

IDE DCS development overview

Ewa Stanecka, ID Week, CERN 29.10.2013

Overview

▶ Actions in 2013

- ▶ Thermal enclosure heaters control system upgrade
- ▶ IDE DCS upgrade
- ▶ SRI IDE DCS test system

▶ Plans for 2014

- ▶ New systems integration
 - ▶ Thermosiphon
 - ▶ Sonar

IDE DCS projects

IDE LCS:

- overall FSM
- beam monitoring
- IDE racks monitoring
- safety scripts

ATLAS network

Follow Pixel schedule



ATLIDEEVCOOL

- cooling plant
- SCT & Pixel cooling

ATLIDETEH

- thermal enclosure heater pads

ATLIDESNR

- degassing
- leak check
- mass flowmeter

ATLIDERAD

- radiation monitoring

ATLIDEBLM

- beam conditions

ATLIDEEVENV

- ID environment monitoring

ATLIDEMAG

- magnetic field monitoring

ATLIDEBCM

- beam conditions
- luminosity

TEH

- ▶ TEH control replaced with new one:
 - ▶ Mechanical improvements to card/backplane
 - ▶ Improved remote control and interlock
- ▶ **May/June 2013 -> EC C and EC A is commissioned and tested**
 - ▶ each „heater pad group” was switched separately to check mapping
 - ▶ All left for ~ 30min in „auto” mode
 - ▶ Very smooth start for heater pads that were working during normal detector operation
 - ▶ Software/hardware mapping verified and corrected for pads that were not in use so far
- ▶ **August 2013 -> Consolidation of TEH pads/sensor connections on PPI side C, recovered 15 out of 17 bad pad/sensor connections.**
 - ▶ **Need to implement recovered channels into TEH DCS configuration**
- ▶ **Tuning PID parameters for operation – to be done with cooling operational**

DCS upgrade

- ▶ IDE DCS follows ATLAS DCS LSI upgrade plan, that includes important changes both in hardware and in software:
 - ▶ New computers DELL PowerEdge R610
 - ▶ installed 6 new machines in PI, old machines kept until new system commissioning
 - ▶ OS system upgrade: Windows NT to Linux
 - ▶ PVSS-> WinCC 3.11
 - ▶ CAN bus interfaces: KVASER->Systemc
 - ▶ OPC DA server -> OPC UA server
- ▶ We plan to finish upgrade of IDE DCS before end of 2013
- ▶ Concern: we have non standard parts (e.g. ELMBs) in IDE, need to test carefully

IDE DCS test system in SR1

- System test for TEH system installed crate installed
- To test full DCS upgrade procedure for TEH system, which uses non-standard ELMBs.

Task	Status
TEH crate installation	done
OS system, WinCC + OPC UA installation	done
Systec box stand alone test	done
Systec box test with TEH hardware	November 2013
Script for config file for the new OPC UA	November 2013
Full system tests	November 2013

New systems integration

- ▶ Thermosiphon
 - ▶ Prepare panels for monitoring thermosiphon
 - ▶ detector parts remain unchanged, the same control on single line level
 - ▶ monitoring of the plant changes
 - Thermosiphon will be monitored from the local server based on UNICOS CPC 6 framework of EN/ICE
 - These local data servers will be located in CCC
 - ID DCS and Thermosiphon data exchange via DIP (?)
 - A few crucial parameters will be monitored directly from PLC
 - ▶ Work to be done in IDE DCS
 - Exercise communication with CCC and PLC
 - define list of parameters to be exchanged and operation procedures
 - replace “compressor module” by “thermosiphon module”, panels etc.

- ▶ Sonar – will be integrated in IDE DCS for the first time. Still some development needed in particular implementation of Final Machine State. For more details see Greg’s talk.

Plans for 2014

- ▶ Early 2014 – integration of Sonar project into IDE and ATLAS FSM
- ▶ Adjust mapping of environmental sensors in DCS configurations
- ▶ Prepare for operation with cooling in summer 2014
- ▶ Optimization, consolidation, code clean-up on going throughout LSI
- ▶ Very detailed list of tasks can be consulted here:
<https://twiki.cern.ch/twiki/bin/viewauth/Atlas/IDDcsTasksLSI>

Summary

- ▶ IDE DCS focuses now to finish upgrade by the end of 2013
- ▶ Integrate new systems thermosiphon and sonar early 2014
- ▶ TEH tuning with cooling start-up in summer 2014
- ▶ Continuous efforts on system consolidation and improvements