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Asphalt drum hydro blasting

FM Conway > Heathrow Asphalt Plant

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DESCRIPTION

At FM Conway's asphalt plant at Heathrow, it was necessary to regularly remove the build-up of material sticking to the dryer finger lifters in the RAP drum. These fingers lift the material and drop it in front of the heat screen to allow the product to be heated and mixed correctly. Over time, the RAP drum clogged with old material blocking the finger lifters and cooled material stuck to the drum. This causes the plant to run less efficiently and results in more wear and tear on the components due to the increased weight of this material.

Staff had to enter the drum with power tools to manually remove the built-up material. This process involved a shift of 4 people working over 2 days to clean and replace 6-10 finger lifters. As there are 60 fingers in the dryer, to gun out a full dryer would take at least 2 weeks. This would involve a full shut down and would need to be repeated 3 to 4 times per year.



Using the Big Risk thinking, a team was formed to search for a safer method of cleaning the fingers. They came up with the use of high-pressure water. The technology had been used in a cement environment but was not common practice in asphalt processing. It is based on a high-pressure water machine that uses water jets that hydro blast the material from the asphalt drum. The jet operates at 1000 bar and uses 231 litres of water per minute. The material removed can be recycled to prevent unnecessary waste. The system takes 3 hours to set up, the rest of the plant can remain running during the set-up process. Cleaning the RPA drum can now be completed in 1½ days. The cleaning is undertaken 3 times a year.

The new system significantly reduces the requirement to carry out work inside the drum. The plant runs more efficiently, with greater reliability and less wear and tear on components. FM Conway can now introduce and trial recycled material in mixes because there is less built-up material stuck within the drum.

BENEFITS

- Eliminated exposure to workplace RCS whilst cleaning out dryer
- Confined space entry nearly eliminated
- Eliminated HAVS whilst removing material build-up
- Eliminated potential for hearing damage working inside drum
- Manual handling associated with moving material and equipment
- No need to cut or weld so no hot works carried out
- Reduced isolations required by increasing reliability
- Reduce plant down time for cleaning finger lifter
- Estimated that the dryer will be 3-4 times more efficient in creating a better material curtain
- Significant reduction in energy use and running costs
- Greater flexibility to run additional recipes using other RAP
- Significantly reduced wear and tear on components.

TRANSFERABILITY AND DEVELOPMENT

- This process will be used at all other FM Conway sites to remove material build-up in the RAP Drums. On-going improvements are being made with an aim of eliminating the requirement for an operator to enter the drum to set up the equipment.
- Additionally, the recycling and filtering of the wastewater is being investigated to see if this could be used in the site dust suppression system.