Oil Analysis to Ensure Equipment Reliability

About three-quarter of all lubricating oil failures are caused by contamination, effective analysis is vital to ensuring the healthy functioning of machinery. Below is a list of things to consider to prevent equipment damage or failure.

1 Monitoring

Regular monitoring is essential to ensuring oil integrity, as a minimum oil should be sampled on a quarterly basis.

2. Identify contamination

There are three types of contamination and identifying them correctly will dictate the correct treatment.

Solid - likely to be dirt or dust particles and can cause jamming and wear to components

Liquid - which can lead to corrosion and impair viscosity and lubricant properties

Gaseous - resulting in foaming in the oil sequences, inaccurate valve responses and damage to pumps

3. Locate the source of contamination.

Identifying the source of the contamination will help to prevent or offset further occurrences. These could include built in contamination as a result of the component manufacturing process, external such as air borne contamination ingress, and contamination generated by the functioning of the machine itself.

4. Neutralise contamination

Neutralising the cause of the contamination could include a thorough oil transfusion, installing additional air filters and replacing worn or damaged components.

5. Filter

Effective filtration can significantly offset, or in some cases prevent, oil contamination. Identifying flow rates, viscosity and pressure are all essential to specifying the right filtration system.

6. Analyse

Effective oil analysis requires in-depth inspection. This could be in a laboratory environment through microscopic particle count and gravimetric test, or through a mobile particle counter installed on the machine.

7. Predict

Recording and plotting results will enable maintenance engineers to identify trends and predict future risks. This is essential for minimising, and in some cases eradicating, unplanned machinery downtime.

8. Prevent

There are a number of simple steps that can be taken that can help prevent contamination: •

Ensure all oil is filtered, whether it’s new or old

Change oil filters at least every 12 weeks or by use of filter indication (mechanical/electrical)

Take oil samples at least every 12 weeks to identify if filters are achieving correct cleanliness level

Install air breathers to minimise contaminant ingress