

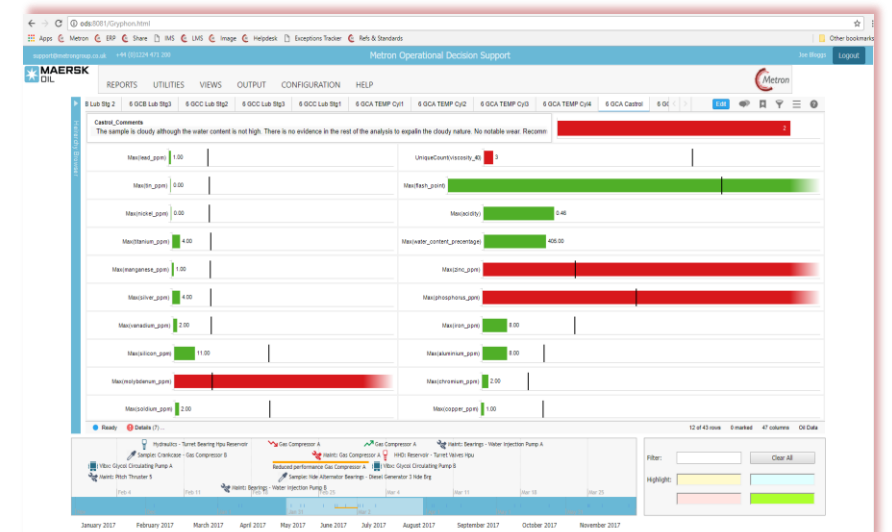
# How to satisfy emissions and performance objectives from rotating plant with obsolete control systems in a declining market.

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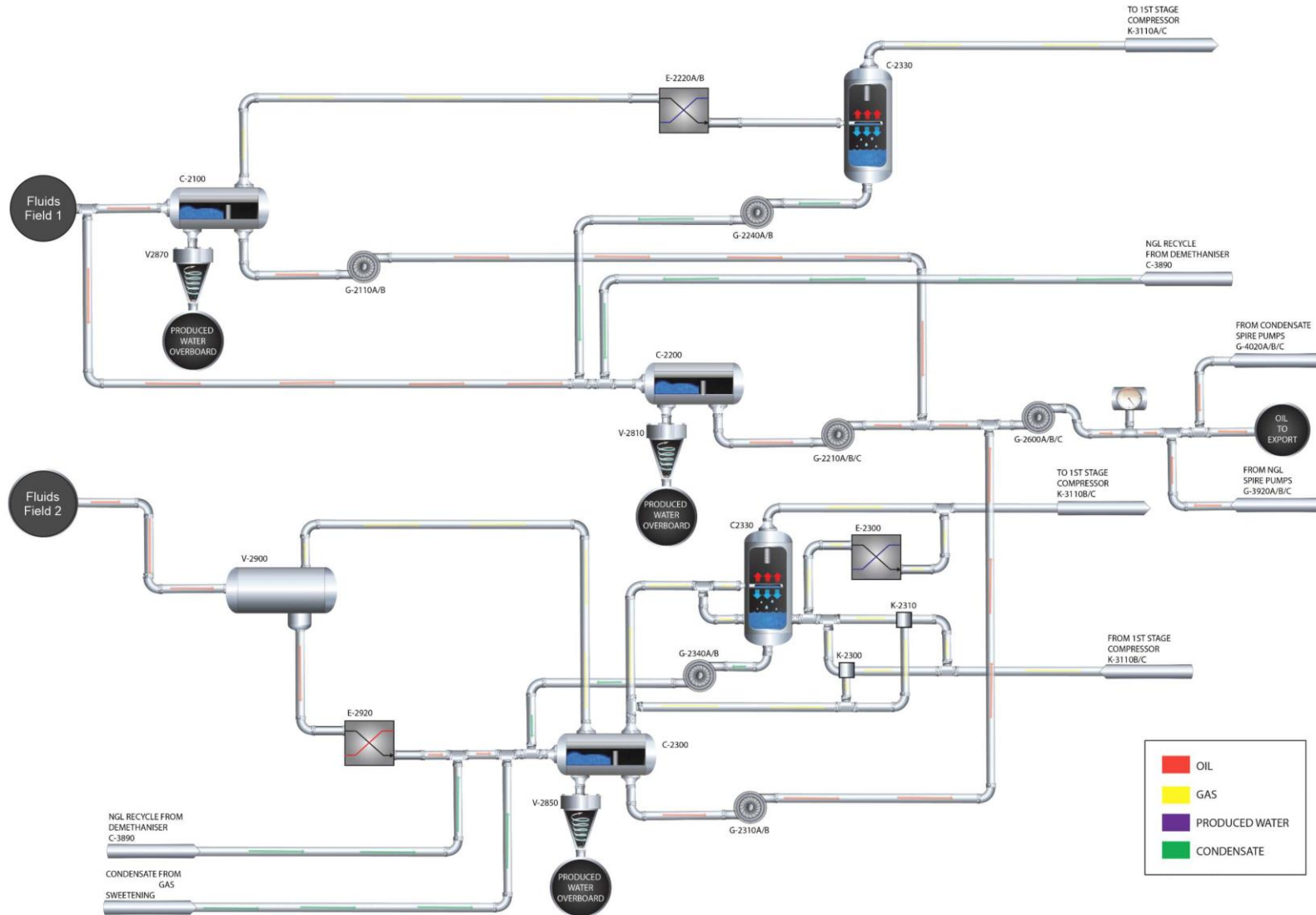
# Metron background

- ▶ An Engineering business
  - ▶ We support many issues where there is no alternative solution – we work it out
  - ▶ Extensive offshore application knowledge
  - ▶ A lot of fire-fighting
- ▶ Improving condition & performance of offshore plant
  - ▶ Typically rotating equipment that is critical to production and environmental performance
- ▶ Improving connectivity and system modelling to improve insight for future improvement / risk management
  - ▶ Help to reduce the fire-fighting and heartache as well as meet environmental performance targets



# Industry challenges

- ▶ Energy security
- ▶ Net-zero
- ▶ Mature basin
- ▶ Safe operation
- ▶ Investment stability
- ▶ All from existing plant



# Typical factors in production & emissions performance

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- ▶ Power generation
- ▶ Gas compression
- ▶ Rotating equipment control systems – typically old / not working / not maintained
- ▶ Flare
  
- ▶ No working systems and data > no measurement > no understanding > no improvement
- ▶ Numerous AI based tools and analysis techniques now available, but much of the source data is missing, erroneous or only allows a high-level interpretation

# How has the world changed?



- ▶ Changed operating regimes – less boepd
- ▶ Loss of historical data – acquisitions / mergers
- ▶ OEMs don't provide as much / any support for older and obsolete equipment
- ▶ Multi-national OEMs have refocused efforts elsewhere
- ▶ Technology is of an age that isn't taught
- ▶ You can't take your 1970s Ford Cortina to a modern Ford garage and have repaired...

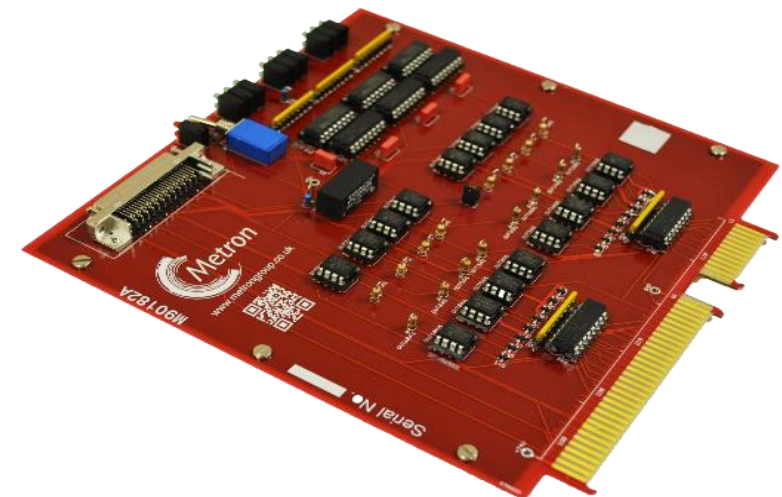
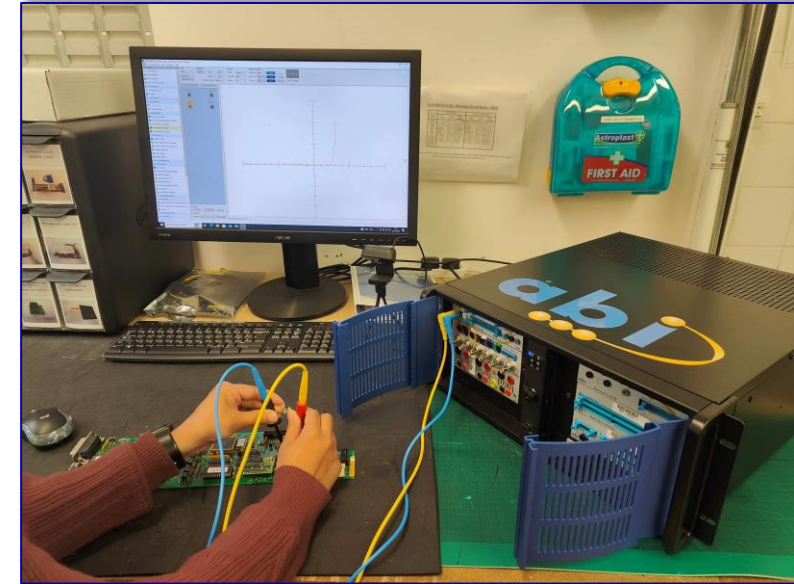
# Why is this a problem?

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- ▶ Offshore systems need to work effectively for:
  - ▶ Safety
  - ▶ Production
  - ▶ Environmental performance
- ▶ Two complementary approaches
  - ▶ Improve performance of plant so you emit less
  - ▶ Capture emissions and avoid them reaching the atmosphere
- ▶ The industry needs to measure accurately in enough detail to affect change
  - ▶ Pointless knowing you are emitting large amounts of harmful emissions, if you are unable to identify the underlying cause in enough detail to fix or modify
- ▶ Historically production efficiency has been ~60-70%
  - ▶ Environmental efficiency can be expected to be worse from ageing plant – it is often not measured in enough granularity to know for sure

# Where does Metron contribute?

- ▶ Offshore engineering support for fault finding & repairs and personnel training
- ▶ Sourcing, re-engineering and repairing of systems, control and instrumentation
- ▶ Leveraging technology and tools used for decades by the Defence Industries
  - ▶ MoD, DoD and others have to support much of their equipment decades beyond OEM support
  - ▶ Boeing 707 airframe flying in 2023
- ▶ Recycling of rare resources – circular economy
- ▶ Improving reliability and increasing functionality to allow data analytics, AI tools etc to be applied to 'old' technology
  - ▶ Application of engineering and AI models
  - ▶ Aiding operational understanding to allow prioritisation of production, safety and environmental improvements



# Where does this fit?

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- ▶ Engineering improvements can be made
  - ▶ Re-wheeling of compressors, changed pump cartridges to suit current daily production
  - ▶ Only relevant if the plant is working effectively
- ▶ Supply chain and operators must work together
  - ▶ Upstream industry has always been less competitive due to licensing approach
- ▶ Industry groups setup to share spares, best practice etc
- ▶ Businesses such as Metron who can provide support and training for obsolete & aging control systems and link robust engineering / AI based analytics
- ▶ Collaboration and prioritisation is absolutely key as the industry transitions
  - ▶ We can not fix everything immediately



# METRON

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