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Mator news

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Provider of innovative consultancy services in gas/oil/water separation technology and condition based maintenance technology for the oilfield industry.

Neutron backscatter - A way to get more information about your separator

Mator has implemented neutron backscatter technology as a supplemental tool in order to understand separation phenomena inside the separator resulting in increased separation performance. The technology has with great success explained malfunction of inlet devices or limitations related to unfavourable phase behaviour.

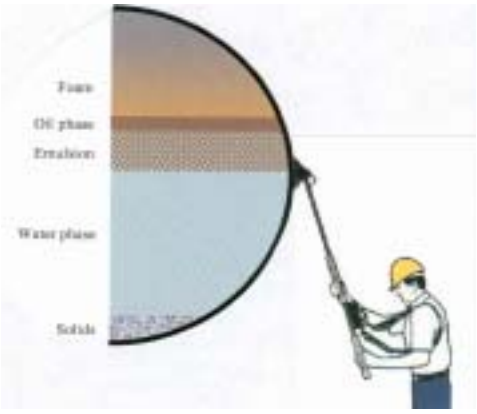
The neutron backscatter instrument allows us to "see" through the shell of the separator in order to enable a better understanding and diagnosis of what is actually occurring on the inside. This is a very effective tool in troubleshooting and when optimising the performance of a separator. The technique allows for measurement and detection of:

- Extent of emulsion bands
- Location of interfaces and liquid levels
- Presence and level of foam
- Solids deposition

A study of emulsion properties together with the scanning exercise is an extremely useful approach in investigating separation problems, be it limitations due to a stable emulsions or faulty design of the internals.

This approach has successfully pinpointed problems caused by improper design of inlet cyclones as well as detrimental flow patterns leading to improper phase separation, and consequently inadequate product qualities. A scanning of the separator for solid deposits or other restrictions is a very effective way to determine the limitations with respect to separation performance and throughput.

Measurement of emulsion characteristics and the emulsion band profile is an excellent basis for the optimisation of chemical treatment and tuning of process parameters. The extent of the emulsion band can not be detected by normal level gauges. A better understanding and control of the phase behaviour inside the separator allows for higher product quality and better performance.



How it works:

The backscatter instrument basically emits fast neutrons through the wall of the separator which interact with the hydrogen atoms in the liquid (or gas), thereby loosing energy. During this process some of the neutrons are reflected back (backscattered) as slow (low energy) neutrons. The degree of backscattering is proportional to the hydrogen density of the phases inside the separator. The method is fully independent of process conditions and physical parameters.

Phase transitions and interfaces can be detected and measured and used as input to a comprehensive interpretation that describes and explains the phase behaviour.

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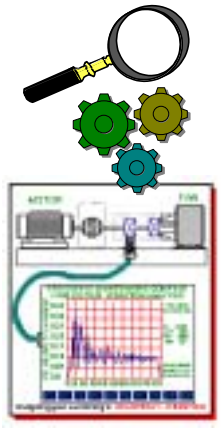
Condition Monitoring at Troll C – a case story



During the year 2000 most of the maintenance activities at Troll C were carried out as “campaigns”. Specially trained and skilled teams were formed that participated in each of the campaigns. This led to continuity in the maintenance work with increased sense of responsibility for the equipment.

Mator participated in the condition monitoring team, taking oil samples from all rotating and hydraulic machinery. All samples were analysed offshore, and the samples showing deviations were shipped onshore for further analysis.

Performing the condition monitoring as campaigns resulted in a 25 % cost reduction compared to the existing model, where all samples are taken by offshore personnel and shipped onshore for analysis. This major cost reduction is a result of more efficient sampling and less time spent on administration and logistics.

When using trained personnel for oil sampling, the number of deviations is reduced. At Troll C, a 30 % reduction of deviations was experienced over the year 2000 period. All deviations were considered to be real, leading to maintenance actions. Other installations within Norsk Hydro report up to 30 % false deviations, leading to a lot of unnecessary actions.

Condition monitoring is an important contribution in identifying the need for rotating machinery maintenance. On site oil sampling and analysis greatly reduces the time lag in that information is made available right there and then for the maintenance campaign team.

As a consequence of the positive results at Troll C, condition monitoring will be carried out in campaigns at Oseberg South, Oseberg East and Sture in the year 2001.

Condition Based Maintenance (CBM) contributes strongly to the economic well being of a production facility. Condion Montoring is the basis in a CBM programme.

Our aim is on providing CORRECT AND TIMELY Condition Monitoring.

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