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AtkinsRéalis

OCTOBER 2024

Real-time operational efficiency savings

An LNG Case Study

Ben Firth - AtkinsRéalis

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We are a world-class engineering services and nuclear organization. We connect people, data and technology to transform the world's infrastructure and energy systems.

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Engineering a better future for our planet and its people.

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The Process Digital Twin

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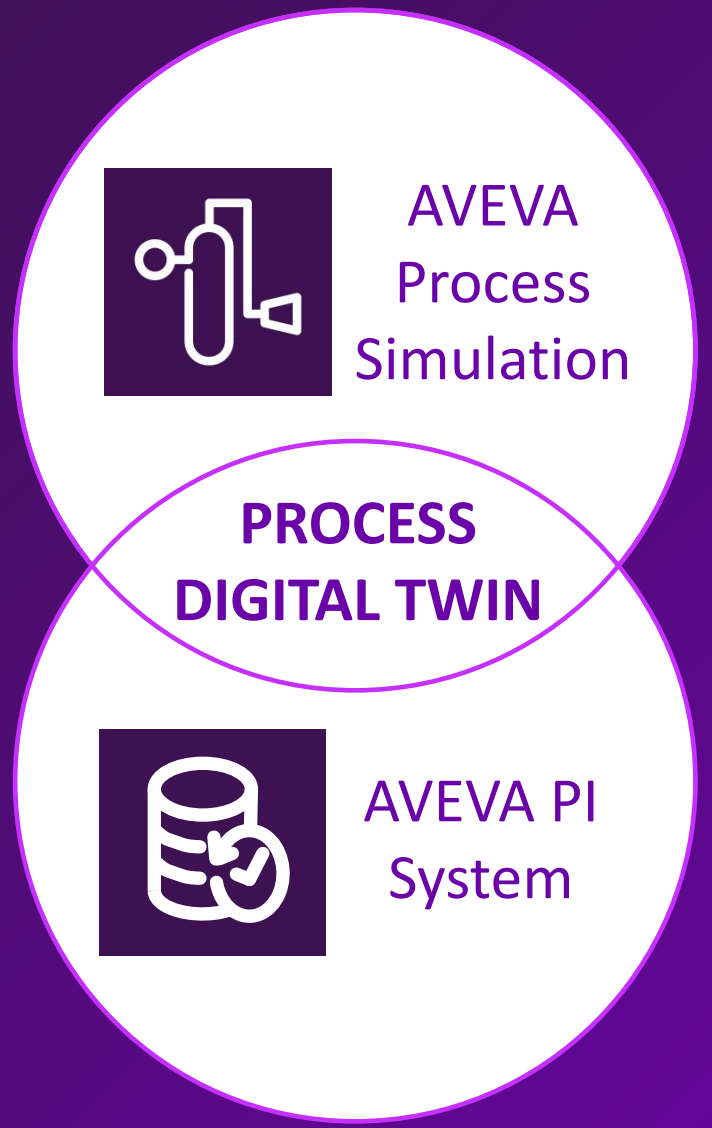
Live Process Digital Twin

$1M Savings through New Digital Offering

- Combining Aveva Process Simulation (APS) and Aveva PI System (PI) capabilities to offer clients a new Process Digital Twin offering
- Real-time, whole-site optimisation
- Proof of concept deployed at LNG site
- Electrical savings identified of ~$1M per year



Offering – Optimisation Tool

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AtkinsRéalis wanted to develop an offering which could:

Optimise sites and help them move towards Net Zero

Complement our existing process consultancy

Avoid bespoke software development

Deploy across the Industries we serve

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System Architecture

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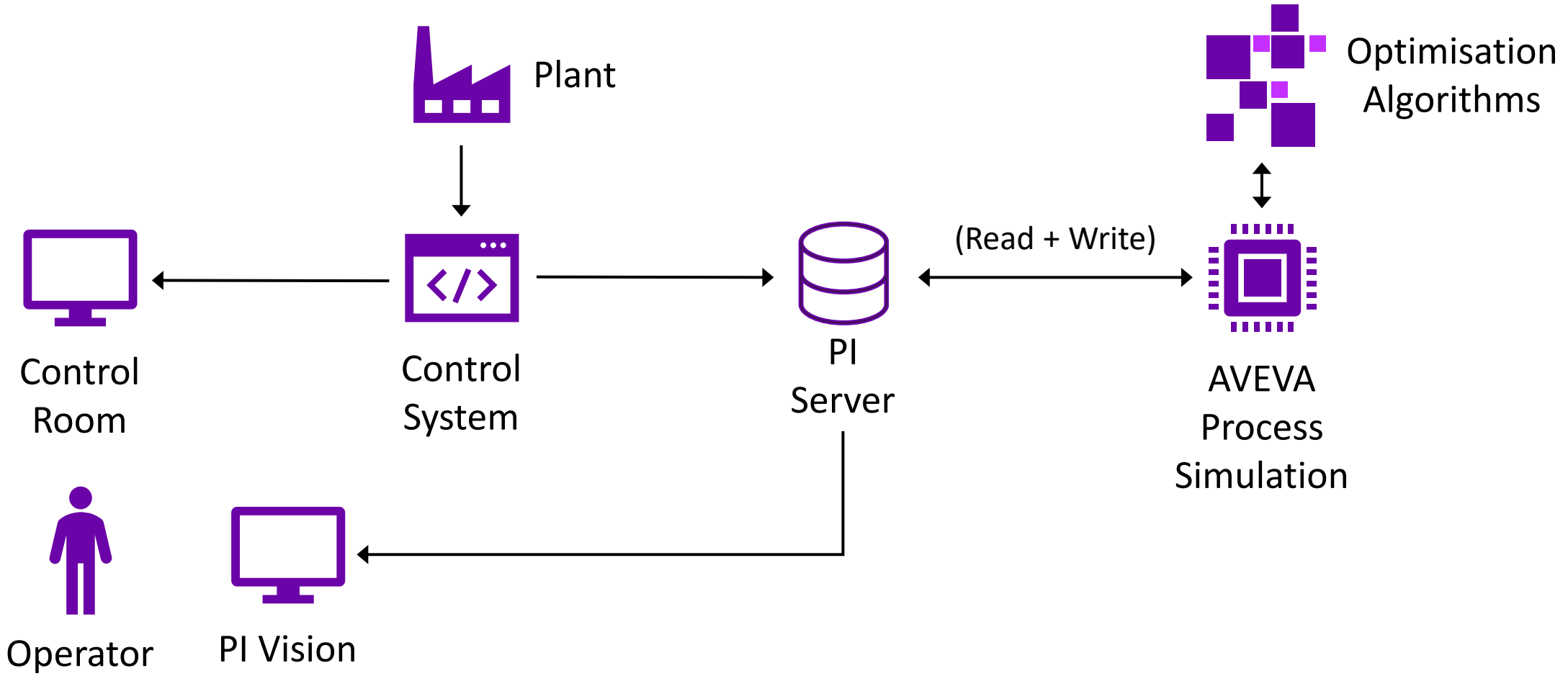

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LNG Terminals – An Ideal Industry for Optimisation

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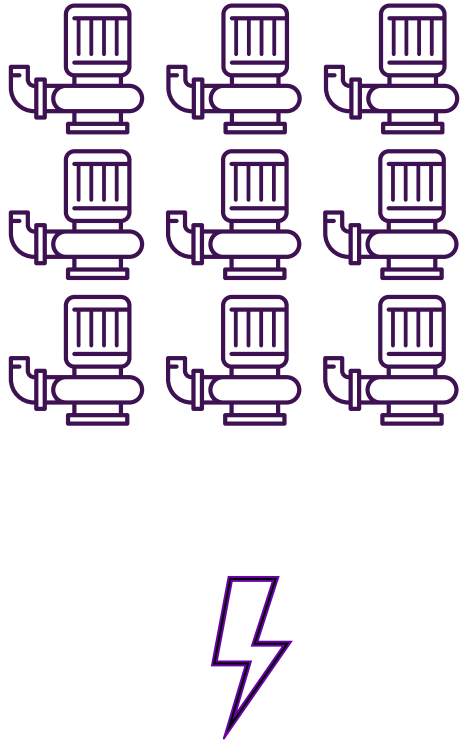
- Scale out process
- High electricity usage
- Setup highly sensitive to key variables
- Discrete changes required – not just set points



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Case Study - Dragon LNG

Digital Twin and Optimisation Tool

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Case Study – Dragon LNG

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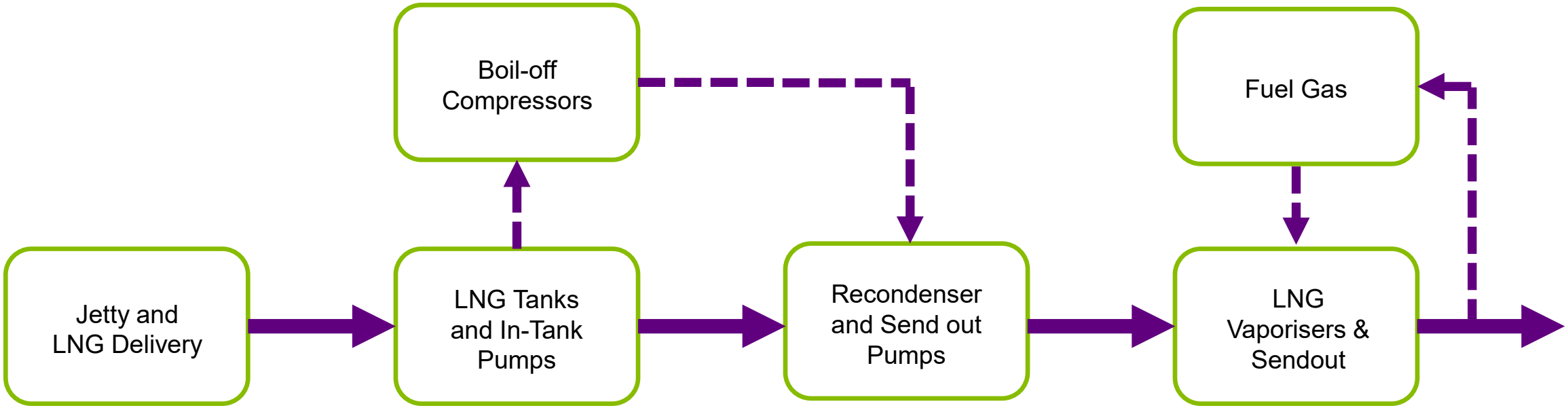
A “Typical” LNG Site:



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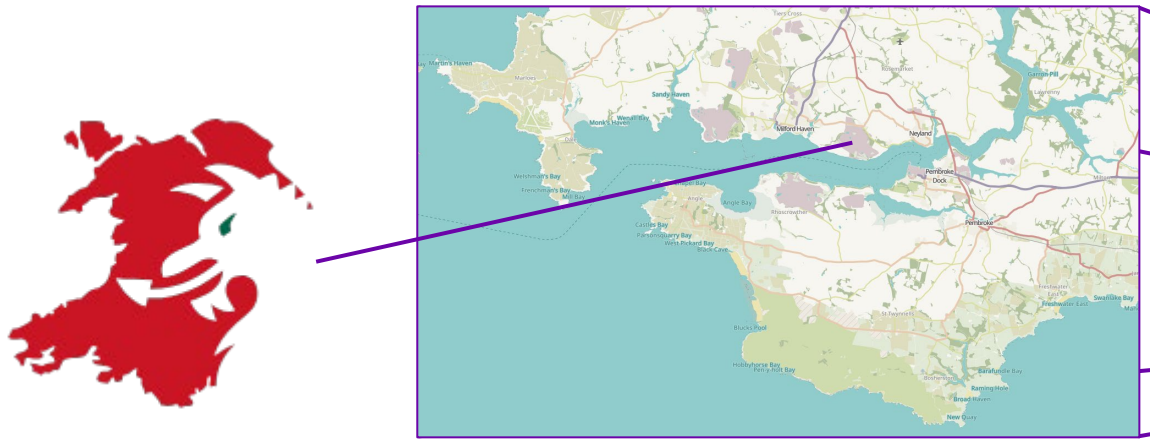
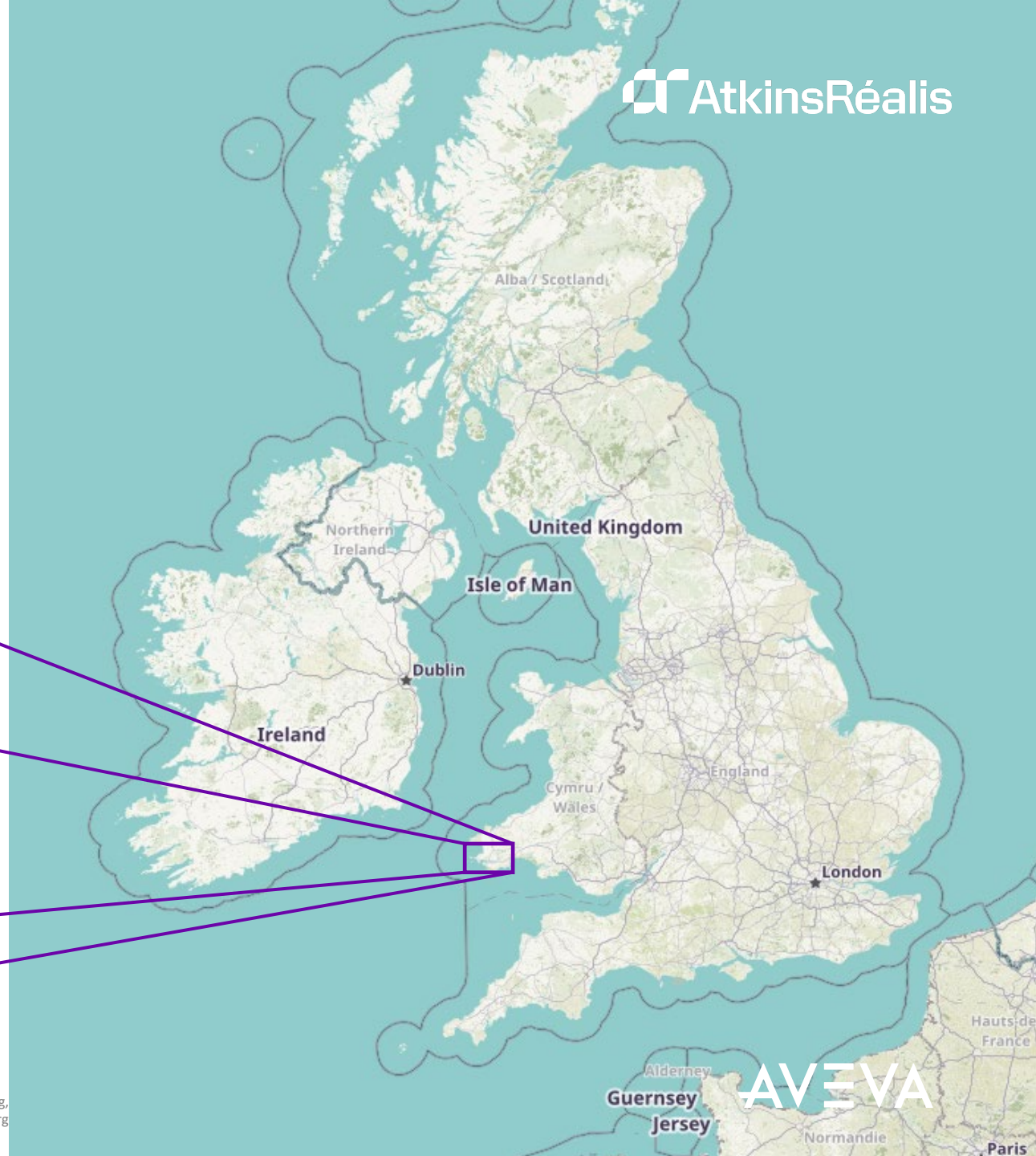
Case Study – Dragon LNG

The Site

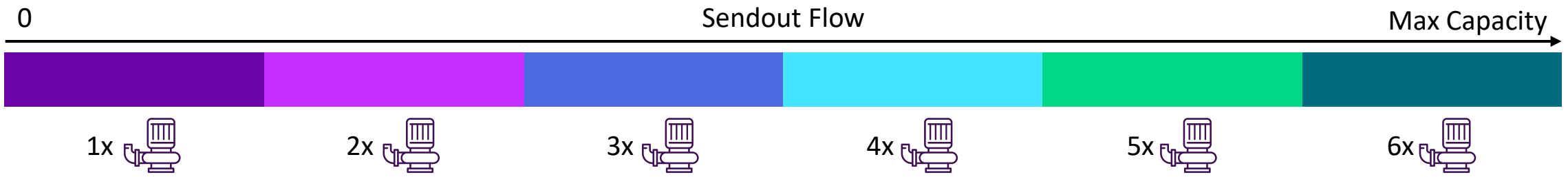
- LNG Terminal on Milford Haven, South Wales
- Ambition to be a Net Zero Terminal by 2029
- 320,000 m^3 capacity
- Vessels up to 217,500 m^3 (Q-Flex)
- 298 GWh/d (or 25.6 mcm/d) natural gas sendout





Case Study – Dragon LNG

The challenge of optimisation



- At design sendout pressure, composition, etc., we can base operations on their design capacity

Case Study – Dragon LNG

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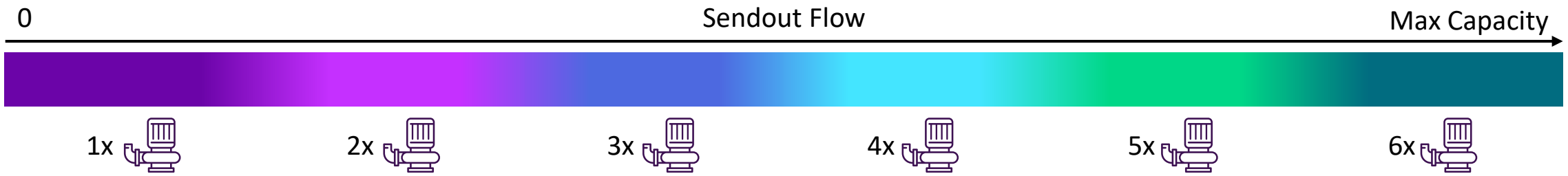
The challenge of optimisation



- At design sendout pressure, composition, etc., we can base operations on their design capacity
- But grid pressure deviates

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Case Study – Dragon LNG

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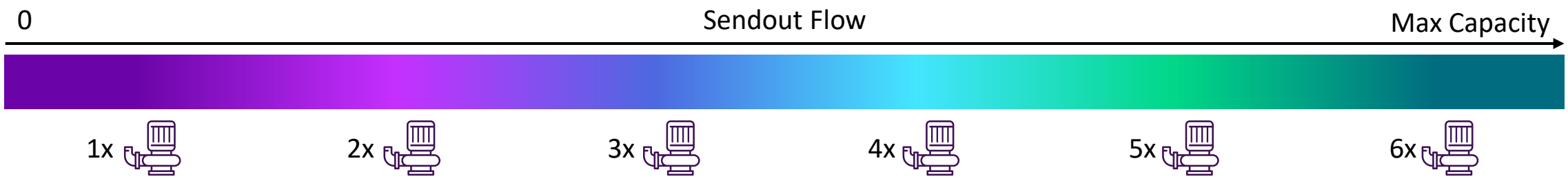
The challenge of optimisation



- At design sendout pressure, composition, etc., we can base operations on their design capacity
- But grid pressure deviates
- And every cargo is a different composition

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Case Study – Dragon LNG

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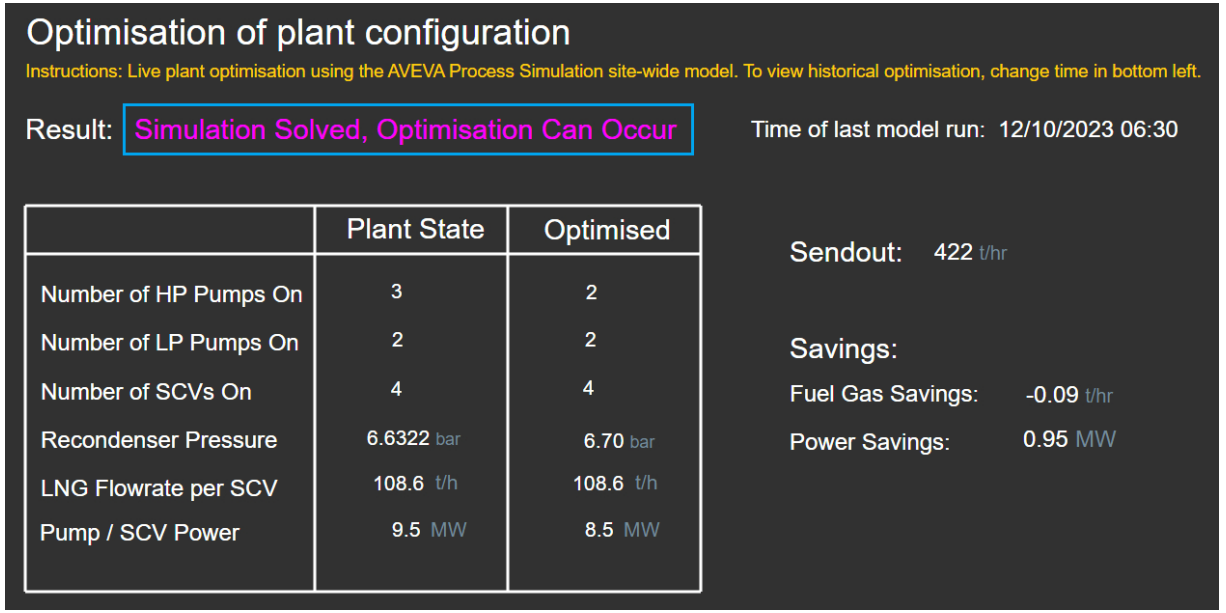
Optimisation Tool

- Compares current plant setup with several potential configurations
- Advises operators on an optimised feasible plant configuration.
- 5 years of data assessed
- Shown to match live plant output **over 97%** of the time
- Health monitoring of major equipment items and control valves



<3% failure rate due to instrument blips and ship unloading

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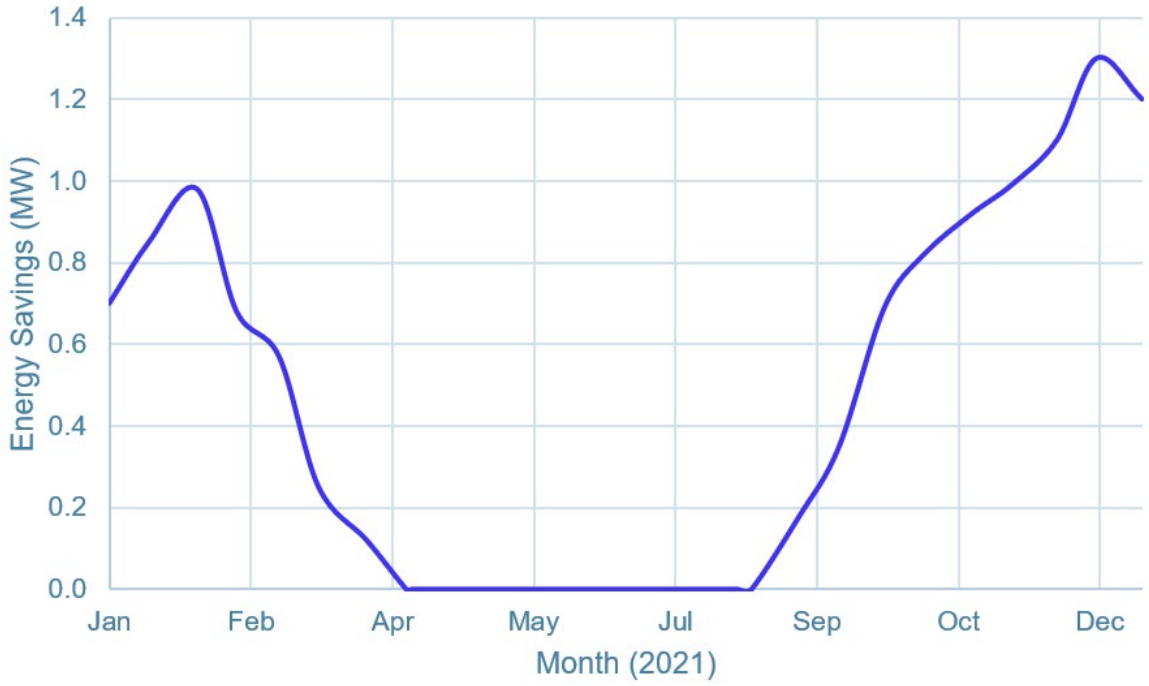
Case Study – Dragon LNG

Outcome: Significant Potential Savings

- Potential savings for Dragon LNG Limited across a year would have averaged between 0.5 – 0.7MW.
- Equated to **~$1M in cost savings per year**.
- Savings are more significant over the winter months where sendout rates are highest.
- More optimal configuration was available 60-80% of the time.



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What does this mean to you?

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A Proven Offering

Ready to roll out to our clients – The Process Digital Twin with APS and PI System

Confidence in Capability

Demonstrated Savings

Transferrable across Industries

PROCESS & POWER INDUSTRIES

AtkinsRéalis have developed a deployable offering to optimise live plant

Challenge

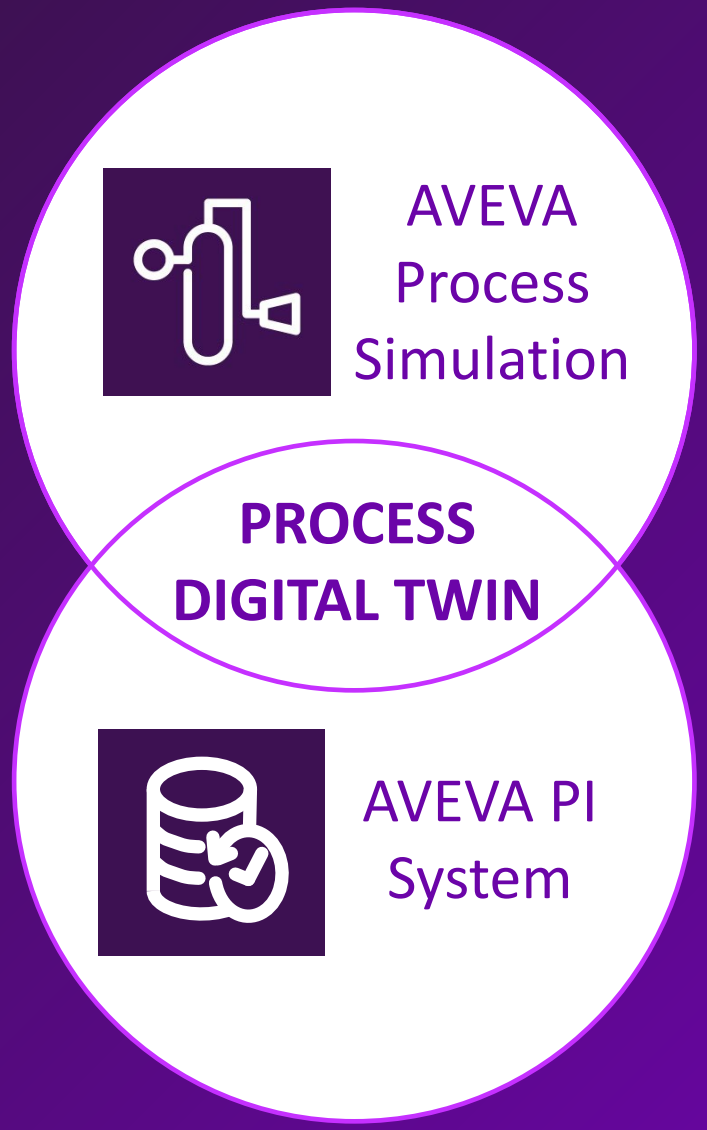
- Potential savings available but unclear how to obtain them
- Original design and operator guidance conservative
- Large volumes of product require high confidence in quality of output

Solution

- Combining our capability in AVEVA Process Simulation with AVEVA PI System to deliver an online process digital twin which achieves real-time, whole-site optimisation

Results

- **Identified $1M electrical savings**
- **Developed new commercial offering**
- **Confidence in results enable a savings share commercial model**



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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!

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ABOUT AVEVA

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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.

Named as one of the world's most innovative companies, AVEVA supports customers with open solutions and the expertise of more than 6,400 employees, 5,000 partners and 5,700 certified developers. The company is headquartered in Cambridge, UK.

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