



**AVEVAWORLD**  
PARIS



AVEVAWORLD

OCTOBER 2024

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# Unlocking your Industrial Digital Twin

Steve Parvin – Strategic Product Manager, CONNECT

Daniel Crisp – Strategic Product Manager, CONNECT

AVEVA

# CONNECT

Unifying the industrial ecosystem with data,  
AI and deep domain expertise for greater sustainability and efficiency

## TRUSTED INTELLIGENCE

Single source of truth for  
proven applications

## ACTIONABLE INSIGHT

Closing the loop for  
real-world impact

## UNIFIED EXPERIENCE

Hundreds of perspectives.  
One shared reality

## EMPOWERED ECOSYSTEM

Accelerating the network  
effect across the value chain



*A digital twin is a digital replica of a physical object, person, system, or process, contextualized in a digital version of its environment. Digital twins can help many kinds of organizations simulate real situations and their outcomes, ultimately allowing them to make better decisions.*

<https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-digital-twin-technology>



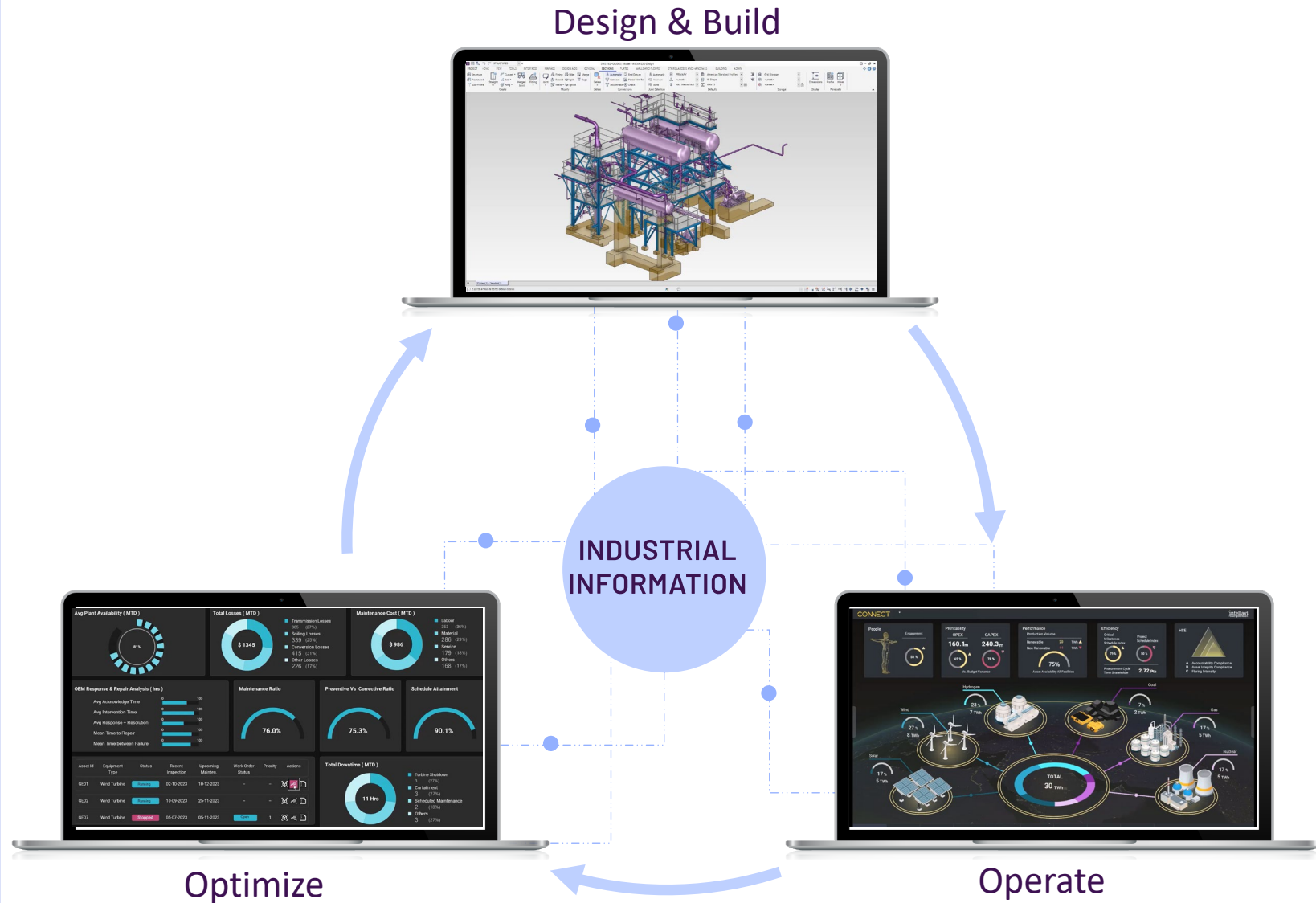
Bringing together experts across the **industrial lifecycle**



Industrial Intelligence is at the heart of the living digital twin

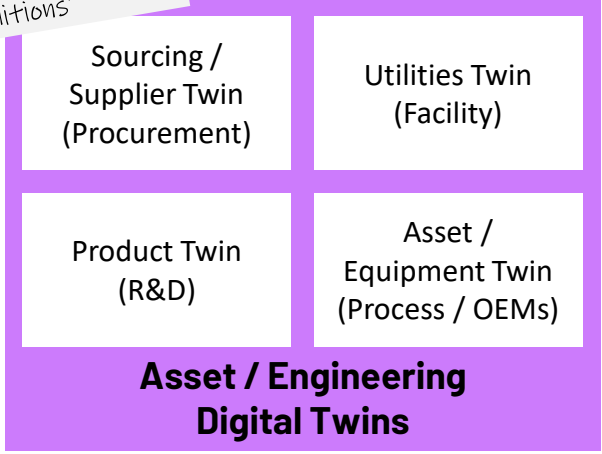


Frictionless exchange of information fuels innovation and confidence



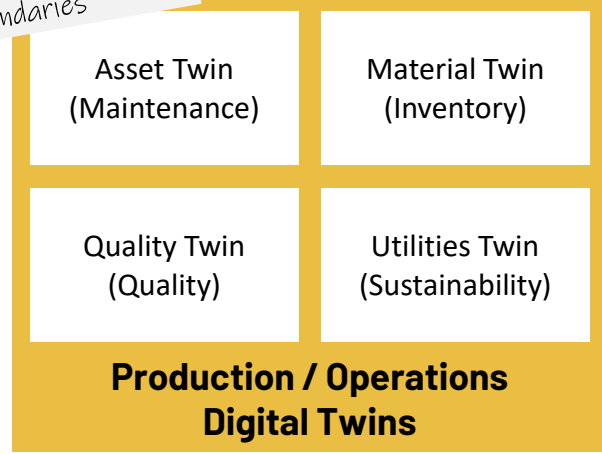
# The relationship between Engineering, Operations & Sustainability

**DESIGN**  
"Define the boundary conditions"



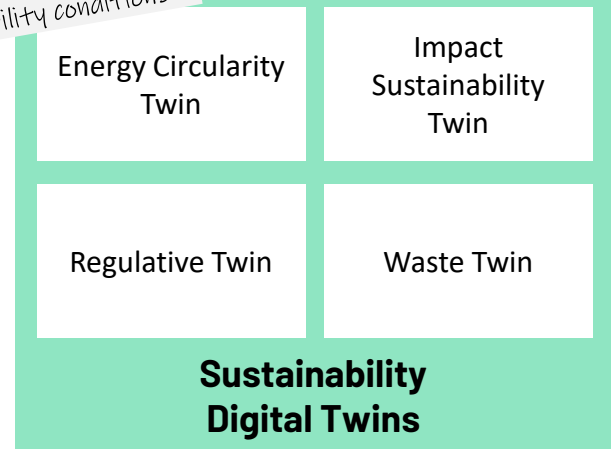
**PREDICT maintenance / upgrades**  
Understand impact of change

**OPERATE**  
"Optimize within the boundaries"

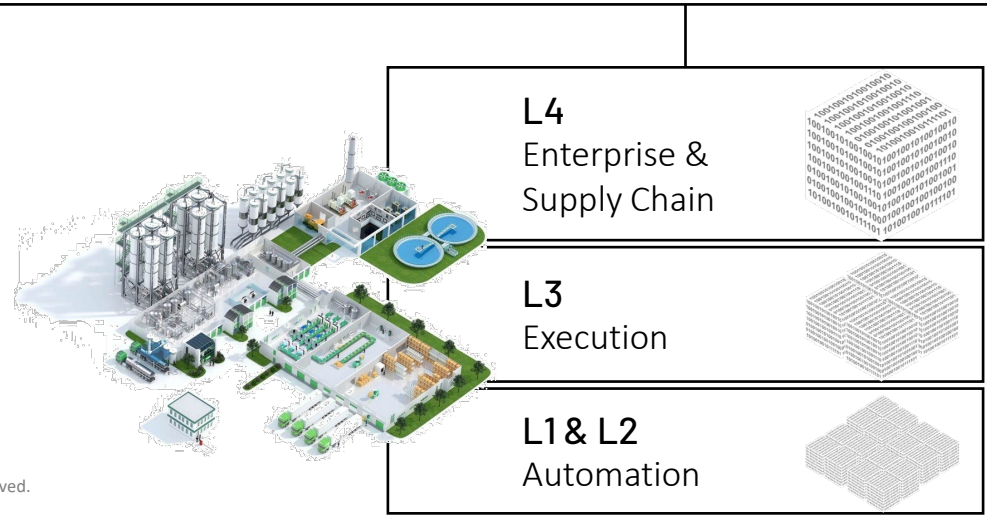


**PREDICT product quality / velocity**  
Impact of materials and operating parameters

**Planet**  
"Define the boundary Sustainability conditions"



**PREDICT attainment of goals**  
Foresee and accelerate impact on ESG and sustainability





# The digital transformation challenge

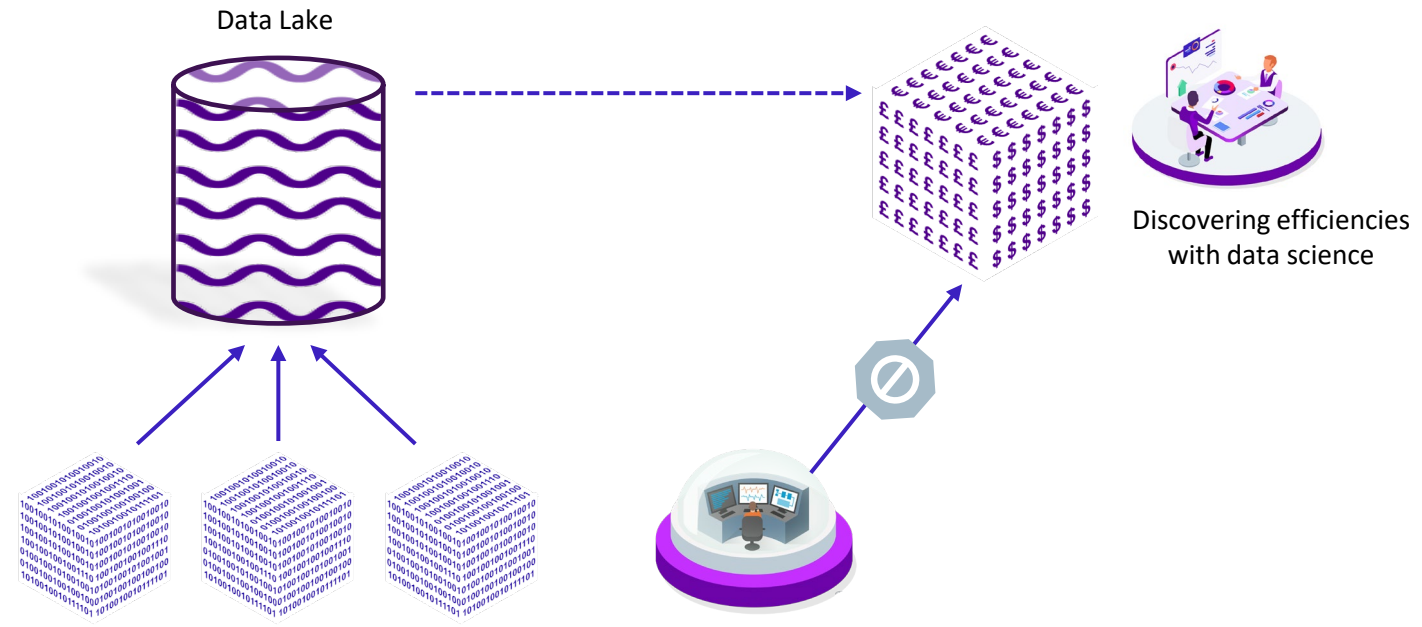
**\$2.8 trillion**  
The amount spent on digital transformation in 2025, double 2020.

**70%**  
Of digital transformations fall **short of their objectives**

**84%**  
Of companies **fail at digital transformation**

**7/10**  
Say digital transformation progress has **slowed or stalled**

Digital transformation Wave 1





# Understanding your objective

## Digitize

- Electronic capture
- Digital engagement
- IoT cost-effective capture

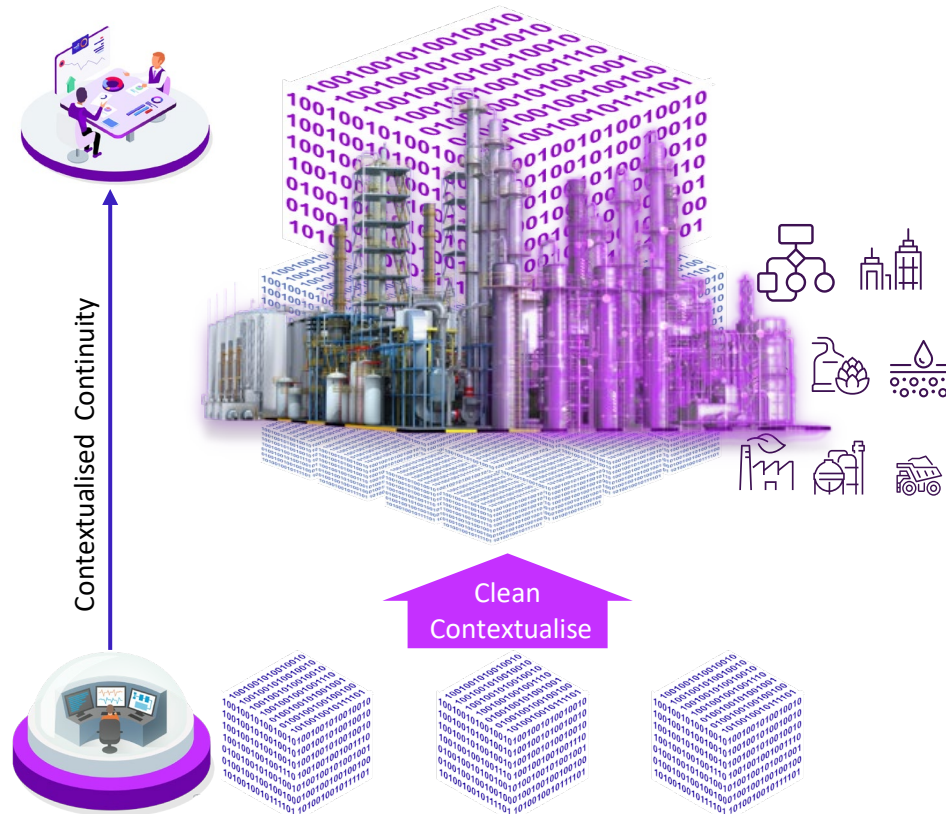
## Digitalization

- Context
- Knowledge
- Experience

## Digital Transformation

- New ways of working + reduce wasted work
- Outward thinking + value creation
- Customer centric
- Timely + Adaptable

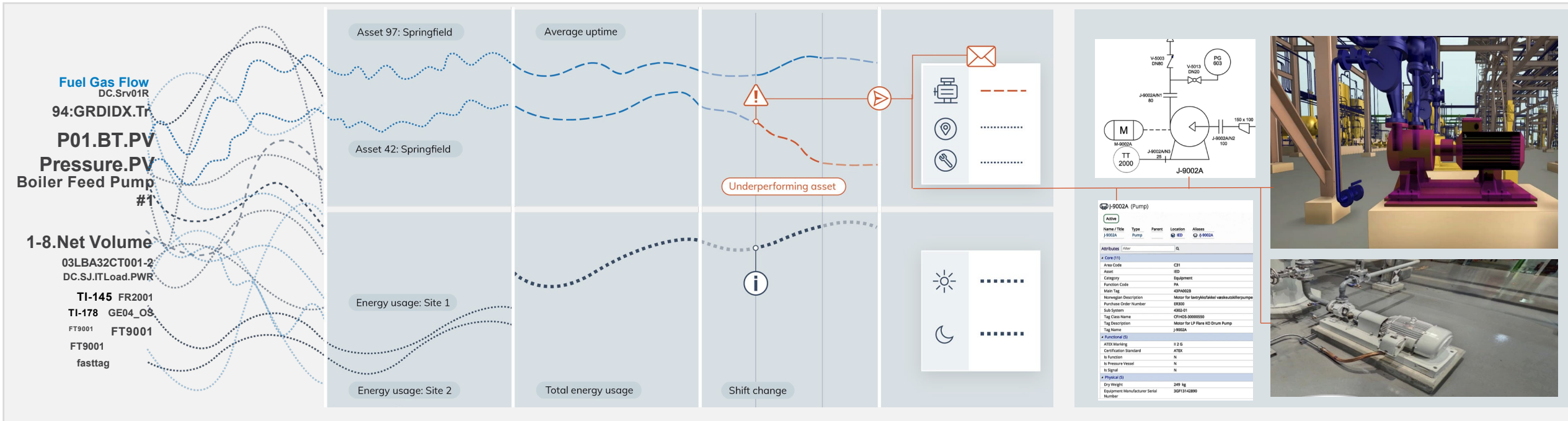
## Digital transformation Wave 2



**SYSTEMS OF RECORD**  
perspective:  
The data value chain

# Asset digital thread – industrial information as a service

Individual services combined to form the digital thread



Streams

Asset context

Analytics

Notifications

Lifecycle

Spatial context

Use case by  
CONNECT endpoints

Services

Data Streams

Data Enrichment

Reference Content

Local Situation (3D, Laser)

### People

Engagement

58%

### Profitability

OPEX	CAPEX
160.1m	240.3m
45%	78%

Vs. Budget Variance

### Performance

Production Volume

Renewable	20	TWh ▲
Non Renewable	11	TWh ▼

75%

Asset Availability All Facilities

### Efficiency

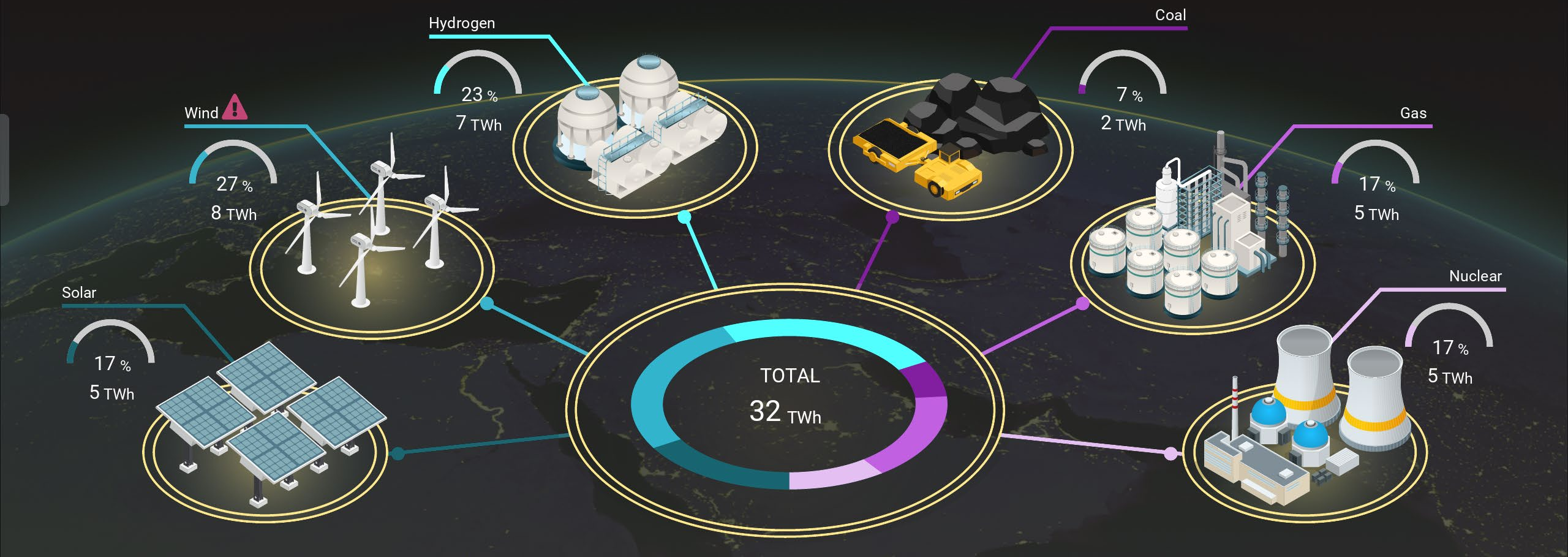
Critical Milestones Schedule Index	79%	▲
Project Schedule Index	50%	▼

2.72 Pts

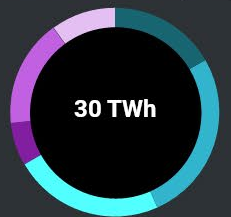
Procurement Cycle Time Shareholder

### HSE

- A Accountability Compliance
- B Asset Integrity Compliance
- C Flaring Intensity

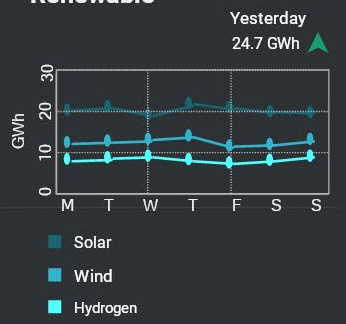


### Total Generation (YTD)

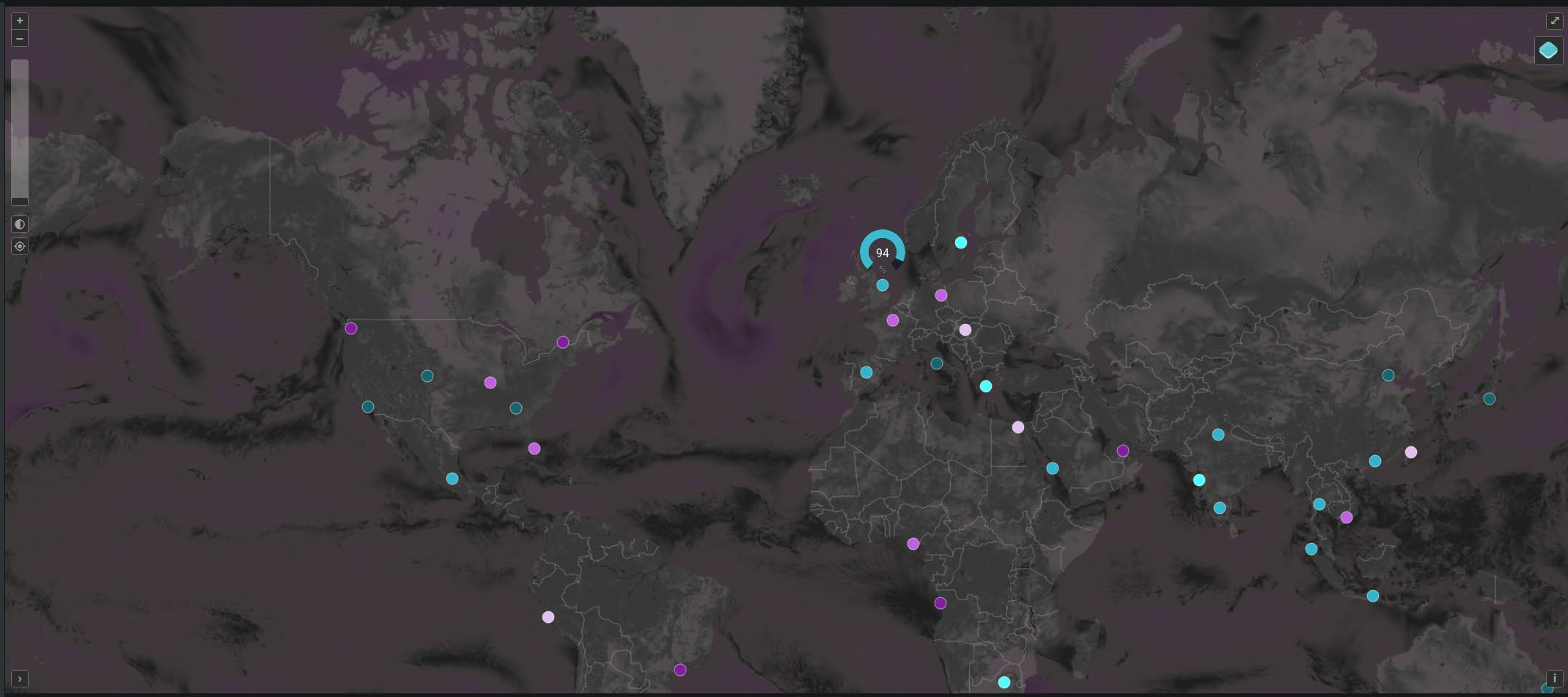
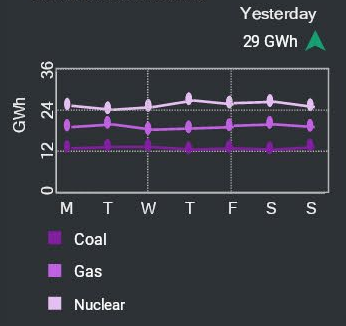


Solar	5 TWh	(17%)
Wind	8 TWh	(27%)
Hydrogen	7 TWh	(23%)
Coal	2 TWh	(7%)
Gas	5 TWh	(17%)
Nuclear	3 TWh	(10%)

### Renewable

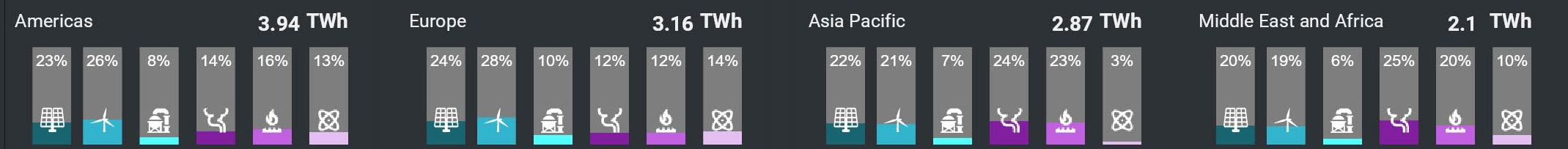


### Non Renewable



Selected KPI:  (Size based on count)

Legend: Solar (dark teal), Wind (medium teal), Hydrogen (light teal), Coal (dark purple), Gas (medium purple), Nuclear (light purple)



Revenue - Monthly **62605.3 \$**

Revenue - Daily **1533.7 \$**

Daily Energy **41.6 %**

Active Power **8029.7 MW**

**Power Transmission**

Power Flow **84.3 MW**  
 Current **0.8 kA**  
 Voltage **70.23 kV**  
 Frequency **60 Hz**

**Plant Load Factor**



10/15/2024 12:00:00 am

**Sunny**  
 Temperature ## °F  
 Pressure 1012 mbar  
 Wind Speed ## m/s

Mon	Tue	Wed	Thu	Fri	Avg Temp	Avg Wind Speed	Wind Direction
56 °F	59 °F	61 °F	62 °F	61 °F			
10 m/s	13 m/s	12 m/s	12 m/s	14 m/s			

**GE01** **Running**

1.1 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE02** **Running**

1.2 MWh  
317.2 V  
60.0 Hz  
0.0 OMR

**GE03** **Running**

1.2 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE04** **Running**

1.2 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE05** **Running**

1.2 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE06** **Running**

1.2 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE07** **Stopped**

0.1 MWh  
385.0 V  
50.0 Hz  
0.0 OMR

**GE08** **Running**

1.2 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE09** **Running**

1.2 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE10** **Running**

1.2 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE11** **Running**

0.8 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE12** **Running**

0.9 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE13** **Running**

0.9 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE14** **Running**

0.9 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE15** **Running**

0.9 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE16** **Running**

0.9 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE17** **Running**

0.9 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE18** **Running**

0.9 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE19** **Running**

0.9 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE20** **Running**

0.9 MWh  
321.0 V  
60.0 Hz  
0.0 OMR

**GE21** **Running**

0.8 MWh  
328.7 V  
0.0 Hz  
0.0 OMR

- Home
- Browse
- Create
- Recently Viewed

# Get started below

Use our powerful search to quickly view asset information, KPIs, and sophisticated analysis.

Your search produced a lot of results. Here are the first 150. Limit the results by applying filters.

Data Tags (100)

- ...tellavi.Chiller.Product Inlet Temperature.Value (17).R\_199\_Packaging Line 1 CEH  
Chiller.Product Inlet Temperature.Value (17).R\_199\_Packaging Line 1 CEH
- Intellavi.EdgeSRV1.PackagingLine.M.Availability  
PackagingLine.M.Availability
- Intellavi.EdgeSRV1.PackagingLine.N.OEE  
PackagingLine.N.OEE
- Intellavi.MQTT1.M5StickCPlus2-Data.\$yDegS  
MQTT1.M5StickCPlus2-Data.\$yDegS
- Intellavi.PI\_AZEJWCDSPPIDF\_1712  
GE02.Nacelle Position | degree

[Show more](#)

Equipment Tags (25)

- 40-15D-VT-66012-BDU3.5  
Line
- 40-15D-VT-66012-BDU3.6  
Line
- 40-15D-VT-66016-ADP3  
Line
- 40-15D-VT-66023-ADK3  
Line
- 40-15D-VT-66023-ADK3.2  
Line

[Show more](#)

Filter By

**Entity Type (6)**

- Assets
- Data Tags (100)
- Asset Stream Ref
- Saved Content
- Equipment Tags (25)
- Documents (25)

**Length (10)**

**Manufacturer (10)**

**Sourced from (3)**

**Engunit includes (39)**

**Dimension (13)**

**Tag Type (3)**

Applications Content

### GE01 - Powers

893 views  
Modified: 26/9/2023 13:39  
charles.navarrete@aveva.co

### GE01 - Dashboard

560 views  
Modified: 16/7/2024 15:16  
dan.lopez@aveva.com

★

530 views  
Modified: 16/9/2024 16:26  
manuel.meijueiro@aveva.com

491 views  
Modified: 19/7/2024 14:46  
bagdevi.moharana@aveva.com

356 views  
Modified: 16/9/2024 15:35  
jean-pierre.caron@aveva.com

### ...a Turbine Status

318 views  
Modified: 14/2/2024 17:19  
lori.warda@aveva.com

- Home
- Browse
- Create
- Recently Viewed

# GE01

Yorkshire > Hornsea Wind Farm > GE01

Overview | (Site 512) Monitoring D... | GE01 - AdvanceAnalytics | GE01 - Dashboard | GE01 - Maintenance | GE01 Alarm Analysis D... | GE01-GE-Wind Turbine ... | GE01-Turbine Informati... | >

### Info

**Active**

Asset Info (2)

Description: Description not defined

Asset Type: Power - Wind - Turbine

Engineering Info (5)

Name / Title: Offshore Wind Turbine - Monopile

Type: Wind Turbine

Parent: WTP

### Attributes

Model: Hornsea\_Wind\_Farm

Serial Number: OWT258001

Core Data (7)

Originator: ARB

Project Code: Power-Wind

System Code: WTP

Tag Class: Wind Turbine

Tag Description: Offshore Wind Turbine - Monopile

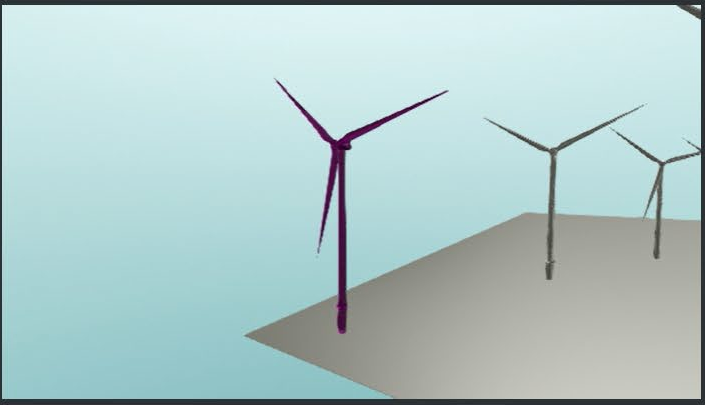
### Status Board

15/10/2024 00:00:00 - 15/10/2024 07:55:47

	CURRENT VALUE	TREND
Hornsea Wind Farm.Variable Power Price Hourly	36.299	↘
GE01.Drive Train Acceleration	40.903	↘
GE01.Tower Acceleration	58.825	→
GE01.Availability	0	→

### 3D Models

Hornsea\_Wind\_Farm



### Relationships

- > has dataset (1)
- > is a part of (1)
- > is an assembly including (8)
- > is located in (2)
- > is referenced by (6)

### Documents

Select Document

**Id:** 00-ACA-X01 Hornsea Single Line Diagram  
**Name:** 00-ACA-X01 Hornsea Single Line Diagram  
**Type:** Single Line Diagram

**Id:** Turbine Components  
**Name:** Turbine Components  
**Type:** Specification

**Id:** Turbine Schematic  
**Name:** Turbine Schematic  
**Type:** Layout Drawing

**Id:** VendorDataSheet  
**Name:** VendorDataSheet

### Parts

Parts (0)

### Associated Content

- Home
- Browse
- Create
- Recently Viewed

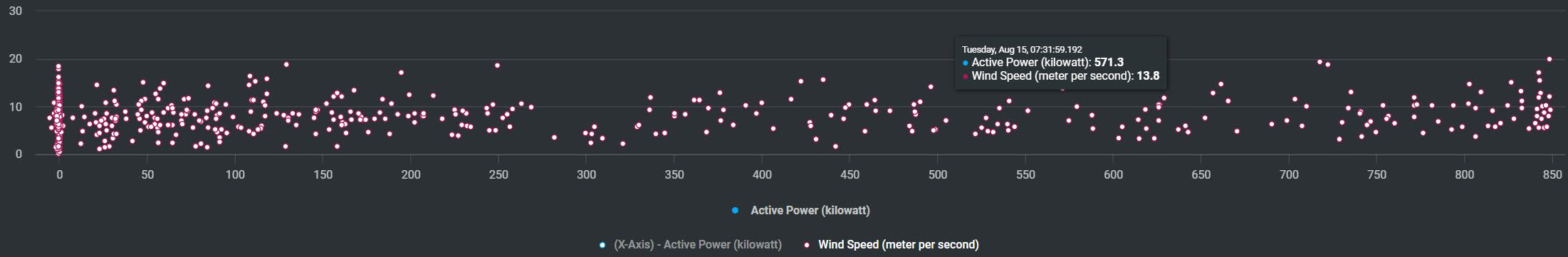
# GE01

Yorkshire > Hornsea Wind Farm > GE01

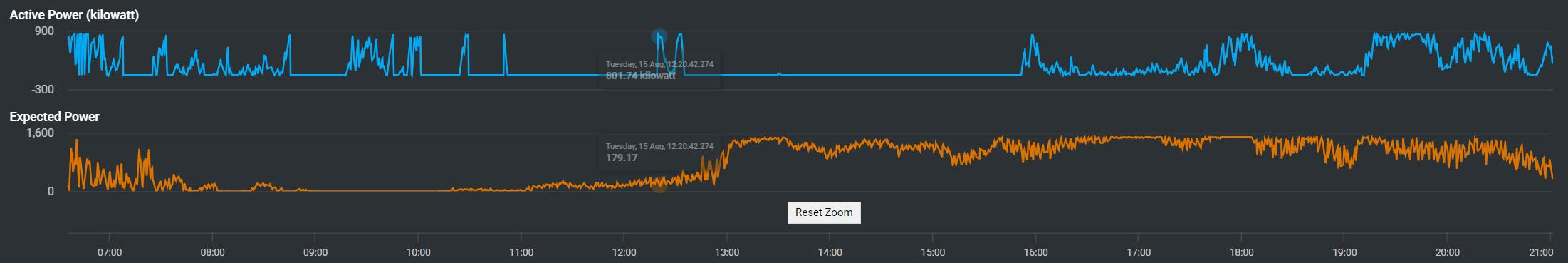
- Overview
- (Site 512) Monitoring D...
- GE01 - AdvanceAnalytics**
- GE01 - Dashboard
- GE01 - Maintenance
- GE01 Alarm Analysis D...
- GE01-GE-Wind Turbine ...
- GE01-Turbine Informati...

## Active Power vs Wind Speed

15/08/2023 06:35:32 - 15/08/2023 21:01:45



15/08/2023 06:35:32 - 15/08/2023 21:01:45



- Home
- Browse
- Create
- Recently Viewed

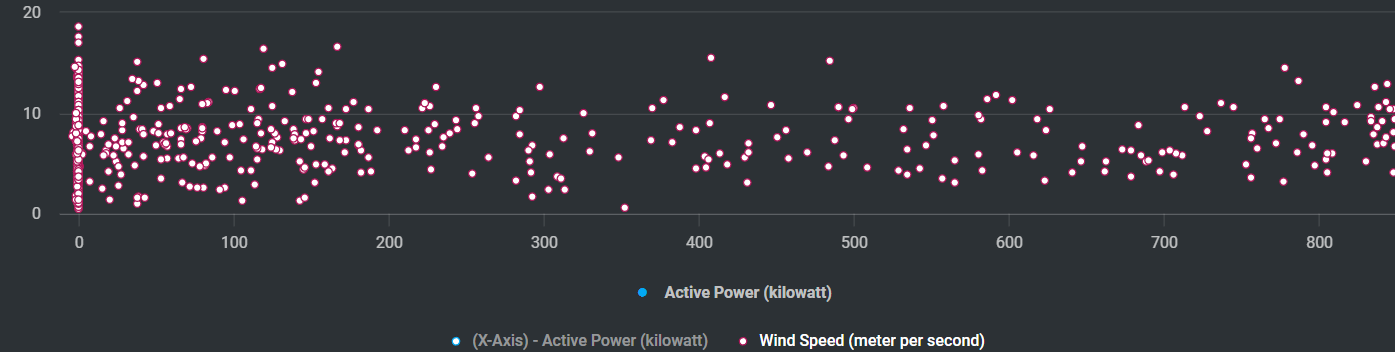
# GE01

Yorkshire > Hornsea Wind Farm > GE01

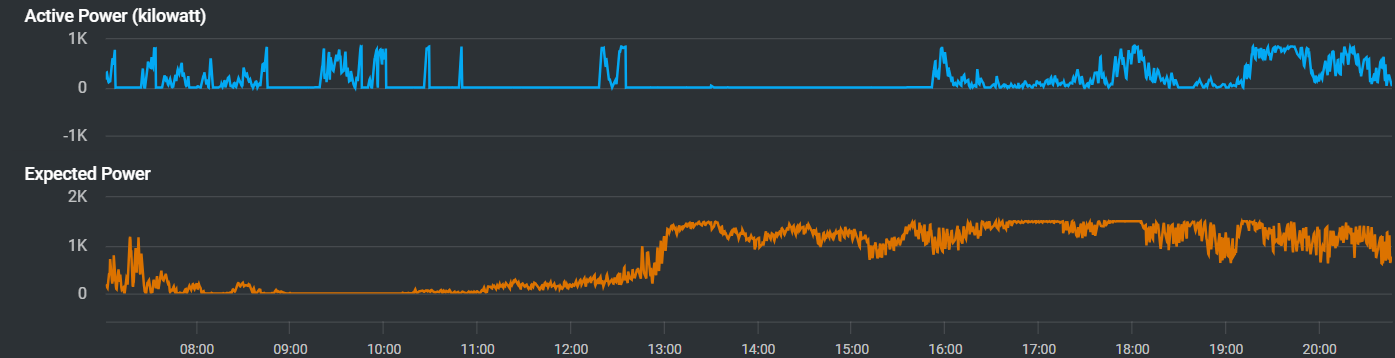
Overview (Site 512) Monitoring D... **GE01 - AdvanceAnalytics** GE01 - Dashboard GE01 - Maintenance GE01 Ai

## Active Power vs Wind Speed

15/08/2023 07:01:52 - 15/08/2023 20:46:45



15/08/2023 07:01:52 - 15/08/2023 20:46:45



## Industrial AI Assistant (Preview)

Industrial Assistant 08:00:01

Based on the available data for the wind turbine [GE01](#) at the Hornsea Wind Farm, here are some observations that might indicate potential issues:

### 1. Tower Base Temperature:

- The current value for the "GE01.Tower Base 1 Temperature" is 0 degrees Celsius. This could be an anomaly, as typically, the temperature should not be at absolute zero unless the sensor is malfunctioning or there is an issue with data reporting.

### 2. Blade Set Values:

- Both "GE01.Blade 1 - Set Value" and "GE01.Blade 3 - Set Value" have a current value of -0.5. This might indicate an issue with the blade settings or the sensors reporting these values.

### 3. Operating State:

- The "GE01.Operating State" has a current value of 15, with a range between 11 and 18. While this is within the reported range, it is important to verify if this state is normal for the current operational conditions.

### 4. Tower Deflection:

- The "GE01.Tower Deflection" has a current value of 2480. Without a unit or context, it's difficult to determine if this is within normal operational limits. However, significant deflection could indicate structural stress.

### 5. Torque and Line Frequency:

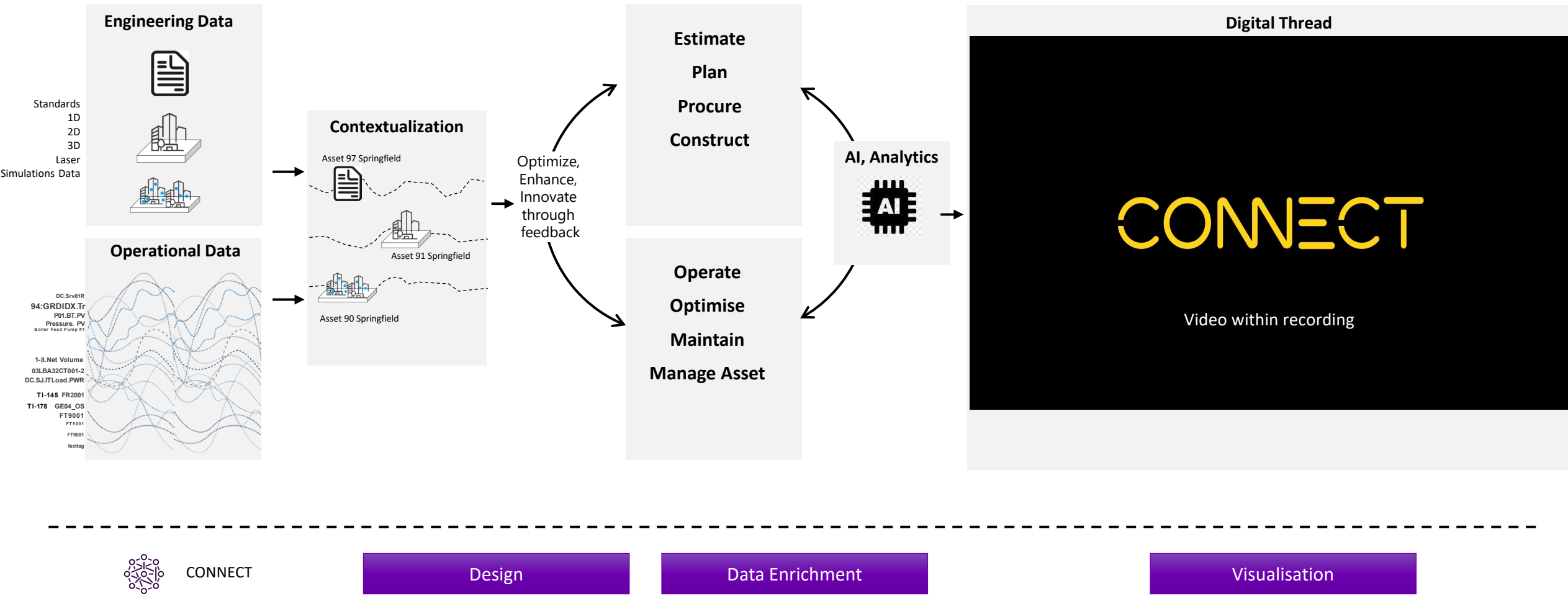
- The "GE01.Torque - Actual Value" is 31, and the "GE01.Line Frequency" is 59.99 Hz. These values seem normal, but should be cross-checked with expected operational parameters.

### 6. Wind Speed:

Enter your message...

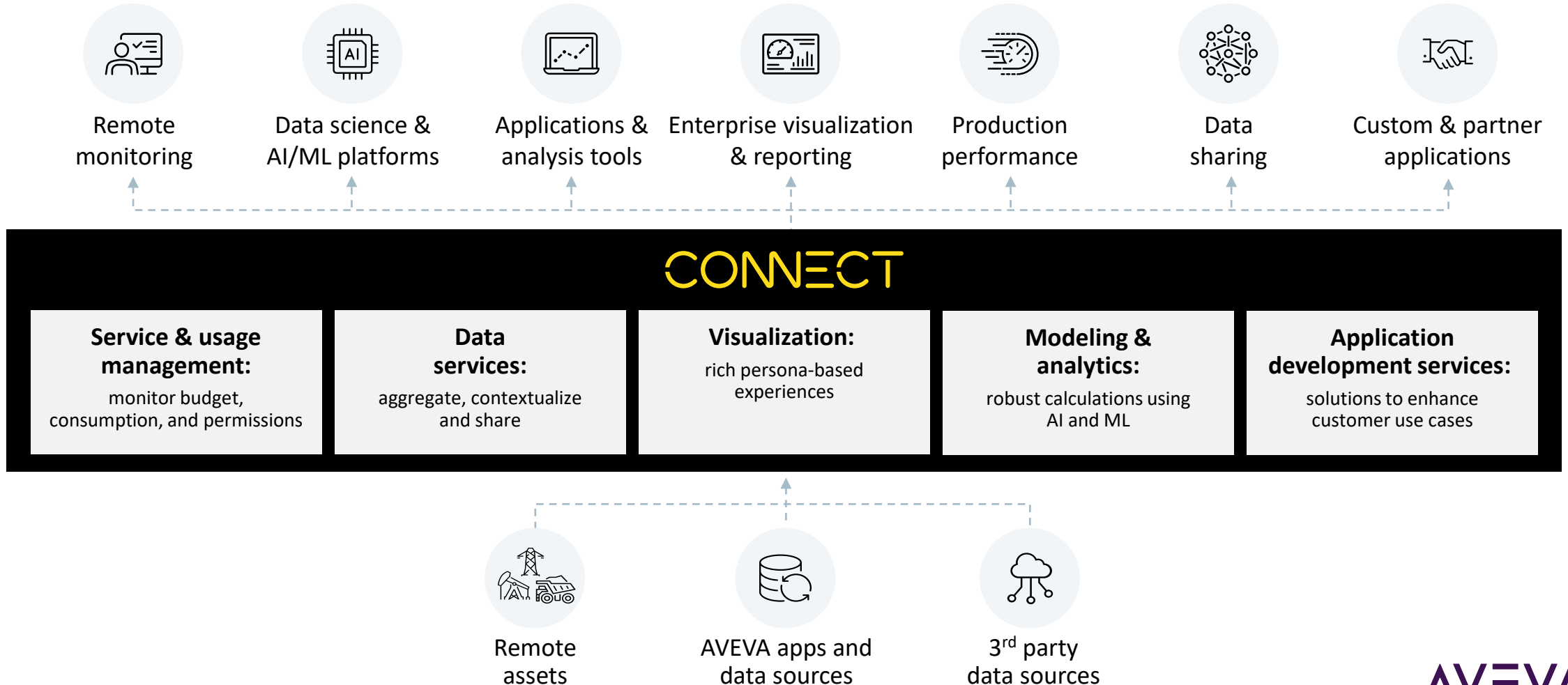
Send

# One contextualised visualization experience for the industrial twin

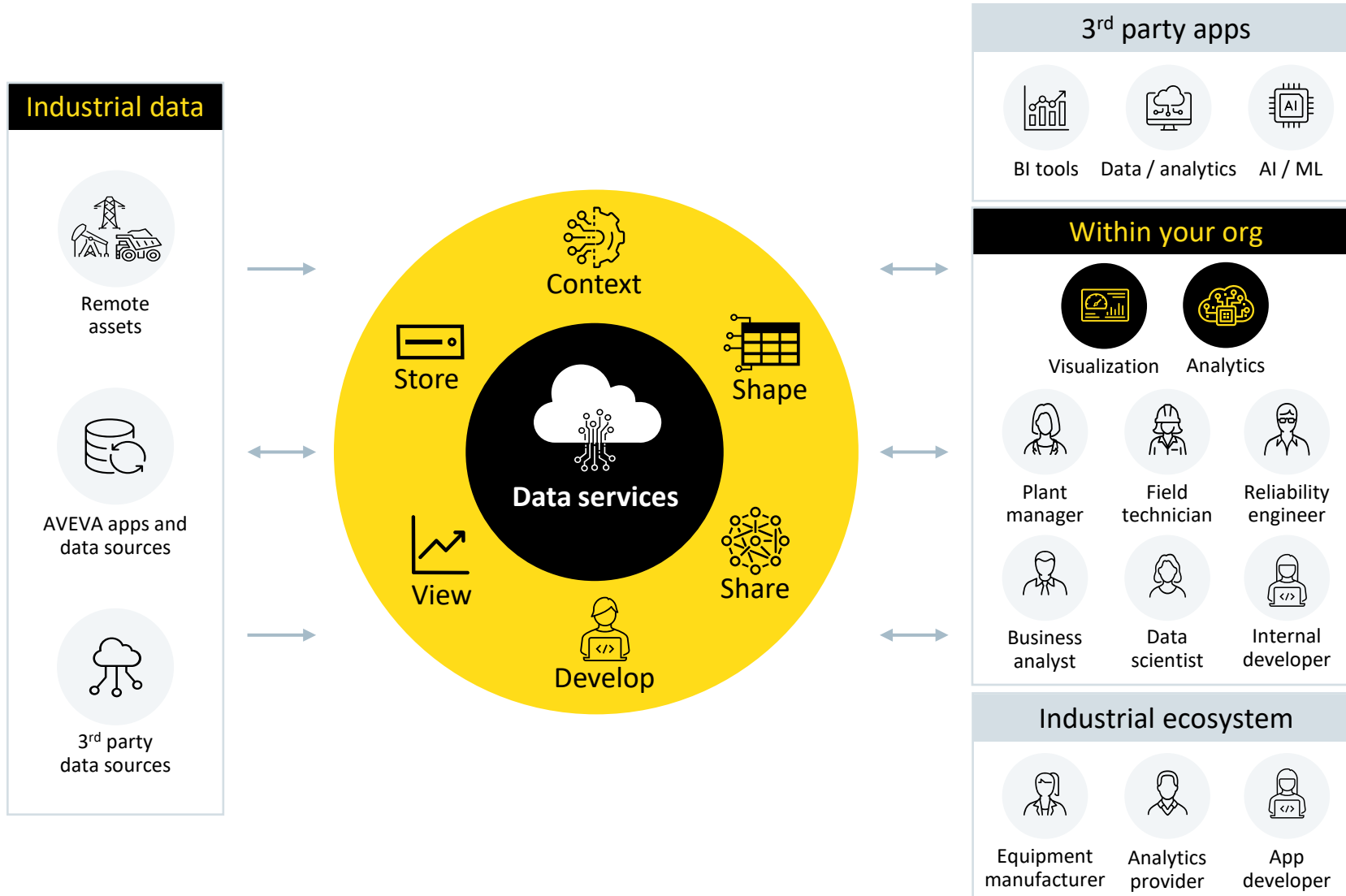


# CONNECT, our industrial intelligence platform

Open and neutral, providing rich data insights for your unified industrial ecosystem



# CONNECT, our industrial intelligence platform



## Aggregate, contextualize, and share real-time industrial data

- Build and manage a central data repository for BI, data and analytics, and AI / ML tools
- Securely share your industrial information with authorized users, extending the use of your existing data beyond your organization's four walls
- Enable 3<sup>rd</sup>-party providers to access real-time industrial data for customized services and applications









# CONNECT data services

## The data management layer within CONNECT

Makes it easier to aggregate, store, enrich, access, analyze, and securely share real-time data to improve efficiency, sustainability and drive digital transformation.

### Value Propositions

 <b>Time to value</b> Ready to use SaaS, requires no development or integration and can start delivering value in hours, not months	 <b>Simplicity</b> Provides the easiest path to get industrial operations data to the cloud and optimized for OT data, at scale	 <b>Contextual</b> Handles any sequential data and allows raw data stream contextualization to support users from any functional area	 <b>Network security</b> Protects control networks with a separate data layer and one-way communication	 <b>Data security</b> Is a more secure, multi-tenant way of sharing data with granular control over what data is shared to which partners	 <b>Cloud solution</b> Is SaaS available via CONNECT and fully managed by AVEVA; nothing for you to manage or maintain
--	--	--	--	--	---

**Purpose-built for OT from the leader in industrial software solutions, ready for the enterprise**  
**Native integration to AVEVA PI System, AVEVA Historian, Edge Data Store, & connectivity to other data sources**



# CONNECT visualization



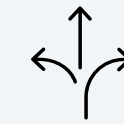
Bring together data sources and data types from across your organization



Breakdown information siloes and empower remote teams



Contain and normalize the scale and complexity of your data



Move from reactive mitigation to proactive assessment



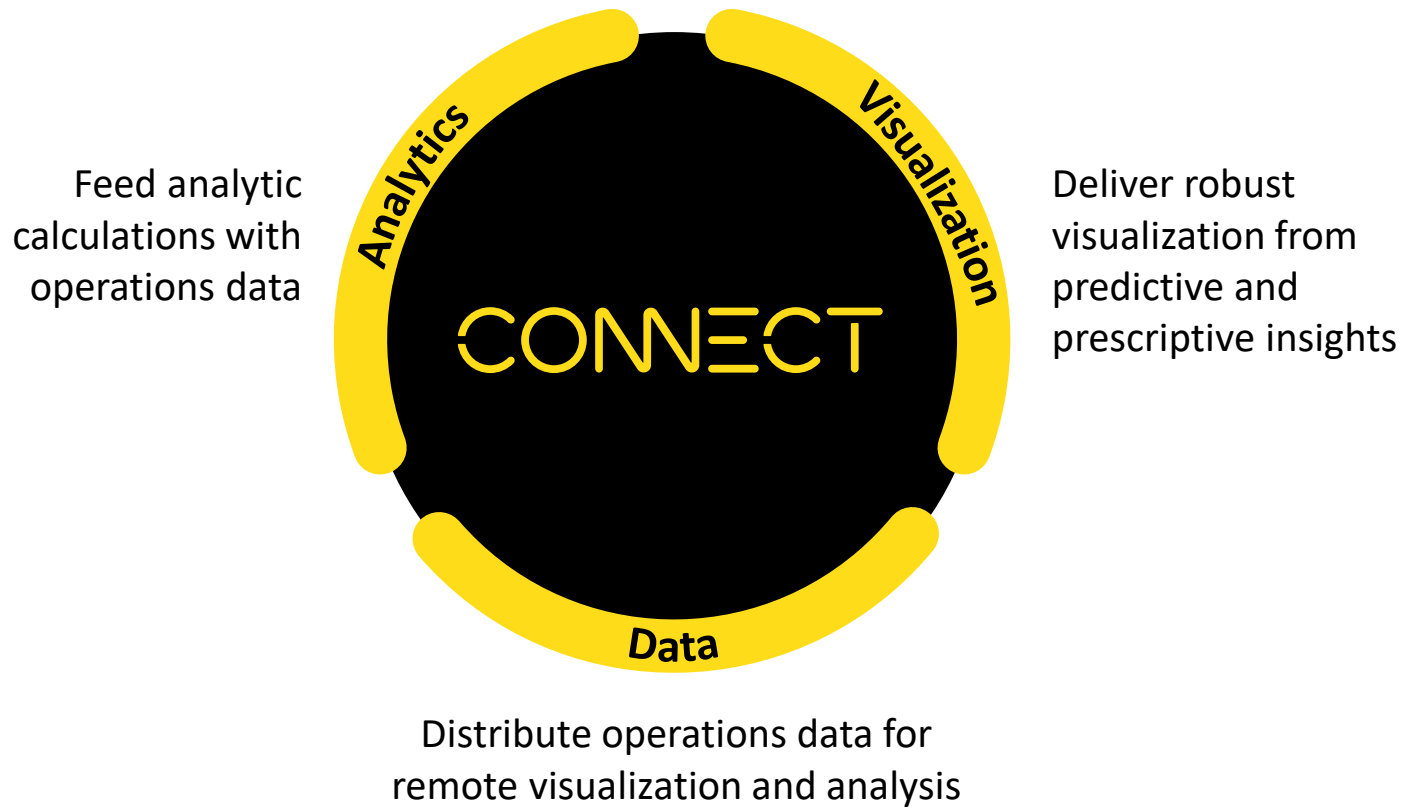
Increase information awareness across groups



Benefit from the power of collective intelligence



Improve data-driven decisions to increase operational efficiency, productivity, safety, sustainability, and asset reliability



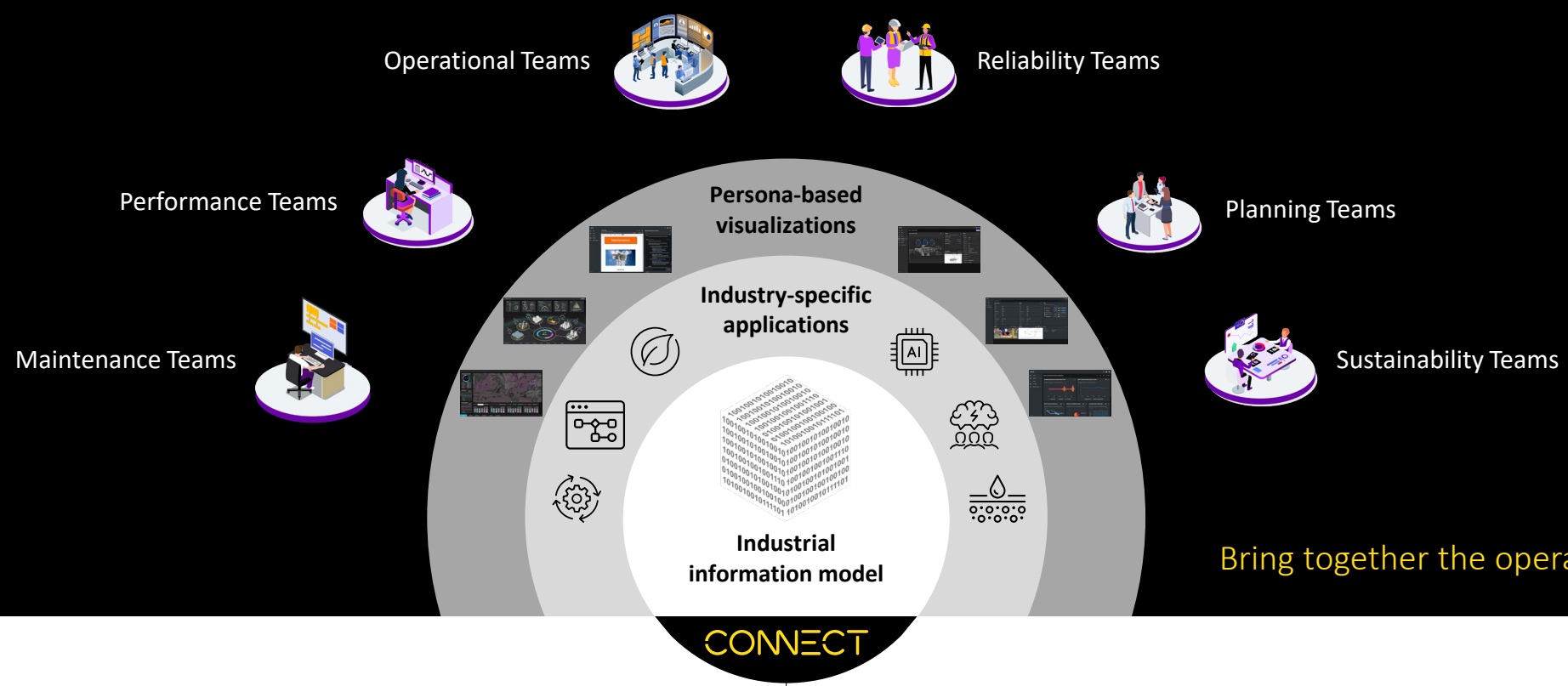
Central license and usage management for both cloud and on-premises applications



Build solutions that extend and enhance use cases

# Acceleration to enterprise unified value

Leveraging AVEVA's 50+ years of industrial experience



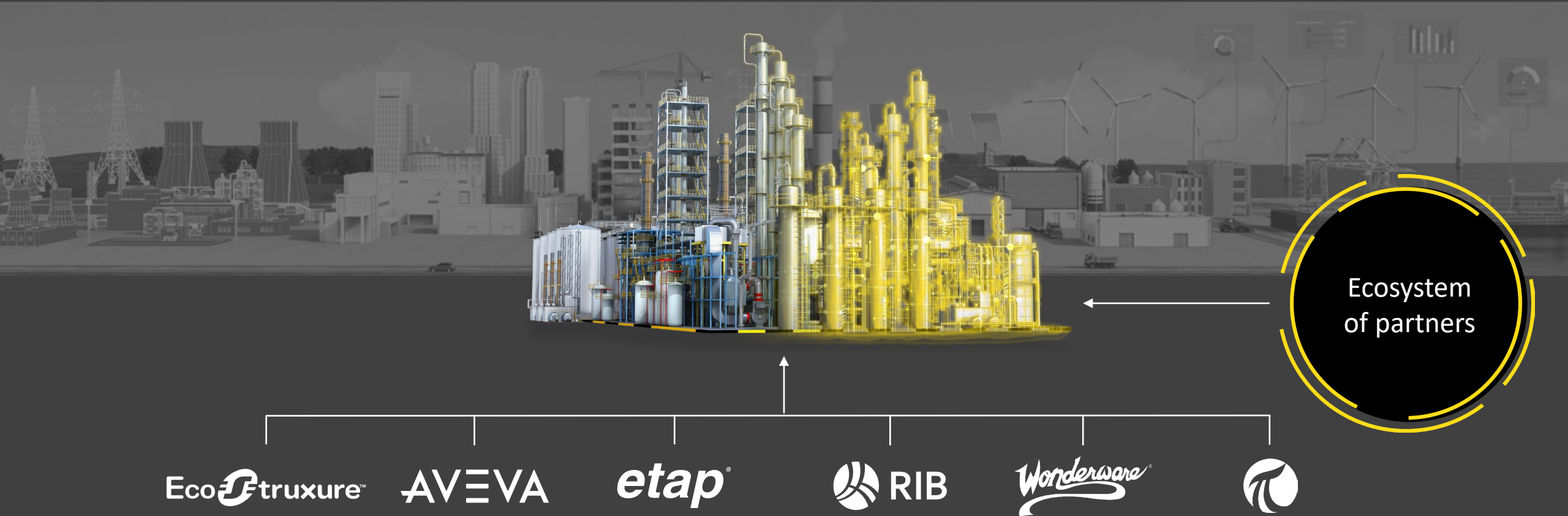
Bring together the operational enterprise





# CONNECT

Extending existing investments and capabilities



# Industrial intelligent twin enables innovation across the industrial lifecycle



DESIGN

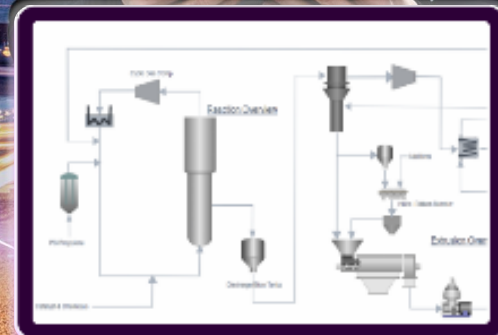


OPTIMIZE



BUILD

CONNECT



OPERATE

AVEVA

- Home
- Browse
- Create
- Configure
- Recently Viewed

# J-9002A

AF\_FPS02 > J-9002A

Overview 2D3D ARCanvas001 J-9002A-Dashboard001

### Asset Info

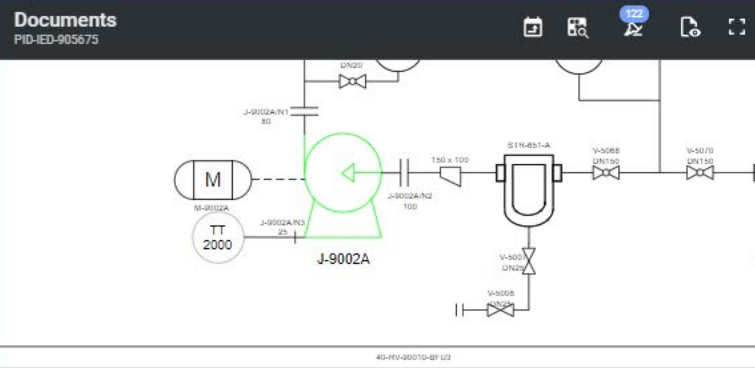
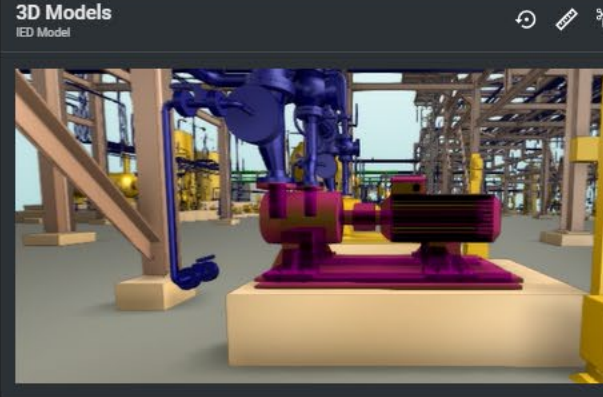
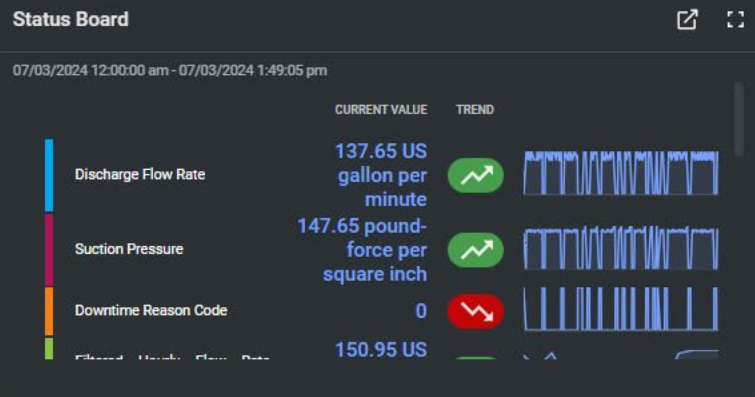
Description not defined

[Pump Condition Based Maintenance - Pump](#)

### Engineering Details

**Active**

Name / Title	LP Flare KO Drum Pump
Type	Pump
Parent	43
Location	C31
Aliases	/J-9002A



### Events

Work Order (2)

<a href="#">MWO-0032J9002A</a>	MWO-0032J9002A
<a href="#">MWO-0093452</a>	MWO-0093452

# Q&A

### Attributes

Cosphi	0.84
Dry Weight	249 kg
Height	388 mm
Width	601 mm
Nominal Diameter	435 mm
Rated Power	3.5 kW

Unlocking your Industrial Digital Twin

**Steve Parvin**  
[steve.parvin@aveva.com](mailto:steve.parvin@aveva.com)

**Daniel Crisp**  
[daniel.crisp@aveva.com](mailto:daniel.crisp@aveva.com)

- has document (1)
- has event (2)
- is a part of (1)
- is an assembly including (4)
- is located in (1)
- is referenced by (27)

### Parts

Motor, Non-Electrical (1)	
M-9002A	Motor
Piping Item, Miscellaneous (3)	
J-9002A/N1	
J-9002A/N2	
J-9002A/N3	





This presentation may include predictions, estimates, intentions, beliefs and other statements that are or may be construed as being forward-looking. While these forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could result in actual outcomes differing materially from those projected in these statements. No statement contained herein constitutes a commitment by AVEVA to perform any particular action or to deliver any particular product or product features. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect our opinions only as of the date of this presentation.

The Company shall not be obliged to disclose any revision to these forward-looking statements to reflect events or circumstances occurring after the date on which they are made or to reflect the occurrence of future events.

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 [@avevagroup](https://twitter.com/avevagroup)

#### ABOUT AVEVA

AVEVA is a world leader in industrial software, providing engineering and operational solutions across multiple industries, including oil and gas, chemical, pharmaceutical, power and utilities, marine, renewables, and food and beverage. Our agnostic and open architecture helps organizations design, build, operate, maintain and optimize the complete lifecycle of complex industrial assets, from production plants and offshore platforms to manufactured consumer goods.

Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life's essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

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