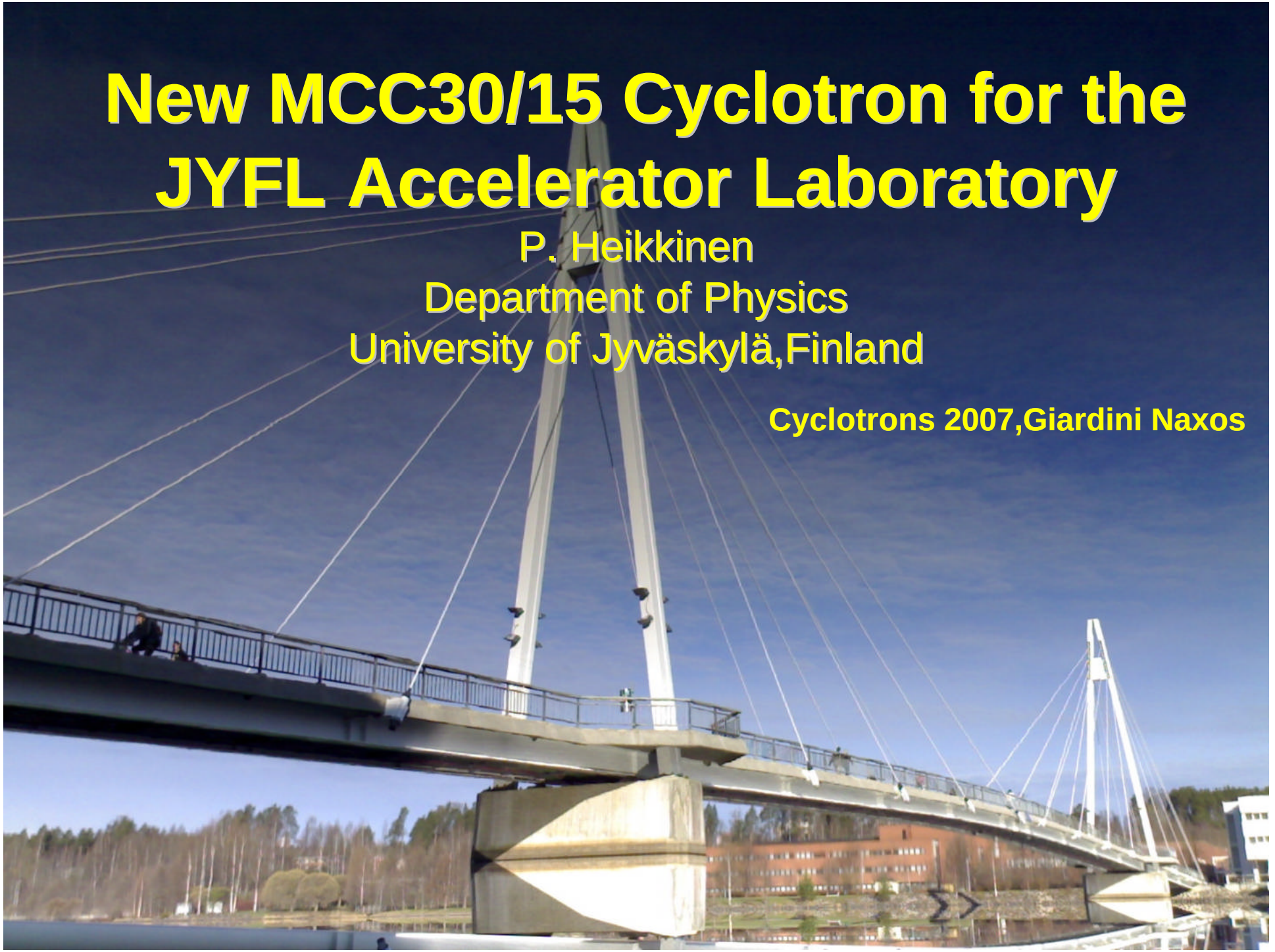
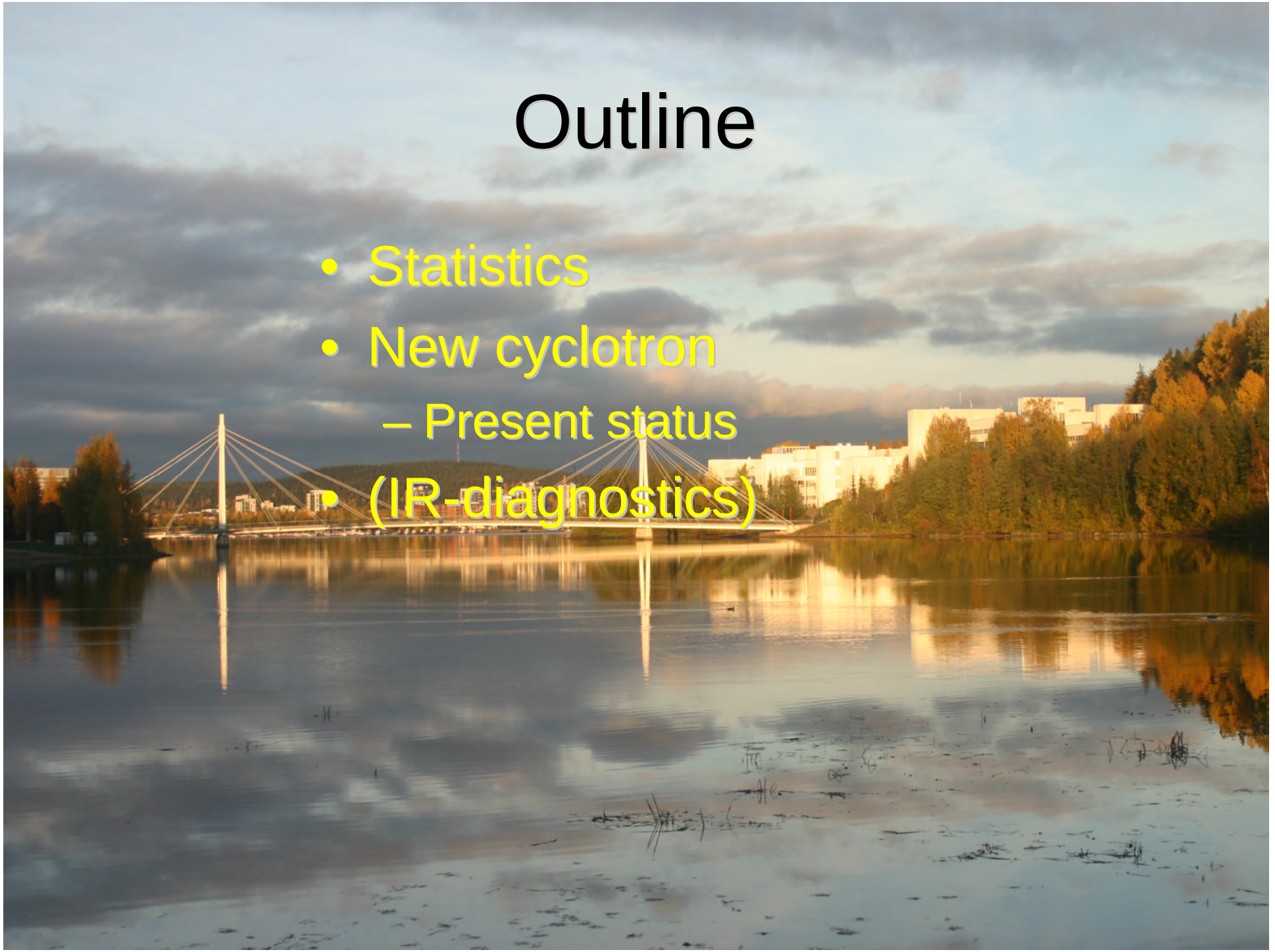


New MCC30/15 Cyclotron for the JYFL Accelerator Laboratory

P. Heikkinen
Department of Physics
University of Jyväskylä,Finland

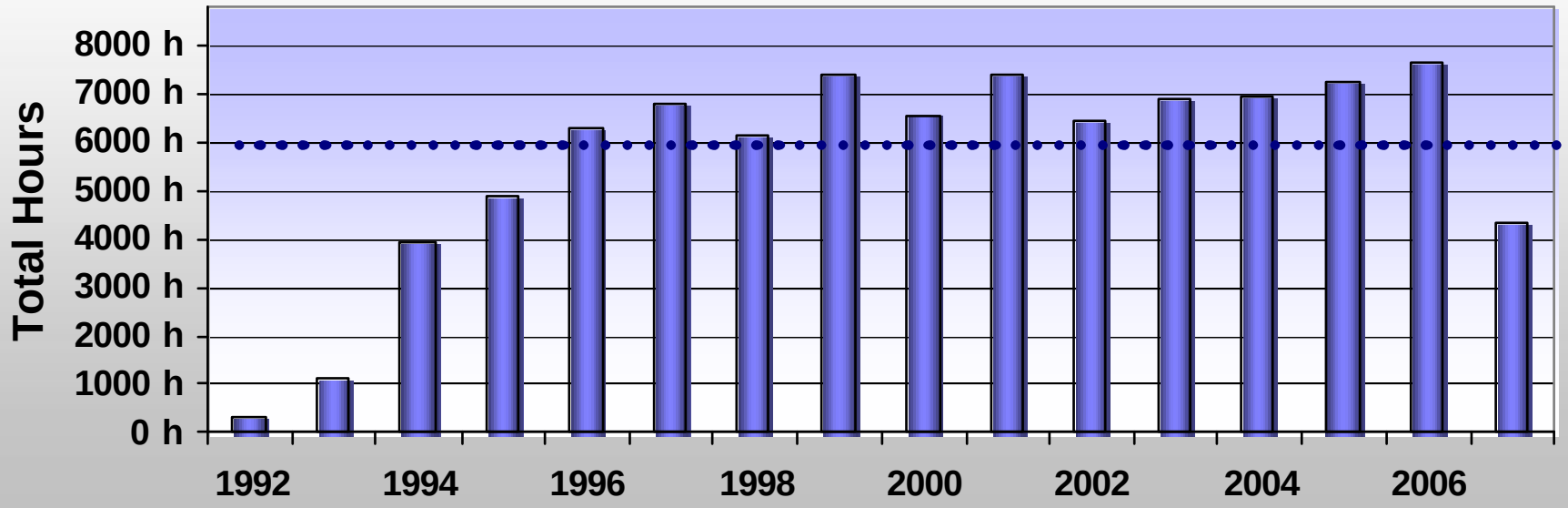
Cyclotrons 2007,Giardini Naxos



Outline

- Statistics
- New cyclotron
  - Present status
- (IR-diagnostics)

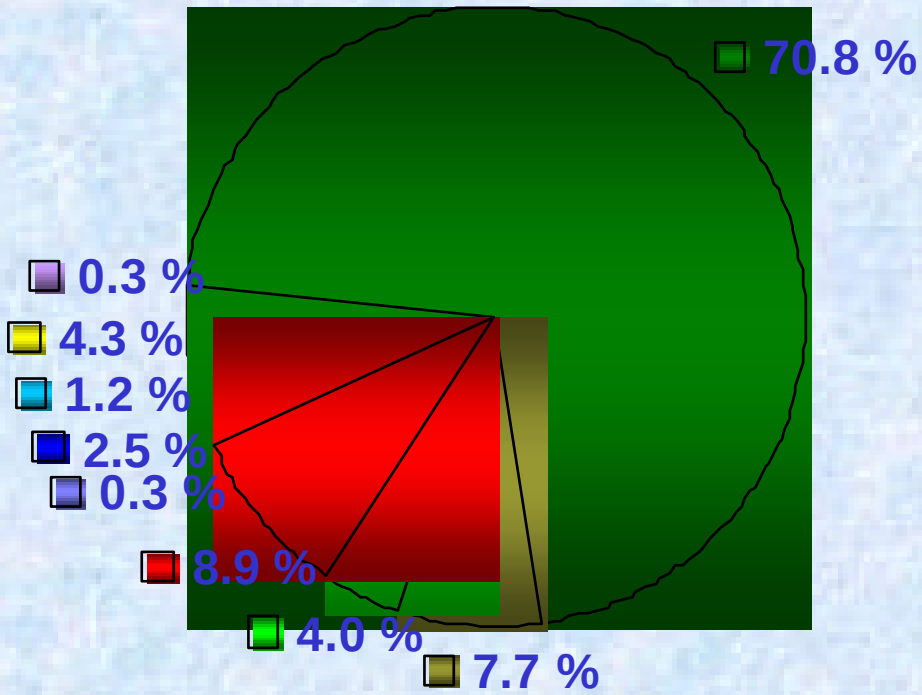
Operation of the Jyväskylä Cyclotron



- Estimated use for 2007 is 6200 hours
- August 13th, 2007: 90.000 hours
- 100.000 hours early 2009
- Very little time for maintenance
- Practically no time for machine development

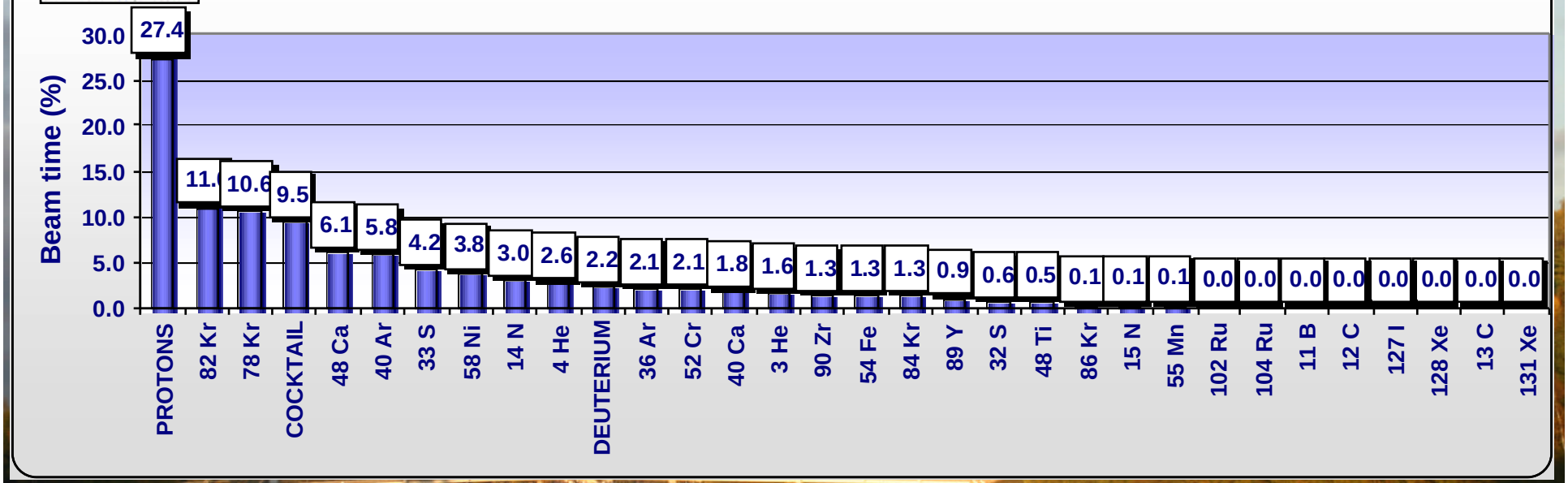
Magnet quench at IGISOL (Trap)

Cyclotron use in 2006



- ECR I INJECTION
- ECR II INJECTION
- LIISA INJECTION
- BEAM TUNING
- BEAM DEVELOPING
- BEAM ON TARGET
- STAND BY
- CANCELLED
- BEAM OFF (SERVICE)

Accelerated Ions in 2007 (All)



- 30 different isotopes
- 1/3 protons
  - mainly for proton induced fission and 123-I production
- Cocktails for space electronics testing (ESA)

New cyclotron

- 30 MeV H^- cyclotron MCC30/15
  - from NIIEFA (Efremov Institute, St. Petersburg)
  - as a partial compensation of former Soviet Union debt to Finland (Inter-governmental agreement between Finland and Russia, August 15, 2006)
  - Full system with two beam lines
    - beams for IGISOL (p-induced fission) and MAP Medical Technologies (123-I)
    - two extractions
      - e.g. 18-F production
- First beam in 2009

Contract, February 20th, 2007

University of Jyväskylä:

Rector Aino Sallinen

Adm. Director Erkki Tuunanen

Alexey Lyutik, Machinoimport

Mikhail Vorogushin, NIIEFA

(Valery Shlyamin, Russian Trade Representative)

JOINT STOCK COMPANY
FOREIGN ECONOMIC ASSOCIATION
RF,119330, Moscow, Mosfilmovskaya str. 35

Tel. +7 (495) 981-99-64, 143-87-97 Fax +7 (495) 143-87-39
e-mail: msm@machim.ru

20.06.2007. **Our Ref №** **50-0705/081**

To Your Ref. № _____ **Dt.** _____

University of Jyvaskyla, Finland
Department of Physics
Attn.: Mr. Pauli Heikkinen
e-mail: Pauli.Heikkinen@phys.jyu.fi

Dear Mr. Heikkinen,

[redacted]

the Contract into force if you have already received the approval of the Ministry of Trade and Industry of Finland. Please kindly confirm th[illegible] as soon as possi[illegible] order we could give official notificati[illegible] the Contract (invoice with TAP P[illegible] will be forwarded for y[illegible]

Lookin[illegible]

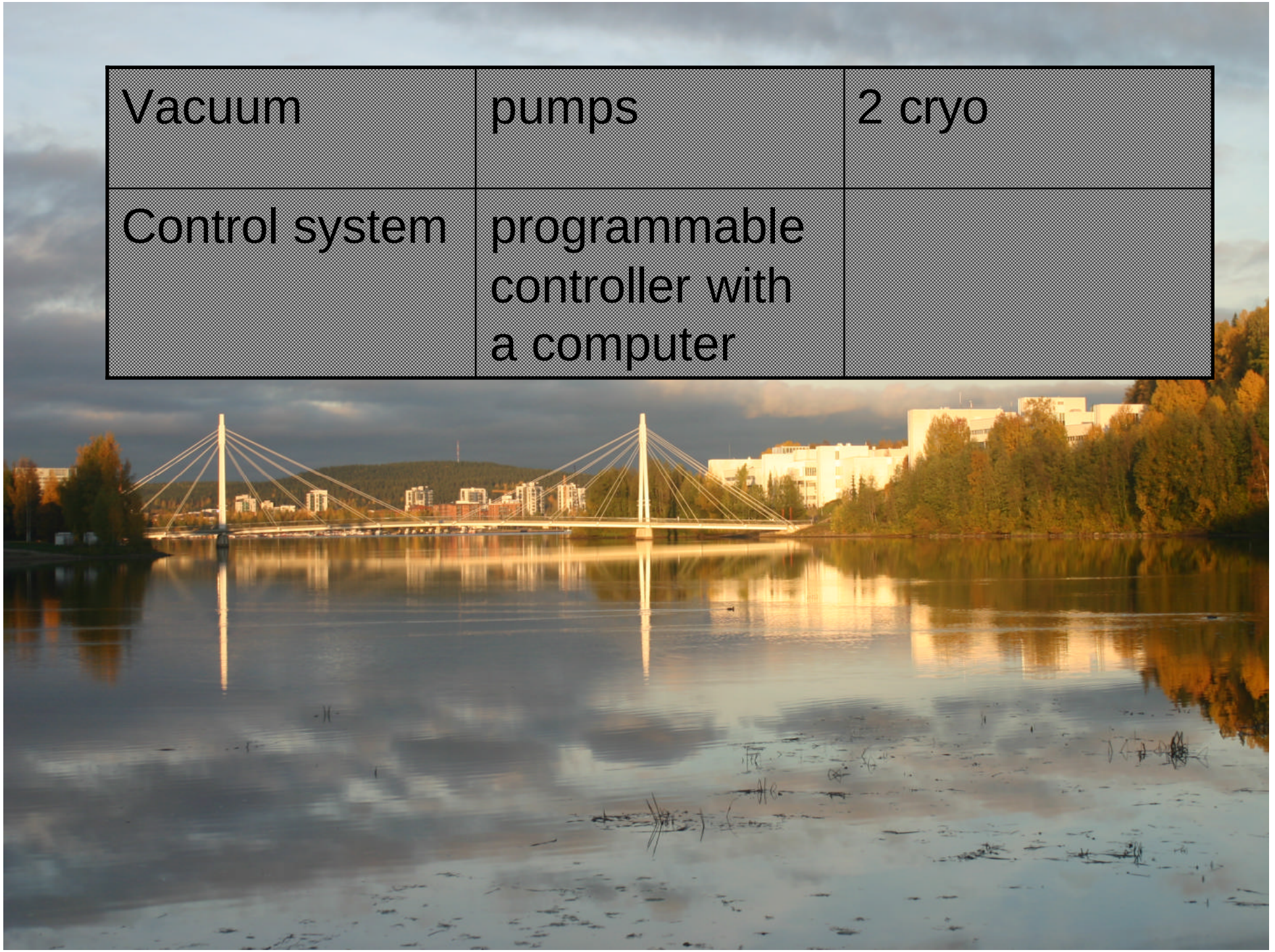
Content of delivery

- Electromagnet with vacuum chamber
- RF-system with RF generator
- Beam transport system (two beam lines)
- External injection with ion source
- Power supplies
- Pumping system
- Control system
- Water cooling system (inner loop)
- Pneumatic system
- Spare parts
- Installation and training

Specifications

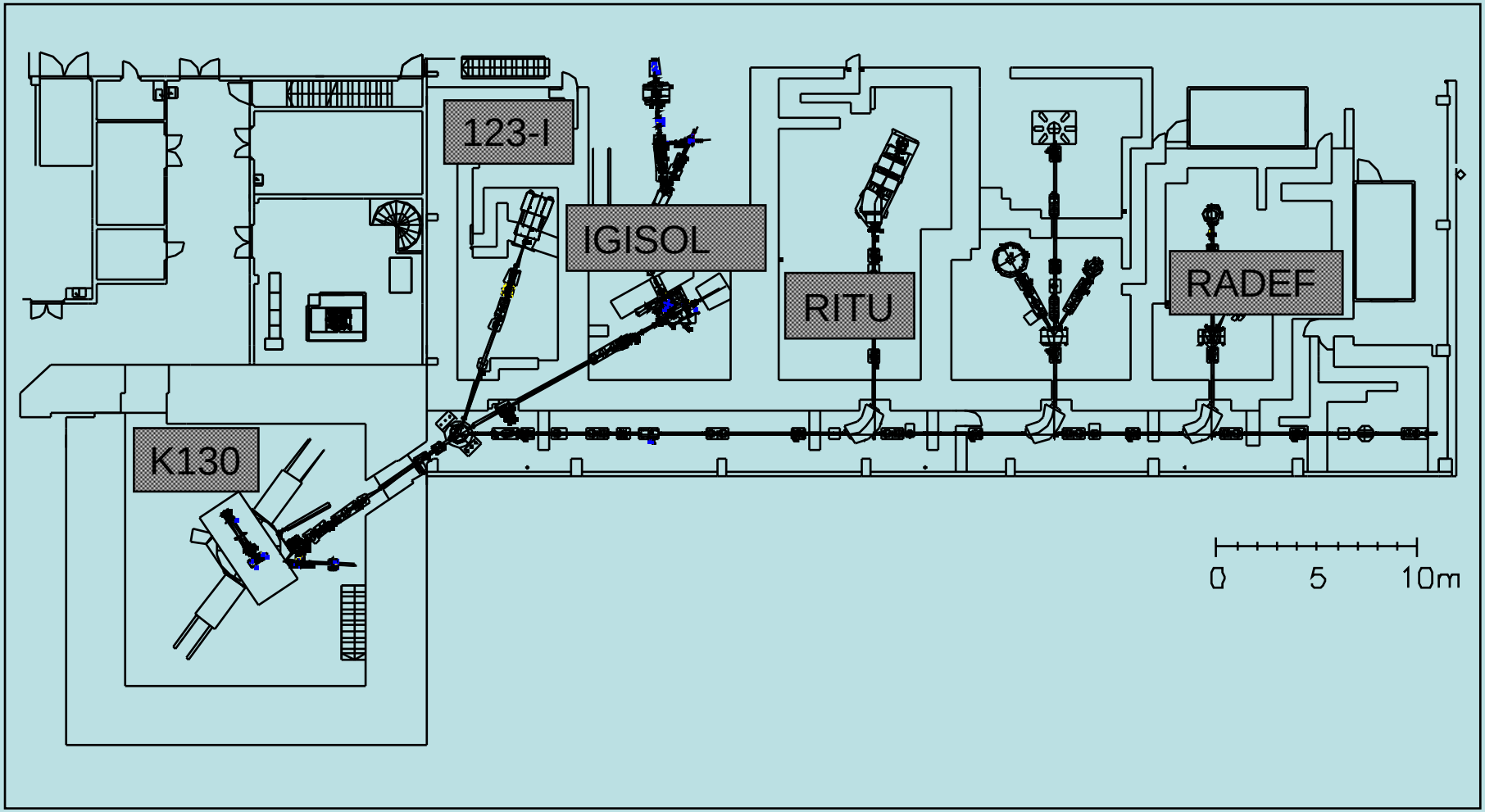
Beam	H^- d^- beam current	18 – 30 MeV 9 – 15 MeV 100/50 μA
Power consumption	Stand by Beam on	< 15 kW <120 kW
Magnetic structure	pole diameter sectors <B> coil power weight (Fe/Cu)	140 cm 4 1.336 T 10 kW 40/2.5 t

RF-system	number of dees	2
	dee angle	42 deg
	frequency	40.68 MHz
	dee voltage	35 – 40 kV
	dissipated RF power/dee	<8 kW
	RF-gen output power	25 kW
Ion source	type	CUSP
	location	external
	arc power	<3 kW
	current	1.5/0.7 mA



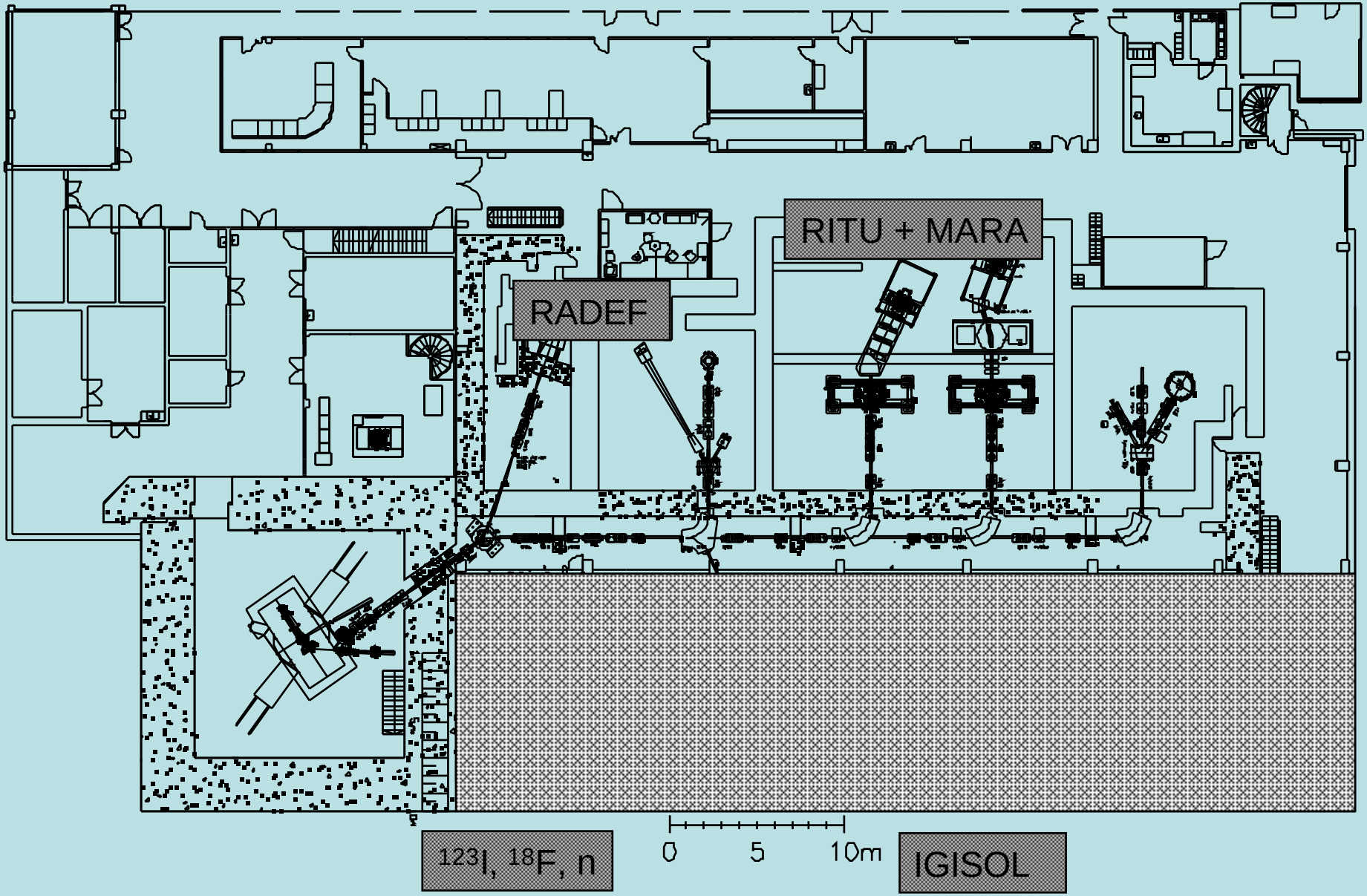
Vacuum	pumps	2 cryo
Control system	programmable controller with a computer	

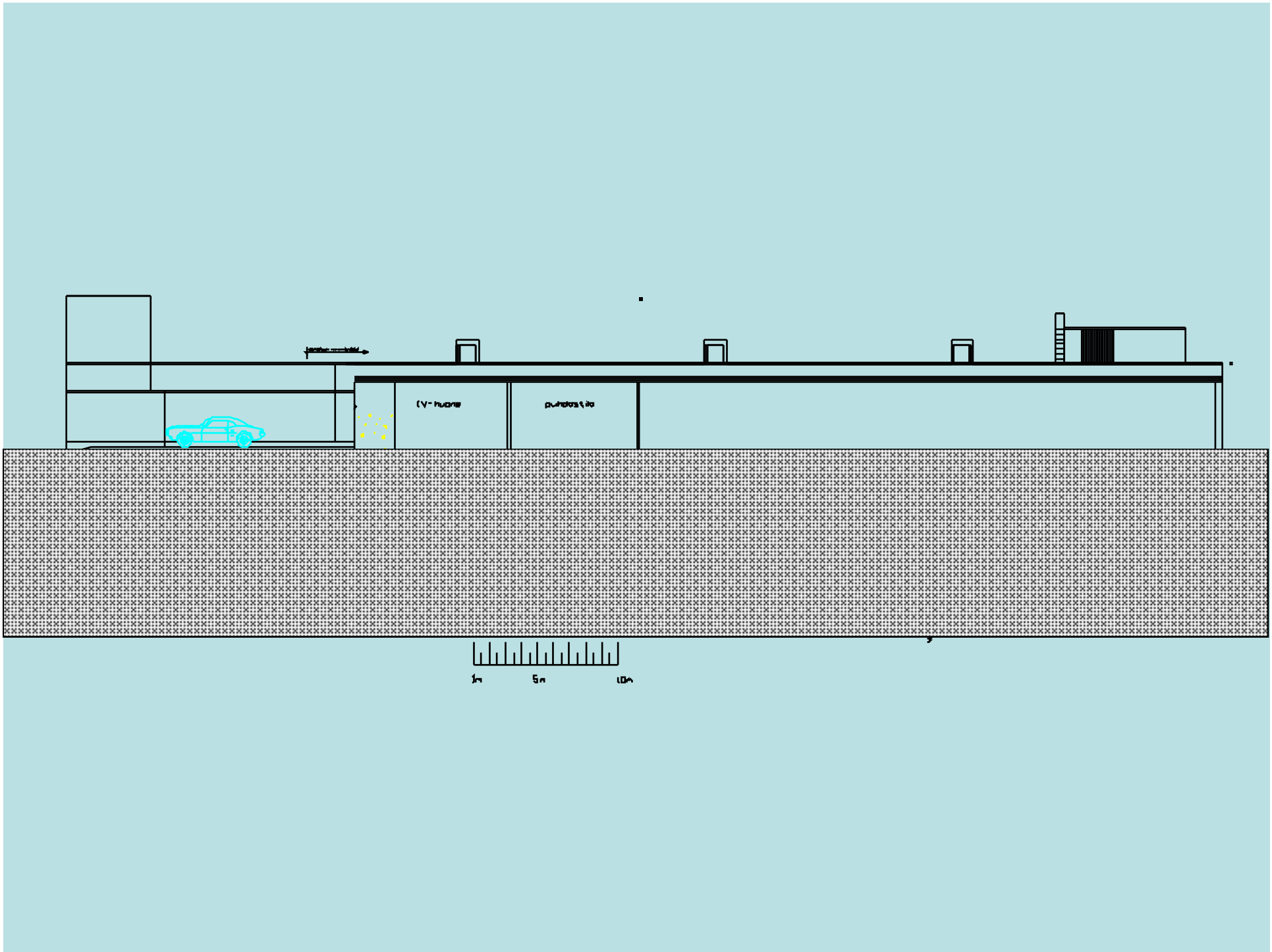
Now

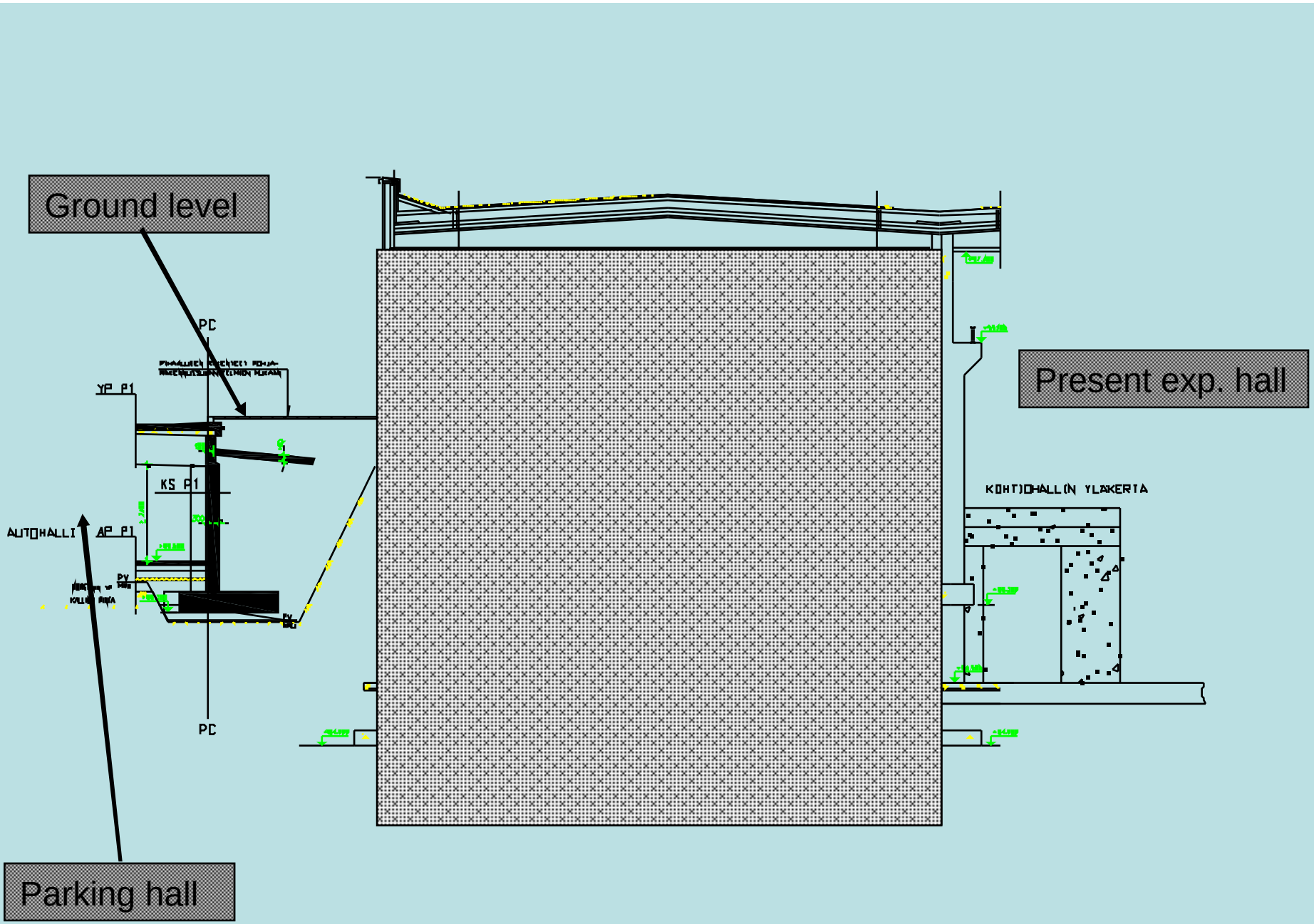


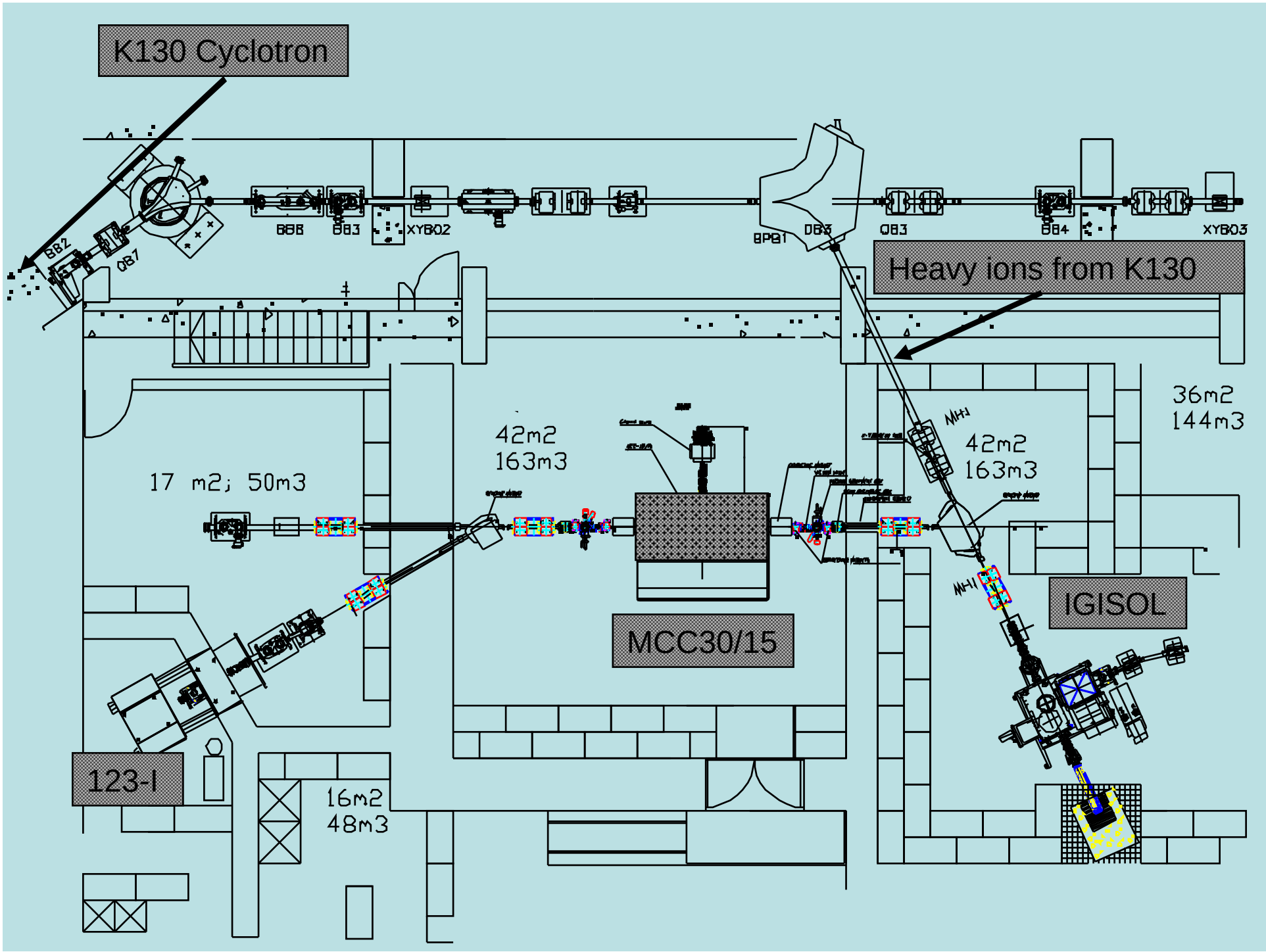

Weight limit 15 tons

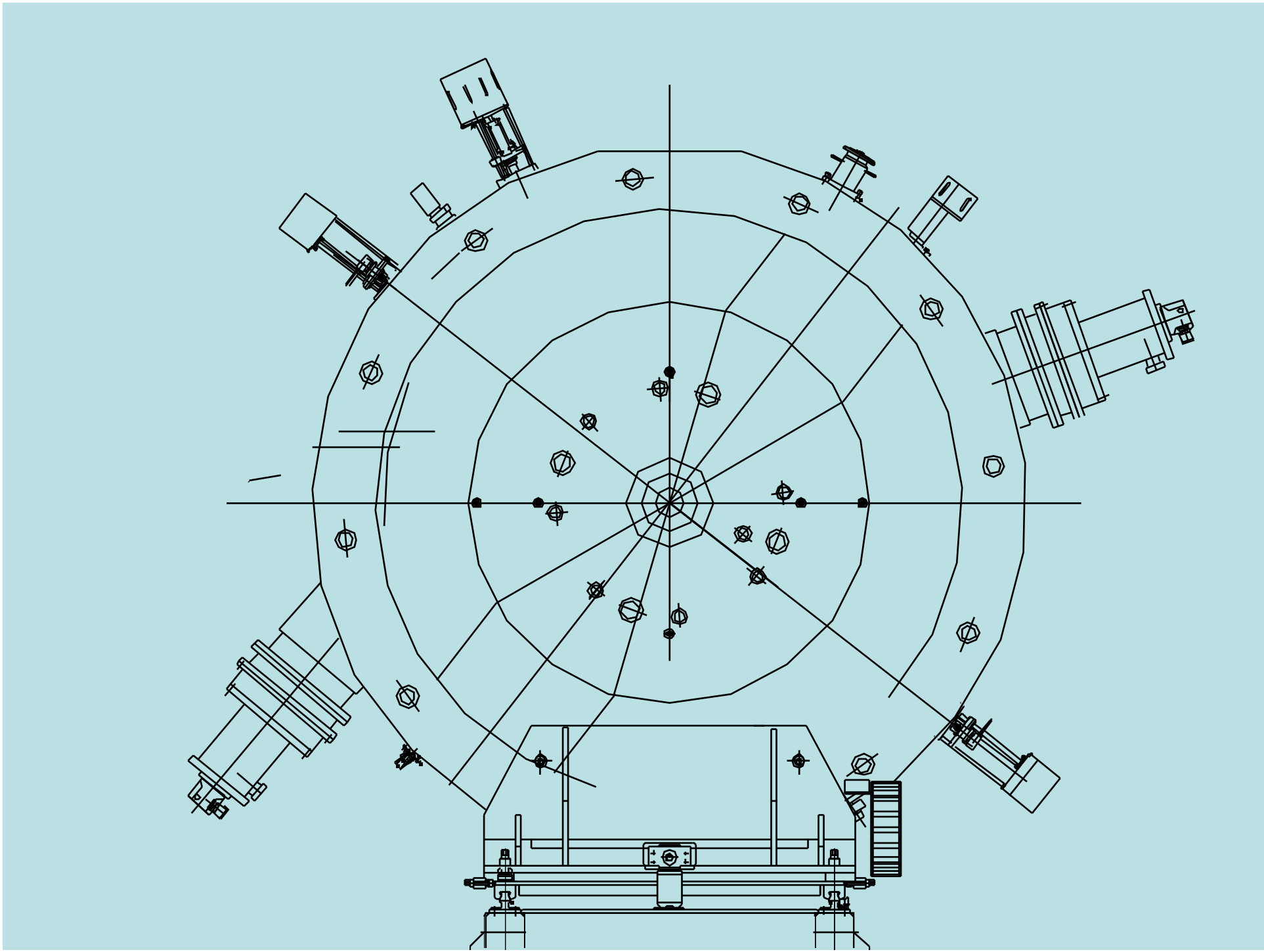

Support during construction


RITU + MARA
RADEF
123I, 18F, n
0
5
10m
IGISOL




Ground level
Present exp. hall
Parking hall
PC
YP P1
KS P1
AUTOHALLI
AP P1
PV
PC
KOHTIOHALLIN YLÄKERTA

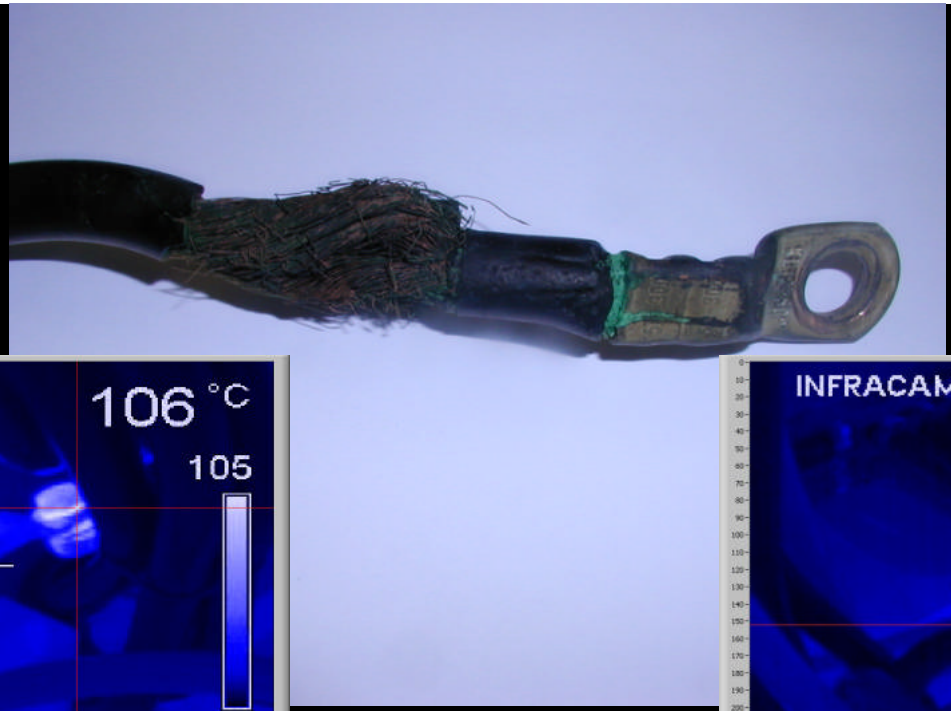

K130 Cyclotron
Heavy ions from K130
BB2
QB7
BBB
BB3
XYB02
BPB1
DB3
QB3
BB4
XYB03
36m2
144m3
42m2
163m3
17 m2; 50m3
42m2
163m3
MH1
MH1
IGISOL
MCC30/15
123-I
16m2
48m3

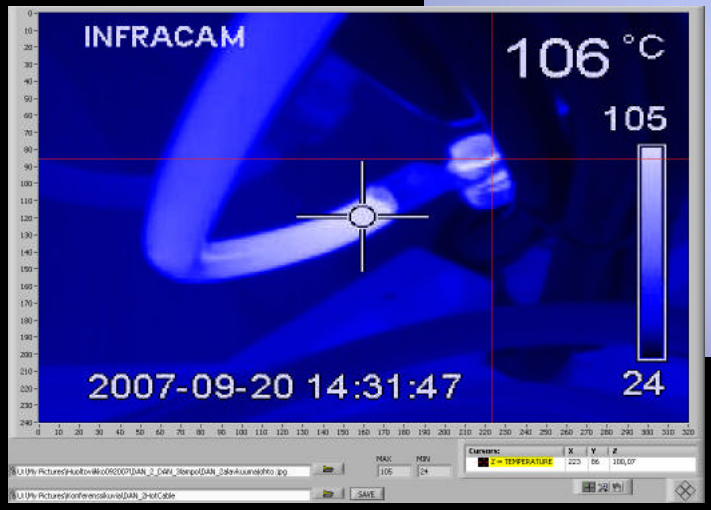


Turku PET Centre CC18

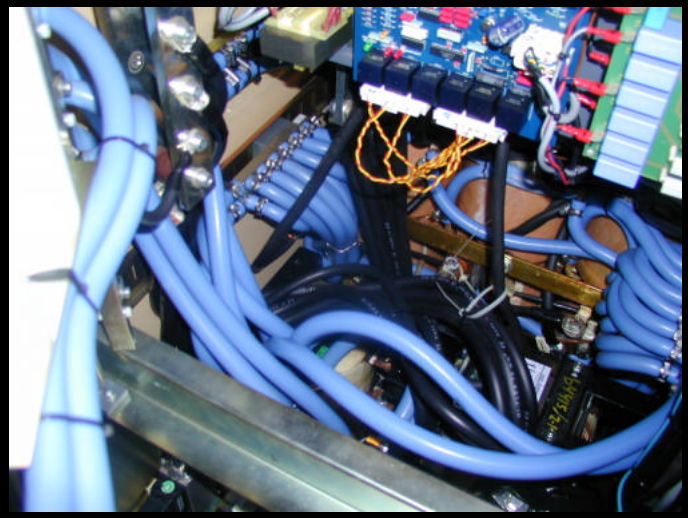
- Made by NIIEFA, St. Petersburg
- As a partial compensation of the former USSR debt to Finland

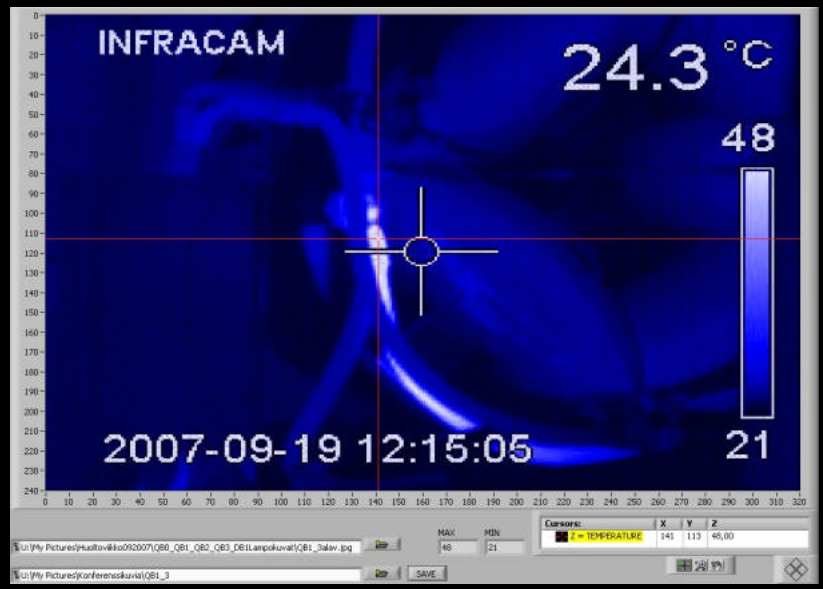
IR-diagnostics

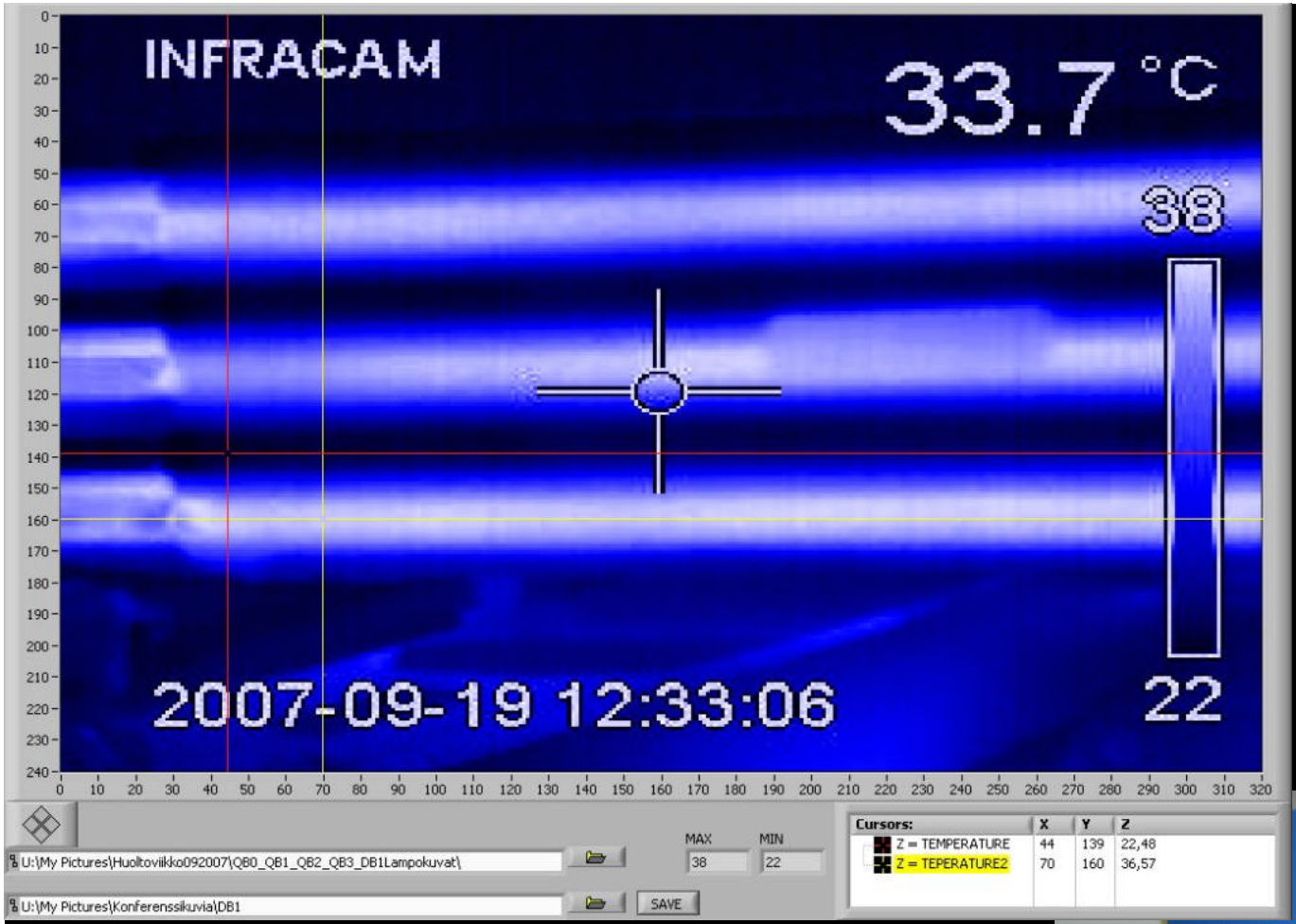



INFRACAM
106 °C
105
2007-09-20 14:31:47
24


INFRACAM
35.5 °C
52
2007-09-21 14:20:09
23




INFRACAM
24.3 °C
48
21
2007-09-19 12:15:05
MAX
MIN
Cursors:
SAVE


INFRACAM
33.7 °C
38
22
2007-09-19 12:33:06
U:\My Pictures\Huoltoviikko092007\QB0_QB1_QB2_QB3_DB1Lampokuvat\
U:\My Pictures\Konferenssikuvia\DB1
SAVE
MAX
MIN
38
22
Cursors:
X
Y
Z
Z = TEMPERATURE
44
139
22,48
Z = TEPERATURE2
70
160
36,57

Thank you !