

# IMPLEMENTATION OF EARNED VALUE MANAGEMENT TOOLS IN THE WENDELSTEIN 7-X PROJECT

A. Lorenz, K. Küttler and H.S. Bosch  
Max-Planck-Institute of Plasma Physics, 17493 Greifswald, Germany  
[axel.lorenz@ipp.mpg.de](mailto:axel.lorenz@ipp.mpg.de)

Earned Value Management (EVM) is an accepted method for measuring and evaluating a project's progress [1]. EVM is suited in particular for projects whose progress is primarily achieved by the application of personnel resources and can be steered through this. The project W7-X has recently implemented several EVM tools to enable a tighter monitoring of internal processes.

Realization of EVM in W7-X has posed several challenges characteristic of large scale research projects. Firstly, breakdown of a schedule into well defined, accountable and reliable work packages to determine Planned Value and Earned Value is particularly difficult in surroundings of numerous technical changes. Naturally, the handling of these changes has to be built in carefully already during the tool setup. Another major task is the adaptation of the cost analysis to specific boundary conditions of the project organization in order to correlate the costs as correctly as possible to their respective work packages. Last but not least, implementation of an EVM tool in an ongoing project results in a number of limitations determining the performance and accuracy of the method.

The EVM tools have so far been implemented for monitoring the W7-X assembly process, the engineering design of the diagnostics and the manufacture of in-vessel components.

The assembly of W7-X follows a tight timetable using extensive human and financial resources in a complex network of work packages, different assembly stands and various differing requirements on the personnel qualifications.

The tool for the diagnostic engineering works on a much smaller scale by tracking purely progress of each diagnostic against the design hours spent. The quality of this system benefits from catching the start of reinforced diagnostic engineering and depends mainly on a sharp definition of the design steps.

These properties also are valid for the tool for the manufacturing of the complex in-vessel components. Here, in addition, a flexible tool set up allows rapid identification of critical components.

Since their implementation all tools serve the department of Project Control as an early and transparent performance indicator.

[1] Project Management Institute, Philadelphia, 2005, Practice Standard for Earned Value Management.