





AVEVAWORLD
PARIS



Connect'In[®]: Unlocking new capabilities with Axens Digital Services



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Axens
HORIZON



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Axens in Brief



Offices in **15**
countries



Over **3,000**
industrial units
under license



Over **500**
modular units
references



70,000
tons of catalysts
and adsorbents sold
complemented by
catalysts regeneration
services



Over **3,500** process
furnaces sold



OIL REFINING



PETROCHEMICALS



GASES

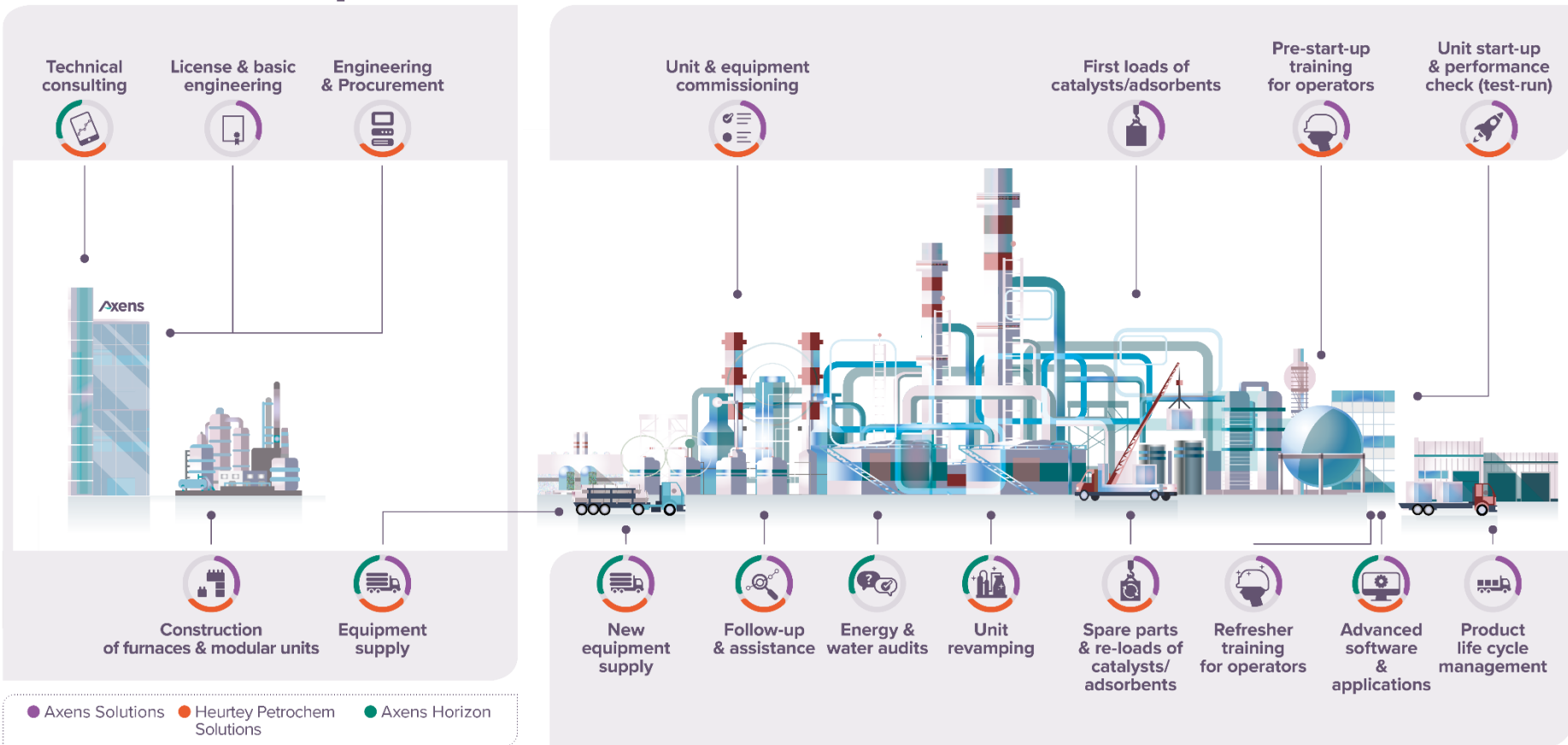


ALTERNATIVES
& RENEWABLES



WATER

Axens Group Offer Covers the Entire Plant Life



Technical Support

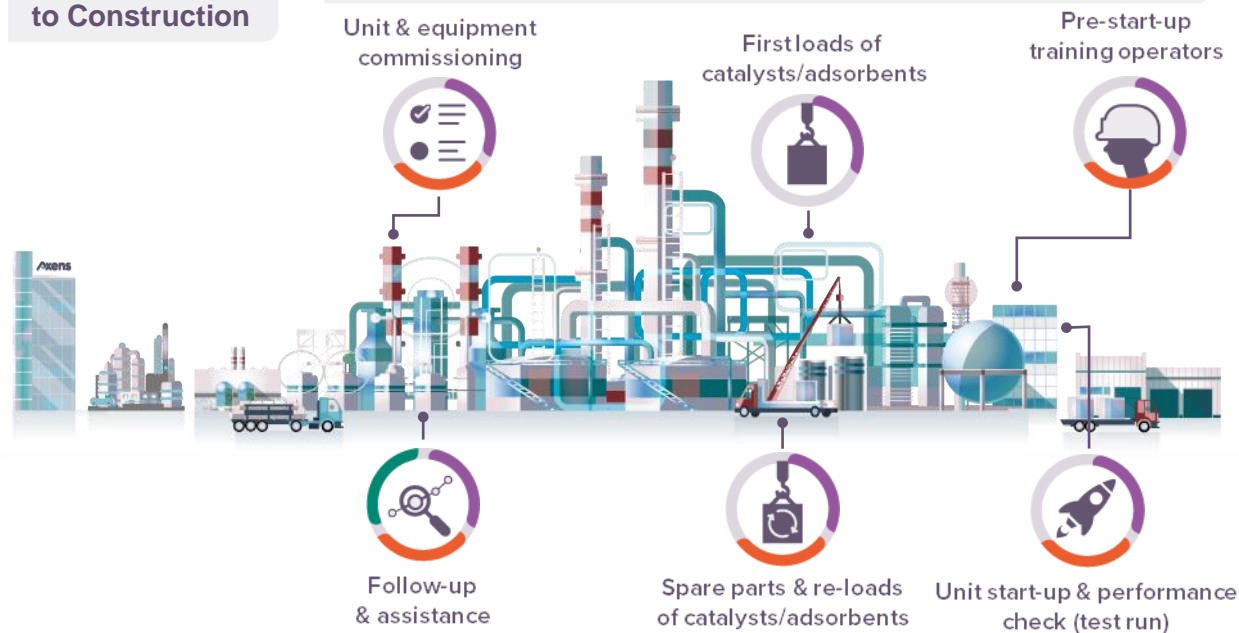
- Provide a Unit “Ready for Start-Up” on time
- Ensure the unit operates in safe conditions at maximum intake and profitability
- Optimize unit performances
- Continuous cloud-based performance monitoring



► More details

1 From Design to Construction

2 Plant Start-Up



3 Operation Support throughout the Life Cycle of the Plant

● Axens Solutions

● Heurtey Petrochem Solutions

● Axens Horizon



Connect'In[®] Introduction

Connect'In[®] brings *monitoring, optimisation, and prediction* tools to a single platform where Axens and its customers can collaborate to achieve energy efficiency goals.



CONNECT

Secure Data Transfer

DATA CLEANSING & RECONCILIATION

OPTIMIZATION OF OPERATING PARAMETERS

PERFORMANCE NORMALIZATION

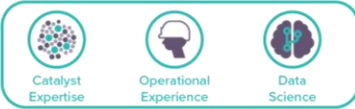
MACHINE LEARNING MODEL TUNING

CONNECT

Information & Knowledge Exchange



AXENS EXPERTISE



| | |
|---|---|
| <p>DECISION SUPPORT & RESOURCE PLANNING TOOLS</p> | <p>KPI DASHBOARDS & PROACTIVE ADVISOR</p> |
| <p>ENERGY EFFICIENCY & EMISSION REDUCTION</p> | <p>DATA DRIVEN PERFORMANCE PREDICTION</p> |
| <p>MESSENGER & EMAIL ALERTS</p> | <p>NO-CODE DATA EXPLORATION</p> |



200 UNITS CONNECTED
400 UNITS DEPLOYED

Connect'In[®] Enhance Unit Performances with Advanced Dashboard

- Providing key operational recommendations at a glance, ensuring quickly and effectively unit performance optimization,
- Actionable Insights at Your Fingertips: With user-friendly interface, all critical data is displayed in an intuitive, easy-to-navigate format. This allows to quickly identify areas for improvement and implement changes without delay.

Control CO₂ emissions :



Historical
Operation
Data



Connect'In[™]

A + B + C
Reaction
Kinetics

Machine
Learning
Utilities
Prediction

First
Principle
Simulations



Plant-wide CO₂
Emissions or
Utilities LP Model



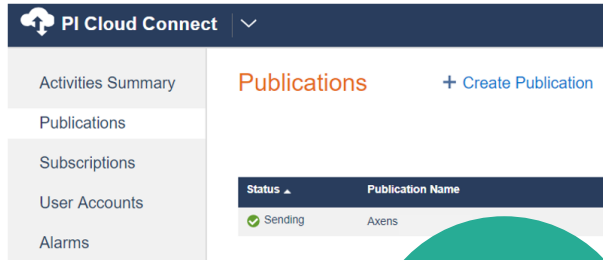
CO₂ Emissions
Reduction
by up to 5%

Technical Services leveraged by AI as a powerful assistant, augmenting rather than replacing human abilities

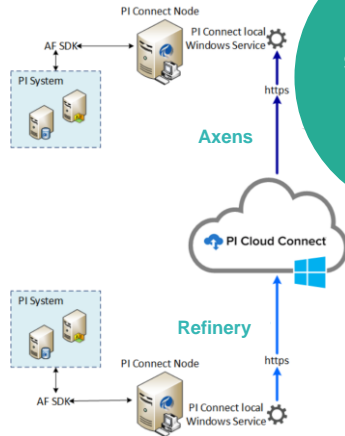
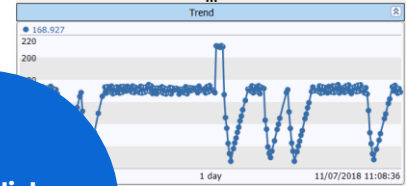


Real-Time Data Collection with OSIsoft® PICC since 2017

Selection of data to be transferred.



| Time Stamp | Value |
|---------------------|---------------------|
| 10/07/2018 11:10:00 | 172.124938964844 °F |
| 10/07/2018 11:15:00 | 169.95062258594 °F |
| 10/07/2018 11:20:00 | 175.13557434082 °F |
| 10/07/2018 11:25:00 | 172.163009643555 °F |
| 10/07/2018 11:30:00 | 167.106796264648 °F |
| 10/07/2018 11:35:00 | 172.178619384766 °F |
| 10/07/2018 11:40:00 | 167.814193725586 °F |
| 10/07/2018 11:45:00 | 172.061477661133 °F |
| 10/07/2018 11:50:00 | 171.771179199219 °F |

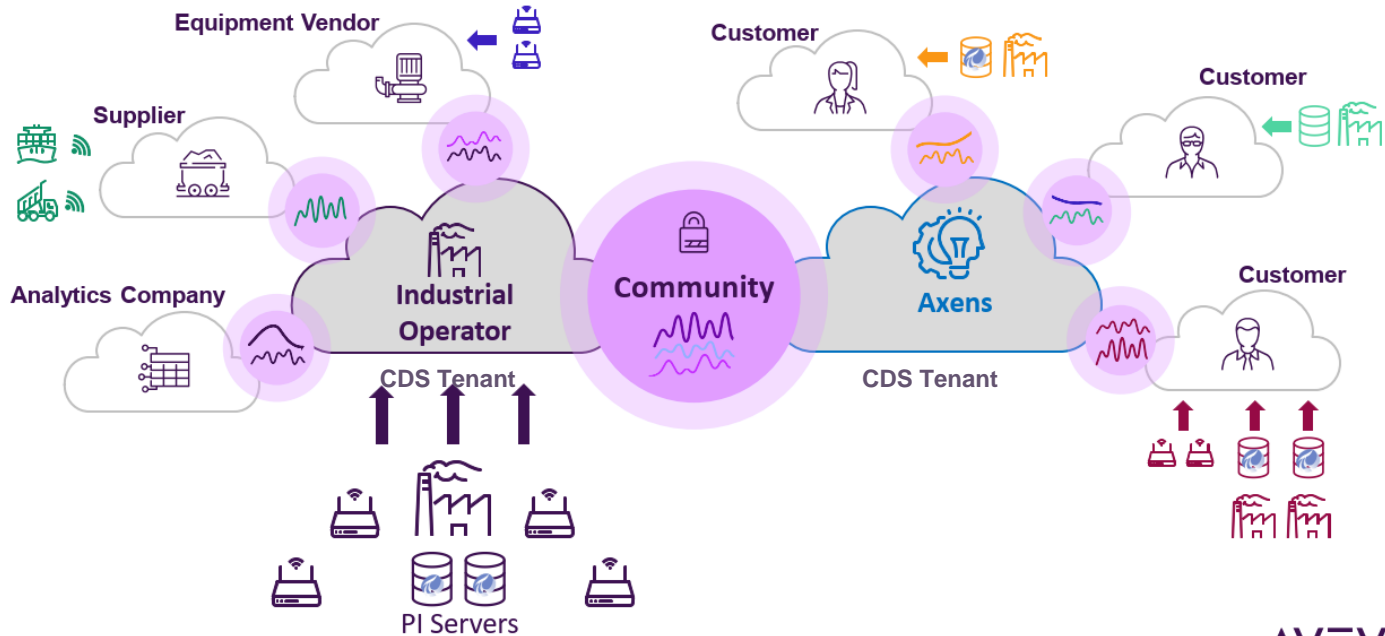


Selective Data Publication

One-Click Subscription

PI Cloud Connect is a Microsoft Azure hosted application that uses a **publish** and **subscribe** mechanism to manage the data flow between PI Systems.

Switch to CONNECT Data Services in 2024



AVEVA

Axens Connect'In[®] & AVEVA CONNECT Partnership



1 Axens customers share data with Axens using the CONNECT **'Communities'** feature.

CONNECT Data services

The screenshot displays two panels from the Axens CONNECT Data services interface. The top panel, titled 'CONNECT Data services > Communities', shows a search bar and three cards representing different communities. Each card displays 'Tenants: 2' and 'Sharing Status: All Tenants Active'. The bottom panel, titled 'CONNECT Data services > Data Views', shows a table with columns for 'Id', 'Name', and 'Description'. The table contains one entry: 'Troubleshooting_DataView' with the description 'Live Data (Active)'.

2 Axens generates CONNECT **'Data Views'** to query the required data.

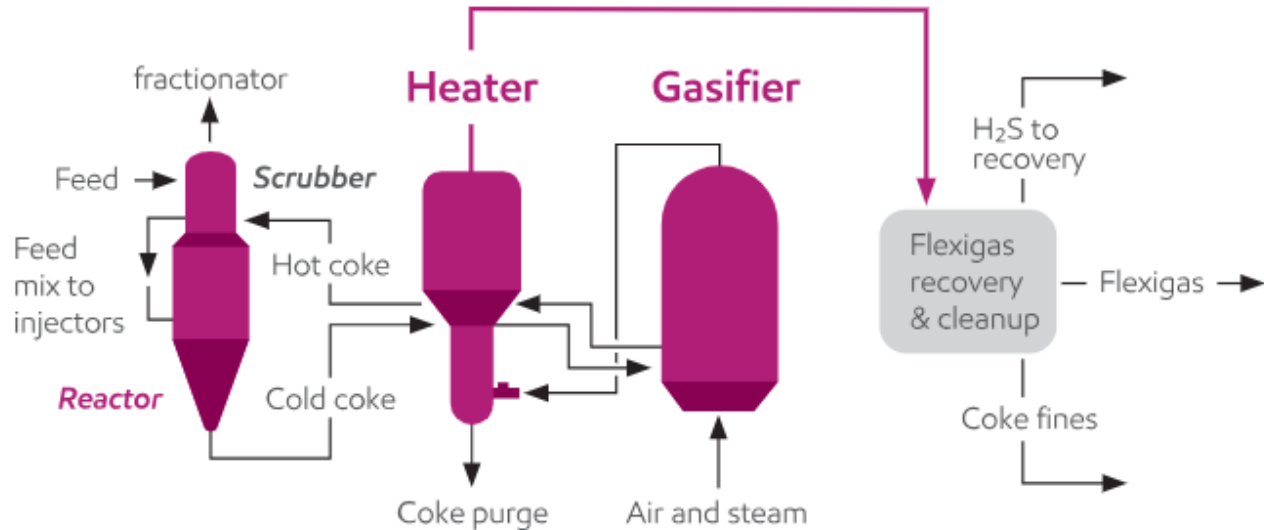
Axens uses the CONNECT **REST API** to extract the **'Data View'** data into the Connect'In[®] ecosystem.

3



Axens and Helleniq Petroleum cooperation leveraged by CONNECT+Connect'In®

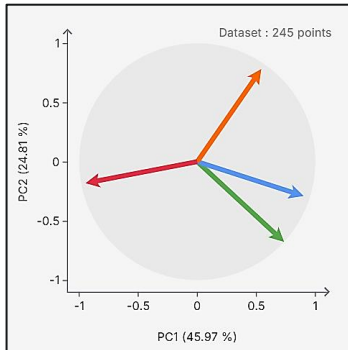
- Successfully connect the Elefsis Flexicoker to Connect'In by partnering with AVEVA and leveraging CONNECT Data service,
- Allowing real-time data transfer and enables HelleniQ engineers to benefit from real-time insights and advice,
- Now exploring advanced data analysis techniques through Connect'In to enhance the value we provide to our partner



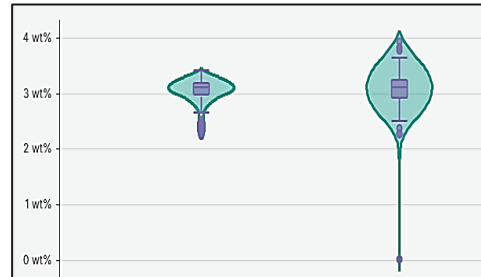
Applied AI in Catalyst Monitoring

Axens Connect'In® leverages applied AI in our automatic data processes to enhance operational awareness, detect inefficiencies early, and optimize performance.

Data Quality Assessment

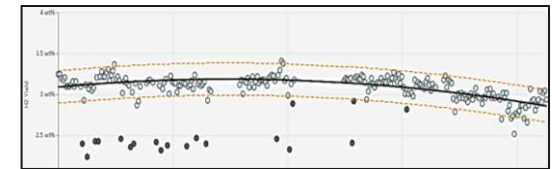
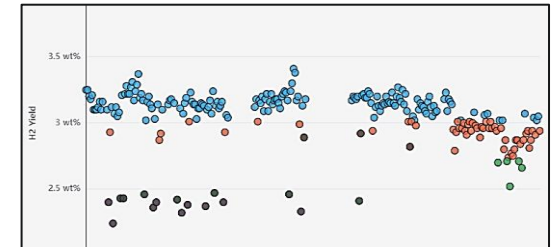


Data Reconciliation & Normalization



| | Mean | Variance | StdDev |
|----------------------|-----------|----------|---------|
| Carbon Balance | 100.0 wt% | 0.0 wt% | 0.0 wt% |
| Hydrogen Balance | 100.1 wt% | 0.1 wt% | 0.3 wt% |
| Overall Mass Balance | 100.0 wt% | 0.0 wt% | 0.0 wt% |

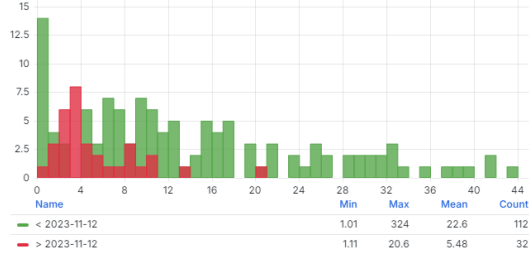
Data Analysis & Classification



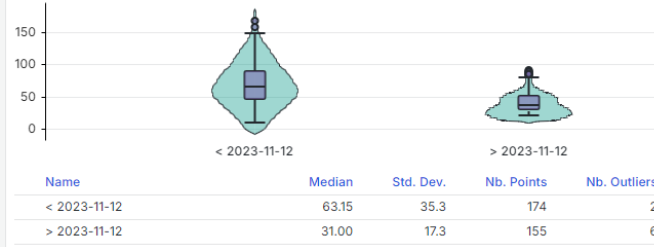
Connect'In® V4 will support complete *unsupervised* hybrid data analysis by integrating process expert systems, statistical confidence models, and machine learning techniques.

Dashboard to Investigate Drop in N2 PPT Outlet

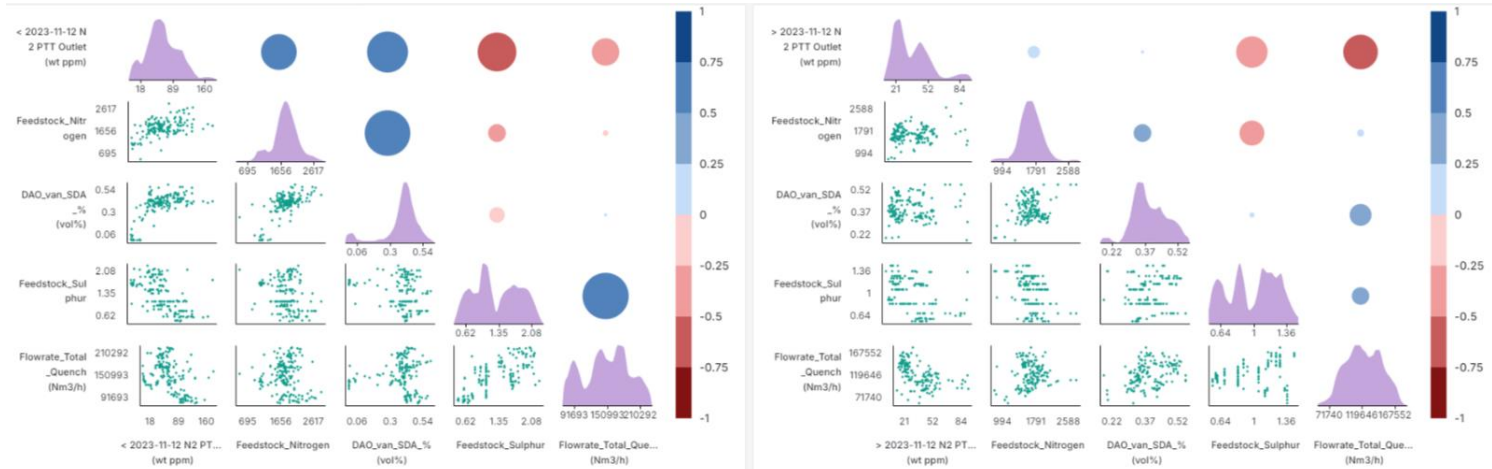
Standard Deviation Calculated Every 7d Distribution



N2 PTT Outlet Distribution Comparison



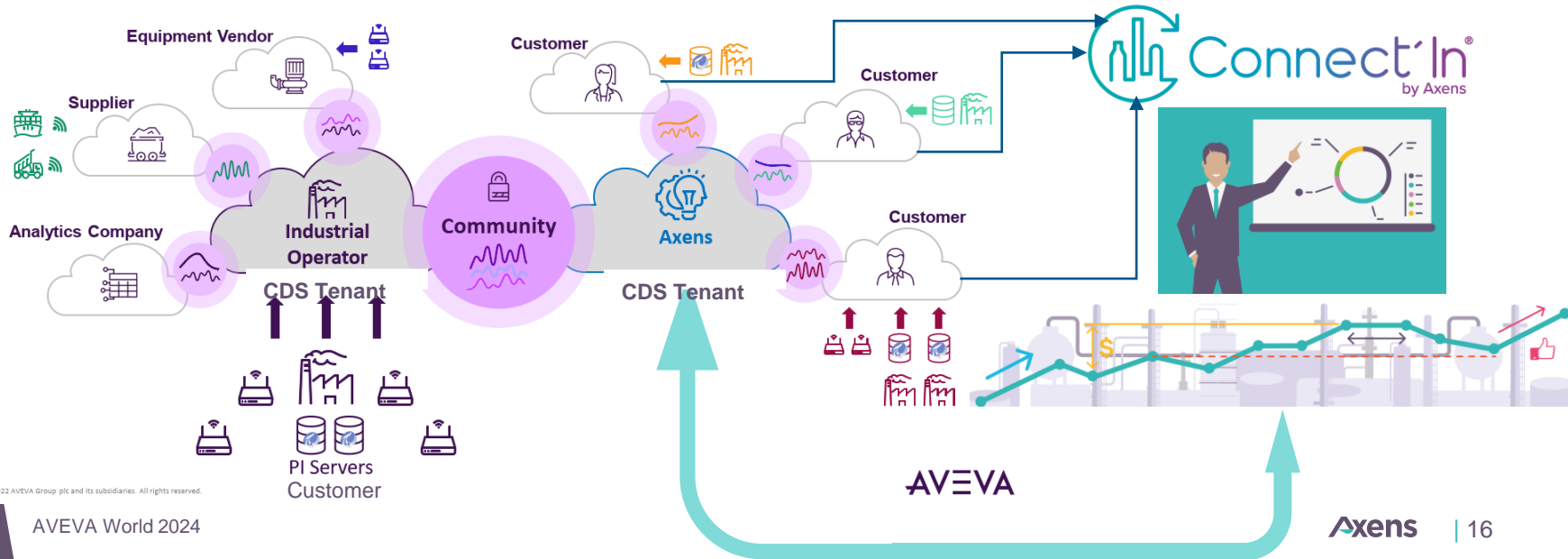
~50% reduction in standard deviation of N2 PPT outlet N2 in period 2 compared to period 1.



CONNECT Data Services

- Multi-tenant architecture designed natively for the cloud, with secure sharing of select data in a bi-directional way across tenants
- Usage of CONNECT within a company led to a considerable reduction in effort for employees who request data across the sites.

Connected community: Powering your industrial ecosystem

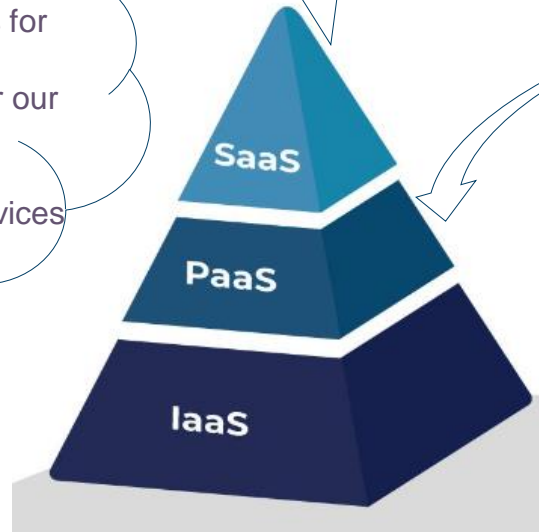


Connect'In[®] to CONNECT: from SaaS to PaaS

Connect'In is a SaaS allowing our clients to access our software via the internet, without local installation

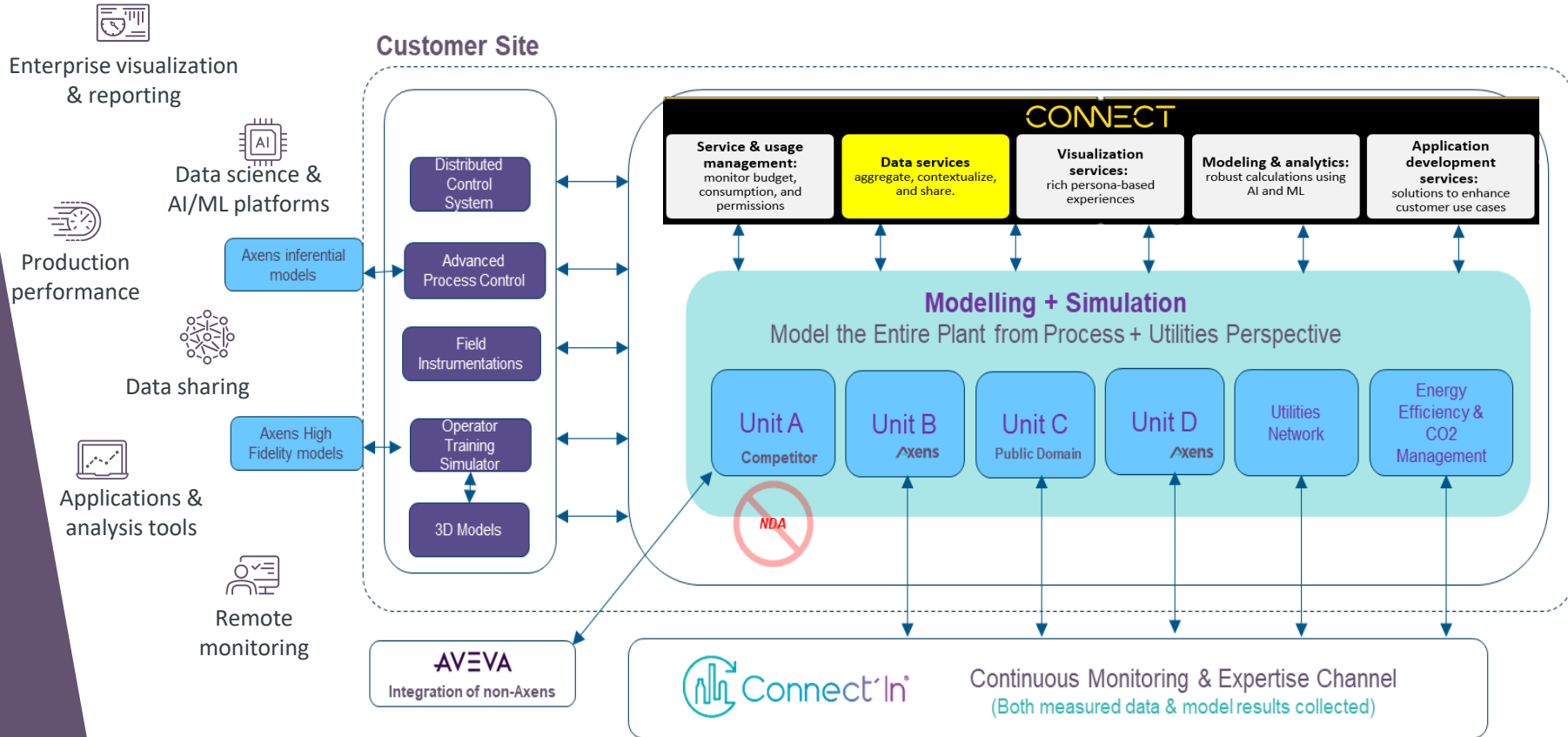
CONNECT is a Cloud platform covering all industrial activities, from engineering and design to operations and production optimization

- Easy access and updates for users,
- No infrastructure costs for our clients
- Axens is proposing Tool + Contents + Technical Services



- Create multitenant data communities with internal and external users for cross-company collaboration, with an ability to attach context and asset information to data streams
- Focusing on Contents + Technical Services

Axens Connect'In[®] embedded into CONNECT



Questions?

Please wait for the microphone.
State your name and company.



Please remember to...

Navigate to this session in the mobile app to complete the survey.



Thank you!