Resource
Data Management

Ice Plant Halves Their Labour Costs and Reduces Daily Water Consumption By 45%

FOREWORD NFH, one of the biggest ice producers in the Philippines, install RDM controls to streamline operations and reduce labour requirement for the production of their bespoke ice solutions.

THE PROJECT

The demand for bespoke ice solutions is growing rapidly due to the specific requirements from the fishing trade, chicken processing plants and the hospitality sector. However manufacturers are struggling to cope with such mounting demand.

This struggle is a result of most ice manufacturers running their refrigeration equipment manually. Only a small number have PLC controls, but these controls are limited in functionality. As such, production is based on outdated logic, with data manually input and recorded in their log sheet. This operation requires extensive labour resource in the form of operators and technicians, which adds a complexity to logistics and spirals operational costs.

THE CHALLENGE

NFH, a traditional business who work with power plant generation from rice husk, are also the biggest ice producer in region V of the Philippines for block, tube and cube ice varieties. With water cost per cubic meter rapidly increasing each year and the salaries of machine operators doubling in 2018, there was an imminent need to streamline operations and minimise their labour requirement.

In response to these demands, KATA Industrial, Industrial Refrigeration and Engineering contactors, proposed to NFH to replace their existing equipment and invest in a controller that is able to handle and record data without the need for manual labour. As well as reducing labour costs, the new equipment needed to monitor energy consumption – identifying areas for improvement and providing methods to vastly reduce costs.

There were also pain-points specific to the production of ice which needed to be addressed – such as reducing water waste during the freezing period which had already been filtered and treated by the Reverse Osmosis (RO) machine. Treating the water is an expensive process, so better monitoring and control of this resource was considered essential.

Furthermore, there were a number of conditions which added complexity to the project. These included:

- Identifying the operation of the previous PLC program, which had limited documentation, by step by step analysis of the system control sequence.
- Identifying the starting position (open or closed) of multiple solenoid valves around the system and providing a mechanical flowchart representing the same.
- There were no electrical diagrams in existence, making it harder to understand the current plant operation.
- There was a requirement to create a completely new control strategy.
- Introduction of new water feed valve and level switch to control water flow inlet.

THE SOLUTION

Given the specific requirements, and already having knowledge of RDM equipment, KATA presented our control and monitoring solutions to NFH as a way of addressing their unique challenges.

In response, RDM Asia developed a strategy utilising our latest monitoring systems, which enable controllers to start and stop remotely. This gives owners the ability to monitor running conditions from afar and quickly and efficiently harvest necessary data, such as the amount of ice per cycle. With intelligent analytics software, our controls were then able to identify trends and highlight areas for optimising production.

Specific elements of the strategy included the following:

- Replacement of existing Siemens controllers with RDM's TouchXL and the newPR0661 expansion board. With a high definition, graphical display, the TouchXL controller offers convenient access to the data and settings of your infrastructure.
- Addition of multiple pressure and temperature sensors for better monitoringcapability. With this Internet of Things (IoT) capability, devices can collect information and tweak controls automatically – improving performance while minimising labour requirement.
- Introduction of adjustable thawing andfreezing timer, allowing for improved performance and functionality.
- Implementation of controls to ensure condenser temperature difference remainedat optimum levels.
- Provision of precise water inlet control,which prevented excess water flow and saved valuable resources – which was labelled as a key objective for NFH.

THE BENEFITS

The project generated savings of 50% for machine operators and reduced daily water consumption by 45%.

NFH saved approximately USD 2,450 per year per ice machine.

After introducing RDM solutions, NFH's level of water waste was vastly reduced. There was also a much lower labour requirement, with operators able to work on multiple tasks during operation as the number of processes requiring manual input became minimal. As such, labour costs dropped significantly and production efficiency hit its highest levels.

Furthermore, due to successful implementation of RDM equipment, and a high degree of satisfaction from NFH, there is the opportunity to install a new controller for their tube ice plant and block ice plate, retrofitting the whole plant with RDM energy management equipment. This investment is a direct result of the savings gained from the initial RDM Asia installation.