arcs & front ends are fixed and connected: 29 days

Fluids connecting and cabling: 104 days (in parallel)

Arcs, front ends and straight sections of a pair of cells are baked together: 32 days

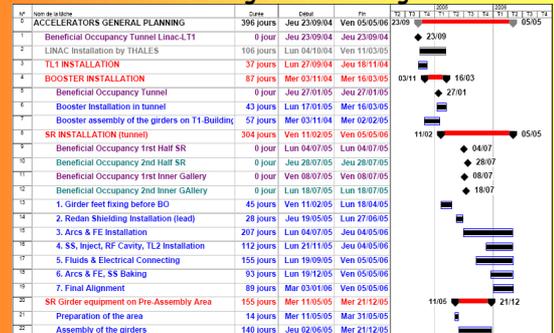
Final alignment: 39 days

## The real task sequencing was different than scheduled

In reality, many unknown factors, delays on the buildings, delays on the equipment deliveries, technical problems encountered during the construction, have constrained us to significantly and frequently amend and adapt this initial planning. Due to the various delays, it was also necessary to manage the cohabitation with the various building trades. However, we could not the initial planning paid off as without its detailed protocols, we work made not have carried out the Process installation within correct deadline..



## Final general Planning



## Balance-Sheet in 2006

The year 2006 was remembered by the starting of commissioning of the Ring, with a first beam that could be circulated on May 14.

Over the 2004 operating hours, two periods are to be distinguished:

- The first two series of Runs were only devoted to the Storage Ring commissioning

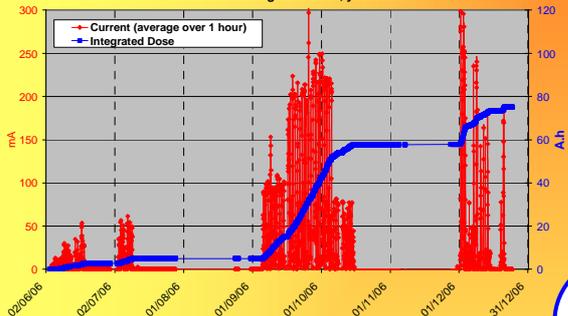
- As of the third series of Runs, 36 shifts out of the 163 programmed were devoted to the Beamlines. During this period, 5 of them opened for the first time.

The maximum current of 300mA possible with only one cryomodule RF was reached very quickly, after only 30A.h of integrated current dose.

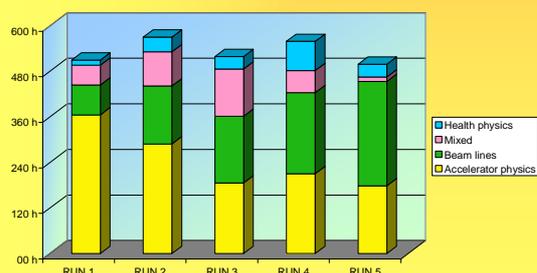
Over the period going from July to December, a rather precise assessment on the whole of the machine and lines sessions could be established.

The availability of the beam represented 83.5 % of total time, with 11.2 % of time of breakdowns and 5.3 % of time of injection, preparation of manipulations or interventions.

Current and Integrated Dose, year 2006



Share out of the effective beam time : 2 650 h (from January to July 2007)



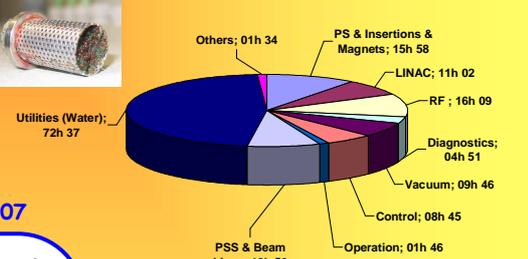
3 kinds of line sessions are to be distinguished:

- ° The health physics tests to measure and validate the shielding of the hutches.
- ° Mixed sessions with commissioning of insertions, while beam is delivered to Beamlines.
- ° Very stable beam delivered to Beamlines

Many water problems related to the resin balls presence in the coolant circuit of the ring tunnel equipment and the quadrupoles power supplies have strongly penalized the operation.



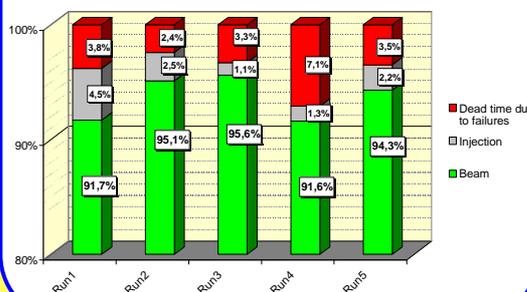
Dead time due to failures : 155h 18 (from July to december 2006)



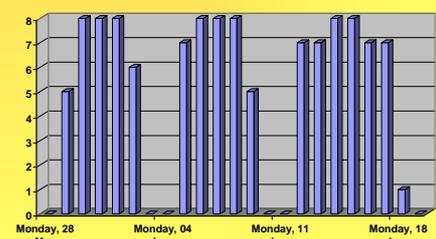
## Balance-Sheet in first half of the 2007

The planned operation of the year 2007 envisages 3096 operating hours for the Beamlines and 1800 hours for the machine. Shutdown days number remains significant in order to allow the installation of further insertions and Beamlines front-ends.

From January to July 2007, 1426 total hours of beam were delivered to the Beamlines, which corresponds to 93.8% of the total time scheduled.



During first half of the year, 5 new Beamlines have for the first time opened their front-end. As of Run 4th, 5 to 8 Beamlines use the beam of SOLEIL regularly



The beam intensity delivered in multi bunch mode (filling mode 3) in Beamline sessions gradually passed from 50mA to 100mA then 200mA. With a beam lifetime of about 14h at 200mA, in average 3 re-injections per day.