

OVERALL WINNER



Alkermes Pharma Ireland Limited – Maintenance Department

Graham Tracey, Utilities Supervisor

Management of a Business Critical Asset

Alkermes is a leader in innovative medicines that address the unmet needs and challenges of people living with debilitating diseases. As a fully integrated global biopharmaceutical company, Alkermes applies our scientific expertise, proprietary technologies, and global resources to develop products that are designed to make a meaningful difference in the way patients manage their disease.

Track Record of Innovation

Through our proven scientific, development and manufacturing capabilities, Alkermes is uniquely positioned to be an engine of innovative treatments for major clinical conditions specifically focused on central nervous system (CNS) disorders, such as schizophrenia, addiction and depression.

The success of our approach is reflected in:

- A product portfolio which includes more than 20 products on the market;
- Five key commercial products that fulfill unique treatment needs and have long periods of exclusivity;
- A substantial and growing pipeline of product candidates in clinical development;
- Our commitment to developing new treatment options for major diseases with patient needs in mind.

All this, combined with our resources and strong global presence, position us as a leading innovator in the global pharmaceutical market, today and for the future.

Project - Management of a Business Critical Asset. Alkermes Catalytic Thermal Oxidiser (CTO) is a business critical asset which over half our manufactured products require the CTO to be fully operational. The CTO was something of a black box to the maintenance department with little in house knowledge and frequent unscheduled shutdowns resulting in manufacturing downtime and reactive maintenance. Over the past two years the maintenance department carried out an improvement project which has resulted in a 94% reduction in unscheduled shutdowns, increased life cycle of the CTO and the creation of a predictive performance tool for the CTO. This predictive performance tool is invaluable to the maintenance of the CTO and to winning new business for Alkermes. Alkermes now have a reliable business critical asset and the maintenance department can now predict the performance of the CTO for existing and new manufacturing processes.

Technology Category Winner



The Flat Bread company

Gerard Naughton, Maintenance Manager

Pizza Cooler Project

The Flat Bread Company is an Irish company that makes pizza bases for Dominos UK and Ireland. While the initial planning and securing of finance started in 2007, production of pizza bases started at the Clara, Co. Offaly plant in June 2009. Since then, the company has gone from strength to strength. Through a combination of hard work and good customer relations, the company is now firmly established with real prospects of further expansion. The pizza bases produced at our factory are 'thin and crispy'. They are used by Dominos to make a healthier option pizza with a thin and crispy base. The raw materials are all bought in and are mixed together to make dough. This dough is formed into precisely weighted dough-balls and is then proofed to allow the yeast to ferment. When the dough is finished proofing, it is pressed to form the flat base – at this stage it closely resembles a pizza base. After it is pressed, it is par-baked in the oven and from there, the pizza bases are cooled down quickly before being cut to the exact size required by the customer.

Project - The equipment used to manufacture the bases comes from Lawrence Equipment, a well established, market leader in tortilla and pizza manufacturing machinery. For the most part this equipment provided little trouble and with proper maintenance works well. One particular piece of equipment used for cooling the pizza bases after they exited the oven began to give trouble and resulted in a good deal of downtime. This had a negative effect on our throughput and action needed to be taken to solve this problem. The machine in question, the Cooler, is a series of nine individual conveyors, each one stacked on top of the other – see figure 1. The purpose of the Cooler is to rapidly cool the pizza bases, from 85°C down to 20°C, before they are cut to the required size. The bases

travel from the oven onto the top belt of the Cooler. They are transferred from the oven at a height of 500mm and gradually inclines to 2m over a distance of 10m. When the bases reach the end of the top conveyor they fall onto the belt below, which is traveling in the opposite direction, and are flipped over in the process. They then continue to the end of the second conveyor and fall onto the third conveyor. This process is repeated until the bases exit the Cooler to the cutting station.

The series of conveyors in this system were driven by a single, 7.5kW, 3ph, Direct-on-Line, Induction Motor. The motor was directly coupled to an adjustable gearbox which was used to control the speed of all nine conveyors. The middle conveyor was directly connected to the motor by means of a chain and sprockets and the eight other conveyors are then driven by this middle conveyor – this can be seen from figure 2. The transmission system seemed complex, poorly designed, inefficient and troublesome.

This method of driving the Cooler caused the conveyors to run with a ‘jerky’ movement because of the spring loaded tensioner sprockets used to tension the chain. Also, because all the conveyors were connected, the jerky movement was amplified throughout the system. As a result of this uneven movement, the pizza bases would pile on top of each other, they would then become blocked instead of falling onto the conveyor underneath. The blockage would only get worse as there was no mechanism in place to detect the problem, this then caused the shaft driving the conveyor to snap under the force created by the 7.5kW DOL motor. Each shaft had to be tailor made at a cost €250 and approximately 12 of these shafts were used. All this was resulting in an average of 4-5 hours/week downtime at a loss of about €2000. This figure does not include labour or materials required and was unsustainable for the company in it’s initial stages of development.

The first step in solving this problem had to involve removing the crude, DOL started motor as a means of driving the conveyors. The thermal overload used to protect the motor from high currents was unable to stop the motor when there was a blockage, the motor would just keep rotating until a shaft or chain snapped. The second step was to remove the chains and sprockets as a transmission system – this was highly inefficient, required a good deal of maintenance, was dirty and therefore unsuitable for a food environment.

The solution to this problem was to keep it a simple as possible and after careful consideration it was decided to mount a motor with right angle gearbox onto each shaft – see figure 3. The speed and torque required was calculated and the top conveyor was fitted with a 0.37kW 3ph motor, the eight other conveyors were fitted with a 0.25kW motor as they as shorter in length. Each motor has it’s own inverter to provide control and protection to the system. The inverter is programmed to trip out if the current exceeds a certain limit and is far more sensitive than the large DOL started motor. So, if a blockage occurs, all the motor will be tripped out almost instantly and an alarm will be raised – no damage will be done to the system. As the gearbox and motor are directly coupled to the shaft, this method of transmission is extremely efficient and each conveyor runs perfectly smooth. This provides a consistent flow of pizza bases to be fed into the next stage of the process – the cutting station.

Since the installation of this system, production has been greatly increased and there has been no downtime or costly maintenance. It is now possible to concentrate energies elsewhere on the production line to try and improve efficiency. It has turned a crude, badly designed system into a highly automated, easily controllable one. Control Techniques, who supplied the motors and inverters, have used this project as an endorsement for their products.

Management Category Winner



Rottapharm Madaus – The Maintenance Department

Wesley Horan, Maintenance Developer/Planner

Paperless Maintenance and KPIs

Rottapharm/Madaus is a privately owned multinational pharmaceutical group based in Italy. The company was founded in 1961 by, Professor Luigi Rovati, a professor of pharmacology at the University of Pavia, Italy. Rottapharm/Madaus Dublin was opened in 1999 and has grown from a small 2 line packaging facility operating on a day shift to now operating 9 filling and packaging lines operating over 2 cycle shifts with an API plant producing active ingredient for the plant and its sister plants in other countries.

Rottapharm/Madaus Dublin presently employs over 150 staff at the facility located in Damastown Industrial Park, Mulhuddart, Dublin 15.

In March 2009 Rottapharm Dublin was given a 7 million euro investment to increase the size of the manufacturing facility and double the output of finished products. Rottapharm/Madaus Dublin currently exports pharmaceutical products to over 50 countries around the world that have been manufactured and packaged at the Dublin site.

Project - In January 2010 project engineers began meetings with CMMS software providers as well as reviewing the system that was available from the Barcelona site. Although most of the CMMS systems available provided similar applications Rottapharm were impressed with a new add on to PMI software's latest version of Pemac the Web Help Desk.

The Web Help Desk allows reduced access to the system to an unlimited number of personal without the requirements of extra software licences.

The help desk also allows individuals to view workorders, history and spares as well as complete individual workorders and input unplanned maintenance events and generate work requests.

With input and feedback from technicians at all stages the modifications required to the system to allow Rottapharm introduce a paperless based maintenance system were identified. With all modifications complete the system was ready for validation at the end of 2010.

Technician access to the system was aided greatly by the purchase of MS standard Panasonic toughbooks which enabled them to carry out all pemac activities on the go in any onsite environments. This eliminated the requirement for the technician to return to an office PC to complete workorders or submit reports. The CMMS system like BARCO was now displaying updated maintenance events as soon as they happened.



A Panasonic CF-18 Toughbook issued to Rottapharm technicians which allow them to view and complete work orders, submit unplanned maintenance reports, view maintenance history, view spares and submit work requests.

As the implementation of BARCO increased across the plant so did the understanding and potential of the system and with support from BMS the utilisation of the system increased. The OEE system was developed with constant feedback from both the technicians and the operators.

Project Achievements

From software purchase and installation in July 2010 Rottapharm completed the validation of Pemac 5 and the paperless maintenance system on all manufacturing and packaging equipment by the end of February 2011.

In all Rottapharm went from a non cmms paper based system to a cmms supported paperless system in the time frame of only **6 months**.

Rottapharm is one of only a few pharmaceutical plants in Ireland operating a paperless maintenance system and the first to go completely paperless at the CMMS introduction stage

Planned maintenance activities including preventative, corrective and predictive is now at **60%** compared to the ESS estimate of **10%** in 2009.

No paper is used in any aspect of general maintenance works carried out on the Rottapharm site.

With spare parts now on Pemac inventory on the system reflects actual inventory onsite.

The maintenance budget before the expansion was **€1,015,469** (08/09); currently the maintenance budget is **€930,647**. That is an **8.5%** decrease in the maintenance budget despite a **90%** increase in production volumes and twice as much production equipment. We are currently running under budget year to date.

The cost of maintenance per pack was **7** cent before the expansion. This has now dropped to **3.8** cent per pack.

BARCO is currently live on 90% of all packaging lines and currently providing real time up to the minute information from the lines and can be accessed offsite by authorised personnel anytime.

BMS software concluded that Rottapharm are currently utilising up to 90% of the functionalities that the BARCO system can provide to a manufacturing plant

Combined data from both systems now provide Rottapharm with the tools to provide accurate and world class standard KPI's for maintenance and production. This allows for detailed analysis of equipment performance (failure rates, MTTF, MTR, etc), prioritisation of works, spare parts optimisation, performance management HR), etc

By the end of 2011 all calibrations and purchasing activities will be carried out through pemac.

In 2012 it is planned to link Barco and pemac to introduce meter based maintenance with running times from barco determining the requirements for routine maintenance.

Award of Certificate in Maintenance Excellence



Daniel Wolohan & Dalkia Site Team

Daniel Wolohan, Technical Support Engineer

Waste Water Treatment System Upgrade

Dalkia - Leader in Energy and Utilities Management, Dalkia guarantees you energy savings, CO2 reduction and on-going maintenance savings. Specifically in the energy sector, we can design, build, organise finance, operate & maintain utility schemes using CHP and/or biomass energy sources, as well as heating & cooling networks systems, for a wide variety of public offices, organisations and buildings. As an ESCO, or Energy Service Company, Dalkia organises finance for projects designed to improve energy efficiency and maintenance costs over a 5 to 15 year time period. ESCOs generally act as project developers and assume the technical and performance risk associated with the project. In addition, we also adopt a pro-active, sustainable and integrated approach to Utilities and Maintenance Management to ensure our clients can focus on their core business. With over 450 highly skilled technical, operational, mobile and office staff in place throughout the island, Dalkia is delivering energy, utilities, lighting and maintenance solutions to public and private sector organisations.

Project - Dalkia completed an upgrade project on the Waste Water Treatment facility at Servier, Arklow. The new system was designed to provide an increased discharge capacity, remove ageing equipment, provide capacity for increasing production, to ensure maintenance & calibration activities could be carried out safely and to eliminate access issues and manual handling of chemicals. The scope of the project encompassed all aspects of the system including drawings, O&M, work instructions, critical spares. Predictive Maintenance is now carried out on the system to ensure continued operation. Intervention is now at a minimum. The requirements set out by the client have been achieved.

Award of Certificate in Maintenance Excellence



PepsiCo Ireland

Adrian Williams, Maintenance Manager
Martin O'Reilly, Maintenance Manager

One Team, One Future

PepsiCo Ireland established its first presence in Cork in 1974 with the opening of a concentrate manufacturing facility in Little Island servicing the European market with 30 employees. In 2003 a second concentrate manufacturing facility was established in Carrigaline primarily serving the North America market.

In 2006, a satellite R&D centre was established with assistance from the IDA.

In 2007 the Irish Operation became a flagship facility within the PepsiCo Worldwide Concentrate environment with the transfer of the Worldwide Concentrate Operations headquarters from New York to Cork. This support centre oversees PepsiCo's entire concentrate operations in 18 locations globally.

The Company now employs over 600 people and supplies over 100 countries from Ireland principally European, Scandinavian, African, Middle East and Far Eastern markets and parts of the Southern Hemisphere.

PepsiCo Ireland produces concentrate base for well established global brands such as Pepsi, 7Up, Mountain Dew, Sierra Mist and Mirinda Orange.

Project This project was about putting a process of information sharing on maintenance "Best practices" in place across the two Irish manufacturing sites. They started this process by sharing information on the suppliers used and started putting dual site agreements in place where possible. They developed this further to now share information on spare parts, maintenance strategies, quality issues, calibration management, criticality analysis, health and safety and contractor management to name but a few items. The scope then expanded

to include best practice sharing in other PepsiCo divisions in the UK and Europe to leverage their best practices that had already been implemented in their snacks and beverage manufacturing sites.

Award of Certificate in Maintenance Excellence



Rottapharm Line 6 TPM team

Richard Hayes, Engineering Technical Specialist

Application of TPM 9 Step Process

Rottapharm/Madaus is a privately owned multinational pharmaceutical group based in Italy. The company was founded in 1961 by, Professor Luigi Rovati, a professor of pharmacology at the University of Pavia, Italy. Rottapharm/Madaus Dublin was opened in 1999 and has grown from a small 2 line packaging facility operating on a day shift to now operating 9 filling and packaging lines operating over 2 cycle shifts with an API plant producing active ingredient for the plant and its sister plants in other countries.

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Project The maintenance project performed on the Line 6 sachet filling & packing line was based on the introduction and application of TPM tools that led to a significant increase in performance of the line through the knowledge and use of the people operating and maintaining the equipment. From the start of the project in July 2010 up to October 2011 the OEE for the line has risen from 12% to 58%. As a result of the positive impact on line 6, TPM is now being rolled out across the Rottapharm/Madaus plant with the aim of bringing the plant to up World Class Manufacturing Level.

Award of Certificate in Maintenance Excellence



Genzyme Fill Finish Engineering and Maintenance Team

Michael O'Keeffe, Fill Finish Engineer

William Hanlon, Fill Finish Engineer

Reliability Centered Maintenance Approach to an Aseptic Processing Facility

Genzyme Established in 2001, Genzyme Ireland is situated on a 37 acre site in Waterford. This multi phased Biopharmaceutical facility has a capital investment of over €400 million and employs over 450 personnel. It is a state-of-the-art facility for finishing of biopharmaceuticals. The company's products and services are focused on areas such as rare inherited disorders, kidney disease, cancer, transplant and immune disease.

The first phase of development, a tableting suite with packaging lines, for manufacture of Renagel has been supplying product to Dialysis patients globally since 2003.

The Biologics Fill Finish facility commenced commercial supply of thymoglobulin in 2006 to global markets. This facility uses isolator technology in its aseptic process. These products were then expanded to include Myozyme and Cerazyme.

The third manufacturing plant commenced operations in 2009. This facility enabled the expansion of our Oral Dose capacity allowing a number of new product introductions.

New products introduced during 2010 in both biologics and oral dose, brought to 8 the products being supplied globally to our patients.

In February 2008 the site finalised plans to expand it's Biological Fill/Finish operations and associated site infrastructure. The expansion brought the total investment on site to over €400 million.

Project Genzyme showed that it had a year on year performance improvement but the lack of robustness and reliability in the process was a challenge.

A reliability centered methodology unique to fill finish was developed. Three machines highlighted for improvement were broken down to a component level and assessed by

Failure Effect – Failure Cause – Failure Mode

Many medium to high risks were highlighted resulting in a preventative maintenance program mitigating these risks. High risk spares exposure was reduced. Many continuous improvement projects were implemented.

By mid October the manufacturing process had 58 batches completed, avr yield 95.9% compared to 52 the previous year, avr yield 94.2% These savings equate to almost 2,500,000 euro's.

Award of Certificate in Maintenance Excellence



Bord Gais Networks

John Barry, Networks Managing Director

The Networks Transformation Programme

Bord Gais Networks (BGN) develops, operates and maintains the natural gas Transmission and Distribution networks in Ireland and provides gas transportation services to suppliers and shippers including Bord Gais Energy, Airtricity and ESB Electric Ireland etc. The Bord Gáis network consists of 2,368km of high-pressure steel pipes and over 10,782km of medium and low pressure pipelines. Gas is received from the Transmission network and delivered through the Distribution network to over 640,000 residential, business and industrial gas users. The main body of work is on three compressor stations, 176 Transmission Above Ground Installations (AGI), 870 District Regulation Installations (DRI) and 1700 Industrial and Commercial skids (I/C). Total gas transported for Ireland, Northern Ireland and the Isle of Man was over 79,500 GWh in 2010, an increase of approximately 7% on 2009. In excess of three quarters (78%) of this gas was delivered for use in the Republic of Ireland with the remaining 22% transported to the Isle of Man and to Northern Ireland. During the year, 93% of all gas requirements in the Republic of Ireland were imported through the UK.

Project The Networks Transformation Programme (NTP) truly changed the way Bord Gais Networks (BGN) operates and maintains its assets. Prior to the implementation of NTP the asset information was fragmented and had no analytical ability. BGN required next generation IT systems to enable operational excellence and sustain efficiencies. Three software systems Maximo, Click and Syclo were integrated into the BGN systems. Two hardware devices were rolled out to field staff, a PDA and a ruggedised laptop.

A centralised asset management model with various asset owners across the business i.e. Pipelines/Compressors etc. is key to BGN's success in performing its extensive planned maintenance programme and moving our maintenance model from a time based maintenance programme to a condition based maintenance programme.