The WENDELSTEIN 7-X project is actively looking for potential candidates for the following high level engineering positions

**Coordination of tests (i12)**

*Senior mech. engineer or physicist, experience with material and component testing*

During the design phase for the various W7-X sub-systems (e.g. the magnet system), specific issues are identified on some of the components under consideration that require the combination of detailed analyses (e.g. Finite Elements numerical models) and support tests to validate the design concept proposed. A survey is performed to identify if previous results from other test programmes can be re-utilised. In case previous experiences are not (fully) relevant, it is needed to conceive, co-ordinate and implement a test programme taking into account the project constraints on timescale and resources.

Areas of works:

- Identification of the test activities needed for qualifying the design solutions adopted for the components under investigation.
- Preparation of the test programme and specifications taking into account the W7-X assembly and operational requirements and the related design conditions (e.g. loads, temperature, vacuum ...).
- Selection of the laboratory where to perform the tests.
- Follow-up of the test activities, analysis of the results and feedback to the design.

A mechanical engineer is required, preferably with experience in experimental programmes and in management of contracts with external laboratories. Some familiarity with FE codes (e.g. ANSYS) and CAD would be an asset. He should work in an integrated context; in particular he should act in close co-operation with the Design Engineering Department for continuous feedback from/to FE models, and with the responsible officer of the component under investigation.

**Senior specialists in structural mechanics (i102, i319new)**

*Mechanical engineer, Finite Element*

A dedicated group for structural mechanical finite element analyses has been set up which needs further skilled specialists in this field. A strong background in elasto-plastic finite element analyses of complex structures and the ability to evaluate and interpret the numerical results are required. Experience with the ANSYS Finite Element code is desired but can be obtained on the job with internal training as well. Focus will the FE analysis of non conformities and identified structural weak points, mostly of the W7-X support system.

**Specialist in structural mechanics: CAD data preparation (i307)**

*Mechanical engineer, Finite Element experience*

A dedicated group for structural mechanical finite element analyses has been set up which needs further skilled specialists in this field. A strong background in elasto-plastic finite element analyses of complex structures and the ability to evaluate and interpret the numerical results are required. Experience with the ANSYS Finite Element code is desired but can be obtained on the job with internal training as well. Interface between CAD and FE input data will be the task of this highly skilled engineer with experience in data transfer and data structure knowledge.
**Head Layout (i308)**

*Senior mechanical engineer, Design and design coordination*

The general lay-out of W7-X, in particular in the torus hall where layout and integration will focus, is used as starting point.

A list of sub-systems is build, where each item is detailed with basic design and functionality, supports, interfaces and auxiliaries.

Taking also into account the sequence of machine assembly, the accessibility and feasibility of first installation, maintenance, and refurbishment/replacement is defined. Configuration control (to check collisions, during installation or operation, with other sub-systems) is also carried out.

This design integration exercise has to be carried out in liaison with the Periphery working group and with the designers of the various sub-systems. It deals also with issues like electromagnetic and thermal compatibility. Areas of work:

- Optimisation of the layout in the torus hall of W7-X machine including the main machine, the diagnostics, the heating systems, the auxiliaries (support structures, pipelines, cable lines and trays, racks, cables etc.) Assembly, disassembly and maintenance accesses should be considered.
- Interface definition of the major components and subsystems and support to design related to interface activities: geometrical verifications, mechanical, electromagnetic and thermal issues, safety problems, collision analyses.
- Organisation of system layout and integration meetings and other specific technical meetings.

Professional profile: An experienced engineer is required, who should be familiar with layout design integration issues in complex systems. He should be able to activate and co-ordinate the dedicated designers within System Integration and Design Office Departments, and to liaise with the other relevant Departments in the W7-X project and in particular with those responsible for the design and procurement of the various W7-X subsystems.

**Designer 3D CAD for diagnostics (i315)**

*Mech. Engineer (Univ. Applied Sciences. /Ecole Superieure) or skilled technical designer*

The design work for the W7-X diagnostics will be the main task of this job. The draftsmen should bring some experience in the design of technical systems, laboratory equipment or best in the design of diagnostics that are attached and included into a technically demanding environment.

Designers with experience in 3D CAD construction (best CADDS5 or CATIA V5) would be the best fit for this position.

**Engineer for 3D system integration (i101)**

*Mech. engineer (Univ. Applied Sciences. /Ecole Superieure) or skilled technical designer*

For the 3 dimensional system integration of supply systems into the basic device and its defined periphery of W7-X a skilled person is needed. The engineer will check critical geometrical limitations of aggregates as well as possible routings for supplies within the experimental site.

A mechanical engineer with experience in 3D CAD construction (CADDS favourable) would be the best fit for this position. A deep 3 dimensional understanding is needed.

**Engineer for the "Reverse Engineering" data base meta structure (i303)**

*Mech. engineer with some experience with data base systems*

The acquisition of the as built geometry is done with 3D laser scanning. These 3D measuring data have to be translated back into CAD format models. The critical zones need to be highlighted and the data converted in a very smart way.

The Meta structure of the data base needs to developed and improved on an ongoing basis to open up the data in an easy and understandable way for e.g. assembly people.
A mechanical engineer with experience with 3D CAD datasets and databases would be the best fit for this position. A deep 3 dimensional understanding is needed as well as some creativity and customer focus.

**Designer 3D CAD for current leads (i331)**
*Mech. engineer (Univ. Applied Sciences /Ecole Superieure)*
The designer will issue construction drawings of complex W7-X components, e.g., current leads connect the power supplies with the W7-X device. A person is needed who is able to define and design the best installation solution. A mechanical engineer (University of applied sciences /Ecole Sup.) or a skilled draftsman with experience in 3D CAD construction (best CADDS) would be the best fit for this position.

**Electrical Engineer for current lead testing (i333)**
*Electr. Engineer (Univ. Applied Sciences /Ecole Superieure) or skilled technician*
The engineer will supervise the test of the current leads for W7-X. The test program will be specified by IPP and performed by a contractor still to be determined. An electrical engineer (University of applied sciences /Ecole Sup.) would be the best fit for this position.

**3D CAD expert for collision checks (i106)**
*Mech. engineer (Univ. Applied Sciences /Ecole Superieure)*
The 3D CAD designer will check existing construction drawings and as-built models of W7-X components for potential collision zones. Starting from the as-built geometries of the superconducting magnet coils narrow zones will be determined and later on reserved space, e.g. for current leads, sensor cables, cooling pipes will be cross checked. A person is needed who is able to detect these critical zones via communication and close interaction with the responsible designers. A mechanical engineer (University of applied sciences /Ecole Sup.) or a very skilled draftsman with experience in 3D CAD construction (best CADDS) would be the best fit for this position. The engineer should have good communication skills and leadership skills as well as the ability to explore 3D complex geometries.

**Engineers for quality assurance during the assembly of W7-X (i328)**
*Senior QA Technician or Mech. engineer (Univ. Applied Sciences /Ecole Superieure)*
The Quality Assurance technician will supervise the assembly of the Wendelstein W7-X fusion experiment and will issue a proper documentation of relevant quality tasks (welding, precision requirements) and will react in case of deviations. As a more senior person the QA technician will not only do quality tests but also take leadership on quality tasks. An experienced technician with quality assurance background, best in the assembly of heavy precision machinery or a mechanical engineer (University of applied sciences /Ecole Sup.) with this background would be the best fit for this position. **remark:** for all positions very good command of the English language is necessary; knowledge of the German language would be helpful.

**Contact person:**

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