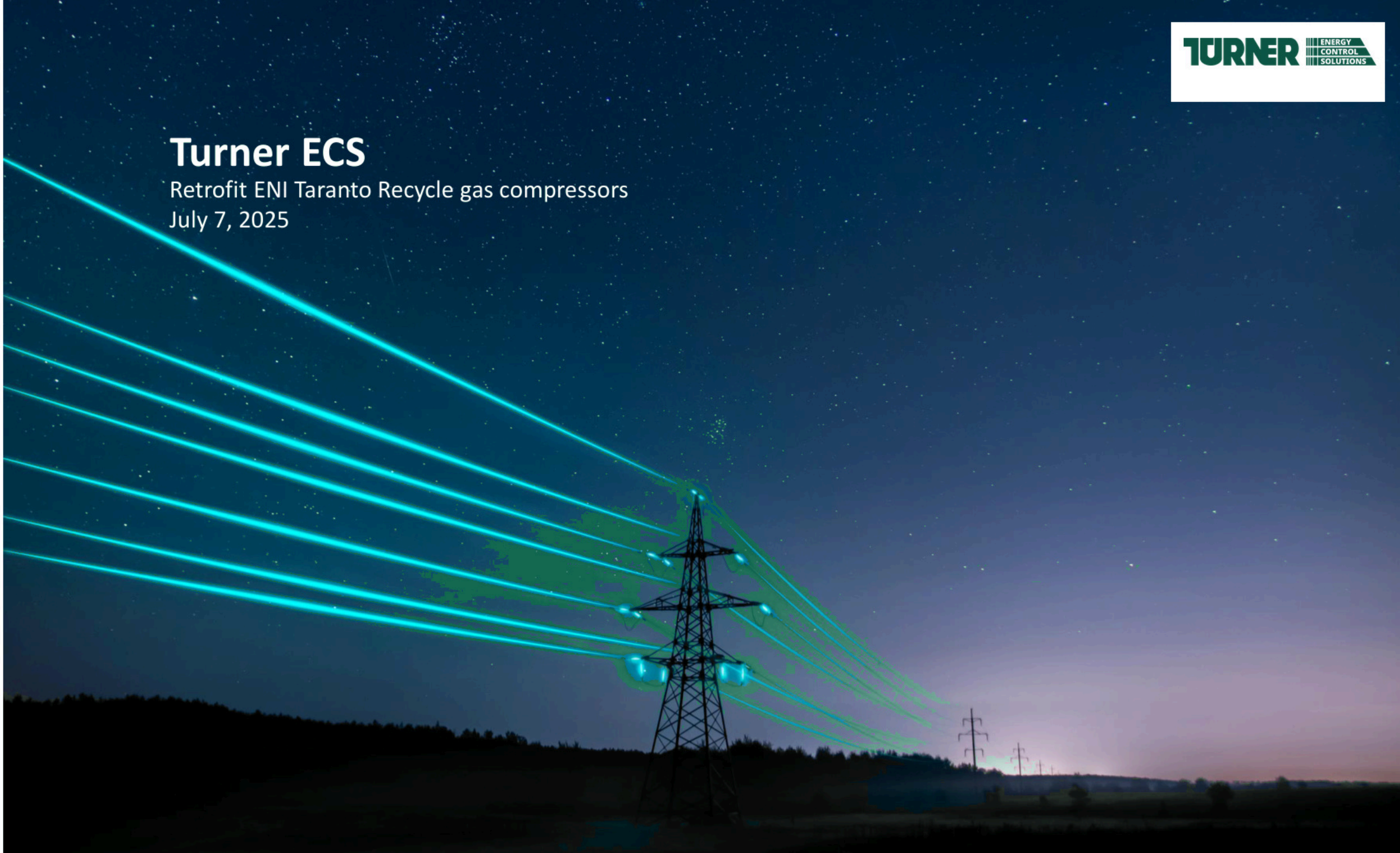
Turner ECS

Retrofit ENI Taranto Recycle gas compressors

July 7, 2025



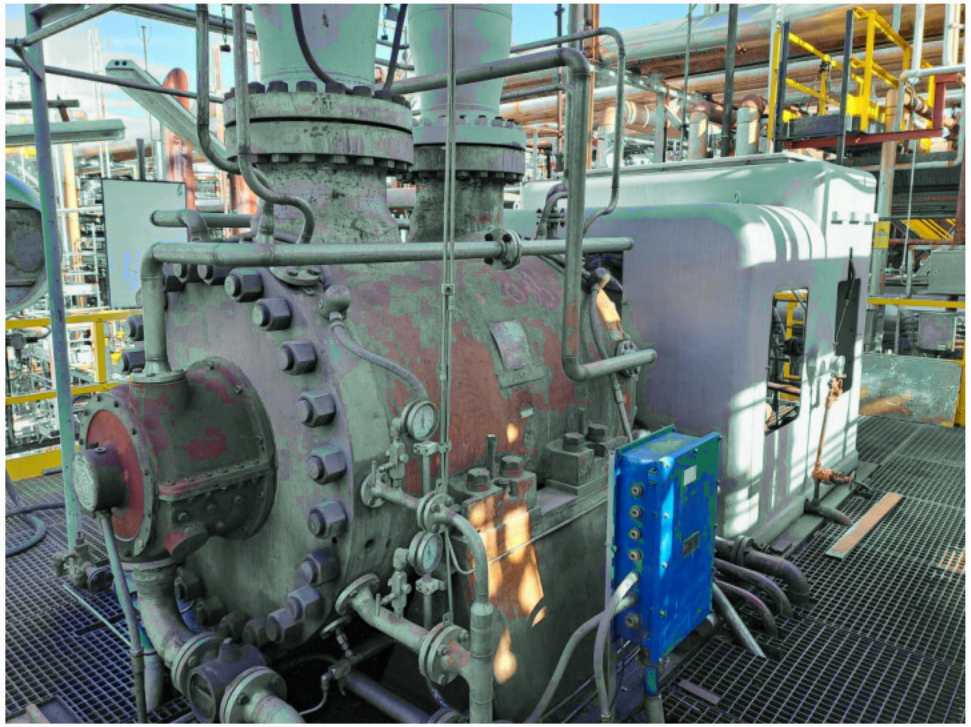
Confidential

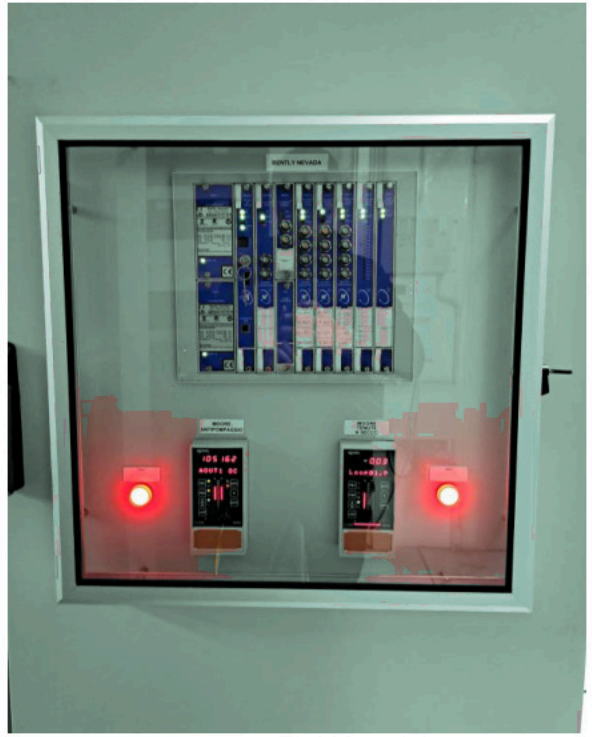
Integrate turbine and compressor control

Taranto

System info

	TK301	TK2401
Costumer	ENI S.p.A.	ENI S.p.A.
Plant	Raffineria	Raffineria
Turbine O&EM	Fincantieri	Fincantieri
Turbine actuatorion system	TM25	CPC
Turbine electronic control system	Woodward 505	Woodward 505
Compressor O&M	BCL 504 – Nuovo Pignone	BCL 306 – Nuovo Pignone
Process gas	Recycle gas H2 + HC	Recycle gas H2 + HC
Anti surge control system	Moore	Moore (Siemens)





Project benefit

OBSOLESCENCE

Automation control retrofits enhance availability and reliability by replacing outdated systems with modern, that reduce failures and unplanned costly downtime

MODEL BASED SOFTWARE ENGINERING

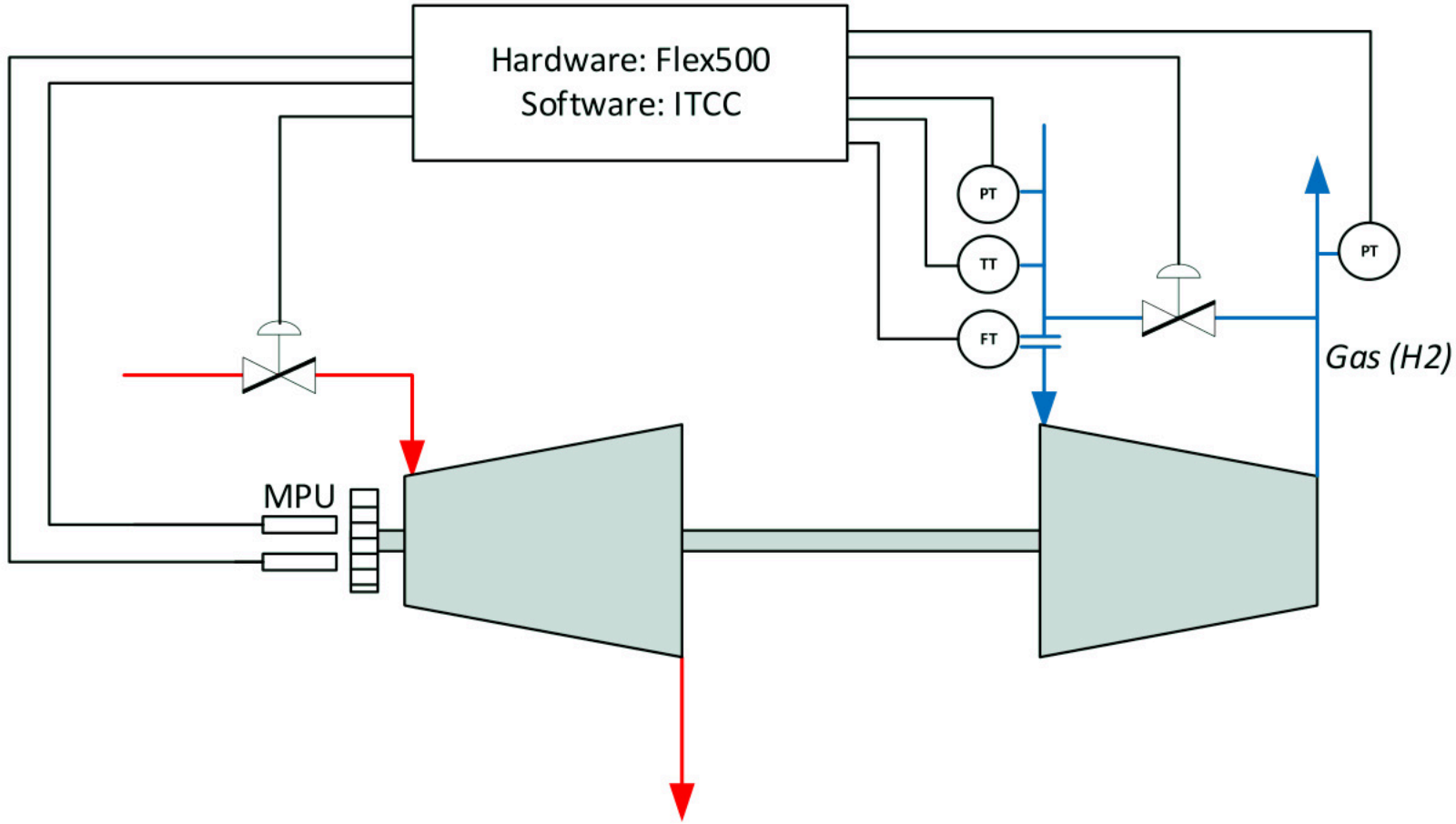
Digital twin model-based simulation enables more reliable control logic development and testing, significantly reducing commissioning time through early validation and optimization

STANDARD ALGORITHM

Standard control algorithms offer proven reliability, reduce errors, and significantly shorten commissioning time compared to custom-made PLC

Project details

We replaced two old Woodward 505 and two Moore module for process compressor control by integrating the turbine and compressor control functions into the Flex500. The new instrument will have ITCC, Integrated Turbine Compressor Control, as software to enable turbine control and compressor anti-pumping control.



Compressor unit H2 + HC reciclye gas TK301 and TK2401

Software core

Major benefits of our Integrated Turbine Compressor Control:

- One Integrated Control System
- Reduction in wiring and system
- Simple to operate
- Simple to support
- Cost savings in spares
- Faster interaction between the motor/turbine and the compressor resulting in a more stable process.
- Easy for operators to understand and manage system.
- Lower risks of operation problems.
- Protects motor from overload conditions.

Project retrofit details

BEFORE

MOORE
Industrial Automation and Optimisation

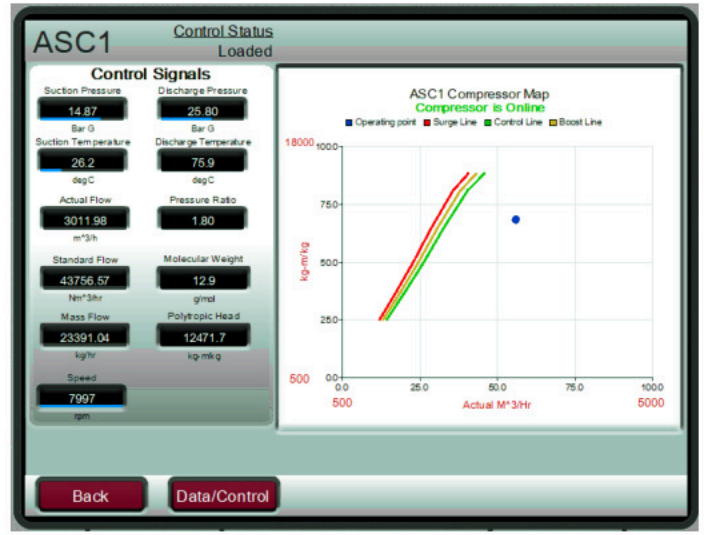
AFTER

WOODWARD

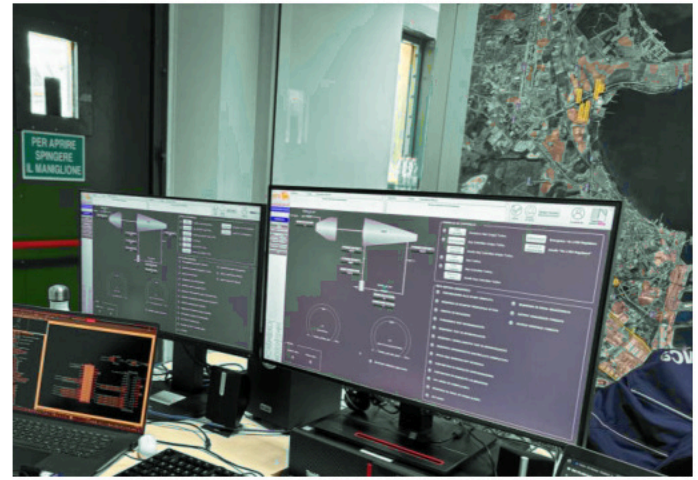
Project details

The **Integrated Turbine and Compressor Core Software developed includes:**

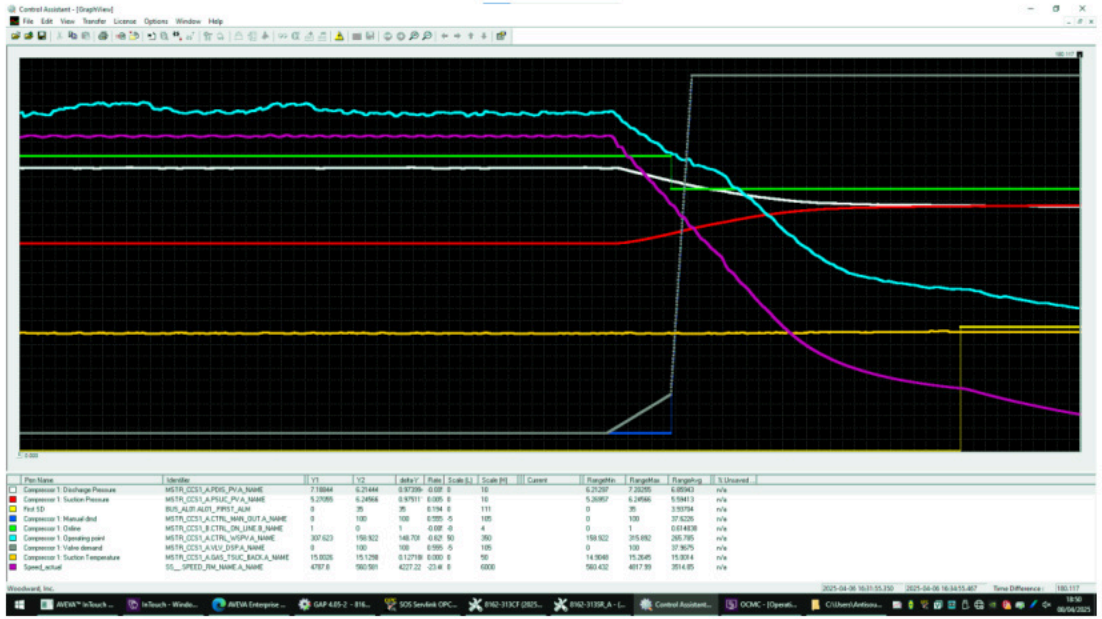
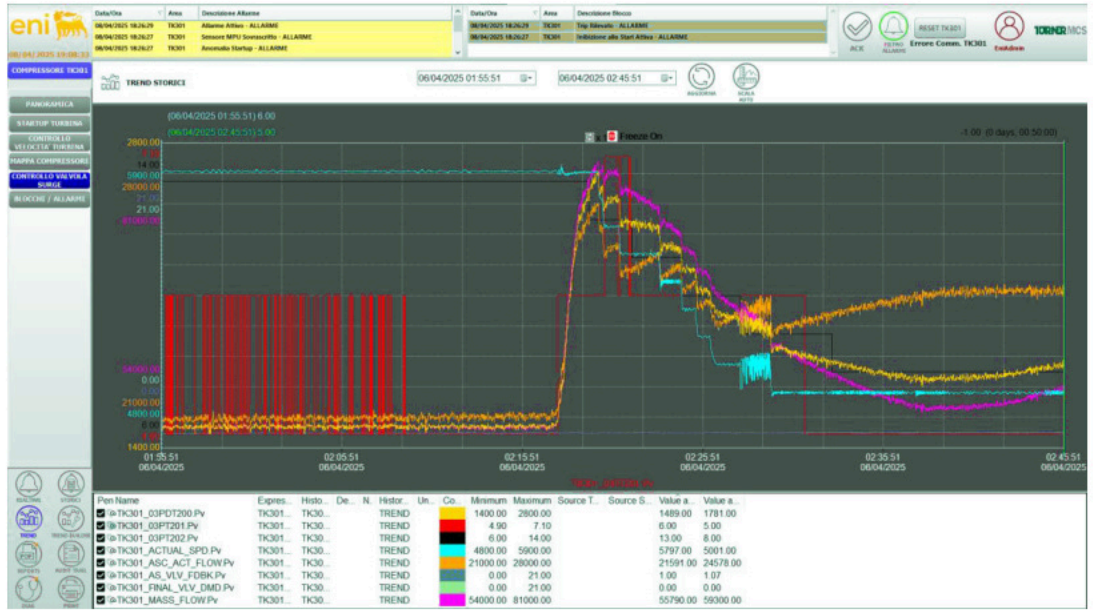
- **Flex500 for Turbine and compressor control**
  - Turbine controls
  - Compressor control and protection features (anti surge)
  - Flex500 graphic pages HMI for maintenance activity
  - Datalogging for up to 5ms scan time analysis



- **AVEVA Scada, plant operator system**
  - System overview
  - Turbine Startup curve with critical bands
  - Compressor surge maps with operating point
  - Real time and historical trends
  - Alarm & events



Datalogging: useful example

The **Datalog** function with **up to 5ms resolutions recording speed** and the SCADA Trend, allowed the customer monitoring and protecting the turbines and compressor.

Few days after the successful commissioning was identified a malfunction of the heat exchanger downstream the compressor. The Datalog allowed our costumer to identify the cause of failure.