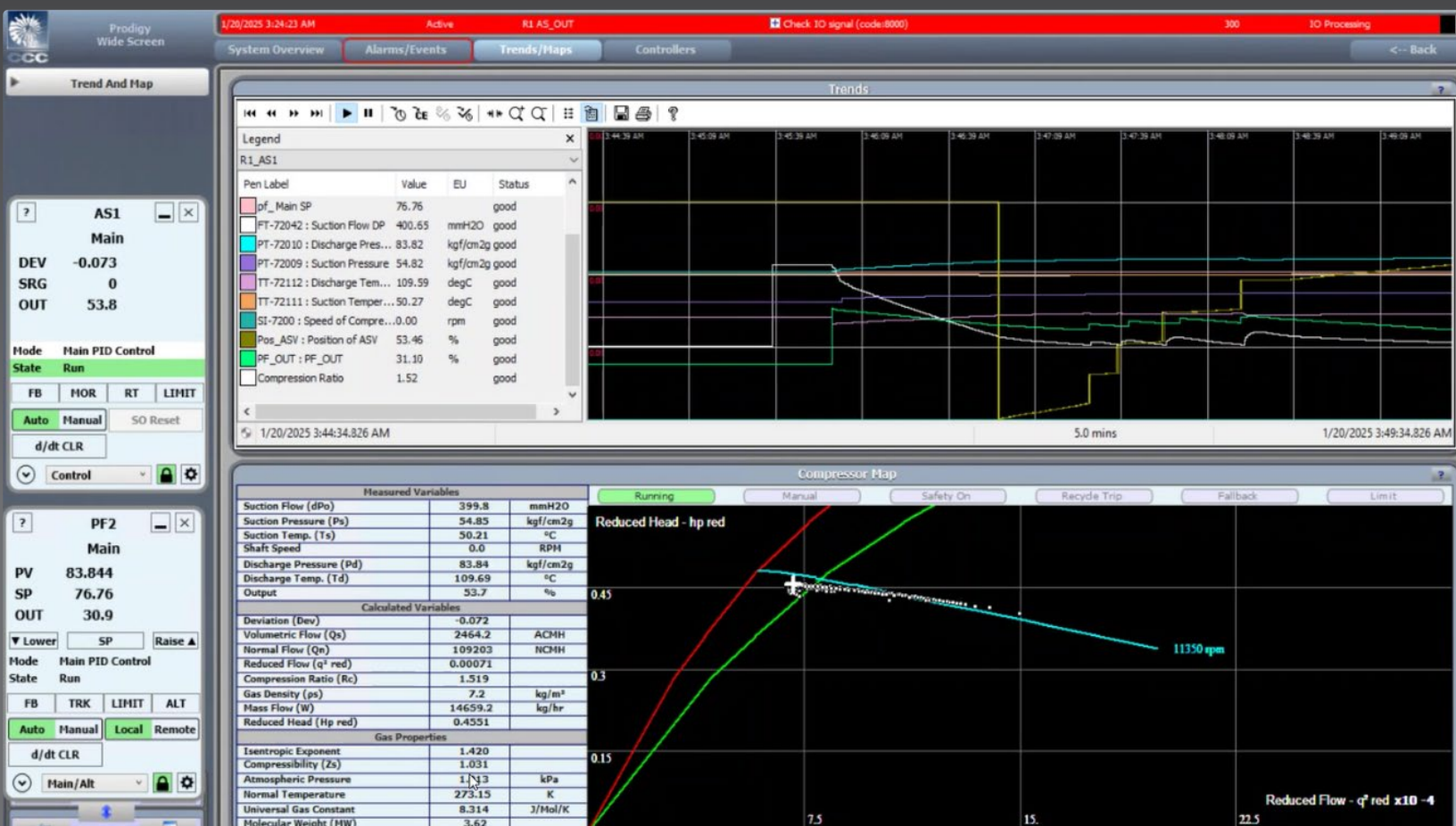


TURBOMACHINERY DYNAMIC SIMULATION STUDIES



High-fidelity simulation services to help you start up faster, reduce risk, and maximize performance

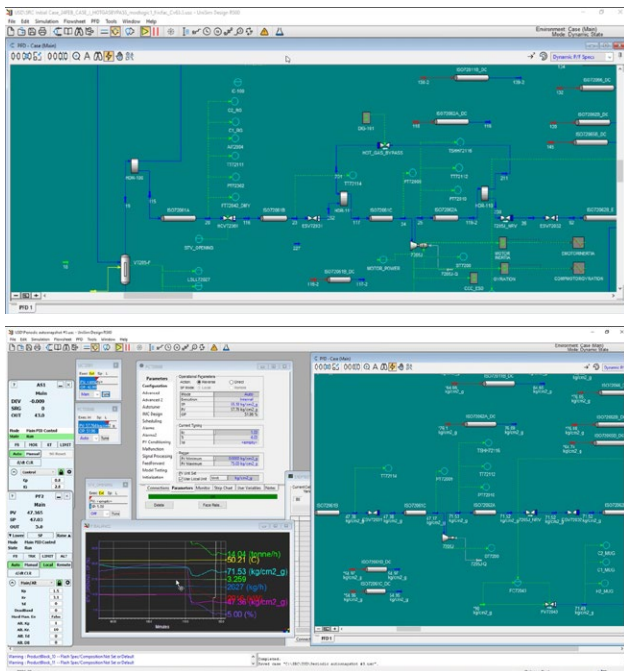


Our high-fidelity dynamic studies and control system pre-tuning help you reach production faster, while minimizing commissioning risks. This unified approach combines advanced modeling, early issue resolution, and seamless deployment to the final control system. With direct integration between UniSim® and the CCC Emulator, you can validate designs, fine-tune performance, and make better-informed decisions before going live.

INTEGRATED SIMULATION SERVICES

Honeywell CCC's simulation offering supports the full dynamic study lifecycle:

- **Scope definition and data collection** – Establish study objectives, define scenarios, and gather essential process, equipment, and operational data
- **Model development** – Build and validate high-fidelity dynamic models in UniSim®, including integration with the CCC Emulator for real control logic testing
- **Control system pre-tuning** – Fine-tune control strategies in a virtual environment for faster, smoother plant startup
- **Simulation planning** – Document simulation run procedures based on proposed design and intended objectives of the study
- **Simulation execution** – Execute simulation runs for the defined range of operating and emergency scenarios
- **Comprehensive deliverables** – Receive detailed reports, configuration backups, and simulation artifacts to support engineering and commissioning
- **Seamless control deployment** – Transfer pre-validated control parameters directly to the final system to reduce commissioning effort
- **Engineering design support** – Access expert consulting for validation of piping, instrumentation, and mechanical equipment design



Reduce project costs, accelerate time to value, and gain operational confidence with the most trusted name in turbomachinery control.

EXPERT-LED EXECUTION

A uniquely collaborative team structure supports your project:



Serge Staroselsky



Medhat Zaghloul



Wayne Jacobson

Engineering managers with 30 years experience in turbomachinery control engineering.

- **CCC Regional Consultants** – Local experts offering turbomachinery and control system domain knowledge
- **Honeywell Simulation Teams** – Scalable modeling and simulation resources
- **CCC Project Teams** – direct involvement of engineers designing the final turbomachinery control system

This integrated approach ensures alignment across simulation, engineering, and commissioning phases.

INDUSTRY ALIGNMENT AND DIFFERENTIATION

Honeywell CCC delivers unmatched value through:

- **Trusted industry expertise** – A proven solution in turbomachinery control
- **Exclusive CCC Emulator access** – Real control logic, integrated and tested virtually
- **Comprehensive validation** – Full step-response testing and control tuning before deployment
- **Seamless UniSim integration** – Ensures high model fidelity and continuity across all project phases

KEY BENEFITS ACROSS PROJECT PHASES

- **FEED phase** – Virtually test and compare multiple design options, validate layout and process assumptions to make informed decisions before capital commitment
- **EPC phase** – Verify instrument location and sizing, piping layout, and control strategies before engineering freeze for construction.
- **Commissioning** – Virtually test and fine-tune control logic ahead of deployment to minimize startup risks, reduce on-site tuning time, and accelerate commissioning.
- **Operation** – Leverage validated models for hands-on operator training, real-time troubleshooting, and ongoing performance optimization

WHERE SIMULATION DELIVERS THE MOST VALUE

Our simulation services include rapid transient upset analysis and start-up/shutdown sequence testing, validation of antisurge and override protection logic, and analysis of dynamic interactions between multiple machines operating in the same process. We also offer troubleshooting and debottlenecking solutions for operating assets.

What You Can Do with It:

- Piping and instrumentation verification
- Control strategy optimization
- Startup and commissioning
- Emergency scenario testing
- Process optimization
- Expert technical access
- Coastdown surge evaluation
- Verify machines' interactions and stability

The Business Case:

- Avoid costly late-stage modifications
- Pre-tune controls before hardware deployment
- Reduce first-startup risks and time
- Validate safety systems in a virtual environment
- Maximize yield and efficiency
- Minimize need for internal resource development
- Validate control elements before procurement
- Early design countermeasures implementation

OPTIMIZE BROWNFIELD OPERATIONS

Modernize confidently by unlocking insights hidden in your legacy control system. Honeywell CCC's dynamic simulation helps troubleshoot persistent issues, optimize performance, and validate upgrade decisions, all without disrupting operations.

- Validate the impact of proposed system changes before implementation
- Uncover root causes of long-standing issues using high-fidelity modeling
- Reduce downtime with virtual testing of startup and shutdown sequences
- Extend asset life through smarter tuning and safer operating strategies

DESIGN GREENFIELD ASSETS

Design it right from the start and bring your plant online faster. Our simulation studies ensure process, turbomachinery, and control system designs are aligned, optimized, and implementation-ready.

- Virtually test and fine-tune designs before procurement
- Ensure seamless integration between process, controls, and rotating equipment
- Reduce onsite effort with pre-validated control logic, configured through high-fidelity virtual testing
- Validate safety logic and emergency procedures in a controlled virtual setting

THE TRUSTED NAME FOR TURBOMACHINERY OPTIMIZATION



2 Billion
Operating
Hours



10,000+
Machines



40+
OEMs



150+
Turbomachinery
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For more information

<https://process.honeywell.com/us/en/products/turbomachinery-automation-systems/ccs-simulation-software/simulation-studies>

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