## **P**ERSONNEL PROTECTION DURING THE OPERATION OF THE THOMSON SCATTERING LASER

## SYSTEM ON THE COMPASS TOKAMAK

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Thomson scattering diagnostic (TS) [1] for the COMPASS tokamak [2] is being installed nowadays. The system is focused on characterisation of edge plasma profiles with spatial resolution of up to 3 mm, with complementary 1 cm resolution in core of the plasma. The Thomson scattering effect has very small cross-section, i.e. high power lasers are needed to obtain measurable scattered light. The COMPASS TS laser system [3] comprises of two Nd:YAG lasers, 1.5 J pulse energy and 30 Hz repetition rate each. Laser wavelength is 1064 nm, in the invisible infra-red spectra. The parameters of the laser system necessitate appropriate safety precautions.

The Thomson scattering laser is located in a separated laboratory. The laser beam is guided from the laser laboratory to the experimental hall and to the tokamak itself. Moreover, a test path in the laboratory is used for the laser alignment. Therefore, a dedicated safety system was designed to ensure the personnel safety in all the areas during the high power laser operation. Several regimes of the safety system had to be defined to cover the alignment of the line using a HeNe laser (class 2) as well as the operation of the high power Thomson scattering Nd:YAG laser (class 4) in case of a) standard measurements during the experiments, b) alignment in the test path, c) alignment in the experimental hall, etc.

The safety system is based on a PLC which handles the inputs from the laser path covers, doors, tokamak hall shutters, etc. and which allows the high power laser operation at given conditions. The operator interface is built using a touch panel where the operating personnel can request the individual regimes of the operation. In this contribution, there will be described details of the laser system operation procedure and the design, implementation, and function of its safety system. Finally, the connection of the TS laser safety system with the COMPASS personnel safety system [4] will be described.

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