

# Nuclear Power - Data Analytics

## Reliability & Thermal Performance Analysis

### Nuclear Power Plants

Reliability and Thermal Performance are two very critical aspects of Nuclear Power Industry. Real time monitoring of health of all critical assets is necessary to maintain required Reliability.

Our **ProcDNA** software has the capability to analyze both critical aspects of Nuclear Power Industry – **Reliability & Thermal Performance**.



Nuclear 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 Nuclear power plants whose anomalies can be detected at the onset -

- Heat Exchangers (Moderator, auxiliary cooling water systems)
- Feed Water heaters (LP & HP heaters)
- Anomalies in Major Fans & Motors
- Anomalies in Generators and Transformers
- Detecting Process issues
- Condenser and ejectors issues
- Instrument & service air Compressors
- Reactor building air drying system anomalies
- Anomalies in Bearings
  - Steam Turbine
  - Primary circulating pumps
  - Pressurising pumps etc.

### Thermal Performance

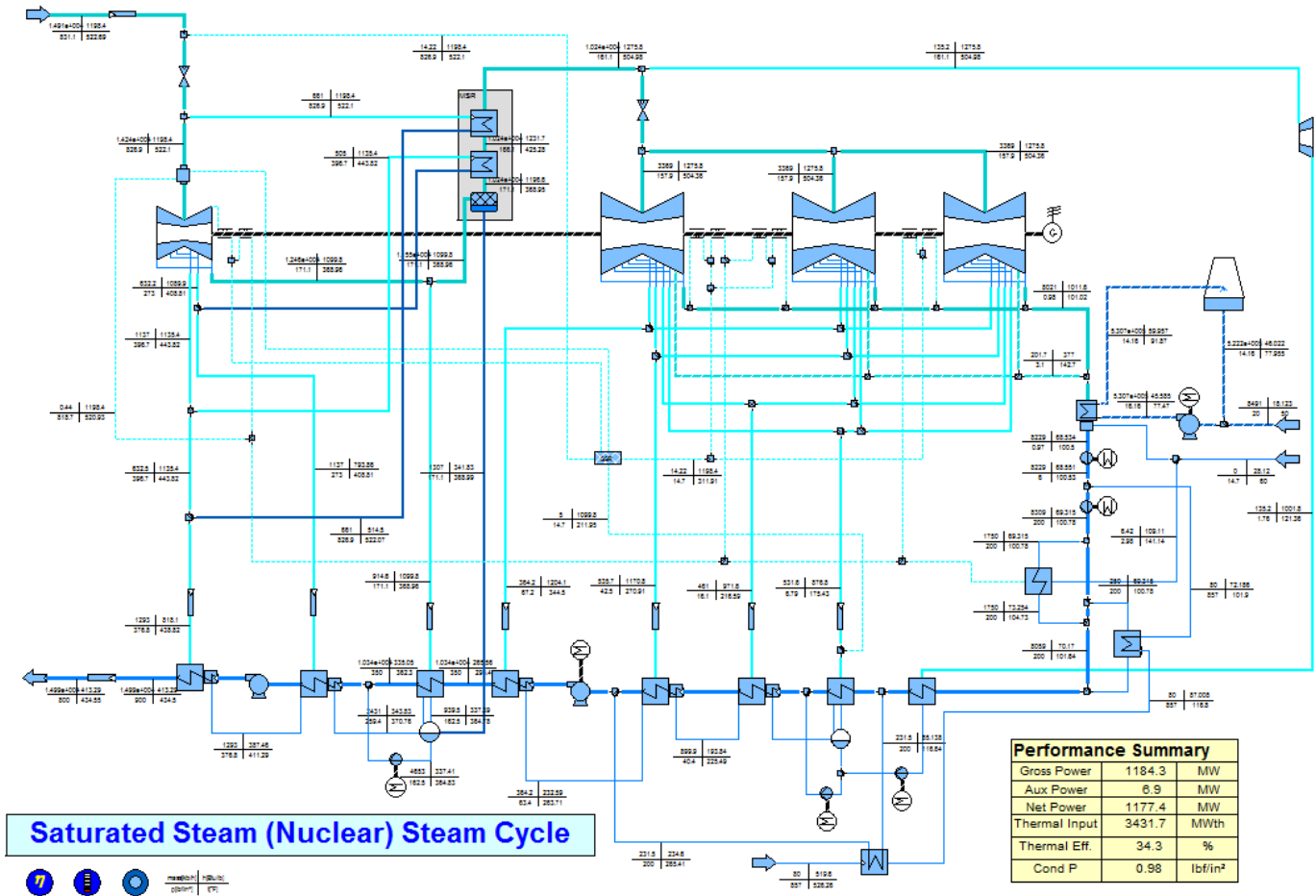
ProcDNA uses [SimTech's](#) IPSEpro thermodynamic engine to analyze thermal performance of Nuclear plant components in real time. Some components that can be analyzed -

- Turbine sections - HP/IP/LP
- Steam Separator
- Feed Water heaters (LP & HP heaters)
- Condenser
- Cooling Towers
- Major Pumps
- Generator



# Reliability & Thermal Performance Analysis

Thermodynamic Model of secondary cycle of a 1185 MW Nuclear Plant built using [SimTech's IPSEpro](#). IPSEpro uses an open equation architecture and all engineering calculations are visible to the end users!



## Nuclear Plants - Thermal Performance Modeling using IPSEpro

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

