FROM RESEARCH TO INDUSTRY

TASK 10.3
5 T HTS DIPOLE MAGNET DESIGN AND CONSTRUCTION

Pre-kick off meeting WP 10 | Maria DURANTE

23/04/2013

10.3 SUBTASKS

Subtask 10.3.1 HTS accelerator magnet design

- Explore magnet concept suitable for HTS cable and ribbon based conductors providing magnetic field of accelerator quality in view of the 20 T HE-LHC dipole

Subtask 10.3.2 Bi2212 magnet developments

- Design and manufacture a prototype magnet using Bi2212 cable. This prototype will be intended to determine the highest stress allowable on such a cable and manage the wind and react manufacturing operation

Subtask 10.3.3 YBCO magnet developments

- Design and manufacture an accelerator like prototype magnet using YBCO tape based conductor and having an operating current of at least 5 kA.
- Thin (5-30 µm) HTS tape insulation that is compatible with coil epoxy impregnation will be tested

DELIVERABLES AND MILESTONES (FROM DOW)

D10.1 Conceptual study of HTS accelerator magnets (report)	M18	Task 10.3
MS64 YBCO magnet design report	M18	Task 10.3
MS68 Technical and economical comparison YBCO/Bi2212 magnets	M36	Task 10.3
MS62 Organized collaboration with DOE Program Bi-2212	M12	Task 10.1 ?
MS63 Cable concept design report	M12	Task 10.2
D10.2 Prototype cable lengths and report	M24	Task 10.2
MS65 Test Station Kick-off	M26	Task 10.4
D10.3 Parameters for choice of SC type	M28	Task 10.1
MS66 First Cable length for magnet winding	**M32**	Task 10.2
MS67 Report on HE-LHC Main Dipole design	M36	Task 10.1 ?
D10.4 Magnet Cold test	**M44**	Task 10.4
Bi2212 magnet design report	M18 ?	
YBCO accelerator like prototype magnet	M38 ?	
Bi2212 dipole magnet	M38 ?	

PARTICIPANTS (FROM BUDGET FILES)

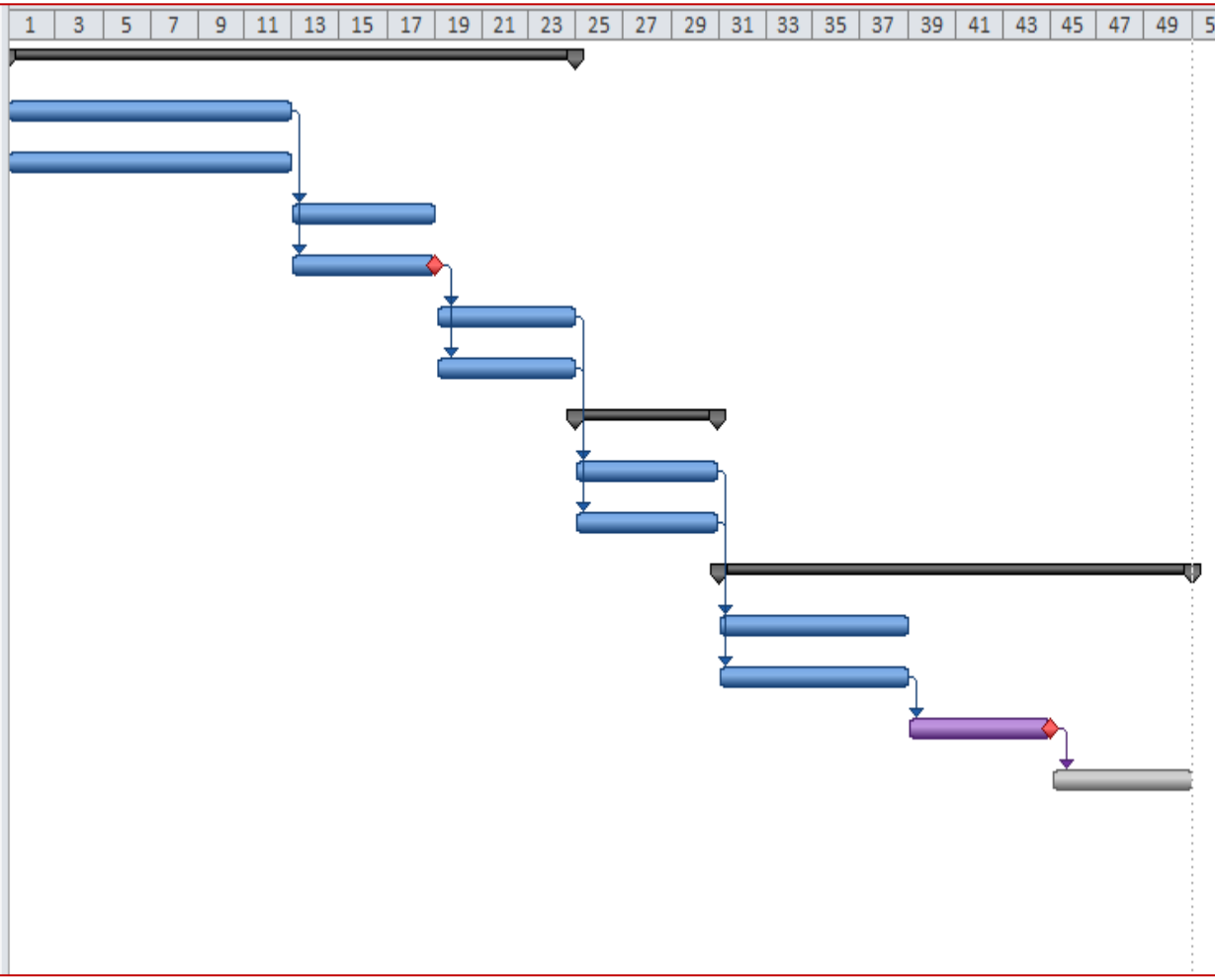
Beneficiary short name (all costs in €)	Person-Months	Consumable and prototype direct costs	Travel direct costs
CERN	24	150 000	12 000
CEA	34	150 000	8 000
INPG	19	12 000	4 000
INFN	4		2 000
TUT	10		10 000
DTI	8	20 000	4 000
Total:	**99**	**332 000**	**40 000**

We have to define who, what and when.

And define who is the contact for each institute concerning Task 3.

PARTICIPANTS / SCHEDULE

Nom de la tâche
5 T dipole magnet design
magnet design options study
conductor definition
magnet detailed design
assembling process design
CAD detailed design
tooling design
components and tooling procurement
dipole parts procurement
tooling procurement
manufacturing and tests
Bi-2212 magnet manufacturing
YBCO accelerator like magnet manufacturing
stand alone HTS magnet testing
HTS Insert testing in outsert



PARTICIPANTS / SCHEDULE

Nom de la tâche	Durée estimée	Participants
5 T dipole magnet design		
magnet design options study	12 months	*cea, cern*
conductor definition	12 months	*cea,cern, ipng*
magnet detailed design	6 months	*cea, cern, dti, tut, infn*
assembling process design	6 months	*cea, cern, dti, infn*
CAD detailed design	6 months	*cea*
tooling design	6 months	*Cea,cern, dti*
components and tooling procurement		
dipole parts procurement	6 months	*cea*
tooling procurement	6 months	*cea*
manufacturing and tests		
Bi-2212 magnet manufacturing	8 months	*cea*
YBCO accelerator like magnet manufacturing	8 months	*cea*
stand alone HTS magnet testing	6 months	*infn, cea*
HTS Insert tests in outsert	6 months	

Commissariat à l'énergie atomique et aux énergies alternatives
Centre de Saclay | 91191 Gif-sur-Yvette Cedex
T. +33 (0)1 69 08 71 27 | F. +33 (0)1 69 08 69 49

DSM
IRFU
SACM

Etablissement public à caractère industriel et commercial | RCS Paris B 775 685 019