Utility providers have to ensure that important public institutions such as hospitals have the certainty of reliable energy sources and support so that they can be confident in their ability to enjoy continuous operation 24 hours a day, 365 days a year. Such confidence is now in place in Toronto, one of Canada’s largest cities, where energy supplier, Enwave Energy Corporation has worked with Siemens to upgrade vital control systems at a number of critical steam and water cooling plants that help power the city. The decision to switch to SIMATIC PCS 7 as the process control system of choice is now delivering real benefits for both the company and the wider Toronto community.
Having already had experience of using Siemens technology at another of their sites, Enwave selected a Siemens SIMATIC PCS 7 Process Control System, to replace the older technology. The decision was based upon the system’s flexibility, easy-to-use HMI, proven performance, integrated diagnostics and asset management capabilities. However, the decision wasn’t just reached on using the most appropriate technology – the need for a reliable partner to provide local support was also a major factor in Enwave’s decision to specify the SIMATIC PCS 7 solution.

Local support and system expertise

Siemens Canada Limited partnered with Bacon Engineering Limited – a specialist in the field of combustion and production of steam – to design, supply, install & commission the SIMATIC PCS 7 system and process instrumentation for the operation, monitoring & control of eight boilers. The system solution was based around five AS-417 Redundant Controllers and rack mounted SIMATIC industrial PCs, to provide the plant operators with a modern HMI and allow them complete visibility of the process and the ability to immediately respond to any plant disturbances. In the first phase of the project, a redundant AS controller was used per boiler pair, giving an n+1 redundancy – the highest level of plant availability and a major requirement for the project.

Operational flexibility, total efficiency

Having the same HMI on both their steam plant sites in the city provides Enwave Energy with the added flexibility to rotate their plant operators between their sites as required. Indeed, plant operators were involved from the early stages of the project and the transition from using the older technology to the modern SIMATIC PCS 7 system was co-ordinated in such a manner so that the operators felt comfortable at all times. Importantly, Enwave Energy also maintains a ‘pandemic plan’ which allows the business to deal with a scenario of the loss of 70% of staff during any possible global epidemics. To this end, having the same HMI on both steam plant sites reduces Enwave Energy’s requirement for any additional training, and gives them greater employee utilisation and flexibility across their organisational structure.

The SIMATIC PCS 7 system is also used to collect key data from the plant allowing management to calculate essential operational information such as boiler efficiencies, peak efficiencies and water & gas discrepancies. Such data is used by the operators and management team to optimise the plant’s operation at all times both for its customer service and to support the company’s ongoing commitment to reduce its overall environmental impact.

Foundations for the future – integration is key

The next phase of the project is to install and automate heat recovery equipment in all the boilers which will further improve the efficiency and capacity of the steam plant. As part of the overall plant improvements drives, switchgear and intelligent meters will also be integrated into SIMATIC PCS 7 using Profinbus DP Fieldbus communications and this integration will provide increased levels of key data to be monitored and then analysed.

The integrated SIMATIC PCS 7 Plant Asset Management system will also be utilised as part of Enwave Energy’s maintenance strategy as the company move from a planned maintenance strategy to a preventative/predictive approach. This will bring many additional benefits for the business including, operating and maintenance cost reductions, quicker fault-finding and improved plant diagnostics, increased plant efficiencies and guaranteed improvements in reducing their environmental footprint.

The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

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