

INTERNET-BASED TECHNOLOGIES IN RESEARCH AND EDUCATIONAL APPLICATIONS OF SAMARA STATE AEROSPACE UNIVERSITY WIND-TUNNEL

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Abstract. The paper describes Automated Test Systems (ATS) developed in Samara State Aerospace University (SSAU, Russia). State-of-the-art technologies allowed for novel approach for design of ATS, providing capabilities for utilization of the same hardware and software both for research and education. The key feature of the presented ATS is the Internet-based technologies (AJAX and HTML5), it can be accessed via www.aero.ssau.ru. For monitoring and control of the experiment the user needs just a browser. This gives the user (researcher) not only the ability to monitor the experiment in a wind-tunnel and obtain a test log, but also to control the process of the experiment, which means changing the test plan. ATS allows for measurements of forces and moments with six-component strain balance, and pressure distribution with multi-channel electronic pressure gage. ATS is widely used in various research and educational applications of Aero-Hydrodynamics Department of SSAU. The system was used for broadcasting aerodynamic experiments between different Russian cities (for example, Samara-Moscow, Samara-Syzran and etc.). The advantages of the system are: 1) the only software required to access it is Internet browser; 2) for research purpose the user can both monitor and control the experiment remotely from the other city and even from the other country; 3) for educational purpose it allows for distant laboratory classes. It allows to organize laboratory classes on aerodynamics in the institutions which don't own wind-tunnels, so expensive equipment can be concentrated in dedicated centers.

Keywords. Wind-tunnel, experiment, automation, Internet-based technology, research, education.