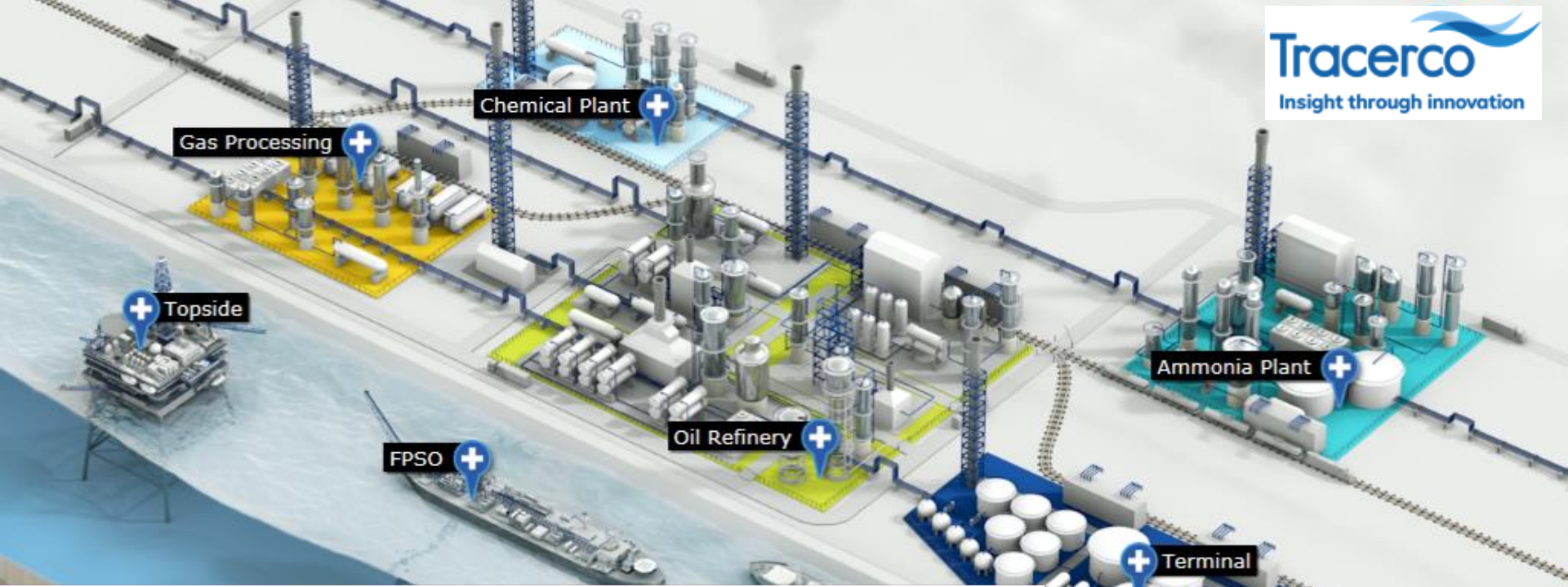


Optimising crude desalters to ensure optimum FCCU and DCU performance

Andrew Shaw
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What we do...

"We create ingenious ways to measure the difficult-to-measure, so that customers have the insights they need to make better decisions."

Why Desalting?

“Desalting is the first defence against corrosion – poor desalting will impact on refinery reliability and costs.”

Desalting process problems

Typical challenges

Flexibility – inability to diversify with crude blending

Unit reliability – increased costs and lower operating margins

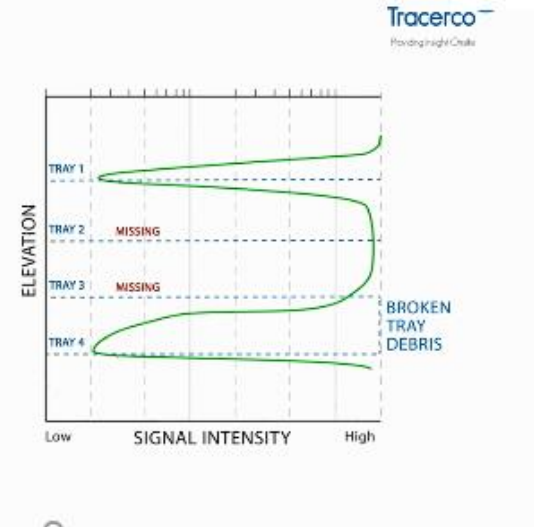
Corrosion in overheads – fouling and damage

Process control – unplanned trips and shutdowns

Chemical usage – impurity removal and emulsion/chemical control

Downstream process – impact on FCC and other units

Desalting process problems

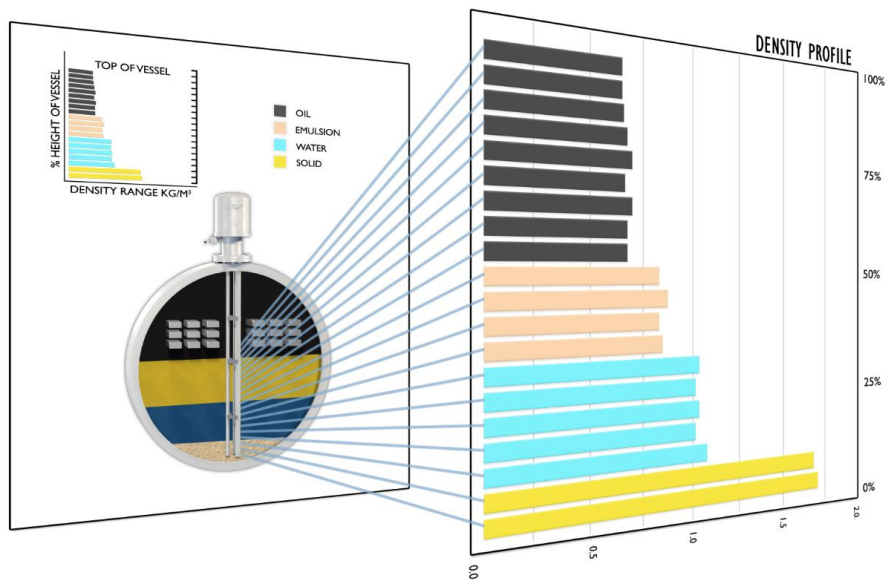


Profiler™

Reliable multi-phase
control, in real time

Tracerco Profiler™

It is the only instrumentation designed to measure the vertical distribution of oil, emulsion, water and mud in real time at high resolution.





Desalter Improvement Challenge

BP Cherry Point

Tracerco
Insight through innovation

JM Johnson Matthey
Inspiring science, enhancing life

BP Cherry Point Challenge

Reduce Upsets / Trips

Poor level control
from existing
instrumentation

Optimize chemical use

Reduce chemical
costs and product
quality

Improve crude flexibility

Increasing
refinery
profitability

Reduce Corrosion

Corroding
overheads due to
increased chlorides

Solving our customers problems!

Innovation

Summary

Improved unit flexibility
crude blend increased
from **30kbbl/d to
50kbbl/d**

Reduced corrosion
(Chloride levels reduced
from 4 ppm to 2ppm).

Reduced demand on
distillation pre-heat

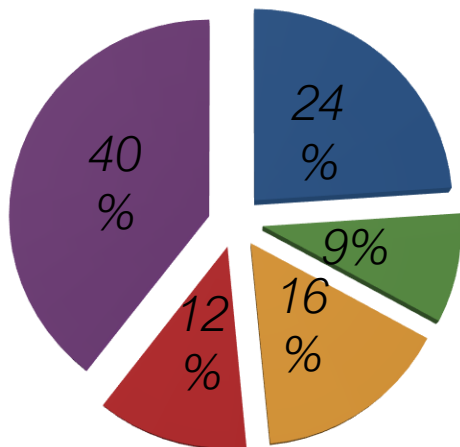
Process control Improved
Interface level now
operated with confidence

Refinery profitability
improved
Reduced trips / Process
upsets

Reduction in chemical
dosing

Summary - The Numbers

Increased refinery profitability by 1M USD / d



Chemistry	Annual Savings \$
Demulsifier	200,000
Neutraliser	75,000
Water Clarifier	130,000
Asphalante Stabiliser	100,000
Maintenance/production losses (3 trips previous year)	330,000
Total Improvement	\$835,000

Desalter performance Challenge

Middle East Refinery

PTQ Q3 2019

Analysing desalter performance and improving
crude blending capacity with multi-phase
instrumentation and control

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Middle East Refinery Challenges

Reduce Upsets / Trips

Improve plant reliability and increase operational days

Reduce Carry-over

Carryover of emulsion (H_2O , NaCl) in the oil stream to the distillation columns and FCCU

Improve crude flexibility

Increasing refinery profitability

Improve level / Interface Control

Poor level control from existing instrumentation

Tracerco Solutions

Supporting clients using a solutions based approach



Process Review

Using Process Diagnostic technologies to understand the process problem.

Feedback

Results fed back to the client.

Solution

A full understanding of the process problem allows the optimum solution to be recommended

LCM

Full Life Cycle Management to ensure optimum performance.



Tracerco Process Review

Onsite scanning services

- Level and interface measurement in storage tanks
- Deposit/vapour profile in pipelines
- Foam heights in tower downcomers
- Liquid levels in tower distributors, chimney trays and draw sumps
- Interface/emulsion detection in separators
- Levels in reboilers/heat exchangers

PhaseFinder™

Neutron Backscatter Application



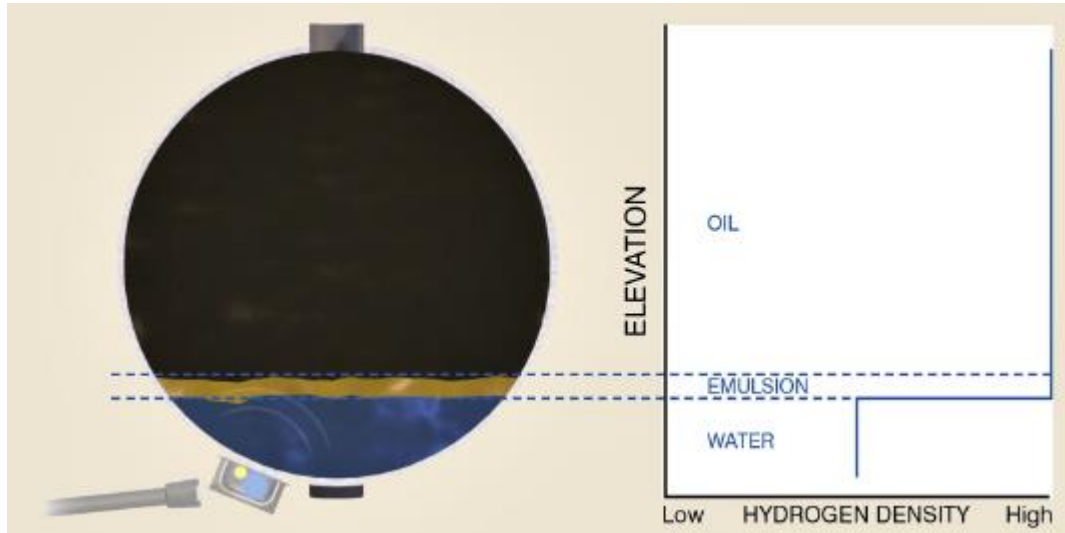
PhaseFinder™

Neutron Backscatter Application

Phase height identification for storage tanks



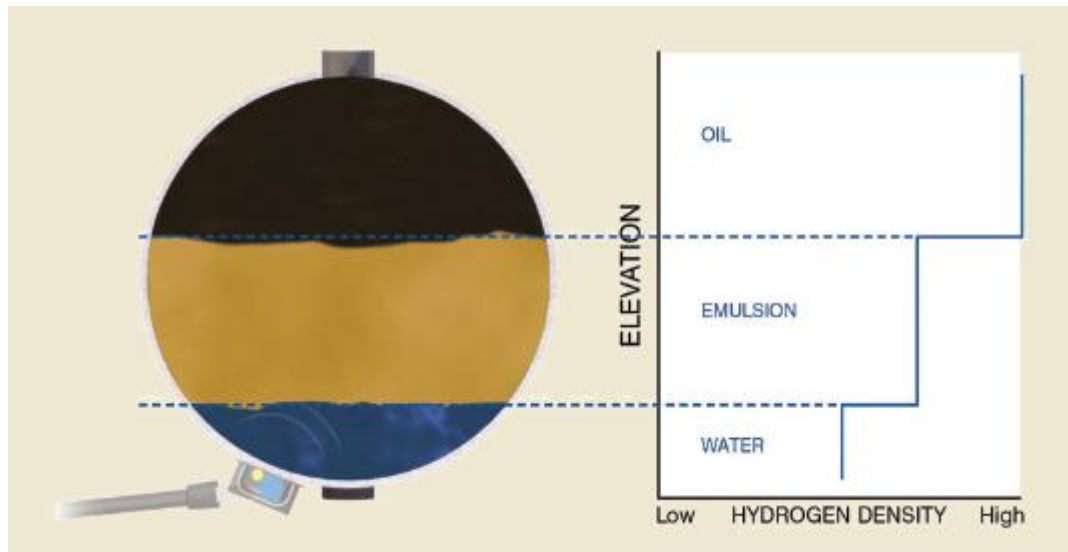
Example – Expected Results



PhaseFinder™

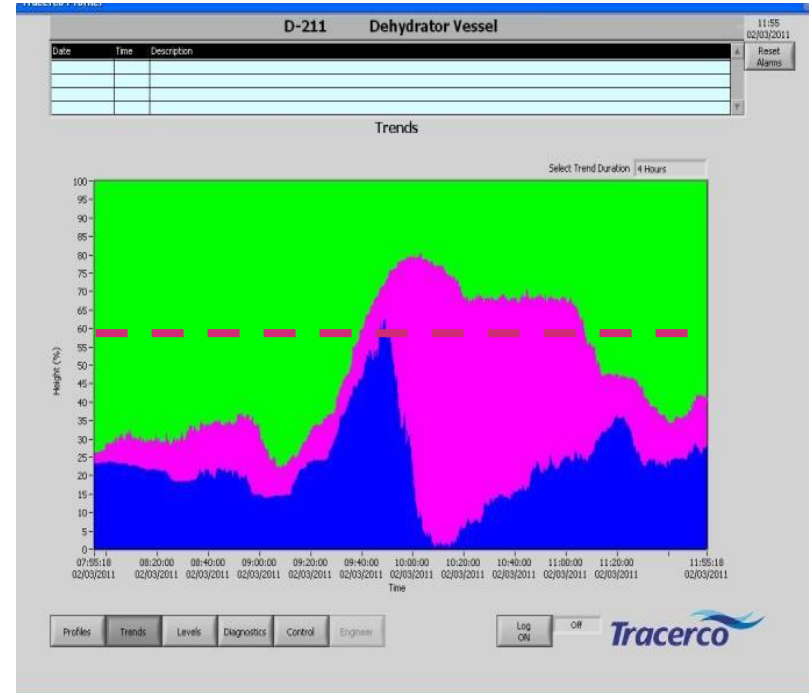
Neutron Backscatter Application

Actual Scan Results



Middle East Refinery Challenges

- Operational days before the profiler = 27days / Month
- Operational days **AFTER** the profiler = 30days / Month



Summary

Enhanced understanding
of process

Reduced corrosion

**Increased operational
days**

Now 30 days / Month

Improved Salt Removal
efficiency

Reduction in BS&W

Reduction in chemical
dosing



Why Use a Tracerco Profiler™

Tracerco
Insight through innovation

JM Johnson Matthey
Inspiring science, enhancing life

Why Use a Tracerco Profiler™?

- Give operators the confidence to run the interface close to the electrostatic grid (**within the design guideline**) thus optimising separation.
- Increased upstream desalter mixing to enhance removal of chloride carry over to downstream vessels thus reducing corrosion and fouling issues. This has reduced carry over of chloride levels from 3-4 ppm to 1-2 ppm
- Increased blending ratios of lower quality crudes with enhanced margin of refined products
- Optimisation of emulsion and asphaltene reducing chemicals within the desalting process leading to considerable cost savings
- The elimination of process upsets resulting from water carryover or oil carry under from the desalter vessel.



Q & A

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