

## Wendelstein 7-X Torus Hall Layout and System Integration

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Wendelstein 7-X is an experimental fusion device presently under construction in Greifswald, Germany, to study the stellarator concept at reactor relevant parameters und steady-state conditions. The heart of the machine consists of the torus that houses the superconducting coils and the plasma vacuum vessel. It is located nearly in the center of a 30m x 30m x 20m hall. A large number of components need to be placed in close proximity of the torus to provide the system with the required means, e.g. cryogenic gases, cooling water, electricity, and to integrate it with the peripheral diagnostic and heating components. The arrangement of these components has to be supported by suitable structures, and has to be optimized to allow for installation, maintenance, and repair. In addition, space has to be provided for escape routes and for sufficient distance between components that could negatively influence each other's performance, etc.

The layout of the components has been done over many years using 3D CAD software. It was based on simple geometric models of the components and of the additionally required space. Presently the layout design is being detailed and updated by replacing the original coarse models with more refined estimates or - in some cases - with as-built models. All interface requirements are carefully taken into account. Detailed routing was specified for the cryo and cooling water supply lines whose design and installation is outsourced. Due to the limited space available and severely restricted access during experimental campaigns, the requirement to put auxiliary components like electronic racks into the torus hall is being queried.

The paper summarizes the present state of the component layout in the torus hall, and how the peripheral supply, diagnostics, and heating systems are integrated into the machine.