Brussels, 17 February 2025

ETN Webinar
“Digitalisation in Turbomachinery: Best Practices and state-of-the art solutions”

Brief summary

The Digitalisation and Diagnostic Working Group of ETN is organising a new webinar, which will take place on Tuesday, 13 March 2025 at 14:00-15:00 (CET).

The following ETN Members will share their expertise in digitalisation, by presenting case studies, applications, and specific technologies relevant to the industry of turbomachinery:

- Paolo Silvestri, Assistant Professor and Researcher at University of Genoa, Italy, and
- Sébastien Grégoire, Senior Business Analyst at Engie

“Experimental investigation of incipient surge identification based on system dynamic responses analysis” (Paolo Silvestri, University of Genoa)

Centrifugal compressors play a critical role in industrial applications. Understanding their operational behavior during rotating stall and incipient surge conditions is essential for enhancing efficiency and reliability.

The presentation discusses advanced signal-processing operations conducted on system dynamic operational responses to better predict compressor behavior and identify the inception process and the origin of low mass flow rate instability phenomena occurrence.

Inflow pressure measurements together with vibro-acoustic response data are processed with time and frequency domain signal processing techniques. Time-frequency technique (short-time spectral analysis, wavelet transform and Wigner-Ville distribution) were also considered for surge transient investigation.

The presented results provide an interesting diagnostic and predictive solution to detect compressor instabilities at low mass flow rate operating conditions and to prevent compressor fails.

“Introduction to Robin: The Historian for Asset Monitoring and a Use Case on Vibration Monitoring” (Sébastien Grégoire, ENGIE)

To realise the ambition of a carbon-neutral economy, ENGIE has created a data historian platform called Robin, which is based on AVEVA PI System. Robin is connected to assets from all over the world and from different types such as power plants, gas terminals, distribution networks, renewable assets, and batteries. The real-time data collected from these assets is used to improve their performance, reduce emissions, increase the availability and help with the valorisation of the assets.

Over time, ENGIE has developed a library of asset models and analytics on Robin to support these goals. The latest and greatest addition to Robin is an application for Vibration monitoring on large shafts of its thermal power plants. This solution offers a series of functionalities for operators in the control rooms and vibration experts.