

PlantWeb™ Architecture, DeltaV™ System Boost Efficiency of Mineral Separation Operation

RESULTS

- Reduced engineering cost
- Increased throughput
- Increased product quality
- Improved operational efficiency
- Reduced troubleshooting & maintenance costs



APPLICATION

Crushed minerals classification and grading

CUSTOMER

Norway-based Washington Mills AS was established in 1868, and has a plant in Trafford Park, Manchester, UK, manufacturing electro-fused minerals. The company supplies alumina, silicon carbide, zirconia and other products as graded sizes of powders, to many industries, such as abrasives manufacture.

CHALLENGE

To meet increased demand, Washington Mills installed a high- efficiency crushing system, but production then became limited by the grading operation carried out in five mineral slurry “classifier” tanks.

SOLUTION

Emerson Process Management engineers were invited to suggest what new control system should be applied to the planned new tanks. Discussions led to a trial installation on one existing classifier tank, and then to a full installation each of the five tanks.

The FOUNDATION fieldbus network links Rosemount® 8742C electromagnetic flowmeters to Fisher® FIELDVUE™ DVC5030f digital valve controllers applied to two-inch butterfly valves in the make-up feed water line to the agitated slurry tank. The flow rate here defines the size of particles lifted out of the tank into the overflow, which is the product delivery line. By using the DeltaV™ digital automation system, accurate flow control is possible, despite variations in header tank level. This improves product quality. Small flow adjustments can also be made to achieve finer segregation between product grades.



For more information:
www.EmersonProcess.com/DeltaV



This foundational control system had far-reaching results. The time saved compared with the previous approach—which required operator mechanical intervention and adjustment of flow restriction systems—produced such a radical increase in efficiency and classifier throughput, that the planned new classifier investment is no longer necessary and has been postponed. The product quality is much better after a classifier tank cycle.

Modern instrumentation and DeltaV digital automation using FOUNDATION fieldbus has achieved significant operational efficiency improvements on a plant and process principle that had been operating unchanged since the original design, probably some 40 years ago.

Significantly, after the initial single classifier tank was instrumented and the DeltaV equipment commissioned on site by Emerson Process Management engineers, the Washington Mills engineers installed the additional four flowmeters and control valves themselves. After connection into the FOUNDATION fieldbus network, these four tank systems were commissioned over a telephone link into the DeltaV system via a modem, using PC Anywhere. From his own office, the DeltaV commissioning engineer was able to tune all the loops, diagnose a number of pipework problems, and then implement solutions.

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