Digital Bridge (PI Cloud Connect) between Axens and MOL to Maximize Profit from Conversion Catalysts

From MOL Plc.
Máté Haragovics- process automation expert
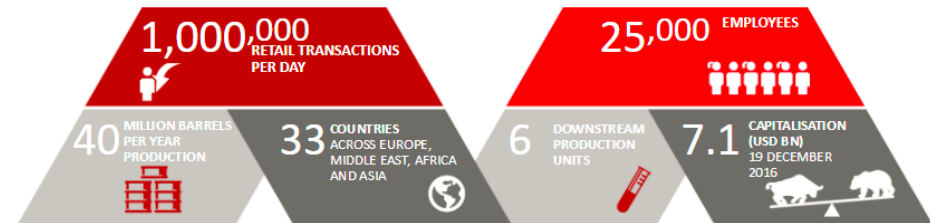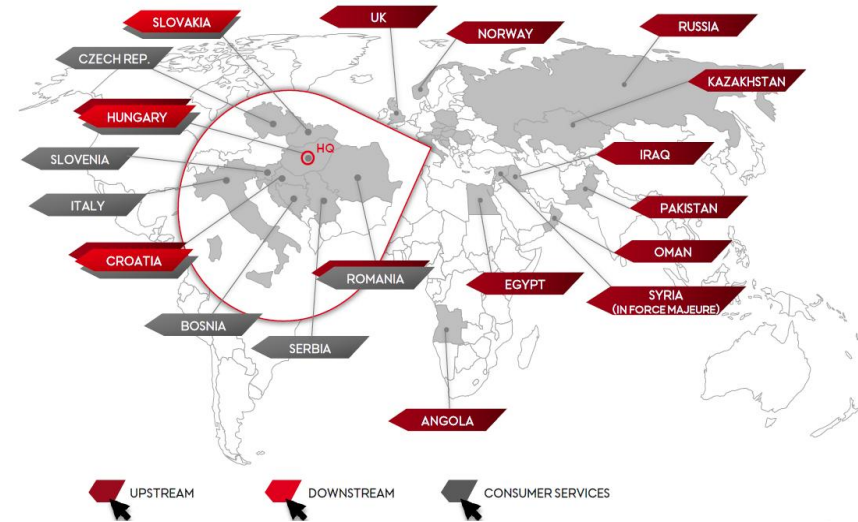Márk Bubálik - process technology leader

From Axens Group

Arnaud Fouillac, Digital application Project Manager

Conference Theme & Keywords

Analytics Energy Management Security
Regulatory Compliance Time Series Real-time Event Frames
Digital Transformation
Open System Asset Health Sensor-based Data IoT
Operational Intelligence Quality Integrators Connectivity
High Speed Community Process Scalability Partner
Infrastructure Reliability Enterprise Agreement
Business Impact Operational Efficiency Safety
Enterprise Connected Services Streaming Data Ecosystem CBM
PI System Visualization Asset Framework
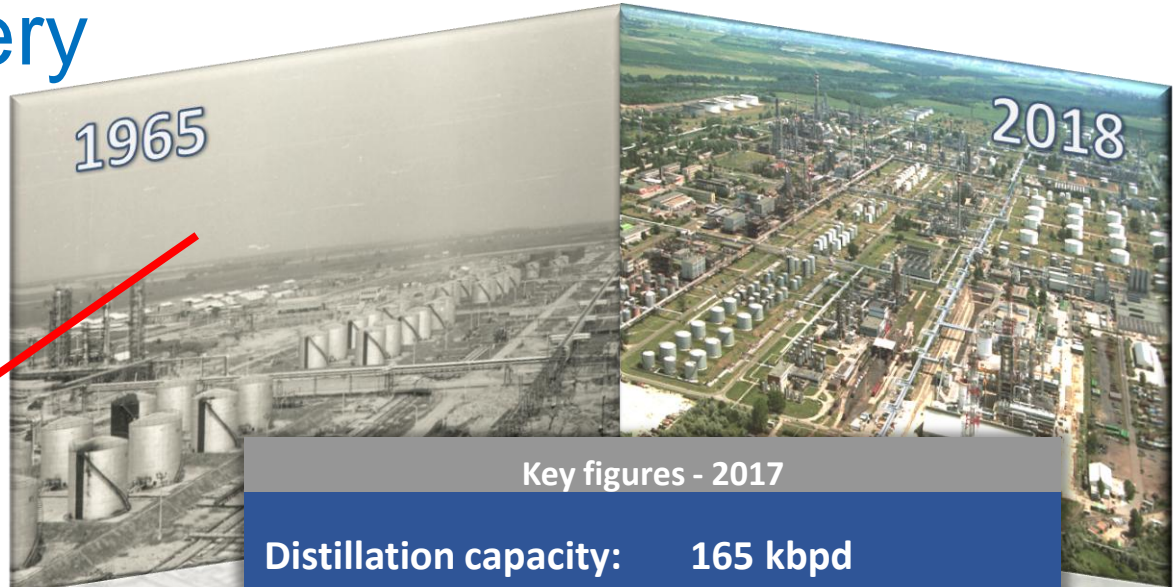Millions of Streams Big Data Future Data

Axens Group

MOL Group at a Glance

- **MOL Group is an integrated, international oil and gas company, headquartered in Budapest, Hungary**

- **Active in over 30 countries**

- **International workforce of over 25,000 people**

- **Track record of more than 100 years in the industry**

SLOVAKIA • UK • NORWAY • RUSSIA • CZECH REP. • KAZAKHSTAN • HUNGARY • IRAQ • SLOVENIA • PAKISTAN • ITALY • OMAN • CROATIA • ROMANIA • EGYPT • SYRIA (IN FORCE MAJEURE) • BOSNIA • SERBIA • ANGOLA • HQ

UPSTREAM   DOWNSTREAM   CONSUMER SERVICES

1,000,000 RETAIL TRANSACTIONS PER DAY

25,000 EMPLOYEES

40 MILLION BARRELS PER YEAR PRODUCTION

33 COUNTRIES ACROSS EUROPE, MIDDLE EAST, AFRICA AND ASIA

6 DOWNSTREAM PRODUCTION UNITS

7.1 CAPITALISATION (USD BN) 19 DECEMBER 2016

Danube Refinery

Key figures - 2017	
Distillation capacity:	**165 kbpd**
Processed crude:	**140 kbpd**
Share of light products:	**78%**
Number of plants:	**54**
Nelson complexity index:	**10.6**

Axens Group in Brief

5 markets covered

Refining | Petrochemicals | Gases | Alternatives & Renewables | Water

over **2,900** industrial units under license

60,000 tons of catalysts and adsorbents produced each year completed by Catalysts Regeneration Services

Offices in **15** different countries all over the world

9 Production Sites

over **2,000** Process furnaces

over **500** Modular units

Axens was created in 2001 through the merger of **Procatalyse** with the **Technology Licensing & Service Division of IFP Energies nouvelles.**

In 2017, Axens successfully acquired more than 92,4% of **Heurtey Petrochem** (including its fully owned subsidiary, **Prosernat**) and integrated 50% of **Eurecat.**

Axens
IFP Group Technologies

Refinery Catalyst Business

- Catalyst – like the enzymes for the human body
- $7 billion-per-year business worldwide*
- The value of products is $500–600 billion per year*

Catalyst management

- Harmonize catalyst performance with operational cost
- For each units that uses catalyst.
- Yearly planning about catalyst types, expected prices, planned replacement dates.
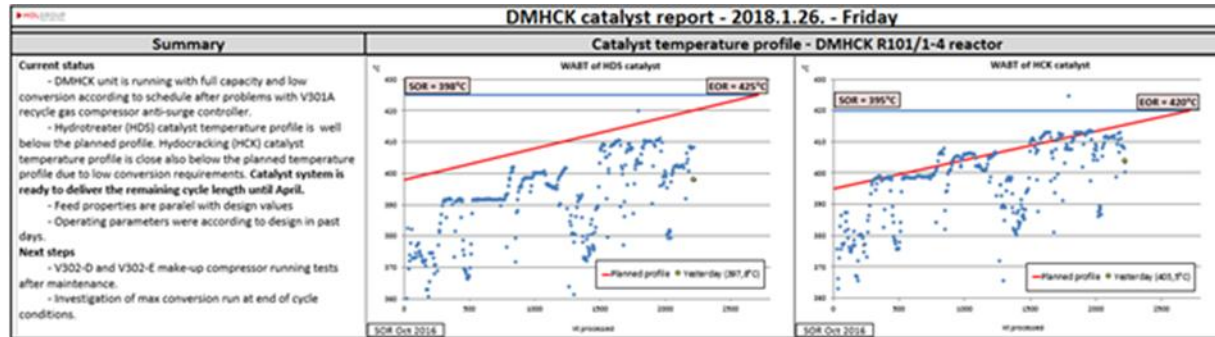- Main responsibility for Process Technologists

Demand for new catalyst
Market research
Tender procedure
Purchasing
Replacement
Catalyst performance control

Catalyst performance Control

- **Support from Catalyst supplier**
  - Regular review meeting (2-4 event per year) – excel base data transfer
  - Occasional communication via phone
- **Process technologist task**
  - Contact with supplier
  - Daily monitoring
  - Weekly/monthly reports

Actual catalyst performance

Guaranteed lifecycle of catalyst

Turnaround program

**Estimated catalyst lifecycle
Maximized profit during the lifecycle**

DMHCK catalyst report - 2018.1.26. - Friday

Axens Asset Performance Management

What Connect'In™ can do for you
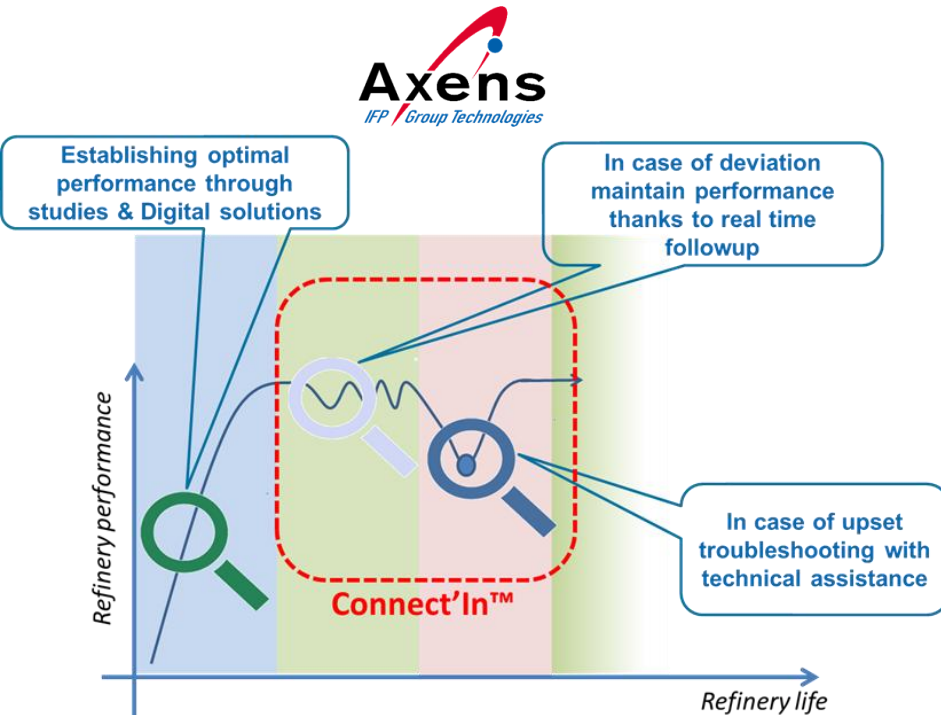
- **An efficient tool to pilot in real time your strategies**
  - Reliability & Availability
  - Profitability (margin)
  - Skill management

- **Connect'In uses real-time data sharing to become a pro-active advisor with premium Tech Services support**
  - Detect/notify abnormal trends/situations
  - Predictive maintenance
  - Operation guidelines

Data Sharing Method

- **Dozens of contractors, different ways of data exchange (internal and external)**

- **Classic – time of obtaining data differ from processing data**
  - Nowadays: e-mail, pendrive
  - Content may be obsolete
  - Response is slow

- **Digitalized – quasi real-time**
  - Should have compatible infrastructure amongst peers
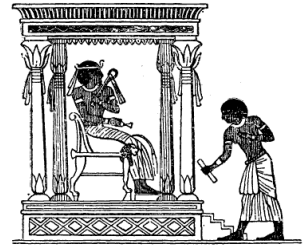
Better Communication

- **Same dasboard, common understanding**

- **More intense communication**

- **More effective communication**

- **Quick responses**
  - Upset or malfunction can be spotted out easier
  - Better situational awareness

Data Sharing Principles

- *Share the data as soon as possible (instantly)*

- *Share only the data that is needed*

- *Spend as few time with sharing as possible*

- *Data should be „here" or „there", but not at 3rd party (cloud)*

Where the Contexutalized data resides: PI System
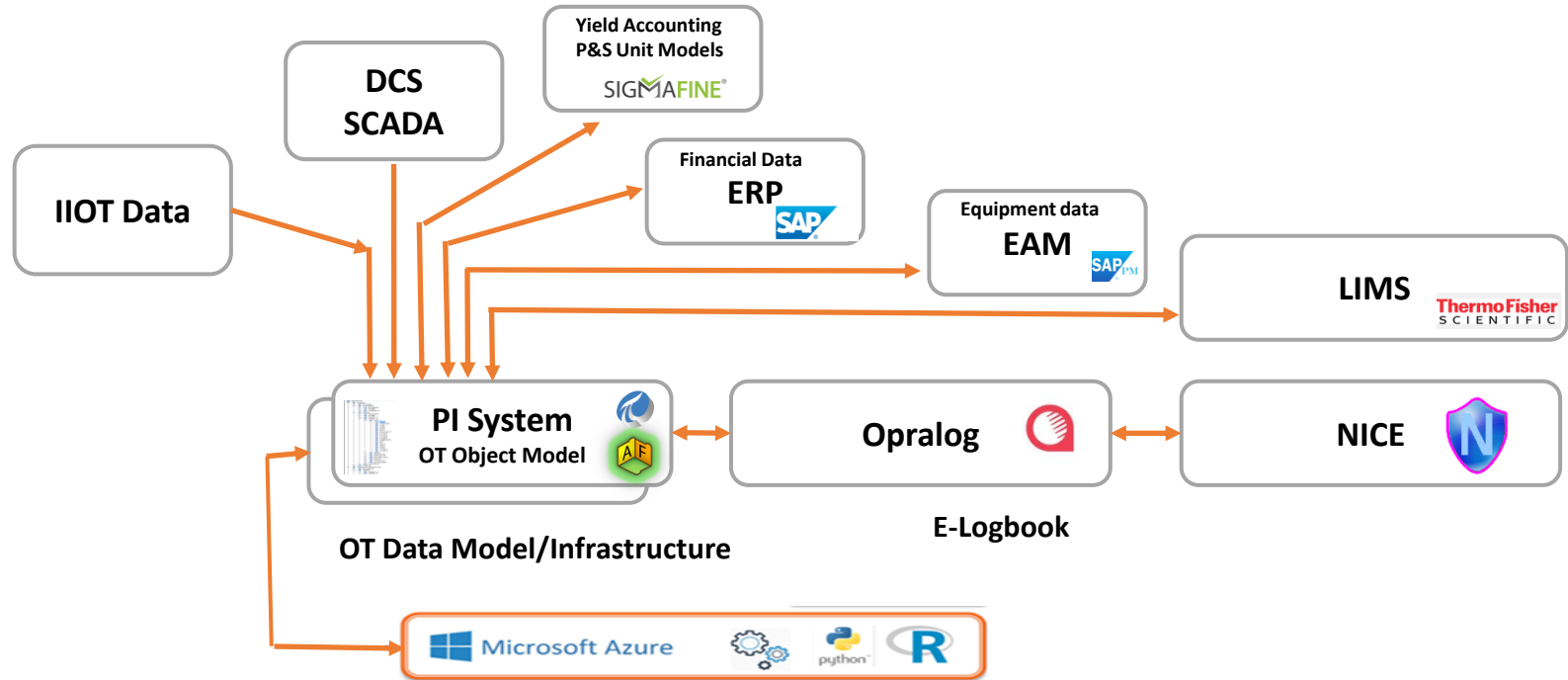
PI System Implementation in Downstream

- **20+ years**

- **HA archive server for downstream (refining, petchem, logistics)**
  - **250,000 points**
  - **~80 interfaces**
    - OPC
    - Custom
    - RDBMS
    - PI to PI

- **PI Asset Framework**
  - 25,000 Analysis/ Streaming Analytics
  - 250 PI AF templates
  - PI Event Frames

- **PI Vision**

- **OLEDB**
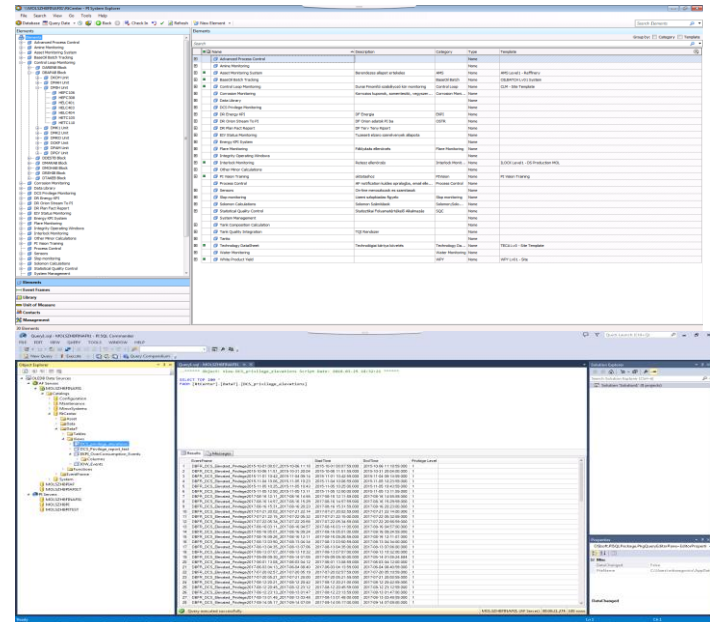
PI Fields of Applications

- **Process Historical Archival ("Historian")**

- **Monitoring/control systems**
  - Closed loop
  - Open loop

- **Streaming Analytics/Predictions (ie. HTHA Corrosion)**

- **Dashboards in PI Vision (Human Analytics)**
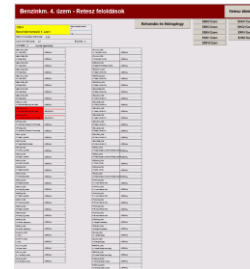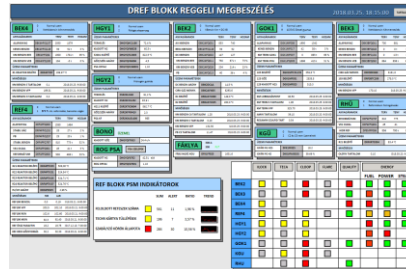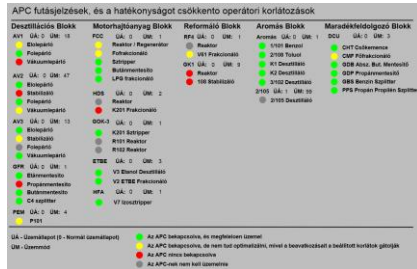
Initial Questions

- *Benefits of the solution*

- *Lifecycle of shared data*

- *Way of sharing data*

- *Legal conditions*

- *Data Ownership, Governance, and Security*

PI Cloud Connect

- *Cloud connection to establish connection between two servers*
  - *Metadata are managed in the cloud with a few clicks*

- *Actual data transfer is between PI servers of both parties.*
  - *No process data is stored in the cloud*

- *Publication/subscription model*
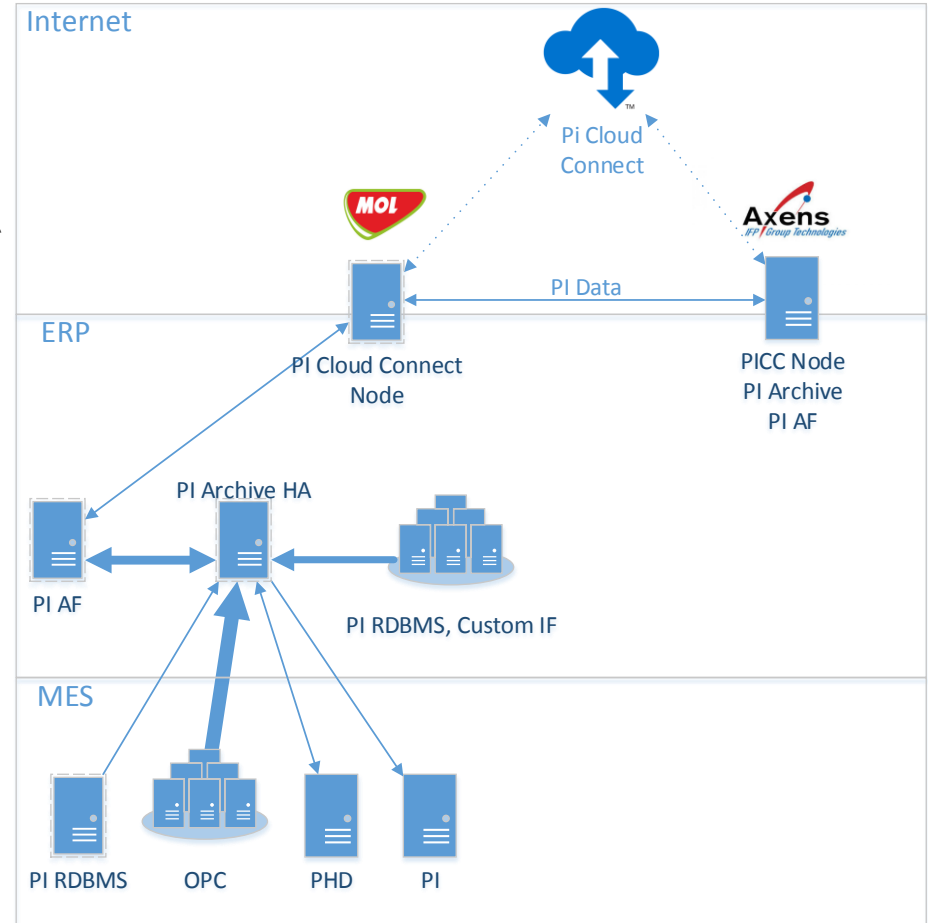
Lifecycle of Shared Data

- **What is limit of the contract at start**
  - What to share
    - Timeframe
    - Which set of data

- **What are the risks/advantages of sharing data on-line**
  - How to intervene if connection becomes insecure

- **What happens after contract ends**
 - Directly used data
  - Backup archives
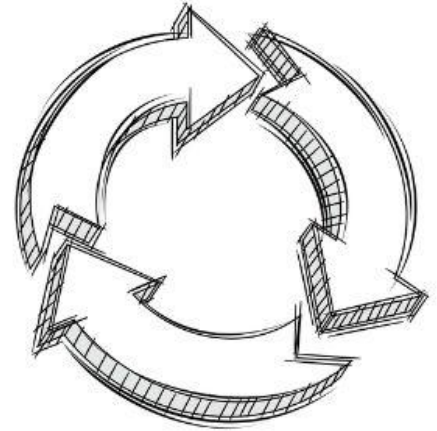
Protection of Intellectual Property

- **Calculations can stay on the source side**
  - i.e.: only share the result of an AF analysis
  - No accidental data leak

- **Better control**
  - What
  - With whom

- **Clear responsibilities**
 - Share by e-mail address

Ease of use

- *Internal and external data management can stay in the hands of one team*

- *Sharing/stopping needs only a few clicks*

- *Completely integrated into a proven technology*
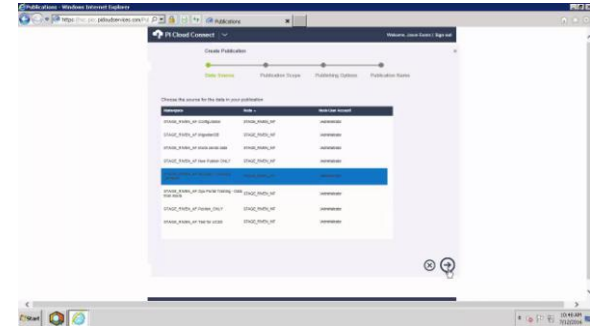
Dashboard in Axens System (Connect'In™)

- **Axens Web-based application for continuous unit & equipment performance follow-up to keep unit profitability on optimal track**

- *Supplier can improve services*
- *Custom solutions can be implemented on supplier side with customer data*
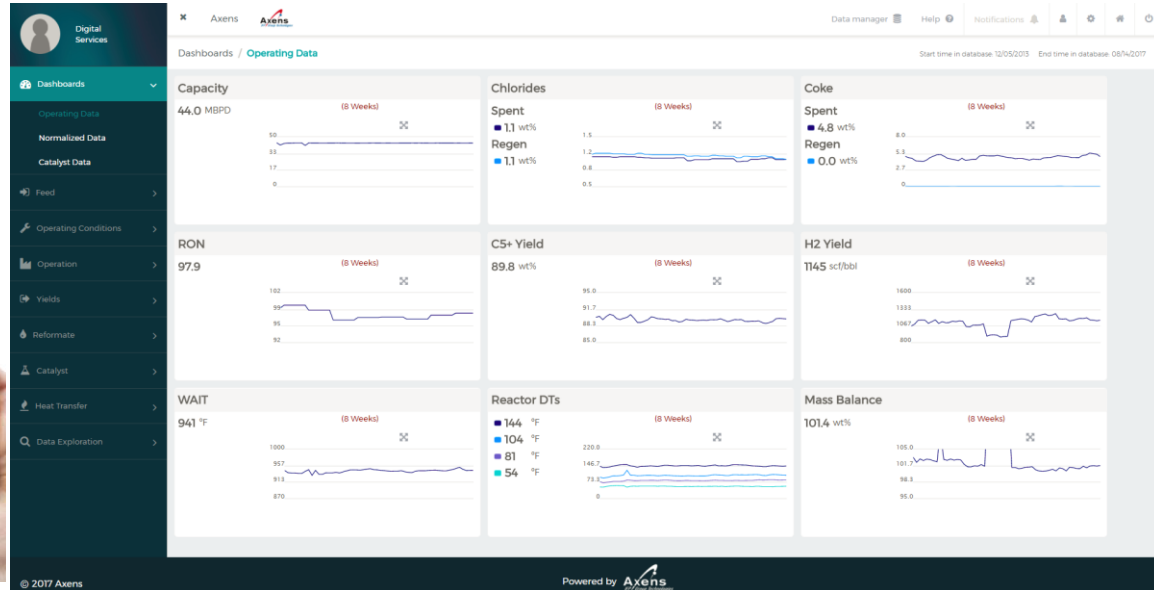
PI Vision Dashboard

- *Displays can be shared*

- *Familiar platform for end users*

- *Flexibility*
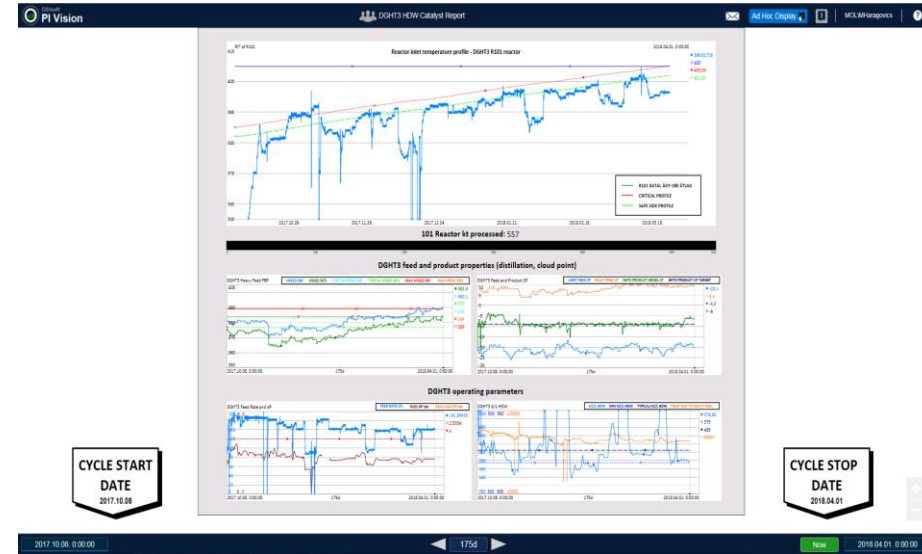
Conclusions

- **There is still a lot of room for improvements even in mature industries thanks to digitalization.**

- **PI Cloud Connect enables tight co-operation with external partners**
  - Data security
  - More leveraged benefit

- **Simple yet safe solution is not rocket science an more**

Takeaway

- **Revise your data/cyber security policy to include new possibilities**

- **If you or your business partner uses PI you should consider Cloud Connect to intensify cooperation**

- **Bottleneck of such co-operation is not the technical part any more**

- **Think of larger scale data sharing in future contracting**

Digital Bridge to Maximize Profit from Conversion Catalysts

MOL is a world class O&G company who utilizes catalysts to improve yields in their processing units. Increasing catalyst lifecycle and performance utilizing secure **digital communications with catalyst suppliers can result in significant EBITA impact.**
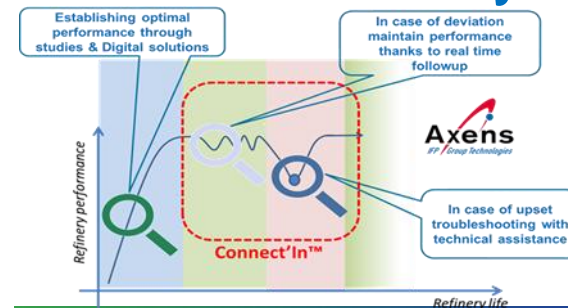
CHALLENGE

Utilize catalyst better to squeeze more value out of the asset

- Avoid premature catalyst replacement
- Fully utilize catalyst by the end of its cycle
- Find optimal operating conditions for the process to maximize yields

SOLUTION

To investigate enabling Axens to provide advanced services and consulting , a PoC was launched to ensure more intensive dialogue with Axens

- PI Cloud Connect is used
- Closer cooperation with supplier

RESULTS

Better utilization of catalyst throughout their lifecycle means bigger profit - $MM/yr potienial

- Higher yield of valuable products
- Better uptime of units if catalyst life is aligned with scheduled lifecycle
- Better uptime and less maintenance cost due to increased awareness during operation

Speakers
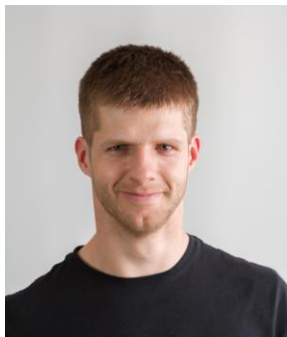
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Merci

谢谢

Спасибо

Danke

Gracias

Thank You

감사합니다

ありがとう

Grazie

Obrigado

Optional: Click to add a takeaway you
wish the audience to leave with.

Questions

Please wait for the **microphone** before asking your questions

State your **name & company**

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