

Using HanPHI™ to Discover Excellence
with Actionable Intelligence
at The University of Texas at Austin

CASE STUDY

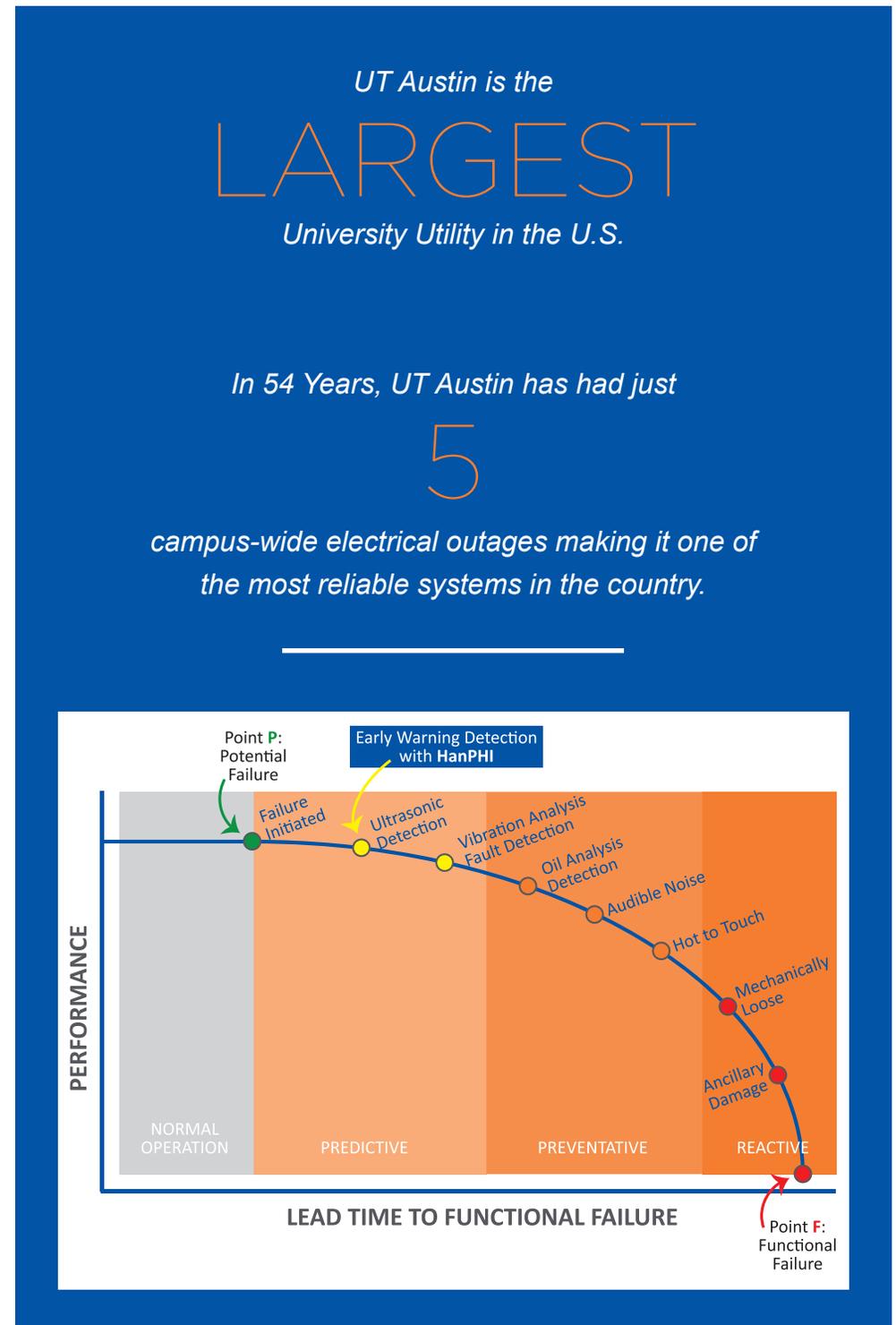
Innovation and Excellence

Innovation and excellence are part of the DNA of The University of Texas at Austin campus. That culture drives the philosophy in how the Carl J. Eckhardt CHP Complex campus energy team manages operations, striving not only for stable power systems but also looking for innovative, cost-effective ways to support a growing campus with challenging demands.

In this vein, leadership decided to adopt **predictive maintenance** to help achieve their goals of excellence in providing uninterrupted and cost-effective power for the campus. Not only is total plant energy efficiency important, but also in play are the volatility of fuel costs and the cost of operation. Within the industry, 89 percent of failures are random. By implementing predictive maintenance, UT Austin takes the random out of the equation. Rather than relying on preventative, reactive, or unnecessary maintenance, UT Austin wanted access to more **actionable intelligence** in order to identify equipment failures in advance.

The Opportunity:

- Eliminate potential or hidden failures
- Reduce non-productive time and downtime
- Increase labor efficiency
- Enhance plant safety
- Diminish equipment maintenance costs



Why Predictive Analytics?

- Power of big data
- Costs savings
- Operational stability improvements
- Increased performance over routine/time-based maintenance

With the implementation of HanPHI, we now have usable data. Without manual calculations and long hours, we have the ability for deep insight into all of our systems, which allows us to optimize our efficiency.

The HanAra can-do attitude is amazing. Throughout the entire process of installation and configurations, they were dedicated to our outcomes. Not only did they hear what we said, but they also applied it, and improved the product.

– Juan Ontiveros
Associate Vice President
Utilities, Energy & Facilities Management

The Solution

A Predictive Monitoring Solution

To reduce unexpected equipment failures, unplanned maintenance activities, and outage time, UT Austin chose HanAra Software's HanPHI™ solution as its condition-based predictive monitoring solution.

Using historical fault-free data, HanAra professionals created **advanced models** for four boilers, two combustion turbines, and two steam turbines. Through communication with the plant and HanAra's proprietary correlation engine and algorithm, HanAra created eight models for the Carl J. Eckhardt CHP Complex. Based on UT's operating condition, HanPHI compares the **real-time data** collected by the historian software (HanPrism™) to these models to determine the health index.

With the health index and early warnings in place, the team now **detects hidden failures in advance**, resulting in increased lead time to plan, schedule, and prioritize maintenance. With the SuccessTree feature within HanPHI, the team can determine the root-cause of an anomaly, all the way down to the sensor or tag level.



Results & Benefits

With the implementation of HanPHI, HanAra provided the UT Austin team with the information to **simplify and speed-up** the decision-making and maintenance process. With a centralized location for data and the capacity to utilize predictive maintenance, HanPHI also **eliminates redundant and unnecessary maintenance and support cost**.

HanPHI monitors the system behavior in any condition either running full load or partial load and alerts the team of potential failures. As a result, HanPHI has helped the team **reduce unexpected equipment failures**, and unplanned maintenance activities and outage time by detecting any failures in advance.

In addition, when UT Austin implements new equipment or makes changes to the existing system, **HanAra professionals are on hand** to guide the UT Austin team in ensuring that HanPHI models accurately reflect the current operating equipment condition. For instance, recently, the HanAra engineers implemented six additional models for the chilling stations as part of expanding the UT Austin team's holistic view of the complex.



Benefits of HanPHI:

- Data analysis to notify of anomalies in real time.
- Ability to perform complex analysis of historical data, create patterns, and alert of deviations
- Predictive data modeling
- Early warning of potential failures that increase lead time and prevent unplanned outages or failures
- Reduced maintenance and operation costs
- Improved speed of analysis from minutes to seconds
- Adjustments to improve accuracy and increase system monitoring
- Ongoing training and support

89%

of failures in all plants are RANDOM, significantly reducing the success of preventative maintenance procedures.

About HanAra Software

HanAra Software connects deep industry knowledge with innovative technology to provide integrated data management and predictive maintenance solutions for process plant management. Through the implementation of HanAra solutions, plants enjoy results including reduced costs, increased efficiencies, and ultimately improved plant safety. HanAra Software combines solutions with training and care programs to support clients every step of the way.

HanAra Software is the United States headquarters of South Korean-based BNF Technology. BNF Technology is a professional software development company that provides optimized software solutions for operational management of process plants. Coal-fired, combined-cycle, seawater desalination, and petrochemical plants use our solutions. For more than 17 years, BNF Technology has provided various solutions to more than 150 units across two continents to help them achieve operational excellence.

To turn your data into actionable intelligence,
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About The University of Texas at Austin Carl J. Eckhardt Complex

The University of Texas at Austin campus operates one of North America's largest and most innovative campus energy plants. The Carl J. Eckhardt Complex includes a combined heat and power (CHP) plant with a 135-MW power capacity that provides 100 percent of the electricity, air conditioning, and heating to the University's main campus — a 431-acre site serving over 70,000 students, faculty, and staff.

The single largest electrical load on campus is the 60,000-ton chilled water cooling system that provides air conditioning to the campus, which has reached a peak demand of 33,000 tons. This campus-energy system includes four chilling stations and 9.5-million-gallon chilled water thermal storage tanks.

