Fatal 5 - Gasket failure at asphalt plant resulting in bitumen spill

WHAT HAPPENED

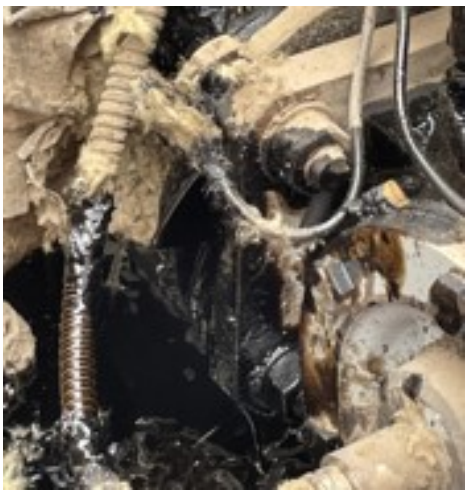
A failure in the bitumen trace heating system on an asphalt plant resulted in the pipework cooling. After the trace heating was repaired the pipework was brought back to the operating temperature. The plant was then started successfully, mixing 6 tonnes without any problems. However, as the manager passed by the bitumen system, he observed bitumen leaking beneath the pump cover box. He promptly notified the plant operator, leading to the shutdown of the equipment.



KEY FINDINGS

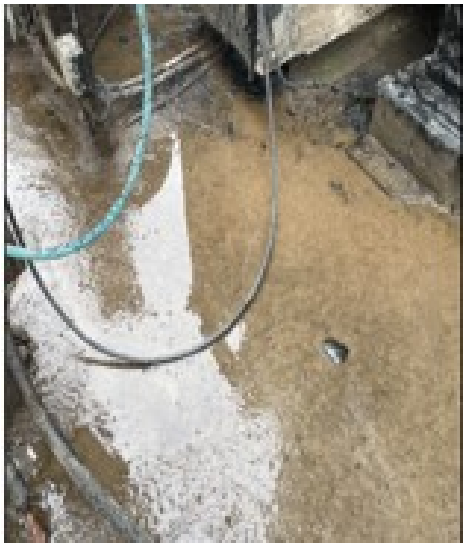
Pipework - The pipes connected to the pump were installed at an angle, it is likely that this complicated the installation of the sealing gaskets during the pump's fitting. Additionally, the pump flange was square while the pipe flange was round, and a portion of the flange had been removed to accommodate the bolts on the side where the failure occurred.

Gasket - The gasket appeared to have been 'pinched' during installation, resulting in a vulnerable area that permitted the gasket to split. The image shows the location of the failed gasket.



Inspection & maintenance - The piping and pump have been installed for several years without any problems or indications of malfunction.

Air system - The cables and air pipes were raised, apart from one pipe positioned at ground level. This pipe ruptured when it became enveloped in bitumen, resulting in a spray of hot bitumen at an approximate temperature of 135-140 degrees being projected upwards.



LEARNING POINTS / ACTIONS TAKEN

HOW COULD THIS HAVE BEEN AVOIDED

Assessing the existing condition of equipment, ensuring components are compatible, standardisation of equipment where practical, considering the consequences if a failure was to occur.

KEY REVIEW POINTS

- Review bitumen systems to determine if there are water or air pipes situated at ground level that may come into contact with bitumen in the event of a spillage from any section of the system.
- Is the bitumen pump adequately shielded to prevent the outward spraying of bitumen?
- Are all flanges enclosed to prevent bitumen spray in the event of a seal failure?
- Are relevant inspections in place for bitumen systems?
- Are there signs of leaking from pipework?
- It is essential to promptly address and repair any leaking bitumen pipework.

LOCATION:	**ASPHALT/COATING PLANT**	**ALERT STATUS:**	**Normal**
ACTIVITY:	**MAINTENANCE & HOUSEKEEPING**	**DATE ISSUED:**	**21/10/2024 15:42:42**
SUB ACTIVITY:	**ASPHALT & COATED STONE**	**INCIDENT No:**	**04839**