

Agitator shaves 60% off plant energy bill

Process engineers at AkzoNobel's Birmingham coatings plant are reporting energy cut by more than 60%, with batch times reduced by 20 minutes, since installing Ekato agitators.

AkzoNobel's engineering manager Scott Love says the equipment was also chosen to reduce maintenance and has delivered 300% greater throughput.

"We had a higher level of maintenance, due to a build-up of material around the agitator shaft and heating coils, reducing heat transfer capability, which ultimately increases the process times and requires cleaning every three months," he explains.

A range of solutions, such as adding additional baffles and retrofitting impellers, had been tried, but none had offered the improvements needed.

AkzoNobel approached EKATO, and subsequently upgraded the existing reactor with that firm's Viscoprop impeller



and electric motor technology, which saves energy by using a smaller 15kW motor.

"This smaller motor still achieves better mixing performance than the previous 75kW unit, with a lower capital investment," comments EKATO UK's

technical sales engineer William Pocock.

With the installation complete, AkzoNobel's Birmingham plant confirmed a 20 minute reduction on its previously nine-hour batch times – due to improved heat transfer, better product circulation and reduced solids build-up on the internal heating coils – which also reduces the need for a chiller, resulting in further energy savings.

Love says that internal cleaning of the reactor has now become an annual procedure, as opposed to quarterly or between manufactured batches, so resulting in less downtime and waste.

"This investment will significantly help our organisation to make strides with process reliability, energy consumption and environmental matters," concludes Greg Methven, AkzoNobel site manager at Birmingham. "This is a step towards achieving our sustainability ambitions for 2015 and beyond."

Costs cut with variable speed compressors

Two regulated-speed compressors are helping steel components maker Astrum to halve compressed air energy costs, while also increasing productivity.

The improvements are being achieved at Astrum's Stanhope, County Durham foundry, and operations director Mike Hutchinson says it's been a crucial development.

"One of our key areas of spend is



compressed air, which is critical to the performance of our plant and fundamental to our processes for moving sand around the foundry and operating industrial equipment," he explains.

Hutchinson approached CompAir distributor Air Energy Management to reassess its air requirements, as part of Astrum's energy efficiency programme.

Having established the potential, the firm developed a bespoke system to reduce demand, and replaced old, large compressors with two, more efficient and smaller CompAir compressors and energy-efficient thermal mass refrigerant and desiccant dryers.

The CompAir L75 RS and L160 RS compressors both use regulated speed technology, and are protected and monitored by a Delcos 3100 electronic control system.

Both are also linked to a flow measuring system, allowing operators to check airflow, allocate costs and pinpoint any leakages. But the bottom line is compressed air energy demand reduced by 1,255,000 kWh – saving more than £80,000 per annum.

Hutchinson also says that the Carbon Trust provided an interest-free loan through the Big Business Refit scheme. "The loan will pay for itself within four years, through energy savings alone, and has provided a cost-effective way for us to upgrade crucial equipment."

And talking of energy- and emissions-saving, both compressors also vent hot air into the foundry during winter and out into the atmosphere in the summer, so allowing Astrum to turn off heaters, saving a further £10,000 per year.

Incidentally, the number of air receivers at the Astrum site has been slashed from 16 to just three, thanks to more efficient use in the new system. Further, CompAir also supplied a desiccant dryer, providing the extra dry air required by a moulding machine.

The new system also includes low-pressure drop piping and a leak detection programme. A flow measuring system brings information from all meters into one control panel, allowing operators to check airflow, allocate costs to different departments and pinpoint any leakage.

Chester Zoo monorail upgrade goes smoothly

Chester Zoo is reporting improved performance from its newly refurbished 1.5km long straddle beam monorail system – in large part due to new Parker drives and ac motors.

The zoo's original system was installed 17 years ago and, although extended and upgraded, it has, until recently, retained much of the original control and motion technology, including heavy-duty dc motors.

"The original power, drive and control systems had been custom built by a local specialist," says project coordinator Paul Curtis. "But, with his recent retirement, we lost significant knowledge.

"Just as importantly, the systems had reached the point where they were becoming increasingly unreliable and expensive to maintain. They were also inefficient, in terms of energy consumption, relatively noisy and it was



difficult to ensure a smooth ride."

Curtis explains that the refurbishment – carried out by Stockport-based systems integrator T&M Machine Tools – involved overhauling everything, from the track to the control systems. In particular, the dc motors were replaced with ac equivalents, while Parker AC890 variable

speed drives were introduced to control and balance motor speeds.

Each carriage has now been fitted with two 2.2kW ac motors, controlled by a network of eight drives – one acting as master, the others slaves switched on or off, in line with energy demands.

The drive network also now communicates with a PLC on each train and hence also with traffic management – with communications enhanced by FireWire. There is also onboard Ethernet, for remote diagnostics and programming. Remote monitoring is carried out over a 5GHz wireless grid.

"The master/slave configuration is important, as the ability to introduce additional drives as demand increases enables us to maintain constant speeds – for example, as passenger loads change or as trains traverse different gradients," comments Curtis.

Filton gets emergency stop

The Airbus plant at Filton, Bristol, is reporting improved safety and efficiency since installing Siemens' innovative 'e-stop' emergency stop buttons.

The site, which builds landing gear for the ground-breaking A380 aircraft, is using the solution on its multi-level test rig.

Gareth Trewartha, of electrical contractor Nexdorf Electrical, explains that the rig is so big and involves so many access points that 30 emergency stop buttons were required to cut power, in line with the Machinery Directive – leading to occasional accidental stops during everyday operation.

Every time it happened, he says, an Airbus engineer would need to walk round the test rig and visually check each button to establish which had been pressed in error – hence the need for some automation.

Nexdorf Electrical specified a Siemens ASI Safe solution – the Siemens ASI F-Link – which directly links all safety devices, allowing them to be individually assessed from a safety PLC.



At Filton, engineers can now simply look at the safety PLC, which immediately shows the emergency stop button in question.

"By installing the Siemens solution, Airbus has been able to maintain the high levels of safety required, while ensuring that they are operating at optimum efficiency," comments Trewartha.

Ultrasonics for level pump

Scottish Water is reporting success with non-contacting ultrasonic level equipment that resolved a difficult deep-well measurement issue.

Jason Cramb of Scottish Water says that the equipment is providing strong, consistent and reliable measurement in a narrow, 25-metre deep sump at Ayr Pumping Station.

Frustrated by the failure of another supplier's equipment, Scottish Water approached Pulsar Process Measurement for a solution and the firm recommended its Ultra 5 controller matched to a dB40 transducer, with a maximum range of 40m on solids or liquids.

Cramb explains that the application presents several challenges. The well is narrow, with a number of obstructions in the path of the ultrasonic beam – making it difficult for ultrasonic systems to bounce their pulses off the target and identify the correct echo, against many others. However, Pulsar's system uses echo processing software called Datem, which locks the echo, even in difficult conditions.

Scottish Water has conducted tests over six months and says the system is working well. "We have moved from difficulty to delight, with absolute confidence in Pulsar's equipment," comments Cramb.

And he continues: "On the strength of confidence built, we are installing more Pulsar equipment, and will be removing other level measurement and control equipment."

