

# Process Control for Industrial Manufacturing

## Aspect's AI-60

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# What do we offer?

- Aspect provides an **inline** way to analyze chemical process's in the **most demanding of process's**, in a very wide range of **industrial applications**; for example measurement of 90% sulphuric acid at 110°C
- Aspect is the **only company** to be able to measure such aggressive chemicals at higher temperatures in **real time** using **NMR**.
- The Aspect solution is **fully automated (hardware and software)** with data sent back within minutes to the plant control room so that the plant can run efficiently
- There is **no other vendor** with this technology.
- This new solution is 18months old and **installed in China** and soon to be **installed in the USA (DuPont)**
- Aspect technology **saves customers \$millions** in efficiency and operational costs

# Aspect's Solution

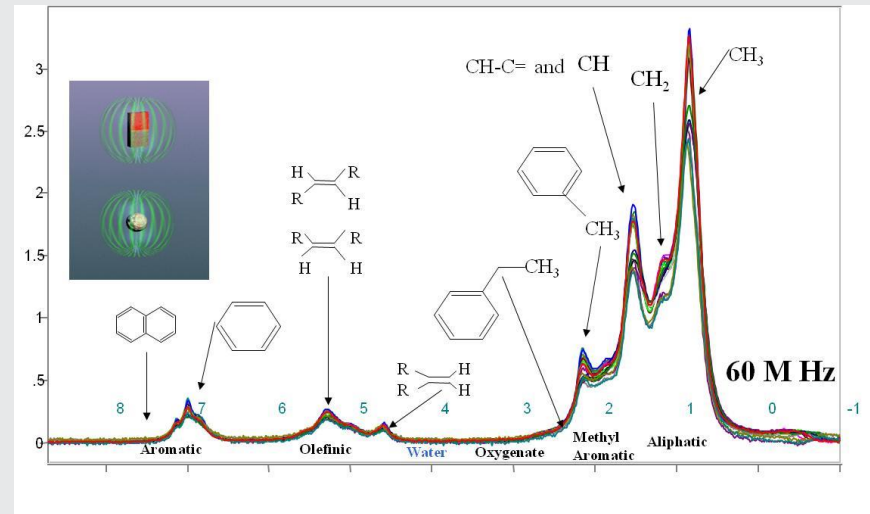
- Aspect AI Ltd. Provides the total solution
- Aspect AI **monitoring** system includes:
  - AI-60 (based on NMR technology)
  - Overall control by proprietary software
  - iModel software (automating the modeling process)
- A combination of this **analytical method** along with **distinctive software**, establishes a continuous and overall **monitoring** of the entire processes.



AI-60 Analyser House

# The Technology: What is NMR?

- Nuclear Magnetic Resonance - magnetic nuclei in a magnetic field absorb and re-emit electromagnetic (EM) energy (at a frequency function of the field strength).
- This physical phenomena can provides picture or spectra of the *chemical structure*, which enable to determine *physical and chemical information*.
- NMR The only **LINEAR** method and thus easier to model that other techniques like NIR



# AI-60 Analyzers Benefits

- **Real time, continuous flow-through** stream analysis
- Provides analysis in **dense and opaque** materials
- **Direct Molecular Measurement**
- **Linear Spectral Response** across broad range
- Direct and **Multi-property analysis**
- **Simple Sample Conditioning** required
- **Minimal maintenance** required



# Sampling Handling System

AI-60 is equipped with a dedicated sampling system to handle the following tasks:



Sampling from the pipes,  
and switching between  
different process streams



- Temperature control
- Flow Control
- Pressure control

# ModelGateway

Automatic Modelling for online process

# ModelGateway Computer Assisted Modelling Infrastructure Benefits

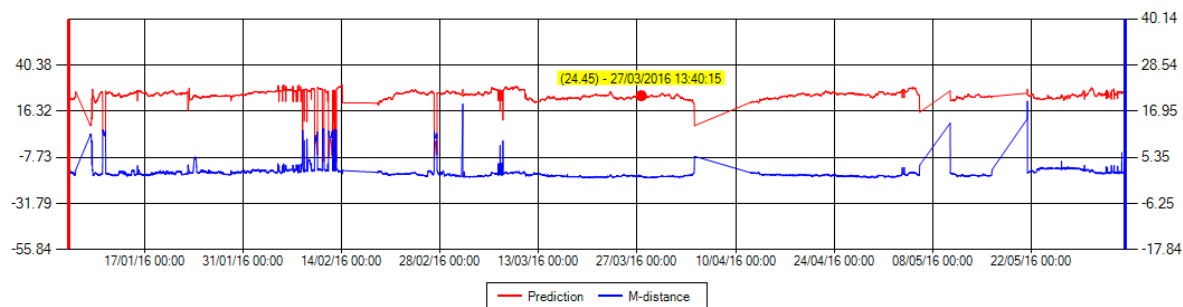
- User controlled degree of automatization.
- Rapid Response to changes (analyzer/sample/temperature).
- Easy model maintenance – one click with visual feedback.
- You can use with traditional modelling infrastructure.
- Off-the-shelf product, runs on any computer.
- Instant infrastructure, tailored in 24hr and ready to use.
- Easy comparison between automatic models and traditional models (Grams/UnScrambler).
- Easy to integrate and compare with lab data.
- Same interface for multiple analyzers (ABB, GuidedWave etc) .
- Immediate feedback – quality of spectra, success level of a model.



# Example Application Screen, used together with Aspect AI online Process NMR

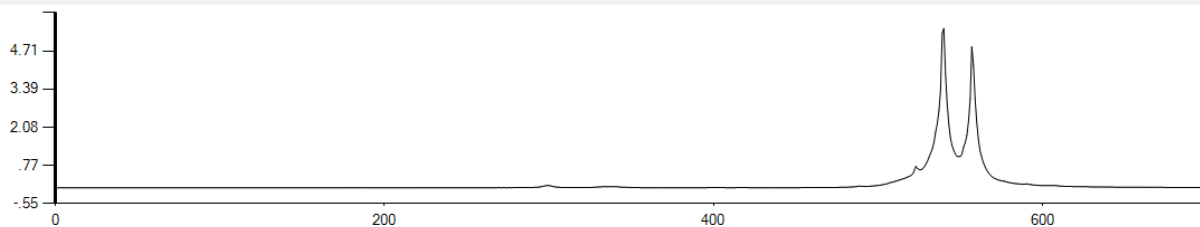
Property Name	Stream	Model	Value	M Distance	Last Update
S1.M1X	Probe1	S1.M1X_20160621_150636.ntx	4.84	1.59	04/06/2016 06:26:30
S1.M2X	Probe1	S1.M2X_20160621_151755.ntx	42.52	1.55	04/06/2016 06:26:30
S1.M3X	Probe1	S1.M3X_20160614_103053.ntx	26.99	1.59	04/06/2016 06:26:30
S1.M2HX	Probe1	S1.M2HX_20160614_103349.ntx	4.57	1.67	04/06/2016 06:26:30
S1.MHX	Probe1	S1.MHX_20160614_103416.ntx	10.81	1.80	04/06/2016 06:26:30
S1.HBOILX	Probe1	S1.HBOILX_20160614_103416.ntx	0.06	1.74	04/06/2016 06:26:30
S2.M1X	Probe2	S2.M1X_20160531_143850.ntx	8.02	2.29	02/06/2016 00:26:56
S2.M2X	Probe2	S2.M2X_20160531_143539.ntx	80.92	2.38	02/06/2016 00:26:56

Multiple streams and user-defined properties



Predictions and M-Distance (accuracy and visual check)

Selected spectrum display (handled for each time point)



# AI-60 Analyzer in the Harshest Environments



Hoshine Silicon Plant, China

The Technology is here today!

Don't get left behind!

Thank You