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Subject: Procurement Procedure for the Port-Extensions on W7-X fusion experiment

Dear Sirs,

IPP is planning to start the tendering procedure for the Port-Extensions for W7-X-enterprise.

A short description of the Port-Extensions is attached to this letter.

We kindly ask you for your proposals of qualified companies (name, address, contact person, telephone and fax numbers, e-mail address). The proposed firms should have a recognised level of competence and references in the field concerned. We would appreciate if you could send me your proposal by April, 11th, 2008 at the latest.

Thank you very much in advance for your assistance.

Yours sincerely

Max-Planck-Institut für Plasmaphysik

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Public Tender Action for the Design and Fabrication of Port-Extensions on W7-X

WENDELSTEIN 7-X (W7-X) is a super-conducting advanced stellerator which is currently under construction in Greifswald (Mecklenburg-Western Pomerania).

Port extensions constitute part of the outer vessel of the W7-X stellerator. They facilitate the easy and maintenance friendly assembly of single components and lengthen pipe and measuring lines from inside the cryostat.

The specification requires 10 QCC-, 10 instrumentation- and 20 H₂O-port extensions.

The QCC- port extension consists of one jacket sheet $d_A = 821\text{mm}$ (2548 x 585 x 10) and two flanges $d_A = 901\text{ mm}$ (2711 x 38 x 30).

The flanges shall be made of 30 mm-plates and metal strips which are to be rolled accurate-to-size (see drawing). Same procedure shall be applied for the manufacturing of the instrumentation port extensions.

The instrumentation port extension consists of a jacket sheet $d_A = 671\text{mm}$ (2077 x 576 x 10) and two flanges $d_A = 750\text{ mm}$ (2238 x 38 x 30).

The H₂O-port extensions shall be made of standard vacuum parts according to list of items and shall be provided by the contractor (Vacom-feedthroughs will be provided by the customer).

Welding of port extensions is to be executed in compliance with DIN EN 729 and AD 2000. The welding filler shall be 1.4455. Permeability of $\mu_r < 1.05$ shall be permitted for the weldseam. Due to the welding filler, the average cobalt concentration of $< 500\text{ ppm}$ of the port extension must not exceed the specified value.

Upon completion of welding, the components shall be machined according to the dimensions given in the drawing. Surfaces shall be blasted with Afesikos A0. All surfaces must be clean, metallic bright, dry and free from inorganic or organic substances such as grease or oil.

Finally, a vacuum leak test shall be carried out to give proof of the quality of components. The integral leak rate for each port extension must be under $1 \cdot 10^{-6}\text{ mbar} \cdot \text{l/s}$ at 20 °C against the atmosphere. For the purpose of tests and inspections, the port extensions shall be equipped with covers. The IPP will provide one cover with gasket. The second cover (all-purpose for QCC and instrumentation port) must have a small flange according to DN 40 DIN 28403 and shall be made by the contractor. The cover material (stainless steel) which is not subject to requirements for lower cobalt concentration and lower relative permeability is to be procured by the contractor. Gaskets can be provided by the IPP if requested.

The order includes the manufacturing and testing of port extensions.

All steel parts must be made of austenitic steel (1.4429 or equivalent) with a maximum cobalt concentration $\text{Co} < 500\text{ ppm}$ and a relative magnetic permeability less than $\mu_r < 1.01$. Leak tests, X-ray tests and dye penetrant testing for weld seams constitute part of the contract.

The IPP shall provide the plates for the contractor (two plates [mm] 3000 x 2500 x 10 and two plates 3000 x 2800 x 10; 1x 3000 x 2000 x 30; 1x 2000 x 1000 x 17). The plates may then cut to size as and when required.