



Thermon's Genesis Network:

Case Study #1 – Ethane Cracker & Polyethylene Production Facility



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INTRODUCTION

Modern industrial facilities are highly complex ecosystems which require frequent maintenance to minimize down time and maximize profitability. Traditionally, heat tracing required a significant amount of time and money for initial installation and routine maintenance/troubleshooting alarms. The advent of Industrial Internet of Things (IIoT) technologies have made life easier in nearly every industry and the introduction of wireless connected devices for heat trace installation, control and monitoring will lead to cost and time savings for facilities.

Thermon has developed the Genesis Network, the premier wireless connected system for monitoring and controlling heat trace. Genesis Network provides a total solution for operational awareness and site-wide visibility. Users save on maintenance hours, increase up-time, and can make upgrades and changes with greater flexibility. Additionally, users can easily monitor, maintain, and troubleshoot even the largest heat trace systems that may include over 10,000 heat trace circuits.

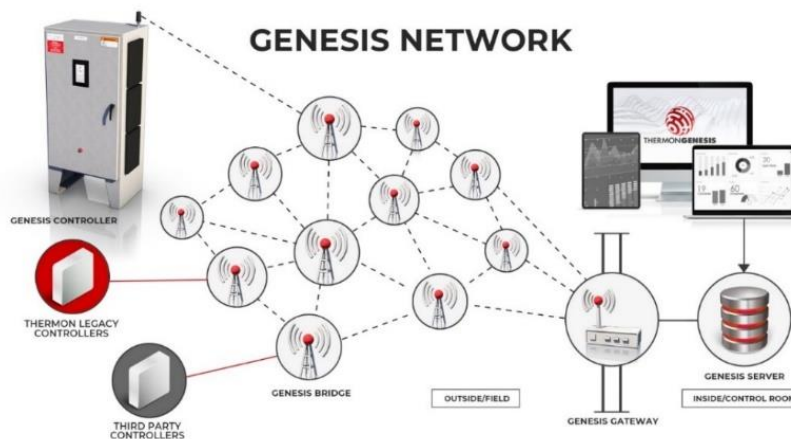
CASE STUDY #1

Petrochemical facilities, like all types of processing sites, strive to minimize costs during installation and recurring maintenance. The Genesis Network will help customers save in both situations. To understand the potential cost savings, we compared wired vs wireless quotes for a medium size downstream petrochemical facility. This site utilizes five refining units, 169 control panels, and 8,770 heat trace circuits that cover the 386-acre location.

When quoting the wired installation, most of the costs are related to the installation of the wiring/cable tray and associated man hours. The actual design of the heat trace system takes additional time as engineering has to determine the most efficient way to run the miles of cable throughout the facility.

	Wired	Wireless	% Saved
Engineering, design	\$30,000	\$15,000	50%
Installation Materials	\$90,000	\$5,000	94%
Installation Cost	\$100,000	\$5,000	95%
Instruments & Gateways	\$30,000	\$100,000	(233%)
Total	\$250,000	\$125,000	50%

The wireless system saves in the design, installation, and wiring costs. The Genesis Network is comprised of the Genesis Bridge, which acts as a wireless transmitter/mesh node/repeater for other bridges, the Genesis Gateway which is the interface between the control room and mesh network, and the Genesis Server which is the software used to control the network. An additional benefit of the mesh network is it is self-healing, which enables the network to continuously find the optimal route if nodes fail.



Costs savings are not only realized during the initial installation of the Genesis Network, but facilities can also save a significant amount of money on an annual basis through optimizing more efficient maintenance and fault checking with the Genesis Server. In this example, for routine maintenance over the course of a year, a site should be able to save ~\$35,000 or 86% of maintenance man hours.

Routine Maintenance/Health Check		
	W/O Digital Communications	W/Digital Communications
Total Man Hrs	2	0.25
Maintenance Cost	\$110	\$15
Yearly Cost	\$40,040	\$5,460
Savings	\$35,000 or 86%	

Maintenance teams are usually notified by the Automation/Control room teams about an alarm/fault. There is great value in reducing the time for the diagnostic period along with accuracy. Remotely diagnosing the problem will save hours in time on roundtrip travel to a panel, along with being able to grab the correct tools, materials, and supplies before heading out for a service call. When evaluating cost savings on an alarm/fault, this facility could save up to \$40,000 per year for a total savings of almost \$70,000/year using the Genesis Server.

Alarm/Fault Event*		
	W/O Digital Communications	W/Digital Communications
Total Man Hrs	3.5	1.5
Maintenance Cost	\$200	\$80
Yearly Cost	\$72,800	\$29,120
Savings	\$40,000 or 60%	

*Costs based on one fault per week

The Genesis Network is the first true IIoT system to provide users with the ability to monitor and control their heat trace from the control room. The Genesis Server provides site-wide alarm status and history, trace heater performance, panel setting management, IIoT device network management, quick access to drawings, and custom operational reports. It provides the secure and robust connectivity of a wireless mesh network that self-heals and adapts to ensure connectivity between controller and control room.

KEY FINDINGS

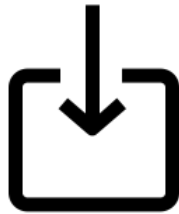
Total savings to the facility:

\$125,000 in installation costs

\$70,000 on yearly maintenance costs

~\$200,000 Year One Savings

Installation Cost Savings



- Wireless systems require less complex engineering/design plans
- Lower installation costs offset the higher product costs with the wireless solution
- Installation of a wireless system could save the facility as much as \$125,000 or 50% over a wired solution

Maintenance Cost Savings



- Improved communication between Maintenance teams and Automation/Control room teams about events
- Reduction in diagnostic period and improved accuracy
- Remote diagnosis saves time on travel, ability to grab the correct tools, materials, and supplies
- Yearly cost saving could be ~\$70,000/year



GENESIS NETWORK

Full Site-Wide Operational Awareness and Control of the Heat Tracing System

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CONCLUSION

Thermon's Genesis Network is a total solution providing full operational awareness of the heat trace system. Implementing this solution will create additional ROI, lower installed cost, and more flexibility over a traditional wired network. Customers using the Genesis Network will save time and be more efficient in maintenance operations.

Genesis Network is the future of IIOT heat trace technology and delivers industry leading benefits including browser interface, automatic software updates, and BI integration. This platform will continue to grow, enhance and offer additional value over time.

For more information, please contact your local Thermon sales representative or email sales@thermon.com.