At the Institute for Energy Systems at the Technical University of Munich a new evaporation test rig is currently under construction. It is planned to study the behavior of heat transfer at sub- and supercritical pressures. In order to obtain a proof of concept for the system engineering, the measurement methodology and the automation concept, a small scale test rig was constructed. It contains a NI cRIO-System and is automated by LabVIEW. After successfully beginning operation, the small scale test rig is going to be used for teaching purposes. The main topics are thermo-fluid dynamics of technical evaporation processes and the handling of a modern measurement and automation system. The design of global and local sensors is similar to the layout of the full scale test rig that is currently under construction. As experimental data, the mass flow of water, several temperatures, the electrical current, local electrical voltage drops and several pressures are measured. For the automation of the small scale test rig the power of an electrical preheater, the revolutions of the feed water pump and the current of the electrical heated evaporation tube can be manipulated. Measurement and automation both are realized using
a NI cRIO System as hardware and LabView as software.

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