A G E N D A
MAGNETS MEETING
26.06.2013
GSI, Darmstadt

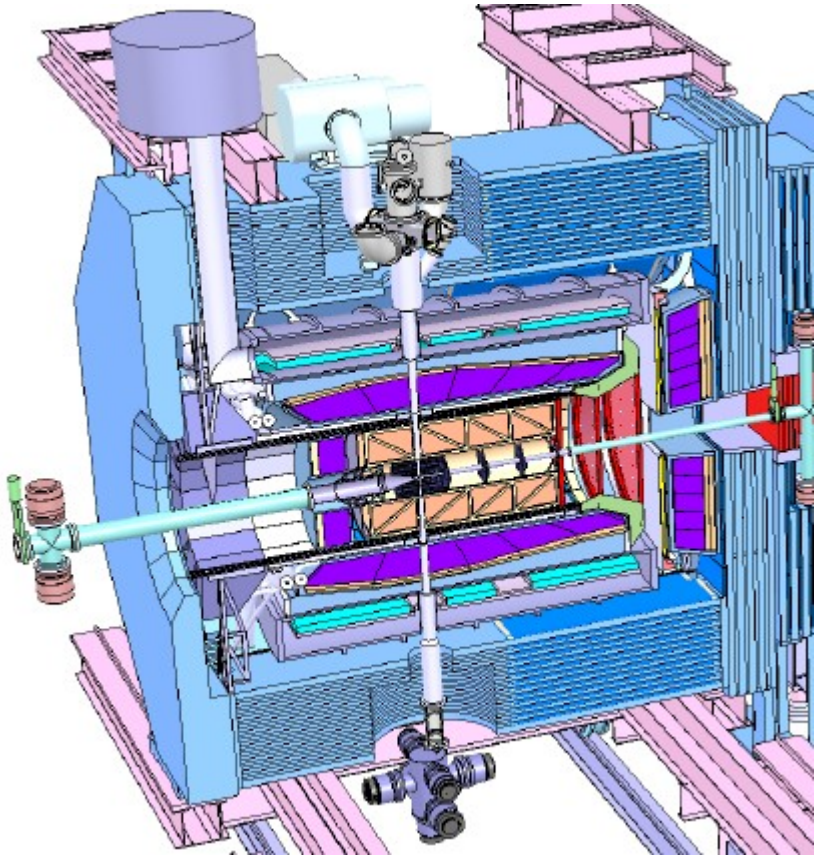
11-00	A.Vodopyanov	CERN team involvement into PANDA solenoid.
11-30	E.Koshurnikov	Review of the yoke and moving system design.
12-00	M.Mikitychyants	Proximity cryogenics & Refrigerator.
12-20	J.Luehning	Hydraulic Actuators for PANDA Target Spectrometer.

PANDA SOLENOID MAGNET
Status Report

A.Vodopyanov

26 June 2013
PANDA Collaboration Meeting,
GSI, Darmstadt

PANDA Target Spectrometer



The PANDA Target Spectrometer Magnet System:

- a 2 T superconducting solenoid,
  inner diameter 1.9 m and length 2.7m;
- a winding cooled and operating at 4.5^0 K;
- a cryostat;
- an iron yoke and moving system;

The magnet services comprise:

- the vacuum system for the cryostat;
- the helium liquefier and helium supply system;
- the electrical circuit including a 5 kA power converter, switches, resistor-diode unit, busbars;
- a magnet control and protection system;

Collaboration with the CERN Group on the solenoid magnet construction:

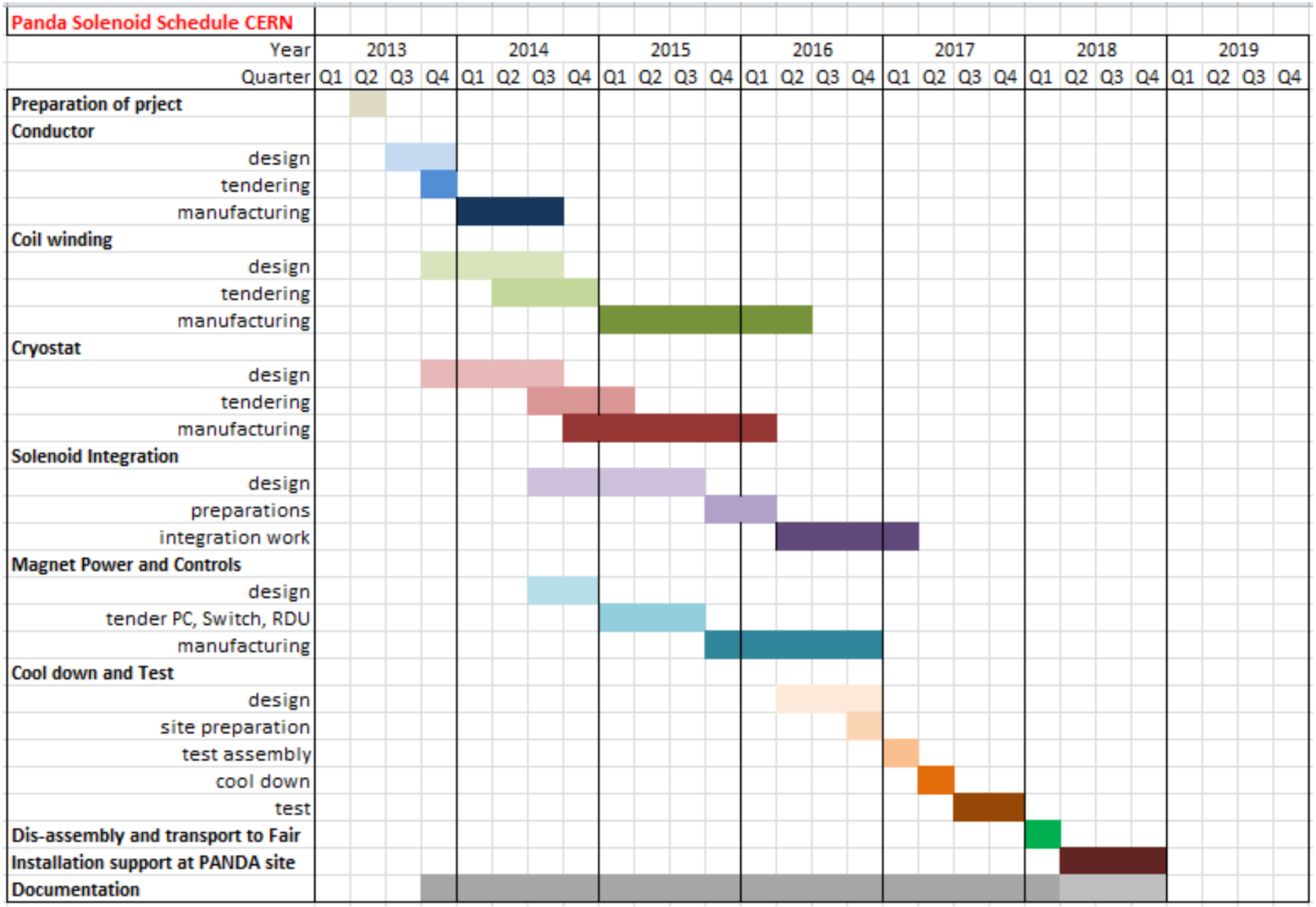
- ATLAS Magnet Group;
- Leader: Prof. Dr. Herman Ten Kate

(an expertise in ATLAS, CMS, COMPASS, ITER, Mu2E etc.);

CERN – PANDA Collaboration agreed from CERN side by:

- Bloch P. – Physics Division Head;
- Bertolucci S. – Research Director;
- Heuer R. – Director General;

Panda Solenoid sharing of work		CERN						Panda/JINR				
		Design	Tender	Follow-up	Materials	Work	Interface	Design	Tender	Follow-up	Materials	Work
Cold mass	Conductor	x	x	x								
	Cylinder+winding+cooling circuits	x	x	x								
	Instrumentation	x			x	x						
	Internal cables	x			x	x						
	Bus connections	x			x	x						
	Current Leads	x			x	x	x					
Cryostat	Cold Mass Supports						x	x			x	
	Thermal Shield							x	x	x		
	Cooling Circuits							x	x	x		
	MLI							x			x	x
	Vacuum Vessel+turrets							x	x	x		
	Turrets interior						x	x			x	x
	Cryo-connection							x			x	x
	Vacuum pump, valves, gages							x			x	x
Cryostat Integration	Site preparation	x				x						
	Coldmass in Vessel	x				x						
	Turrets assembly	x				x	x					
	Instrumentation	x				x						
	Current Connections	x				x						
	Helium Connections					x						
Test at CERN	Site preparation	x			x	x						
(temporary)	Helium supply	x			x	x						
(final)	Vacuum controls	x			x	x						
(final)	Current supply +Switch+RDU	x	x	x		x						
(final)	Solenoid controls	x			x	x						
Transfer to FAIR/GSI		x		x	x	x						
Yoke								x	x	x		x
Supports/Feet								x			x	x
Helium Plant+controls								x	x	x		
Proximity Cryogenics								x	x			x
Integration with Detector Controls								x			x	x
Installation at FAIR/GSI								x			x	x


Panda Solenoid Schedule CERN
Year
2013
2014
2015
2016
2017
2018
2019
Quarter
Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
Preparation of prject
Conductor
design
tendering
manufacturing
Coil winding
design
tendering
manufacturing
Cryostat
design
tendering
manufacturing
Solenoid Integration
design
preparations
integration work
Magnet Power and Controls
design
tender PC, Switch, RDU
manufacturing
Cool down and Test
design
site preparation
test assembly
cool down
test
Dis-assembly and transport to Fair
Installation support at PANDA site
Documentation

ADVANTAGES
OF THE COLLABORATION WITH CERN

- High qualification and experience in design and production of superconducting magnets;
- Good knowledge of the current status of the industry in this field;
- Professional contacts w/ industry according to CERN rules on the base of tenders;
- Possibility to use CERN stock of materials;
- Final product will include the winding w/ complete electrical chain assembled and tested w/ cryostat.