

## SMi<sup>1</sup>/TNO – Real Time Production Monitoring Master Class

The SMi Production Monitoring Masterclass, a day-long event, was taught by experts from the Netherlands-based research organization [TNO](#). Monitoring production is necessary for the proper control of a production facility and for reporting. But monitoring is also the key to production optimization. The logic goes, ‘you can only control what is monitored, and you can only optimize what is controlled.’

Information theory connects measurement and system state – comprehensive monitoring can in principle produce a complete picture of what is happening across the whole production system. The advent of the ‘digital oilfield’ means that monitoring is getting more comprehensive, producing a digital ‘tsunami’ and posing questions as whether data compression should be used (TNO’s answer is ‘no!’).

Even if you have captured and managed a tsunami-load of data, there are significant cultural issues to contend with such as stakeholders’ conflicting requirements. The cultural divide is between the ‘off-line,’ petroleum engineering community and the automation/process world – although this boundary may blur as off-line is replaced with real time optimization. Whatever the community and time scale, it is essential that monitoring goals need to be set during the design phase along with GUI<sup>2</sup>s for a particular job. Otherwise there is a danger that a large-scale monitoring system sees little take-up after the initial roll-out. TNO advocates a ‘do it yourself’ approach to monitoring system design, avoiding vendor lock in and allowing for the use of ‘best of breed’ components. A North Sea case history showed how by targeting a specific issue, in this case a condition-based approach to water wash to clean salt build-up, brought a 5% production hike.

Model-based control was introduced as a novel technology that is migrating from its downstream, refining origins to the upstream. This was confirmed by one participant who described a real-world deployment combining multi-phase meters and neural net ‘virtual metering.’ This stuff is really happening in an oilfield near you!

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<sup>1</sup> <http://www.smi-online.co.uk>.

<sup>2</sup> *Graphical user interface.*