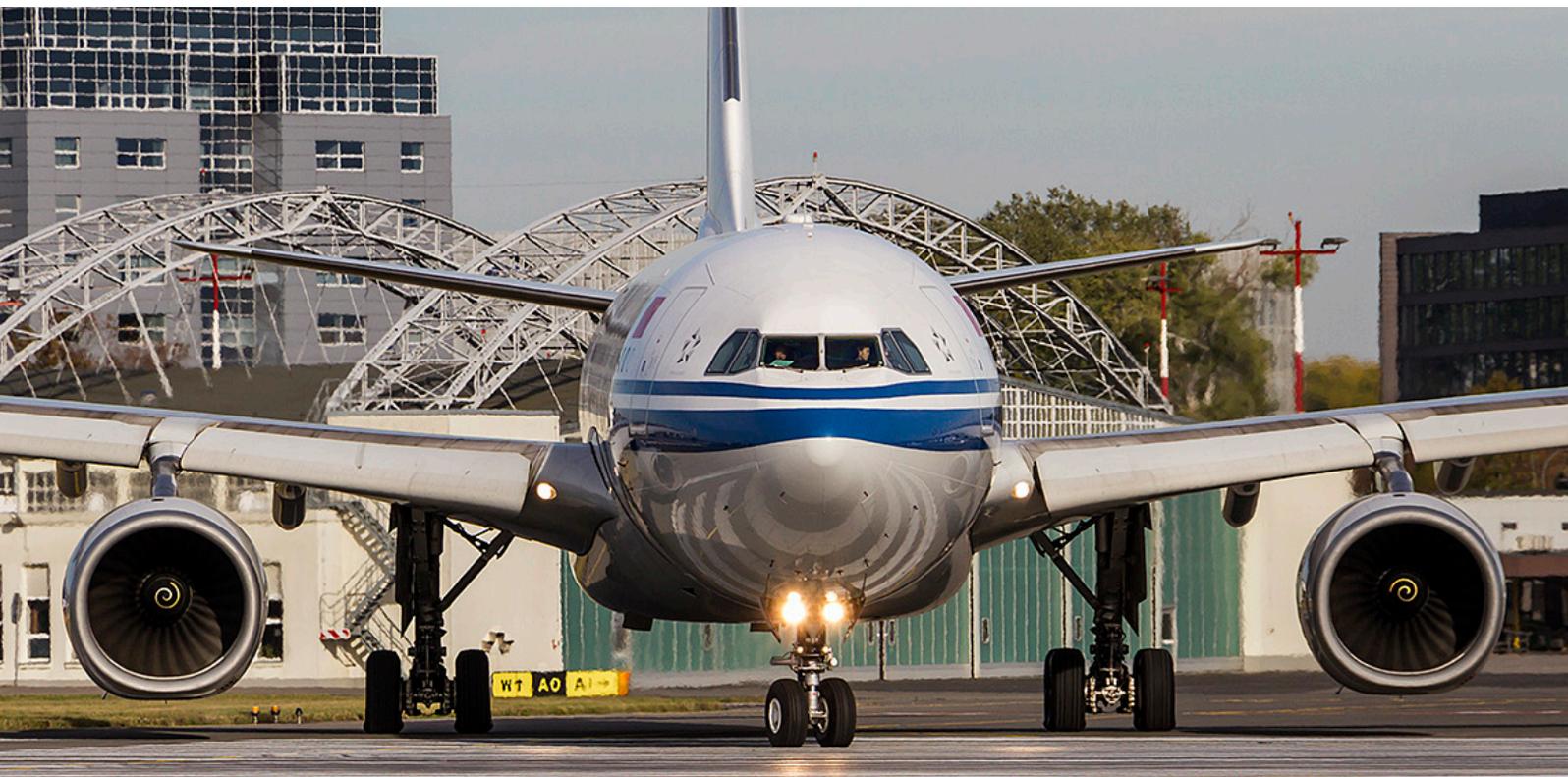


Expanding fields of research with zenon at the Institute of Aviation

New ideas take flight at Instytut Lotnictwa

The Institute of Aviation in Warsaw needed a control system for its new testbed for challenging aviation research. The solution would need to provide integrated control over the entire test environment as well as the necessary logic, visualization, and data capture for subsequent analysis. COPA-DATA's zenon was the technology top gun.



The Institute of Aviation in Warsaw has a proud history dating back to 1926. Halted only by the outbreak of war in 1939, since 1945 the technical institute has led the world in aerospace research; working with global leaders such as Boeing, General Electric and Airbus. As part of its current mission to expand fields of research, the institute planned a new test facility which could facilitate challenging aviation tests on jet engine fans.

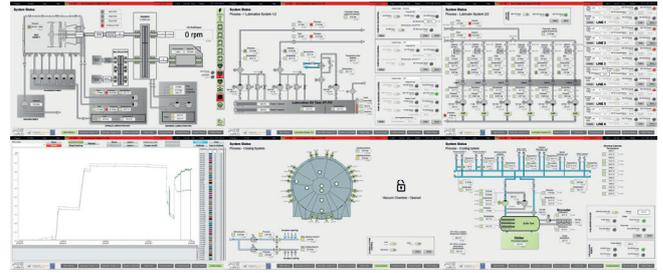
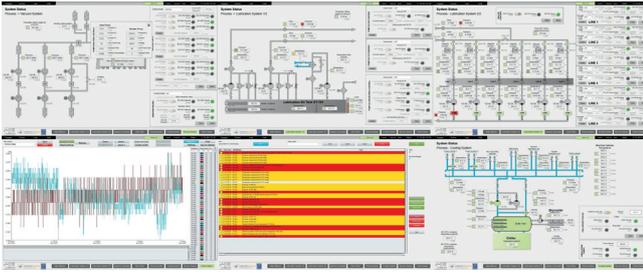
CONTROL AND VISUALIZATION FOR A UNIQUE TESTBED

The planned test stand would make it possible to recreate the effects of a bird strike or the spontaneous detachment of an impeller blade – and would require an advanced control system. As such, the principal goals of the project were to

enable independent HMI and SCADA application development, avoid potential delays in the commissioning of the project, and safeguard the knowledge relating to the control strategy for this unique test stand.

Because the institute had already implemented zenon in an earlier test facility project to control the emergency shutdown system (ESD), its engineering team saw zenon as a natural fit for the new testbed project.

Rafal Sikorski, automation manager at the EDC Laboratory Maintenance and Development team, explains, “We had no doubts whatsoever that zenon would meet our expectations because it would not be the first time we had used the zenon software”.



zenon captures and displays essential metrics of the test facility, conditions and results.

The extensive project covers more than 4,500 variables and features 70 different screens. This is displayed on six LCD monitors.

“ We found zenon to be an intuitive system that allowed our engineers to develop a complex project. ”

**RAFAL SIKORSKI, AUTOMATION MANAGER
AT THE INSTYTUT LOTNICTWA EDC LABORATORY
MAINTENANCE AND DEVELOPMENT TEAM**

SEEKING BETTER CLARITY

The new system would need to control all aspects of the testing room; establishing fault-free communication with the Allen Bradley PAC ESD controller and offering remote control via synoptic panels. Data visualization and measurement, including the ability to present data in chart format, was another vital element of the project, as was the option to define different authorization levels for users.

Having chosen zenon to fulfil these needs, Instytut Lotnictwa began the extensive implementation. Rafal Sikorski remembers: “We valued the complete independence zenon gave us in terms of hardware choice and received expert technical advice and perfect support at the order delivery stage from COPA-DATA. We found zenon to be an intuitive system that allowed our engineers to develop a complex project.”

The project now covers more than 4,500 variables and features 70 different screens. These provide visualization, control and monitoring over all aspects of the testbed – everything from the five UPS power supplies, vacuum chamber

system and cooler system to the LED lighting system, status of the control cabinets and the warnings and alarms generated by the PAC and ESD controllers. This information is displayed over six LCD monitors and two auxiliary 50” screens.

ALARM PROFILE RECIPES FOR DIFFERENT TESTS

For the enhanced status alarms and warnings required in the test environment, Instytut Lotnictwa used zenon Recipe Manager. This enabled the team to easily store and modify alarm profiles for the various tests as “recipes”.

Test data is then displayed on the process HMI for easy review during testing. This is augmented with the zenon Extended Trend that enables users to visualize essential data in charts and graphs which facilitate the visualization of the many phenomena occurring in parallel in the system. In all, the graphs cover around 1,100 different variables.

Although the laboratory has a separate system for archiving measurement data, with which the data from zenon



Instytut Lotnictwa’s new test facility allows for challenging tests on jet engine fans.



Instytut Lotnictwa, the Institute of Aviation in Warsaw, has a proud history dating back to 1926.

is seamlessly shared, some processing of data does happen in zenon. Thanks to zenon’s integrated PLC system, compliant with the IEC 61131-3 standard, the Instytut Lotnictwa team has been able to configure operations on variables that would otherwise have been impossible to implement. These operations are performed locally on the HMI computer for immediate local visualization.

FLEXIBLE USER AUTHORIZATION

Another important aspect of the project made simple by zenon was the need to cater for multiple user authorization levels. Some users need access only to data visualization, whereas others can control subsystems according to predefined automatic modes. Others require full access to allow manual control of any subsystem or component, including the ability to modify variables such as alarm points and alarm stop conditions. Creating and managing these different user profiles is easy to achieve in zenon.

Rafal Sikorski concludes, “zenon has precisely delivered on all our project specifications and expectations in an intuitive and straightforward way – critically supporting our work to deliver our top-quality research services to this important global aerospace market.”

HIGHLIGHTS:

- ▶ Complete hardware independence
- ▶ Stable communication with the control and emergency shutdown systems
- ▶ Visualization of data in intuitive and graphical form
- ▶ Use of recipes to store alarm profiles for various tests
- ▶ Real-time archiving of process data
- ▶ IEC 61131-3 compliant integrated PLC system for advanced data processing
- ▶ Clear data visualization in chart format
- ▶ Expert technical support from the COPA-DATA team