

ATB Controls Renovation

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Scope: Motorizations used in objects in North experimental area on the equipment inherited by BI (Collimators, Converter, Target Absorber, In/Out Dumps)

AC Motors: 76

DC Motors: 213

Control solution for AC and DC Motors

- In Equipment with positioning motors and linear transducers the motors are controlled by an in-house module called the Position Controller on an in-house field bus called the Equipment Bus. For the AC motors there is an additional power chassis.
- In the Equipment where objects move only in IN/OUT position the control of these motors is integrated in a system based on PLC. The PLC controls a module called the Motor Driver for the DC motors and a power chassis for the AC motors.

Motivations:

- Maintenance is become difficult to sustain: Failures rate very high due to the age of the hardware and the position modules. In average we had this year more than 7 interventions per month of 2h hours each one.
- Few spare parts still available
- Serious communication problems due to the limited bandwidth of the equipment bus and the old heavy control architecture limit and randomly block the operation.
- The old control software is not supported anymore by CO nevertheless Alastair is still ensuring friendly support for the operation. The situation for him is really unsustainable.

Objectives: Replace the old controls with a new solution based on PLC and FESA gateway fully supported by CO (i.e. CNGS target, table and shielding control) starting from 2009 till end 2011

- Beckoff modules on Profibus will be used to control DC motors and Siemens AC motor starters will be used for the AC motors
- The present VME crate that control motors of different obstacles will be replaced by a PLC
- New control software as well as new FESA classes to be developed
- New control chassis will replace the old position controller and power box in the racks

Budget:

xATB: 1.7 MCHF for material cost: control hardware including chassis cabling

xCO: 2 FESA gateways

less than 6 KCHF per axis including power electronics cabling and installation!!!!!!

Resources:

xATB: 4 FTE (hardware design, cabling and installation, testing, PLC and FESA control software)

xCO: 1 mm (CESAR Adaptation)

Scope: Stepping motors control on the slits in Linac, Linac 3, CLIC and LEIR based on old G64 crates

25 "Slits" in Linac

24 in Linac 3

4 in CLIC and LEIR

Motivations:

- Hardware obsolete and in part not supported anymore by CO (old GM class running on old VME crates)
- Only few spare parts still available
- Control software support not ensured

Objectives: Replace the old controls with a new solution based on PLC and FESA gateway fully supported by CO (i.e. AD scraper new control installed) starting from 2009 till end 2010

- New control software as well as new FESA classes to be developed
- New control chassis as well as new stepping motor driver will replace the old hardware in the racks

Budget:

xATB: 516 KCHF for material cost: control hardware including chassis cabling and stepping motors driver

xCO: 1 FESA gateway

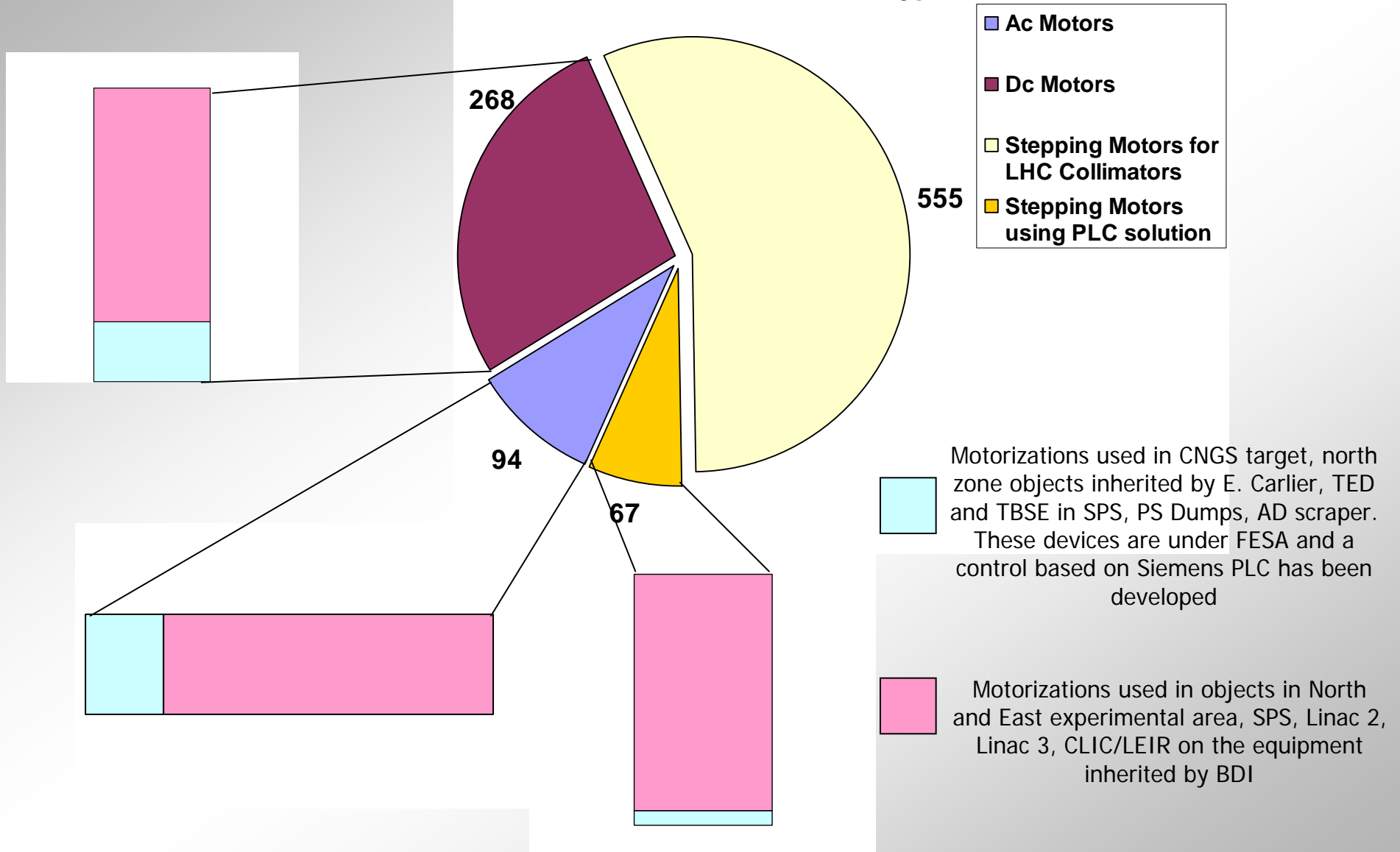
Resources:

xATB: 2 FTE (hardware design, cabling and installation, testing, PLC and FESA control software)

xOP: to estimate (applications adaptation)

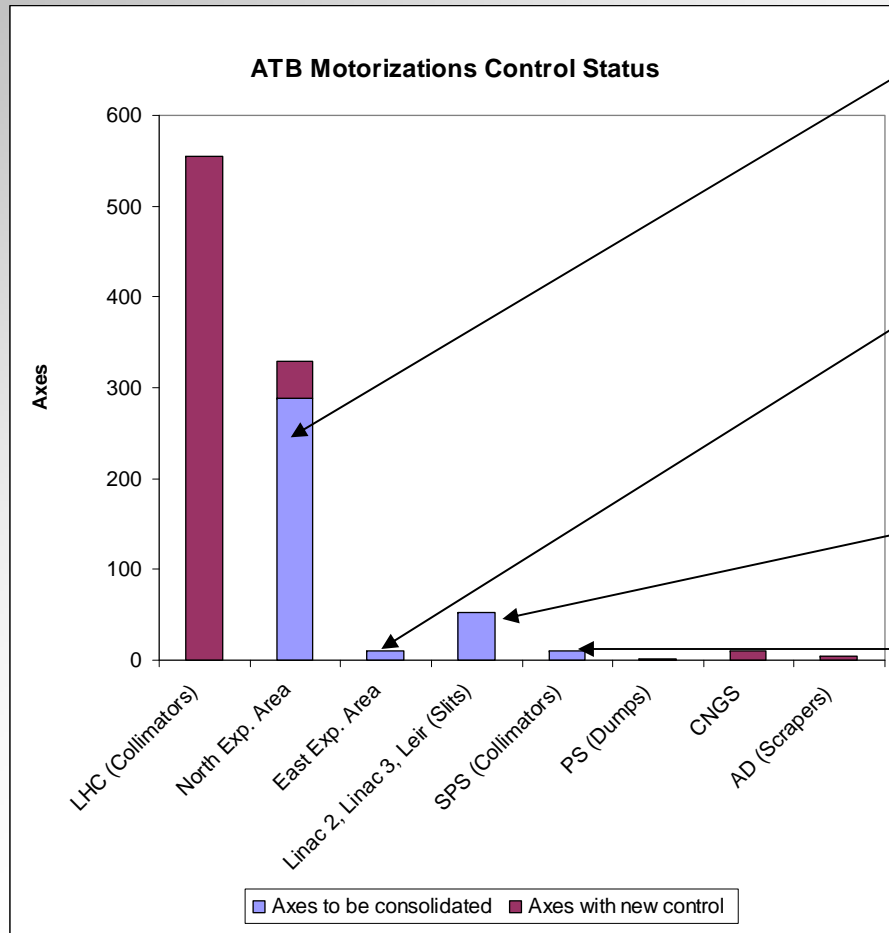
3- Conclusions

ATB Obstacles and motorization types



3- Conclusions

The controls renovation of the North Area movable objects is at high priority to drastically reduce the failures rate, to improve the operation and basically to continue supporting them in the future. We have received many yellow cards from the users and the CO group.



Only controlled locally,
consolidated at low priority

The budget and the
resources for the slits control
renovation in Linac 2, Linac 3
and LEIR are already covered
in the consolidation plane of
S. Baird

They will be replaced by new
Scrapers

4-Summary

Work Package	start date	end date	ATB specific controls hw (KCHF)	CO controls hw (KCHF)	CO total SW resources (FTE)	Comments
<i>Explanation:</i>	<i>(when CO HW / SW are required)</i>	<i>(when system goes in operation)</i>	<i>(your specific controls HW / cabling costs)</i>	<i>PC system: 2.5KCHF VME crate: 7.5KCHF VME CPU only: 2.5KCHF other boards: cf J.Serrano's table</i>	<i>(mainly needed for porting to FESA)</i>	<i>e.g missing resources, or budget</i>
North Area Control Renovation	Q2/2009	Q2/2012	1700	10	0.1	Budget and resources to be allocated
Slits Control Renovation in Linac	Q1/2009	Q1/2011	516	5	0	Budget and resources already allocated

Very limited support to CO group is required for the consolidation but if north area consolidation will not be approved the price for CO (Alastair) to support the operation will be considerable !!!!!!!