

Embracing Change: Using High Performance Graphics to Improve Operations – A Case Study

Jonathan Mitchell, PE^{1*}

CDM Smith, 8140 Walnut Hill Lane, Suite 1000, Dallas, TX 75231

(*Email: MitchellJD@CDMSmith.com and Phone: 214-346-2808)

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ABSTRACT

High Performance Graphics (HPGs) are interfaces designed to help operations staff see issues before they arise and react more quickly, and appropriately, to address and troubleshoot problems when they do. This method is growing in popularity, quickly taking off in industries such as Oil & Gas and Manufacturing, but migrating slower into the Water/Wastewater industry. This paper explores how HPGs have recently been used in the Water/Wastewater industry, as well as problems and resistance encountered, and how plant operations have already begun to benefit.

This paper will review three plants that currently utilize varying degrees of HPG elements. The first plant installed three 60" dashboards to monitor the whole plant, with each dashboard set to cycle through 2-4 different screens every 10 seconds. This setup was not ideal as operations could not absorb the plant health in a glance and took up to a minute to review all information. The second plant implemented HPG ideology on overview screens enabling an operator or passing supervisor to quickly see if flows and analytical data are in compliance. The third plant was developed with HPGs permeating all levels of the graphics, but is a hybrid system consisting of HPG and traditional piping and instrumentation diagram (P&ID) graphic elements. The equipment symbols and piping used are 3D while the color scheme of equipment is more subdued, utilizing "hot" colors, such as red and yellow, for warnings and alarms.

For these projects the HPG elements that were most utilized involve color management, alarm control, trending, and bar graphs. The utilization of bar graphs and trends have allowed operations to be more proactive, rather than reactive, thereby minimizing alarms and compliance issues. Having visual, rather than numerical, displays has also helped operators fully understand the context of the information. While there was initial hesitation from operations in moving away from traditional graphics, the ease of use and benefits realized from HPGs have convinced many of their worthiness in the Water/Wastewater industry.

ABOUT THE AUTHORS

Jonathan Mitchell, PE is an Automation Engineer working out of CDM Smith's Southcentral Regional Design Center in Dallas, Texas. He graduated with a BSEET from the Southern Polytechnic State University in Marietta, GA and is a licensed Control Systems Engineer (CSE). He has 16 years of experience in the design, construction, and integration of automation systems in water/wastewater and airport fueling markets. He is a 6-year member of ISA and 2-year member of WEAT. Contact: MitchellJD@CDMSmith.com