Blue Gentoo
Digital Gas Hydrate Management
Who are Blue Gentoo?

Blue Gentoo

Focused on Gas Hydrates
Partnered with Academia
Commercializing product development
Managing hydrate risk – with no expense spared!

- Old method still applied
- Large contingencies due to uncertainties
- Overdosing accepted as cost of business
- Still caught out by unexpected events
- But ...... Operators are beginning to think differently
How differently?

Despite improvements in software modelling, real-time data is still missing on critical information:

- Inhibitor concentration
- Water salinity
- Prediction of hydrates formation and location

Customers Holy Grail

“Optimisation and monitoring of hydrates during changing pipeline conditions.”

“Risk management and having real-time information.”

“Early detection of hydrates.”

Results of customer survey, May 2018
We apply a forecasting approach to Gas Hydrates Management

Digital Transformation is; Interfacing **Physics-based rules** which enable **Data-driven models** linked with **Artificial Intelligence** to enhance **End-user skills**.

- Gioia Falcone (OGTC’s Digital Transformation for Optimised Production workshop, Sept 2018)
Blue Gentoo Instruments – Physics-based Rules

HydraCHEK™ – Monitors the Aqueous Phase

Disruptive solution
Analyses fluid samples in real time
Inhibitor Agnostic (THI or LDHI)
$$ Millions of savings in chemical use
Enabled recovery factor increase of **over 2.5% of recoverable reserves**

For more information, see published paper SPE 166596; Saha, P., Parsa, A. Abolarin, J. “NUGGETS Gas Field - Pushing the Operational Barriers”

HydraSENS™ – Monitors the Gas Phase

Disruptive solution
Analyses fluid samples in real time
Inhibitor Agnostic (THI or LDHI)
Determined periods of time hydrates formed
Enabled savings of over **50%** of chemical requirement

Prototype, Aug 2018


*HydraCHEK™ and HydraSENS™ are trademarked technologies owned by Hydrafact. They are global-exclusively licensed to Blue Gentoo.
Benefits of operationalising Gas Hydrates Management

Predicting hydrate formation in real-time

- Lower risk
- Better information
- Better understanding
- Improvement by forecasting
- Greater savings
Benefits of operationalising Gas Hydrates Management

**Reduced Cost**
- Reduction in inhibitor use (MEG, MeOH, EtOH)
- Smaller MEG regeneration plant requirement

**Reduced Risk**
- Hydrate prediction
- Predictive chemical injection

**Production Efficiency**
- Reduced human interface
- Optimized production
Where we are right now

Cost Reduction

Maximised Availability

Risk Managed

- predict
- prevent
- monitor
- adjust
- outline

Courtesy TechnipFMC
Recap

➢ Dramatic digital transformation – as seen in weather forecasting

➢ Real-time monitoring of key components; Pressure, Temperature, Water and Gas

➢ Decision making model to optimize chemical injection, while preventing production upsets
For more information visit

www.blue-gentoo.com

Thank You