

ISTC Project #3889p

Development and manufacture of RF cavities for a unique pilot CCDTL accelerating section in the energy range of 50-100 MeV for the new accelerator Linac4

Total for the project **1 300 000.00 USD ← 1 300 000.00 by CERN**

BINP 100 000.00

VNIITF 1 200 000.00

ISTC Project #3888

Development, manufacture and experimental investigation of a unique pilot CCDTL accelerating section in the energy range of 50-100 MeV for the new accelerator Linac4

Total for the project **1 100 883.55 USD ← 185 000.00 by CERN + 915 883.55 by EU**

BINP 500 000.00

VNIITF 600 883.55

Total for the 2 projects **2 400 883.55 USD ← 1 485 000.00 by CERN + 915 883.55 by EU**

BINP 600 000.00

VNIITF 1 800 883.55

Both projects officially started on June 01, 2009 and will last 2.5 years.

Funding for the project #3888 will be available starting form ~ July 15, 2009.

Funding for the project #3889p will be available as soon as the first money transfer to the ISTC account is made by CERN.

Scope of the ISTC projects #3888/89p

BINP and VNIITF will produce, assemble and test (up to a certain level) 7 CCDTL modules

Each module consists of 3 tanks (with 2 drift tubes in each tank), tanks in a module are rf coupled by 2 coupling cells placed between the tanks

Each module rests on a frame

Frames will be designed but not produced within the ISTC projects

Cavities are water cooled. All water circuits of each module are collected at 2 water manifolds mounted to the frame

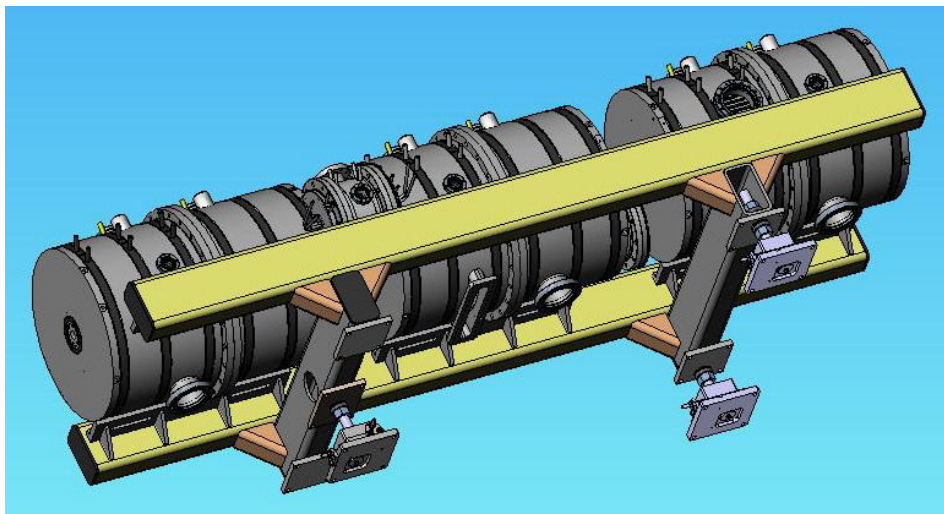
Water manifolds are included

Cavities have fixed and movable frequency tuners

Movable tuners are not included, Fixed tuners are included

Rf power is delivered to each module through a waveguide input coupler.

Waveguide T-section, waveguide short termination are NOT included



Scope of the ISTC projects #3888/89p

BINP and VNIITF will produce, assemble and test (up to a certain level) 7 CCDTL modules

“Production” responsibility

VNIITF

- *will manufacture tanks and coupling cells, copper plated inside*

BINP

- *will manufacture the drift tubes, made from solid copper and EB-welded*
- *will manufacture external water circuits / connections and manifolds*
- *will manufacture fixed tuners*

Scope of the ISTC projects #3888/89p

BINP and VNIITF will produce, assemble and test (up to a certain level) 7 CCDTL modules

“Assembly” and “test” responsibility

VNIITF (in Snezhinsk)

- *will perform mechanical (dimensional) checks*
- *will perform test assembly of the modules*
- *will perform vacuum leak tests of the tanks and coupling cells with rubber seals*
- *will perform pressure leak tests of the water cooling channels and check flow rates in the individual channels*

BINP (in Novosibirsk)

- *will install the drift tubes and check the alignment of drift tubes in half tanks*
- *will repeat test assembly of the modules on a specially made frame*
- *will perform vacuum leak tests of the modules (with the drift tubes installed) with rubber seals*
- *will assemble external water cooling circuits / connections and manifolds and perform pressure leak tests of the entire water cooling system of each module (of course, the drift tubes will be tested separately beforehand)*
- *will perform frequency tuning of the cavities (will adjust lengths of individual fixed tuners)*
- *will perform tuning of the input couplers (will define positions of individual WG-shorts)*
- *will measure rf parameters (at low level rf), such as f_0 , tuning range Q_0 , Q_L , field profile*

Scope of the ISTC projects #3888/89p

BINP and VNIITF will produce, assemble and test (up to a certain level) 7 CCDTL modules

“Assembly” and “test” responsibility

BINP (at CERN) = BINP will provide man power

- *to install the drift tubes (an option of having the tanks shipped from BINP to CERN with drift tubes installed and half-tanks assembled with HELICOFLEX seals needs to be investigated, but most likely DTs will come disassembled from half-tanks, half-tanks sealed with rubber gaskets)*
- *to assemble the cavities on the frames*
- *to prepare the modules for vacuum leak tests*
- *to assemble external water cooling circuits / connections and manifolds*
- *to assemble frequency tuners and input couplers*
- *to measure rf parameters (at low level rf*
- *to assist in high power tests*

Installation of the modules in the Linac4 tunnel should be discussed separately and is not treated as a part of the ISTC projects #3888 and 3889p

Scope of the ISTC projects #3888/89p

Partner project #3889p = Secondary project

Half-tanks and coupling cells will be produced at the VNIITF main workshop. The workshop personnel involved in the production will be working full time and so will need to be paid completely from the project.

For the main workshop workers the daily rates need to be up to 120\$ in order to compensate their regular salary at VNIITF. Such daily rates are only possible for partner projects, not for regular ISTC projects.

⇒ Half-tanks and coupling cells, produced at VNIITF, will be formally transferred (without “physical” movement) to the regular project.

Remark: CERN provides 100% funding of partner project. So CERN has the property for all equipment, produced within this partner project, and, with corresponding letter, can request and authorize that the half-tanks and coupling cells are transferred to regular project “for further investigations”.

Regular project #3888 = Primary project

Half-tanks and coupling cells on support frames will be delivered to BINP. After certain works at BINP, which include installation of the drift tubes, various tests and measurements, the CCDTL modules will be delivered to CERN (probably, with the drift tubes dismounted and packed separately).

Time schedule of the ISTC projects #3888/89p

Year 1 (June 2009 – May 2010)				Year 2 (June 2010 – May 2011)				Year 3 ... Nov 2012	
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10

304L ↑
 OFHC Cu ↑
 Auxiliaries ↑

Tanks VNIITF → BINP
 Modules BINP → CERN

M 1

M 1

M 2,3

M 4,5,6

M 2,3

M 7

M 4,5

M 6,7

