PRESS RELEASE

AUTOMATED ULTRASONIC CLEANING BOOSTS SEAL MANUFACTURER'S PRODUCTIVITY

Stainless steel seal components are being cleaned more quickly, efficiently and economically at John Crane UK, Slough, following installation of a four-stage, aqueous cleaning line from Turbex. The equipment replaced two separate industrial washing systems and extends the size of component that can be processed to 500 mm diameter.

Programmable ultrasonics together with jet turbulation in the latest equipment are proving highly effective at helping to clean newly manufactured seal components, particularly the blind holes that tend to harbour swarf and cutting oil. Combining the two methods of agitation is equally efficient at removing heavy hydrocarbon soil from the rotating faces of seals that are returned periodically for refurbishment.

The previous cleaning plant at Slough included a rotary, aqueous jet washer to clean batches of new seal parts before assembly. However, the parts had to be dried manually afterwards.

The other pre-existing cleaning system at Slough was a manual washer that used a paraffin derivative delivered through a brush to remove heavy

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oils from used seals, many of which are returned from arduous applications in the petrochemical and mining sectors. Between one and two hours' work was needed to clean a batch of such components by hand to the required standard.

Cleaning of both new and used seal components is now carried out in the Turbex line. Called Crystal CRX, it is one of the first in the UK of a new design of modular washing machine built by Finnish manufacturer, FinnSonic, for which Turbex is the UK agent. Extensive trials were carried out at its Alton technical centre, together with John Crane engineers, to identify the correct number of tanks and the best cleaning agents, and to fine-tune the programs for optimum results across the two applications.

The line, which started operation at the Slough factory in February 2009, comprises four stages. The first contains an alkaline detergent. Full immersion of the parts in a basket with programmed ultrasonics at a frequency, intensity and duration to suit the component type, plus jet turbulation, result in rapid processing to a high level of cleanliness.

The basket is transferred via an overhead beam to subsequent tanks for primary rinsing, secondary deionised water rinsing and drying of the parts. When the basket has completed the cycle and reaches the start of the output conveyor, fans automatically cool the components so that they can be handled more quickly.

Mike Perrett, Projects Manager at John Crane, commented, “The beauty of the Turbex system is that the operator loads parts into a basket and places it on the input conveyor, after which he is free to do other jobs while cleaning is in progress, such as preparing the next basket of parts, bench work or attending a lathe.

“A mix of new components and refurb parts can be processed in successive loads, to a maximum weight of 60 kg per basket, and cycle time is between 15 and 30 minutes – much faster than either of the previous processes.”

He said that significant productivity improvements have resulted in two areas: avoiding the need to dry new seal components by hand after they came out of the rotary jet washer, and elimination of time-consuming manual cleaning when refurbishing used seals. The savings will help to amortise quickly the cost of the CRX machine.

As to its purchase, Mr Perrett commented that John Crane had opted for the Turbex solution as it was the only one offered by a total of four potential suppliers that was able to clean the seals to the required standard within the available budget.

John Huntingdon, Managing Director of Turbex, explained that modular build and commonality of parts allows a CRX system to be configured for typically 20 per cent less than similar purpose built systems on the market.

The Turbex / FinnSonic Crystal CRX four-stage washing machine at John Crane UK, Slough.

A basket of stainless steel seal components about to enter stage 2 of the Crystal CRX washing machine.

The fully processed basket of seal parts is cooled at the point where the output conveyor emerges from the machine so that the parts may be handled more quickly.

Seal components about to be refurbished.

Similar seal components after processing in the Crystal CRX.

Mimic diagram of the Crystal CRX machine on the touch-screen control.

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