Anomaly Detection and Diagnosis for Thermal Performance and Equipment Health

Wednesday December 10th, 2014 9:30AM- 11:30AM
Room: W311C
Track: Plant Performance I
11B – New Frontiers in Maintenance

When problems occur at a plant – whether involving equipment health or performance degradation, tell-tale signs are recorded by the data historian but it is difficult for plant personnel to monitor such data and identify problems in real-time across an entire plant. In many cases, equipment problems are not detected until the equipment fails; or with process issues such as thermal efficiency or emissions there are extended excursions with high costs.

Steve Piche, director of R&D at NeuCo, will describe our adaptive neural network models that monitor plant data in real-time, constantly searching for anomalies that point to equipment health or process performance issues. The system predicts expected values for signals under current operating conditions, compares them to actual values, and, when the difference between the predicted and actual values exceeds an appropriate threshold, generates an alert to notify users of a potential equipment problem. High quality models that are automatically evaluated and updated allow problems to be identified soon after they occur and result in fewer false alarms than other detection systems. Several case studies will be presented highlighting the results that have been achieved through the presented advanced anomaly detection and alerting technology.

Analysis and Treatment of Weather Forecast Error - A case study at Independence Station

Wednesday December 10th, 2014 1:30PM- 3:30PM
Room: W307C
Track: Gas Turbine Technologies I
08C - Combined Cycles Session II

Weather has a significant effect on overall plant capability due primarily to its direct effect on gas turbine (GT) capability. Estimating the effect weather is having, or may have in the future, is difficult because, among other reasons,

- It is difficult to predict the weather;
- There may be real or artificial differences between the actual weather at the plant and the actual weather at the location for which the forecast is taken.

Rob James - who is responsible for comprehensive product management of NeuCo’s closed-loop and combined cycle optimization technologies for fossil power generation systems - will present a case study detailing the analysis and treatment of weather forecast error at Dynegy’s Independence Station (two 2-on-1 combined cycle units, each unit having two GE 207FA gas turbines with 165 MW capacity, two Vogt HRSG’s with supplementary-fired duct burners (22 MW capacity each), and one steam turbine (206 MW)).