



Power Engineering Professional Services Case Study – Huntsman



Huntsman's Port Neches Plant

Client Profile:

Huntsman Corporation is a multi-billion dollar, publicly traded global manufacturer and marketer of differentiated chemicals. Huntsman's chemical products number in the thousands and are sold worldwide to manufacturers serving a broad range of consumer and industrial markets. Huntsman is headquartered in The Woodlands, Texas, and has more than 100 manufacturing and R&D facilities in approximately 30 countries. Huntsman employs about 15,000 associates within its five distinct business divisions—Polyurethanes, Performance Products, Advanced Materials, Textile Effects, Pigments and Additives.

Power Analytics has served Huntsman since 2006 with several multi-year contracts for professional power engineering and consulting services. In 2006, Huntsman increased production at its Port Neches plant, located east of Houston, Texas, and needed to expand and upgrade their power system infrastructure. The Port Neches plant provides raw materials for Huntsman's Performance Products division, which, in turn, produces a wide range of products for various uses: paints and coatings, construction materials, fuel additives and lubricants, agrochemicals, industrial applications, and personal care.

Scope of Work:

The Huntsman Port Neches plant has about 100MW of on-site generation, with the remainder of the plant's demand met through a transmission interconnection with Entergy. The internal electrical system at this plant is extensive and complex. In 2006, Power Analytics was tasked with helping Huntsman to expand and upgrade this system with new technology, power equipment, and substations. Our professional power engineers began the upgrade by modeling the existing electric power system using our Paladin® DesignBase™ software. This software enables the engineers to have a clear view of the existing power system, and to perform simulations to assess the impact of all desired infrastructure upgrades upon the system's power flow, protective device coordination, and potential for short-circuit and arc flash anomalies.

In 2015, Huntsman installed additional substations, feeders, and other electrical equipment at the Port Neches plant and, once again, called upon Power Analytics to evaluate and make recommendations about the plant's load flow, short circuit vulnerabilities, protective device coordination, fault events analysis, and reliability improvements to the high voltage protection system. Again in 2016, Power Analytics was enlisted to evaluate the entire 69KV protection coordination scheme, as well as a transient analysis of various load shedding scenarios, to mitigate faults and outages originating from the utility supplier. Because the Paladin DesignBase power model was in place, and up-to-date, this work was conducted with great efficiency, ahead of schedule and under budget.

Mission Critical Challenge:

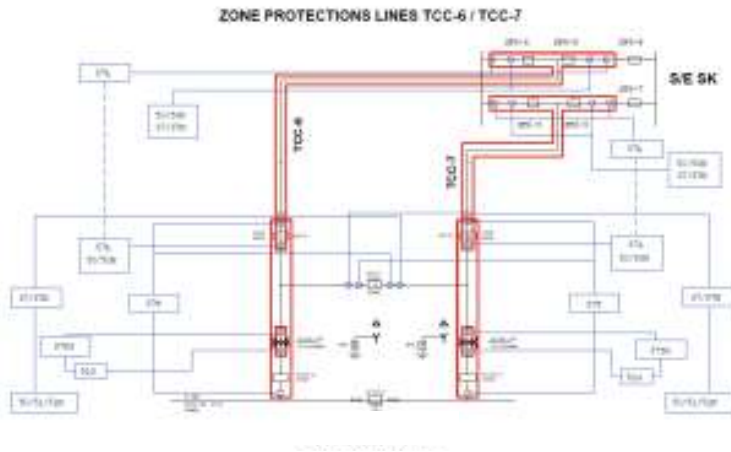
Huntsman has a stringent philosophy about safety, protection and accident prevention. A power outage at a major chemical processing plant can result in millions of dollars of lost productivity and profit per hour, not to mention the potential damage to processing equipment and to the safety of the employees. The critical challenge of this project was to assess the impact of the power system additions upon the safety and reliability of the entire power system, and to make appropriate recommendations for improvement, while keeping daily production flowing.

Raleigh, NC Houston, TX

Nationwide Toll-Free 844-367-2752 www.poweranalytics.com

Copyright© 2017

Power Analytics Case Study – Huntsman Power System Situational Awareness



Paladin Analysis Dashboard Samples

Process and Analysis:

The one-line segment shown above for a single substation illustrates the complexity of the electric power system at the Huntsman Port Neches plant. This plant's power system is comprised of multiple and varied busbars, capacitors, circuit breakers, feeders, fuses, induction motors, static loads, switches, and transformers, in addition to two interconnections to the Entergy transmission system.

However, all of this information was easily captured, integrated, presented, and ready for simulation testing and analysis on the computer by the Paladin DesignBase power model. The results of the testing and analysis upon the newly installed additional power equipment, in relation to the existing power system, revealed what was working correctly and what would require remediation to optimize reliability, safety, and economics. The screen shot examples at the right demonstrate how the Power Analytics Paladin management dashboards present the data and findings in a clear, concise, and conclusive manner.

Solution:

The end result of this project was a set of actionable recommendations for the integration of the plant's new power equipment and improvement of protection system reliability.

Value Provided:

Through the provision of expert engineering services, and the sophisticated power modeling and simulation capabilities of the Paladin DesignBase software, Power Analytics has given the operators and the management of the Huntsman Port Neches plant a high-level of confidence that the plant's latest power system expansion will be safe, reliable, and will enable the company to meet its increased production goals.



"The Port Neches facility is Huntsman's largest, and this expansion makes the plant the largest ethylene oxide manufacturer in the country."

Source: 9/3/15 news article from The Examiner of SE Texas
A Look Inside Huntsman's Multi-Billion Dollar Port Neches Facility

**For more information or to request a demonstration, contact
Sales, Power Analytics
sales@poweranalytics.com (919) 882-0300**