BEST PRACTICE

LOCATION:	**Asphalt/Coating plant**	**ARTICLE YEAR**	**2017**
ACTIVITY:	**Production and Processing**	**COMPANY:**	**Aggregate Industries**
SUB ACTIVITY:	**Asphalt & coated stone**	**COMPANY LOCATION:**	**Express Asphalt Darwen**
BEST PRACTICE No:	**BP2014**	**COMPANY TEL:**	**0000**
COUNTRY OF ORIGIN:	**United Kingdom**		

TITLE

Bitumen kettle dual modular redundancy (DMR)

ARTICLE

DESCRIPTION

Dual modular redundancy (DMR) is the duplication of critical components to increase their dependability in the form of a failsafe. Darwen Asphalt Plant decided to install a second set of load cells onto the bitumen kettle which are used to continuously monitor the correct operation of the primary set. The DMR system looks for discrepancies between the primary and secondary load cells, if there is a difference of more than 10kg is detected, the pump is immediately shut down to prevent any further filling. The pump can only be restarted when the reason for discrepancy between the load cells has been identified and rectified.

The system can be checked using a very simple test facility. Two handles gently squeezed together simulates a weight difference which should automatically shut down the pump. The operator can restart the pump after this simple test has been completed. Without DMR, a load cell fault could allow the kettle to overweigh bitumen. In this situation, the high level sensor would become the last line of defence for the shutdown of the pump.

Additionally, installing DMR has provided further operational benefits. 'Zero Drift Protection' monitors the potential negative drift on the weighing. A 'Rate of Change' indicator monitors

the free movement of the kettle where a snag could allow bitumen to accumulate undetected. In either scenario, the pump is shut down pending further investigation.

A visual display in the mixer cabin gives real time weight display and also flashes a clear fault message in the event of a problem.

BENEFITS

- Eliminates the risk of bitumen kettle overflow caused by load cell failure.
- Allows a 'real time' check on the health status of the primary weighing system
- Removes reliance on the high level probe as 'last line of defence'
- Automated stop systems reduce operator error risk – ignoring alarms
- Easier to identify and rectify faults
- Low cost solution that can be easily installed on other plants
- Good hierarchy of controls and exceeds AI's existing bitumen standard.

ARTICLE IMAGES

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