

# Combined cycle power plants

## Reliability & Thermal Performance Analysis

### Combined Cycle Plants

Combined cycle power plants generate power at high thermal efficiencies (reaching 60%). Real time monitoring of Reliability and Thermal Performance helps maintain health and efficiency of Combined cycle power plants. Our **ProcDNA** software has the capability to analyze both critical aspects of Combined cycle power plants – **Reliability & Thermal Performance**.



### Combined Cycle Power Plant

Process Modelling

Real time Data Analytics

Remote Monitoring

Diagnostics

Alerts & Notifications

Offline Simulation

Historian Implementation

Reports & Automation

### Reliability

ProcDNA can monitor the health of various critical components of industries in real time. A combination of **Artificial Intelligence, Statistical methods** and **Thermodynamics** are used for this purpose. Some components in Combined Cycle Power plants whose anomalies can be detected at the onset -

- Anomalies in Bearings
  - Gas turbines
  - Steam Turbines
- HRSGs
- Combustion related anomalies
- Anomalies in Major Pumps & Motors
- Anomalies in Generators and Transformers
- Heat Exchangers
- Condenser
- Cooling Towers
- DM water systems

### Thermal Performance

ProcDNA uses **SimTech's** IPSEpro thermodynamic engine to analyze thermal performance of Combined cycle power plant components in real time. Some components that can be analyzed -

- Gas turbines
- HRSGs
- Steam Turbine sections - HP/IP/LP
- Condenser
- Cooling Towers
- Major Pumps & Fans
- Generator



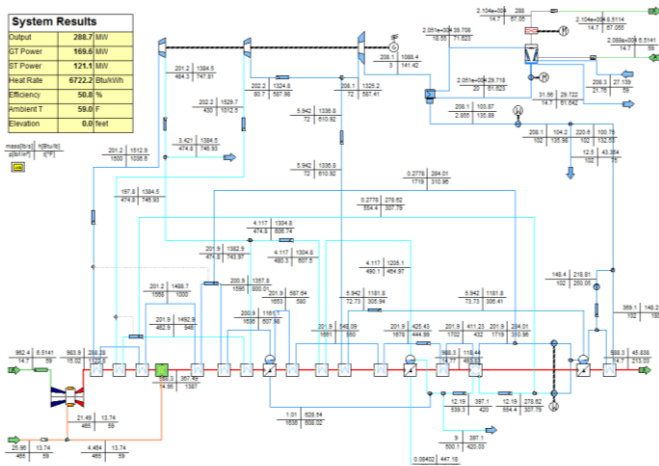
# Reliability & Thermal Performance Analysis

## Thermal Performance Analysis

### Using SimTech's IPSEpro

Thermal performance model of a 288 MW Combined cycle power plant built using [SimTech's](#) IPSEpro.

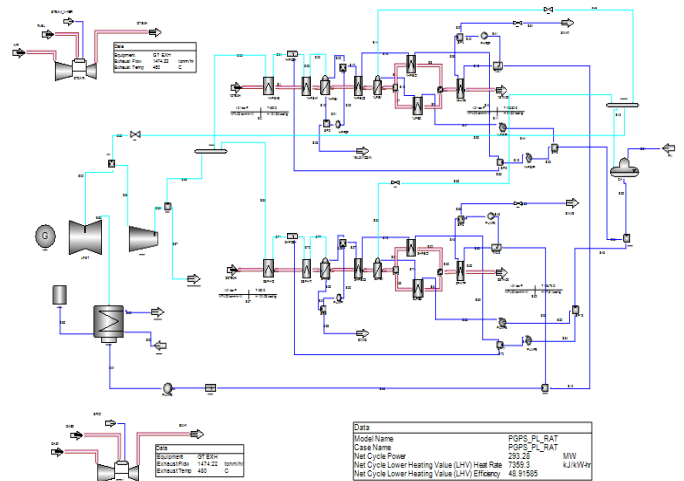
IPSEpro uses an open equation architecture and all engineering calculations are visible to the end users!



### Using GateCycle

For customers using OSI PI and GE's GateCycle software, our ExcelANCE™ software can be used to setup a real time performance analysis solution very quickly.

ExcelANCE software is currently monitoring 2000+ MW of combined cycle plants of various configurations.



## Combined cycle plant – Thermodynamic Modeling & Analysis

- Mass & Energy balance is maintained
- Very detailed component level performance analysis in real time
- Can perform Design and Off-design calculations of all major equipment
- Models provide detailed analysis of "Current" and "Clean performance" and calculate component level degradation accurately
- Capability to run detailed thermal performance simulation

To know more about our software and solutions, please visit [www.patsimo.com](http://www.patsimo.com) or write to us at "info@patsimo.com"

