

Are traditional SCADA systems a thing of the past?

Dublin, Ireland 11th of June 2014

The pressure being placed on municipal and county utilities continues to rise as customers demand quicker problem identification and resolutions. Regulatory organisations are imposing stricter compliance requirements, while reporting requirements are becoming increasingly more demanding. Engineers require an enhanced integrated SCADA (Supervisory Control and Data Acquisition) system that does not require ongoing alterations, upgrades and or pose other difficulties associated with maintaining consistency and integrity. Traditional SCADA systems are no longer up to the task and a fresh contemporary approach is needed. This is where Mitsubishi Electric Europe has stepped in to offer a solution in the form of MAPS (Mitsubishi Adroit Process Suite).

MAPS, a windows-based SCADA system, delivers a fully integrated automation design, engineering and life cycle management solution that reduces the engineering effort and costs associated with automation projects. As Life Cycle Management starts the day you decide to engineer a new part of your manufacturing process, it is paramount to maintain a solution with increasing returns. Designed to offer a fully integrated management solution, MAPS can significantly reduce lifecycle engineering effort and costs, offering savings of up to 50%.

MAPS adds value throughout all the phases of the automation system project, from process design to engineering, development of the control systems, installation, commissioning, start-up and acceptance testing, all the way through to operations, maintenance, repairs and ongoing upgrades. Unlike traditional SCADA programmes, MAPS delivers a tightly integrated SCADA and PLC solution built around pre-configured and tested engineering libraries, with a

built-in full suite of diagnostics and maintenance tools and integrated document management capabilities.

One such industry that benefits greatly from the installation of MAPS is the Water/Waste water industry. This can be seen by the operators of a waste water treatment plant and four associated purification plants in County Wicklow. The installation of MAPS and other Mitsubishi Electric Automation products saw reductions in ongoing operating costs as well as increasing energy efficiency and optimising the transfer of data. MAPS allowed operators to accurately track and control all process stages and systems remotely.

“We have installed a complete Mitsubishi Electric Solution comprising of MAPS alongside their range of PLC’s and Variable Speed Drives in some of our Waste Water Treatment Plants. The most attractive feature for us is the remote access availability to the site conditions which minimizes call out requirements and means more can be achieved with less staff involvement required. The data collection and reporting aspect is an added bonus and frees up significant amounts of time during the annual reporting period.”- Paul Olthof, Executive Engineer, Wicklow County Council.

DDC Ltd, a Mitsubishi integration partner, installed a complete integrated automation solution based on the Mitsubishi Electric iQ Platform, various frequency inverters and GOT series HMI’s. The solution was designed and visualised using the MAPS.

These treatment plants in Wicklow County will enjoy the benefits encompassed in a complete Mitsubishi Electric automated solution;

Automatic reporting and documentation

One key feature of MAPS that greatly benefits the water/waste water industry is its ability to automatically generate EPA reports. In Ireland, the Environmental Protection Agency (EPA) keep a close eye on businesses in order to make sure

that its environmental protection requirements are strictly adhered to. The method used to do this is based on a special reporting procedure results in regular time-consuming visits to plants on a daily basis. By means of collaboration with Mitsubishi Electric, the aim is not only to improve the efficiency of data transfer but also to reduce the energy consumption at plants – in order to save on resources and reduce costs. It is important for the plant operators of Ireland to be able to supply the Irish environmental authorities with information for the EPA report in a prescribed format. Beforehand, this information used to be collected manually by engineers, however with MAPS, it can be requested and compiled automatically by the Mitsubishi Business Intelligence System, thus saving on time and effort.

Frequency inverters increase energy efficiency

A high level of energy efficiency combined with maximum availability is one of the central requirements for automation components. The same applies to frequency inverters: not only do they need to provide high dynamics and speed stability but they also need to make a significant contribution towards saving energy and consequently improving plant efficiency. At the waste water treatment and purification plants in the Wicklow, Mitsubishi Electric FR-F740 frequency inverters and the IP20 FR-FSU (Floor Standing Unit) take care of the task of regulating the high-pressure pumps. The special characteristics of the FR-F740 include SensorLess Vector control (SLV), automatic motor data recognition during operation, Soft-PWM for reducing noise and additional special processes for achieving extra-ordinary energy savings.

MAPS brings reduced engineering costs

Engineering, commissioning and maintenance costs can be reduced considerably by installing MAPS. This involves combining three basic tasks within the construction of the plant – the programming of the PLC, the development of the process control application and the creation and updating of documentation. The MAPS library contains preassembled modules or templates for doing this. In

the case of the water and waste water industry, the templates relate to automation objects such as pumps, valves, tanks and flow meters. The faceplate, i.e. the graphic representation, alarms, the data archiving for the object in question, tags for the process control system, including a list of all the digital and analogue inputs and outputs used in the program are included in a template in accordance with the processes displayed in the controller.

The result is an efficient PLC program, a process control application in which alarms, trends, data archiving and faceplates are generated along with a list of the inputs and outputs used. By means of collaboration with Adroit Technologies, customer-specific templates were created for use at the Irish waste water treatment and purification plant. The full commissioning of four small to medium-sized purification plants was carried out in less than a week. It is highly unlikely that the commissioning of the plants could have been carried out in such record time if conventional engineering tools had been used.

Secure remote access

Modern communication solutions, remote control concepts and flexible data management mean that the plant operators are now able to visualise the status of all the parts of the plant from a central location at any time. All the data required are archived automatically, which has meant dispensing with local data collection costs as plant values are checked remotely. Windows Security ensures that only authorised persons are able to access the system by managing users and groups.

Fault detection during a service visit: alarm signaling by SMS

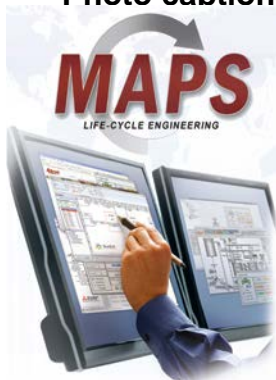
Local GOT operator terminals from Mitsubishi Electric, which are used for the monitoring and manual control of the individual stations, bring transparency to the functional sequences and enable process-oriented dialogue between operator and plant. As all the relevant information is immediately accessible, a service engineer can display a comprehensive overview of all the system processes.

Besides being easy to operate and configure, the GOT control devices have powerful diagnostic functions. The reporting system ensures rapid fault detection which means that down times are reduced as a result. Alarms are displayed immediately within the control room via the centralised alarm system. In addition, if a problem arises the system sends a text message to the members of the service team via standard mobile data terminals within a very short time so that they are able to react quickly and thus save on resources and reduce down times.

Adroit SCADA Intelligence Suite – the right information in the right format

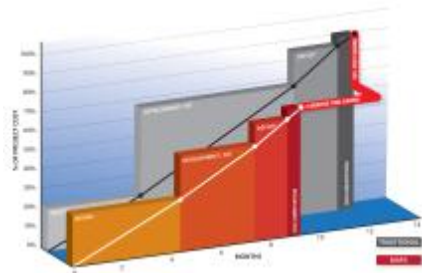
Besides the need to archive data, all information occurring has to be presented as clearly as possible so that the operators can react quickly to a situation if necessary. In the case of the plant in Ireland, the Adroit SCADA Intelligence Suite (ASI) looks after the preparation of data. The database is searched at regular intervals for relevant information which is then put into a specific context such as a special pump, for example. Details relating to location, availability, delivery rates, energy consumption and other user-specific data will be stored for that pump. Once configured, this information will be periodically stored in the so-called data warehouse, while taking account of the relevant context, from where it can then be quickly and clearly displayed in an Excel-based report, for example, for the purpose of studying the efficiency of the pumps by comparing delivery rates and energy consumption.

Photo captions;





MAPS provides a streamlined lifecycle approach for complex plants that drives down costs and boosts productivity. The program has unrivalled openness, features scalability and extensibility and delivers tight integration with Mitsubishi Electric PLC-based automation systems.



Designed to offer a fully integrated design, engineering and management tool, MAPS can significantly reduce automation system lifecycle engineering effort and costs, offering savings of up to 25%. (Details you will find in the separate document “background information.”)



MAPS provide a structured lifecycle engineering approach in process applications using Mitsubishi Electric PLCs along with SCADA solutions from the market leader in South Africa, Adroit Technologies.



MAPS provides a wizard that can be used to generate PLC and SCADA projects automatically, saving a significant amount of time during the engineering and configuration phases. It also ensures a structured system design and makes routine lifecycle system maintenance much easier.



MAPS supports consistency and integrity right across the automation system throughout its lifecycle, from process design and engineering through installation and commissioning to maintenance and set-up.



The Mitsubishi Electric frequency inverters of series FR-F740 are specially tailored to the requirements of pumps and fans.

About Mitsubishi Electric

With over 90 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, as well as in products for the energy sector, water and waste water, transportation and building equipment.

With around 121.000 employees the company recorded consolidated group sales of 29,5 billion Euro* in the fiscal year ended March 31, 2013.

Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

Mitsubishi Electric Europe B.V. Industrial Automation – Ireland Branch is located in Dublin Ireland. It is a part of the European Factory Automation Business Group based in Ratingen, Germany which in turn is part of Mitsubishi Electric Europe B.V., a wholly owned subsidiary of Mitsubishi Electric Corporation, Japan.

The role of Industrial Automation – Ireland Branch is to manage sales, service and support across its network of local distributors throughout Ireland.

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