

RISK MANAGEMENT FOR FIRST OF A KIND (FOAK) WASTE-TO-X PROJECTS



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All Energy & Dcarbonise

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Petrofac 

A life-of-asset energy services provider

Petrofac in numbers

#20

ENR Top 250 International contractors of the world



+200

Major projects delivered



9,400

worldwide employees



>4.5 MN

Annual engineering man-hours



>US\$2 BILLION

Procurement spend (on average per year)



>200 MILLION

Average annual direct construction man-hours



40 year

Track record

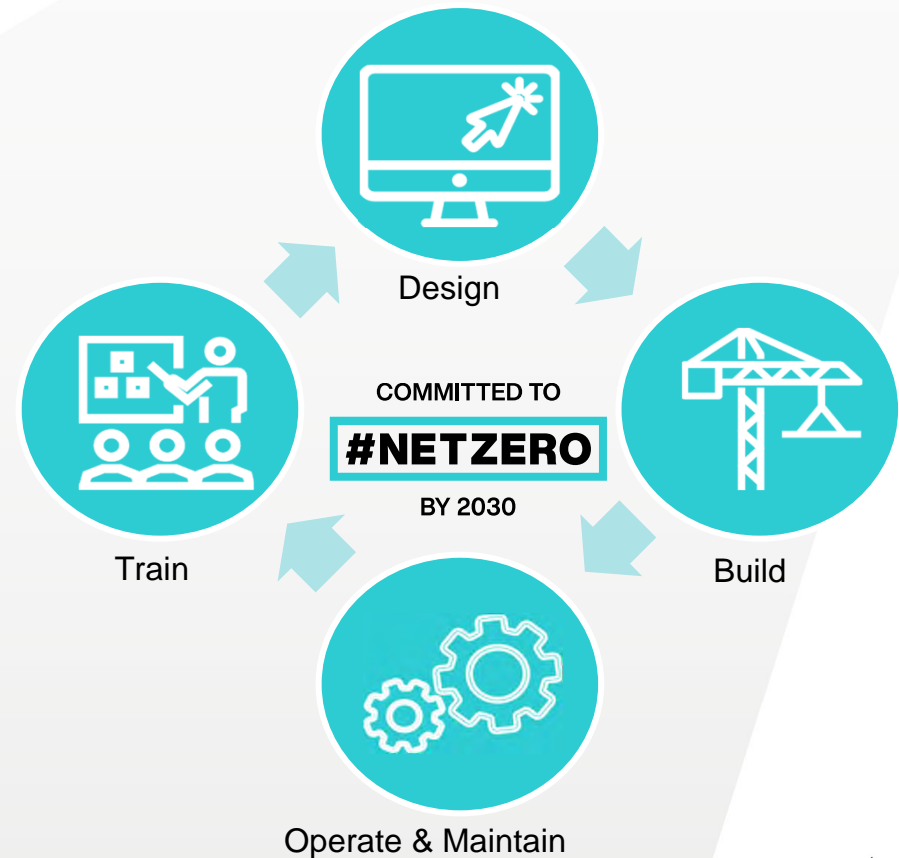


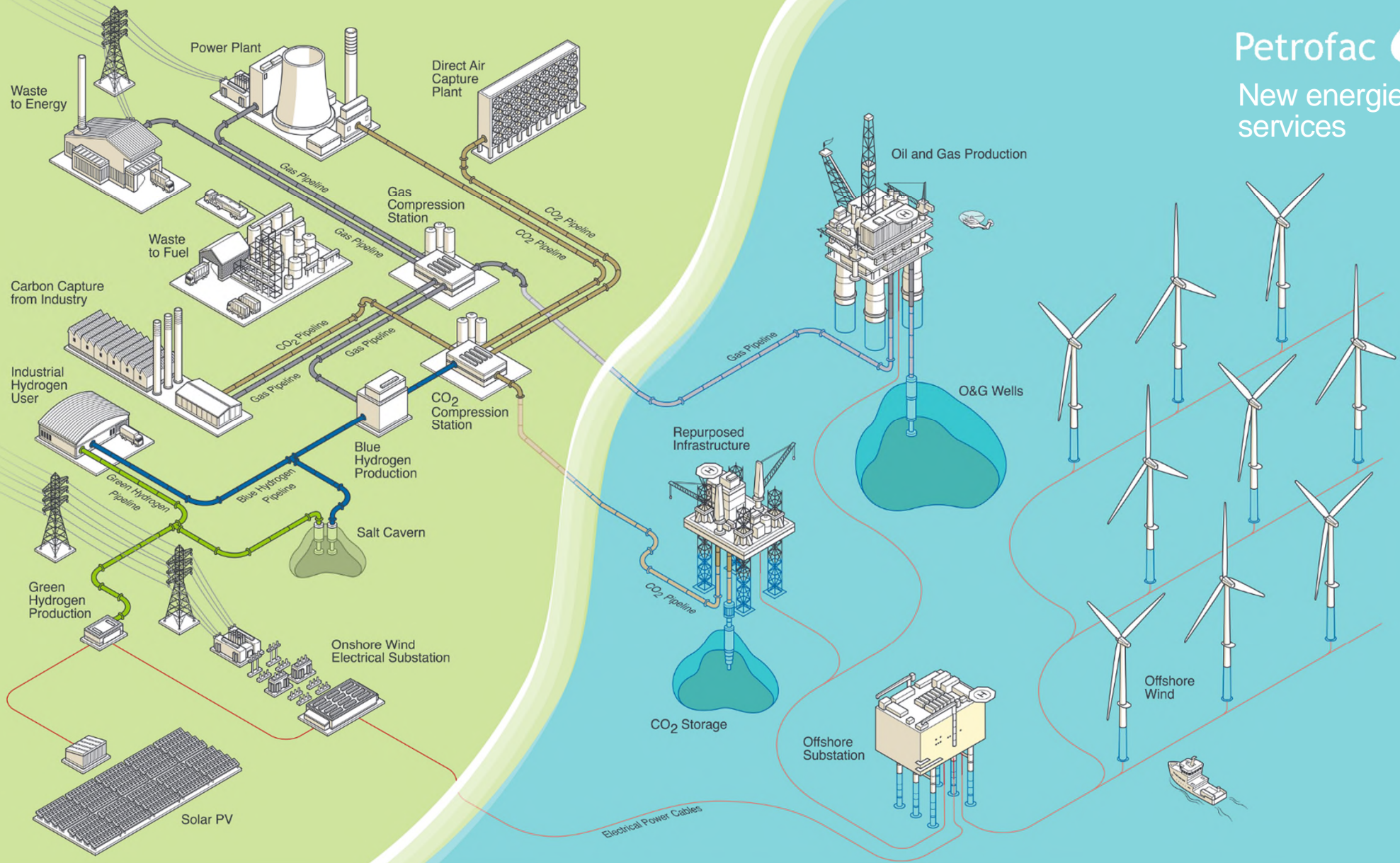
31 offices

Worldwide 29 countries



Our life-of-asset offering





Agenda

1 Risk Management of FOAK Projects

2 Waste to Fuels and the risks to be managed

3 The Petrofac Model

4 Concluding Remarks

Risk Management & FOAK Projects

- > Currently there are a number of First of a kind 'waste to x' projects being executed in the UK.
- > Project financed with full process wrap and LSTK requirements.
- > The UK is a challenging location for the execution of these style of projects; for example:
 - > Air Products Gasifier Teesside
 - > Tecnicas Reunidas, EfW Biomass Plant, Teesside.
- > Need to approach these projects with a very keen eye on risk and risk management.

FOAK Biorefinery Project

- > In Q1 2021, Petrofac was awarded a FEED study for a FOAK biorefinery
- > Option to roll into EPC and O&M for the facility
- > Project utilises pyrolysis and hydrotreating technologies
- > Convert waste tyres, used cooking oils and tallows into renewable biofuels.

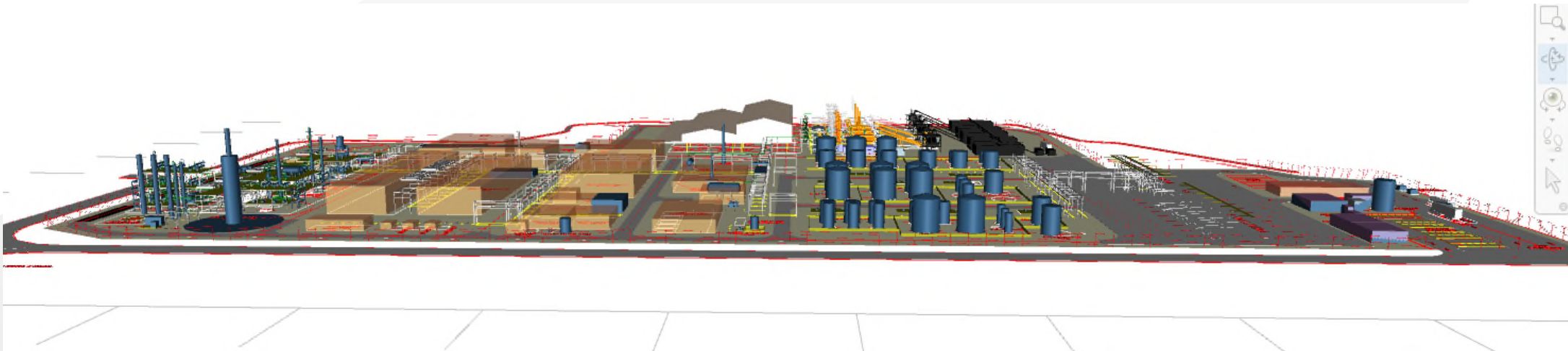


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Waste to Fuels and Risks to be Managed

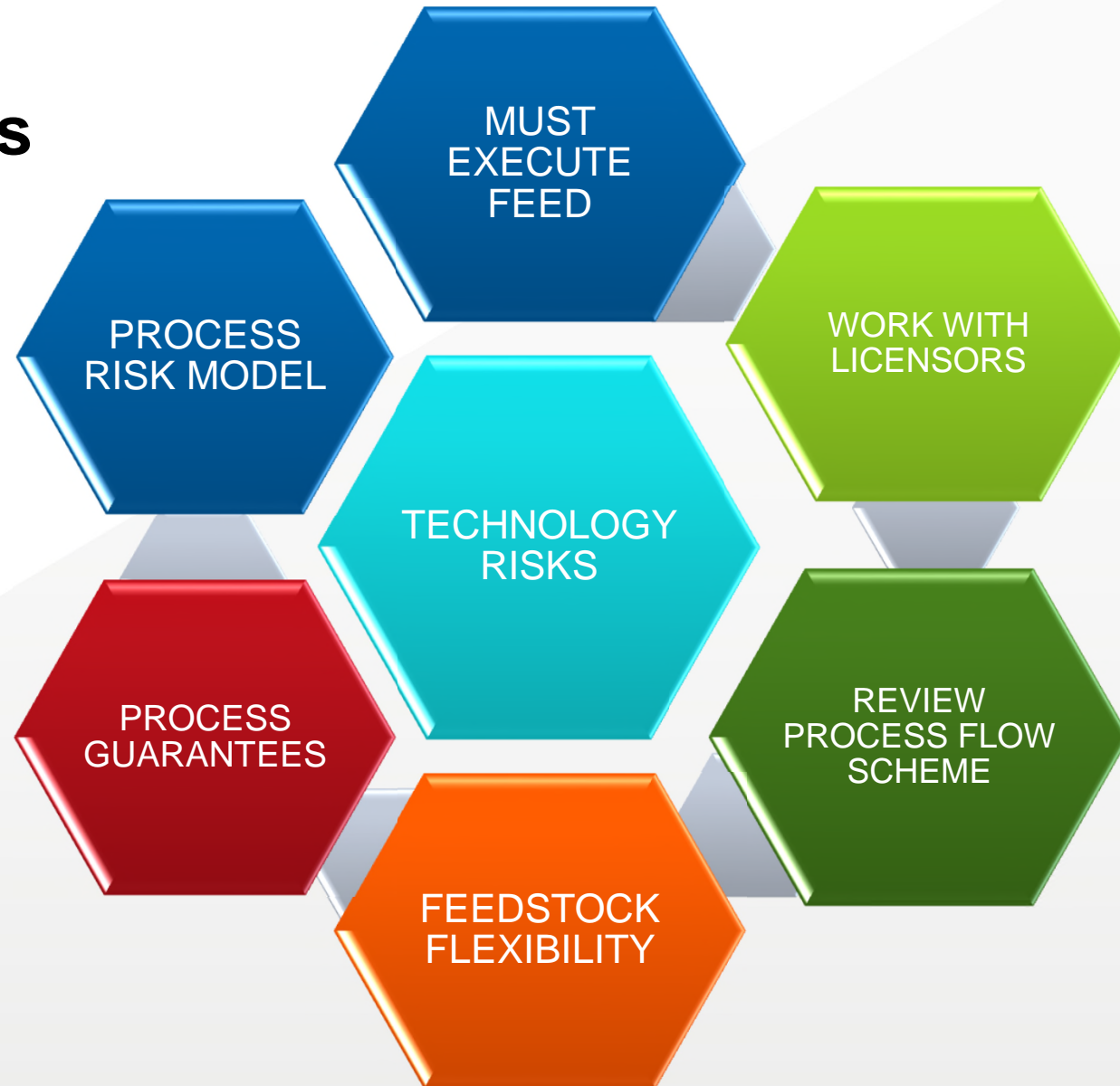
- > The project risks broadly fall into three categories:
 - > Technology risks such as novel technologies, process configuration, variability of feedstock quality.
 - > EPC execution risks due to contractual requirements, industrial relations and logistics.
 - > Operational risks such as complex feedstock pre-treatment operations, high variability of feedstock and other unknowns associated with FOAK processes.



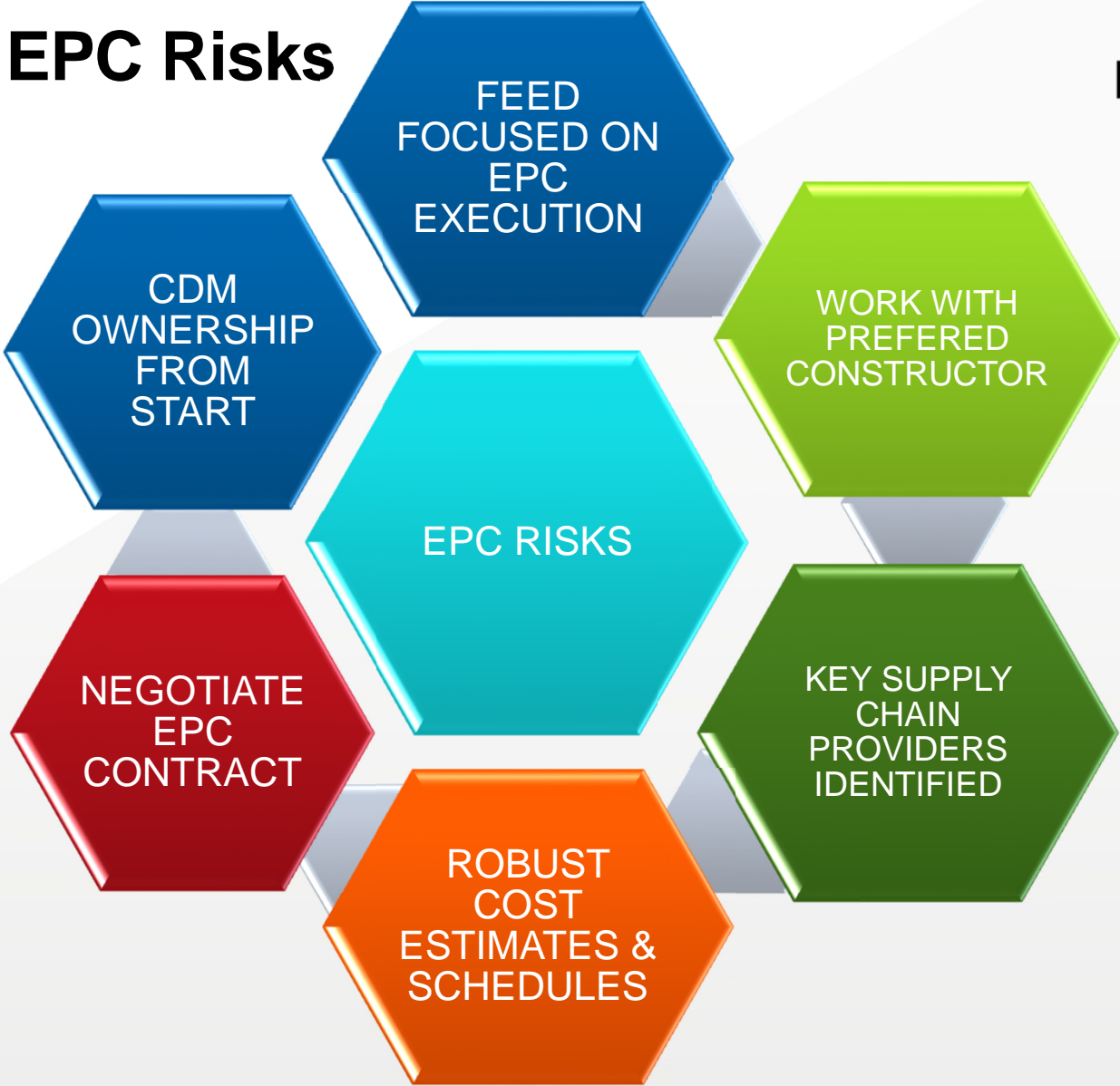
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Petrofac Model – Technology Risks



Petrofac Model – EPC Risks



Petrofac Model – Operational Risks



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Concluding Remarks

- > Petrofac will only provide an EPC offer if they complete the FEED
- > Work with selected supply chain partners
- > Clear and detailed understanding of process and technology risk
- > Fully integrated with technology suppliers in design development
- > Produce robust cost estimates and schedules
- > Detailed and continuous risk assessment starting at bid stage

Trust our capable teams
to bring **the right energy.**
Every time.

For assured, ultra-efficient delivery, **turn to** Petrofac.

Petrofac 