



Modernization of an existing control system to improve data analytics for real time decision making



Industry

Oil and Gas

Location

St. Croix (USVI)

Market

Caribbean, Central and South America, and the US East Coast.

Challenge

The Refinery had outdated legacy software and needed to update the interface to each of their systems with the latest proven design, better stability and reliability, that could provide high-quality graphics, high-speed data analytics and allow the operators, technicians and engineers to maintain a high level of confidence with the system retrofit.

Solution

The company chose FactoryStudio powered by FrameworkX because it could provide high speed controller data for fast and efficient analysis. The software was also extremely efficient and engineering time was reduced.



Ron Walker, President at Control System Technologies, the system integrator that worked on the project, says, ***"when compared to their original software, the customer was overheard saying many times, 'Man, this is like magic!'."***

Results

The updated software allowed the company to analyze the Control Unit quickly and efficiently, leading to quicker resolution to issues by presenting real-time data, cold hard facts, and no longer hearsay to management so they can focus their attention to the production and overall efficiency of the plant's operation.

1 **Real-time alarms** helped the unit to continue operation safely, where otherwise the unit unloading, runback or to even shutdown was prevented.

2 When comparing the upgrade cost and the amount of engineering hours required, compared to other units, the cost reduction by using FactoryStudio **exceeded \$40,000.**

3 With the ability to perform data analysis on every point in the control system, the company found problems they did not even know existed. **This increased efficiency and availability** due to resolving issues without shutting down, and to preplan for immediate outage support.



FactoryStudio powered by FrameworX came through

Limetree Bay Refinery is a world-class refinery, terminal and logistics hub, that will help transition the maritime fuel sector toward new international standards. Further, it is well situated to process the growing supply of Latin American sour crudes to fulfill consumer demand in growing end markets in the Caribbean, Central and South America, and the US East Coast.

Besides the need to update their outdated legacy software, the facility also needed new technology to expand their goals. With the right tools, like FrameworX, they knew they could support the transition to new international maritime standards, while also providing needed economic development in the U.S.V.I.. This would create more than 1,500 local jobs during construction and 400 full time jobs beyond 2020.

New data allowed for better, more efficient decisions.

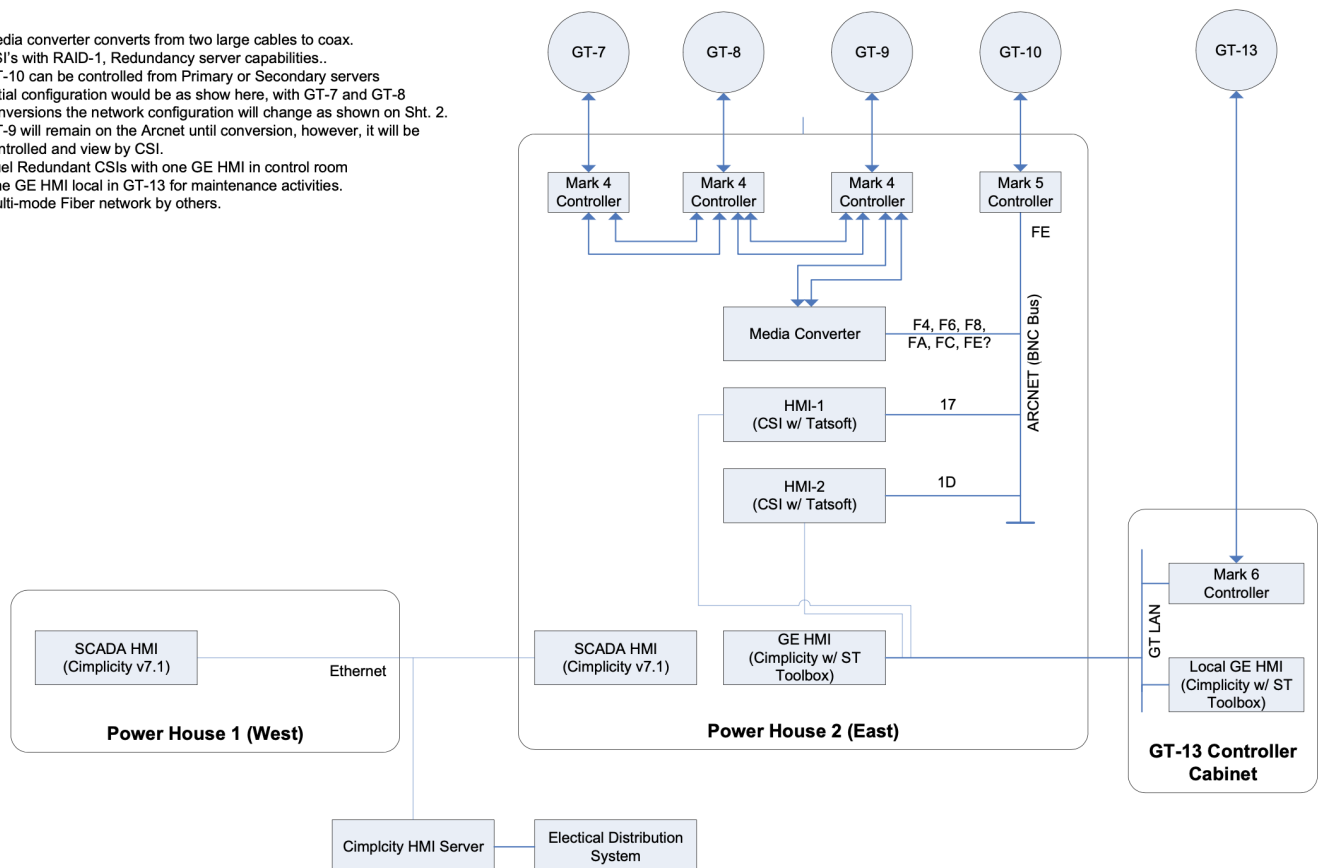
The project focused on restarting certain refining operations in the more modern East Refinery, which includes Crude Units, a Vacuum Unit, Coker, Platformers, Hydrotreaters, FCC, an Alkylation Complex, ULSG unit, and a Sulfolane Complex.

To do that, Limetree needed data - FactoryStudio allowed them to interface with the Control System Technologies CSI Controller, OPC, capturing data from digital pressure, temperature switches, LVDTs, RVDTs, TCs, RTDs, Speed Probes, Vibration probes, isolation vales, control valves, diesel engine, MCCs and 13.8 Kv breakers.

Control System Technologies was the chosen integrator for this system, and tailored their design for a Generator Load Control and Auto ISOCH Selection system and integrated it with the initial project. Legacy technology couldn't meet their modern needs.... Control System Technologies with Tatsoft did!

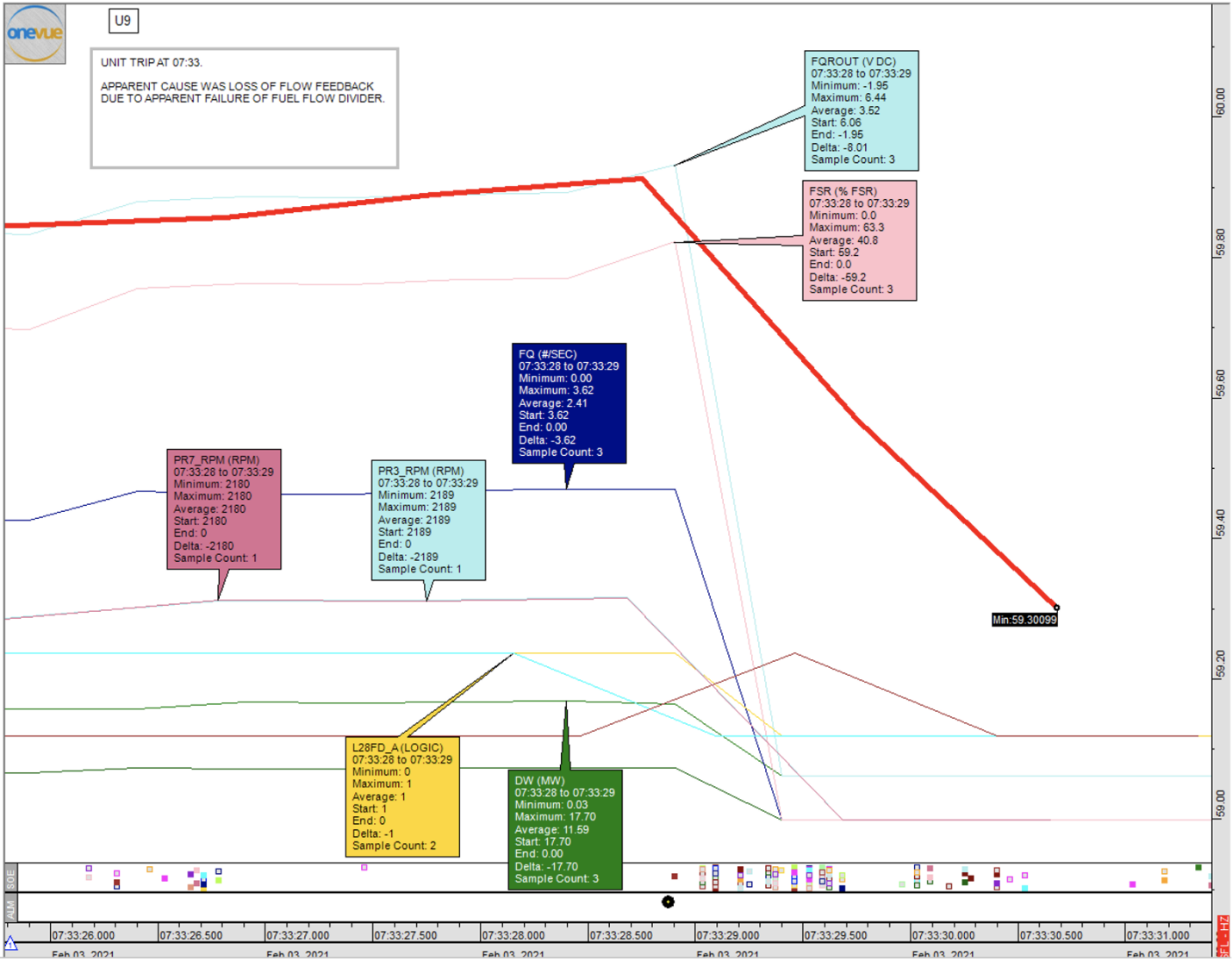
Notes:

- Media converter converts from two large cables to coax.
- CSI's with RAID-1, Redundancy server capabilities..
- GT-10 can be controlled from Primary or Secondary servers
- Initial configuration would be as show here, with GT-7 and GT-8 conversions the network configuration will change as shown on Sht. 2.
- GT-9 will remain on the Arcnet until conversion, however, it will be controlled and view by CSI.
- Dual Redundant CSI's with one GE HMI in control room
- One GE HMI local in GT-13 for maintenance activities.
- Multi-mode Fiber network by others.





With the data in hand, the updated system provides real-time analysis to the operators, technicians and engineers, and operator interface was simplified, trending improved and data analytics has provided much need elements to the plant operations. OneVue data analytics software, combined with the Legacy Data Recorder(LDR) high-speed data collector, provided a way to plot literally thousands of trends on the same chart simultaneously, which was the starting point of analyzing what may have caused a condition needing correction. You get that when you have a very high-resolution perspective of the changes taking place in the unit or plant.



User nodes

The system went in with four concurrently Users but, when fully implemented, it will support up to 25 simultaneous clients with fault-tolerant redundant servers to maximize uptime and assure access when needed.

Tags/communication points

Over 10,000 communication points from multiple controllers. Licensed for up to 15,000 real-world I/O.

Engineering time

Initial CSI system design was approximately 10 weeks. The customer then requested a high efficiency grayscale color scheme be applied, which took about 6 weeks to implement.