

# Singapore Olefin Plant Turbine Extraction Optimization Project

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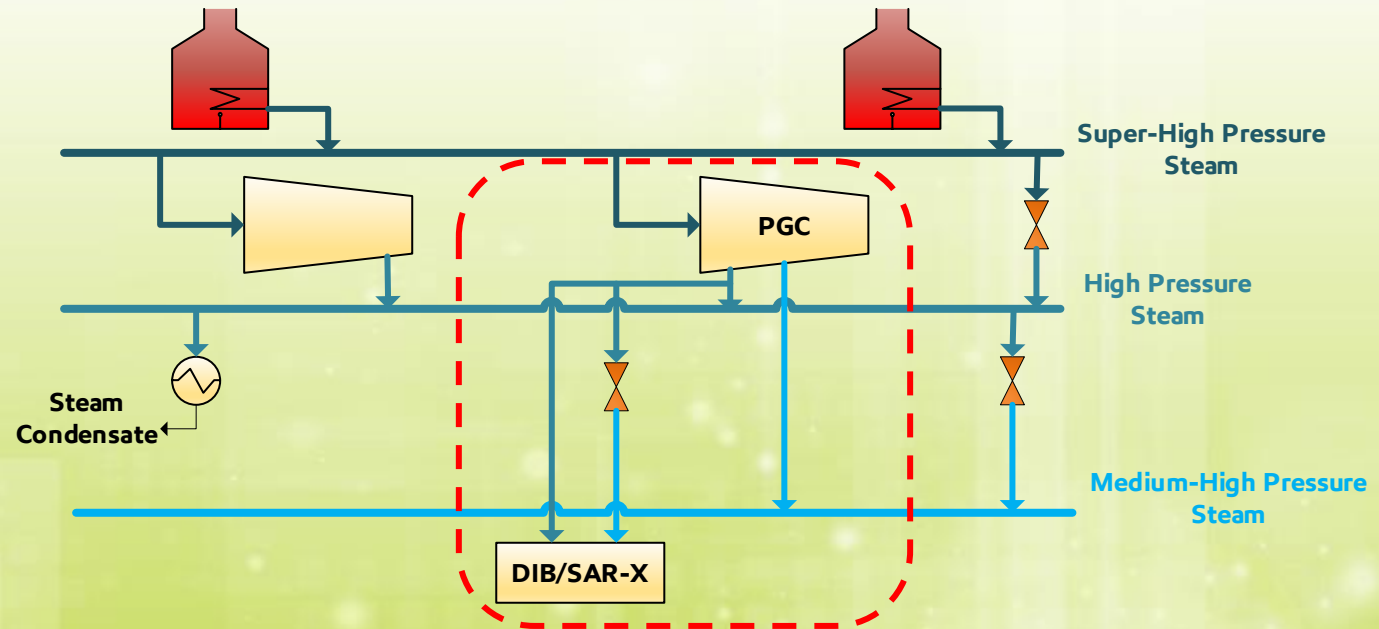


# Content Page

- Background on steam network
- Turbine extraction optimization
- Optimization results
- Key Challenge faced
- Key takeaways

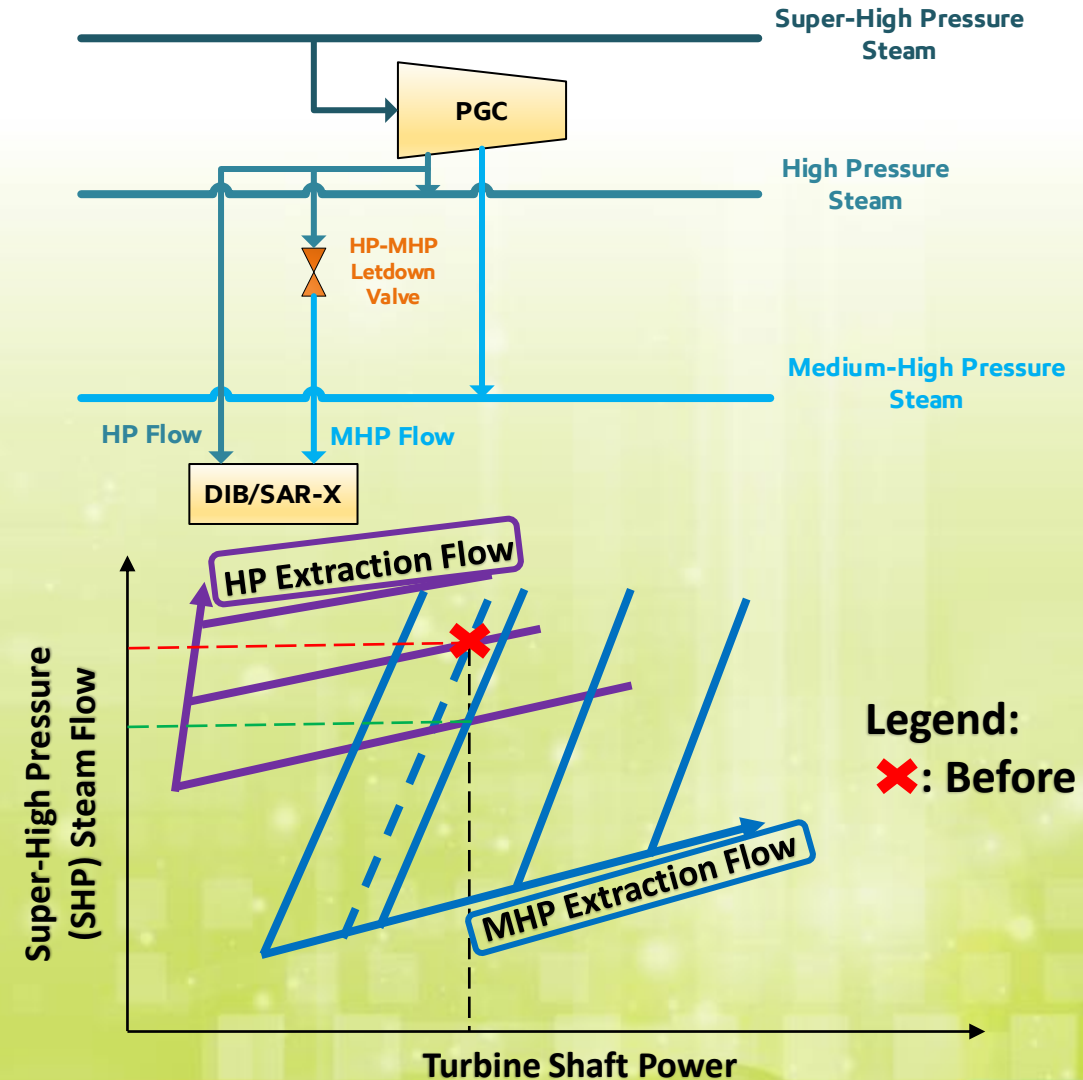
# Singapore Chemical Plant Steam Network

- Highly integrated system consisting of various steam users and generators
- Different tiers of steam to satisfy each equipment's energy demand
- **Energy efficiency** is a key element of steam system design and operation



# Original Design

- Di-Isobutylene and aromatic (DIB/SAR-X) units require both high pressure (HP) and medium-high pressure (MHP) steam
- MHP steam was generated by **letting down HP steam**
- This is an inefficient method because:
  1. **Zero energy recovery** from steam letdown
  2. **Lower process gas compressor (PGC) efficiency** due to lower MHP extraction rate





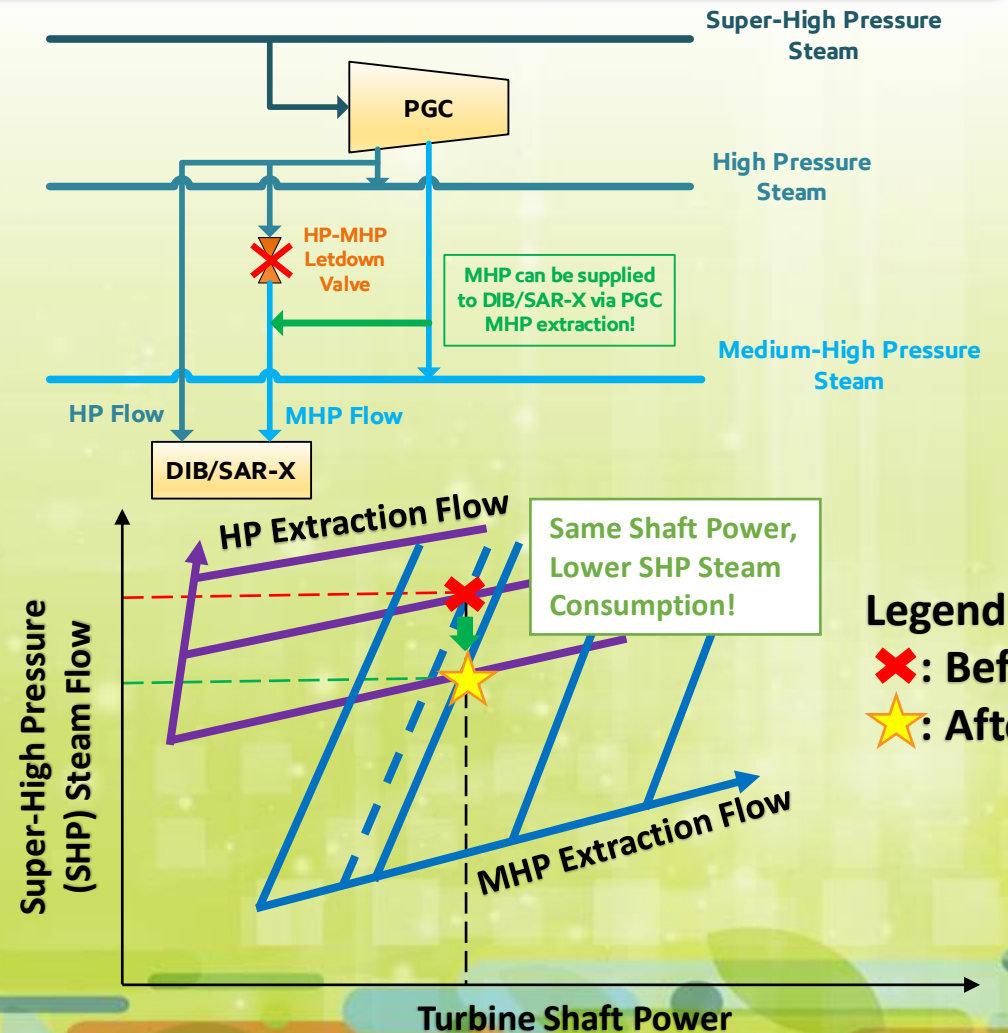
# Improvement



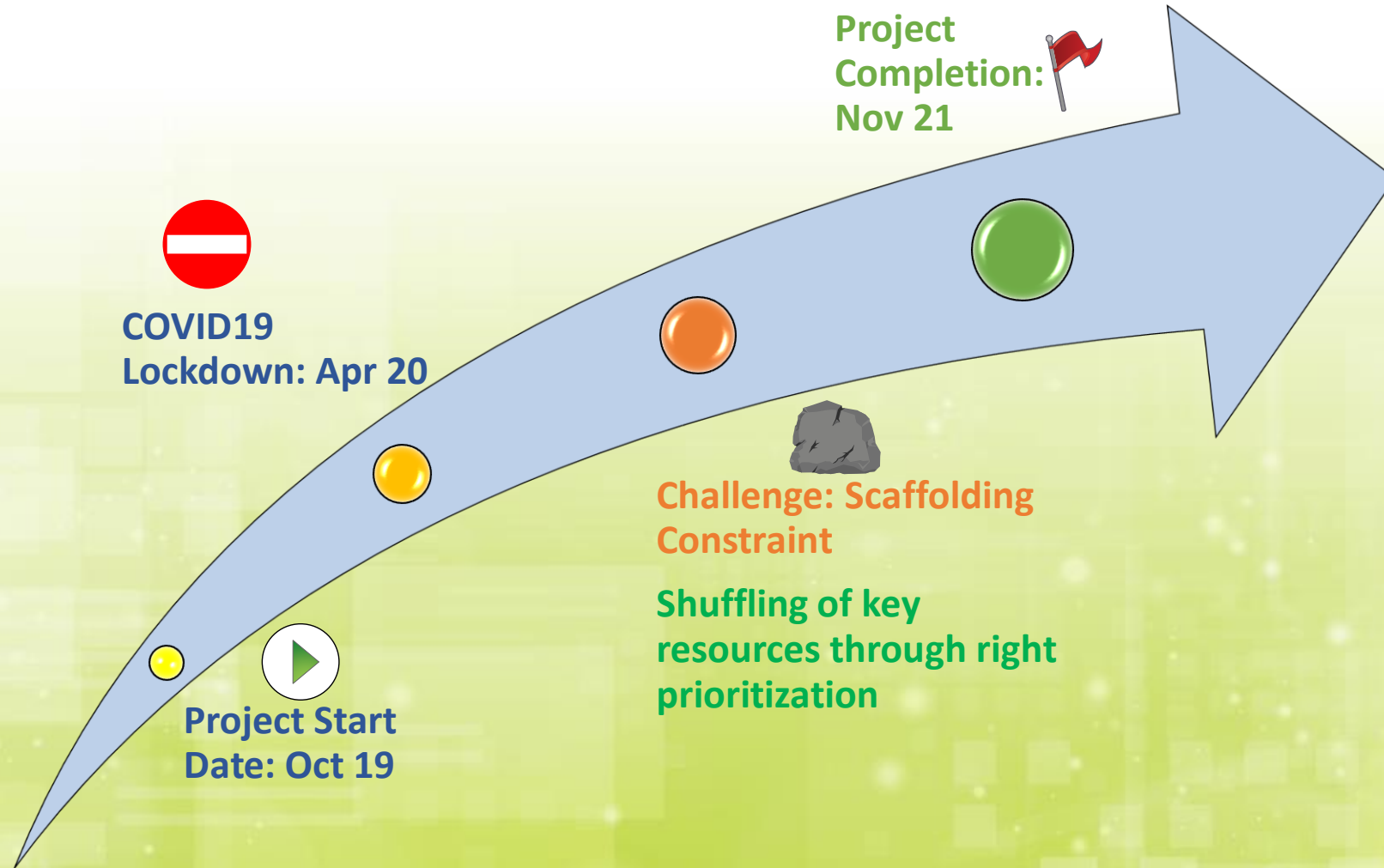
**Solution:** Building a new line from MHP extraction header to DIB/SAR-X

Conceptualized during steam system energy consumption review as part of the ExxonMobil Global Energy Management System (G-EMS)

- ✓ **Energy recovery** through PGC turbine compared to letdown valve
- ✓ **Better PGC efficiency** and lower SHP steam consumption
- ✓ **Reduced boiler fuel gas consumption**
- ✓ **8.0MW Energy Saving = ~14.2kT CO2 emission abated**



# Key Challenge faced



# Key Takeaways

- Idea generation through routine energy review
- Have an overall 'big picture' view



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THANK YOU

