

The Vacuum control system for Hardware commissioning of sector 7-8.

The 4th LHC Control Project Workshop
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13/6/2003

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Contents

- Vacuum Equipment
- What is specific?
- System Architecture
- Where are we today?
- What do we need?
- Milestones
- Responsibility
- Conclusion

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Vacuum Equipment in number

- 4 different Vacuum system: 2 beams, QRL & Cryostat
- Large number of Vacuum equipment:
 - 1200 Gauges
 - 230 Sector valves
 - 400 Ion pumps, 180 pumping group, 40 sublimation pumps
 - 60 mobil equipments for Beam Vacuum + 40 for Insulation Vacuum
 - Bake out equipment.
- Used for the control: 1 server PVSS, 28 PLC S7/400, >100 PLC S7/300.

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Vacuum Equipment for Sector 7-8

- Insulation Vacuum for QRL pressure between 10^{-3} and 10^{-6} mbar done by Air Liquide
 - 1100 m³ to pump
 - 8 Pumping groups and 16 “By-Pass” valves.
 - 35 Gauges
- Insulation Vacuum for Magnets pressure between 10^{-3} and 10^{-6} mbar (without LSS)
 - 1160 m³ to pump
 - 8 Pumping groups and 16 “By-Pass” valves.
 - 50 Gauges
- Beam Vacuum pressure up to 10^{-10} mbar
 - 12 gauges

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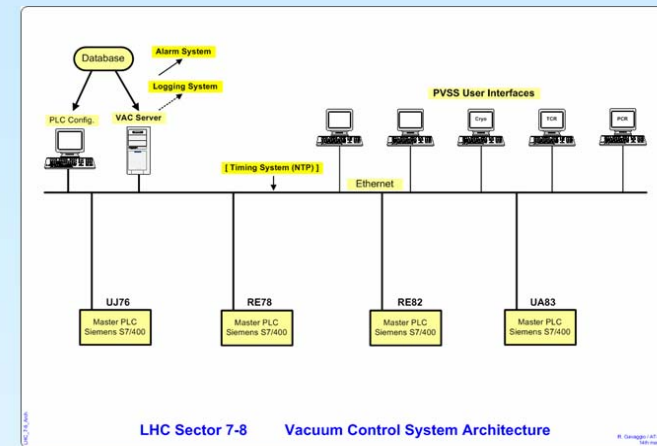
What is specific for us?

- LHC will stay under Vacuum 365d/year and 24h/24
- Different types of users with different needs (Vacuum group, Vacuum piquet, TCR, PCR, Cryo control group)
- Local control during commissioning and leak detection
- Mobil equipment

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System architecture

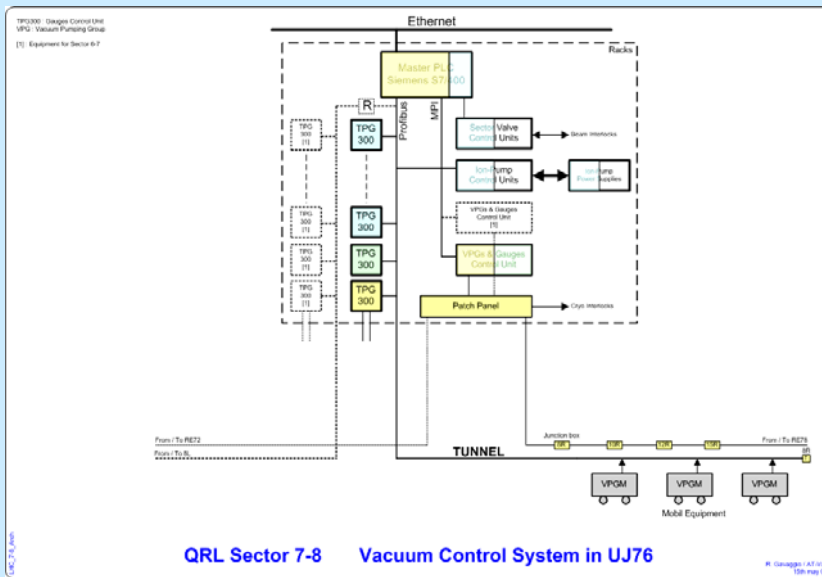


LHC_Vacuum_Control_System, E. Gavaggio / AT-Vac

2

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Where are we today?

(June 2003)

- Installation of all cables in sector 7-8 (arc & LSS) with Profibus line.
- Waiting of QRL installation to start pumping with mobil pumping group
- Developing an PVSS application in collaboration with Protvino.
- Plan to use Alarm System and Logging from Nov. 2003.

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What do we need from the Controls Group?

- Logging and Alarm central system
- Timing system, used only for sector valves under beam vacuum
- Ethernet in the alcoves

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Vacuum Milestones

QRL Installation	21/07/003
QRL Insulation Vacuum (tests)	1/10/2003
QRL Insulation Vacuum (commissioning)	11/11/2003
Magnets Insulation Vacuum (tests)	01/06/2004
Magnets Insulation Vacuum (commissioning)	01/06/2004
Beam 1 & 2 Vacuum (tests)	01/06/2004

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Control Milestones

Racks, Cables, UPS	21/07/2003
Ethernet in UJ76, RE78, RE82& UA83	21/07/2003
PVSS Server	21/07/2003
Alarm, logging & Interlocks	11/11/2003
Wireless Ethernet in the tunnel	?

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Vacuum group Responsibilities

- Hardware Commissioning Responsible: Paul Cruikshank
- Vacuum Equipment:
 - AT/VAC/EN2 section, Paul Cruikshank for cold part
 - AT/VAC/SL section, Miguel Jimenez for Room temperature part or Christian Rathjen
- Vacuum Controls:
 - AT/VAC/IN section, Richard Gavaggio, Isabelle Laugier.

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Conclusion

- All the vacuum system for sector 7-8 will be under control in due time!
- Our first experience with SPS will be used.
- For us, nothing really new!!!

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