Driving Decarbonization with Compression

Customer Event Steam Turbine and Generators 2023



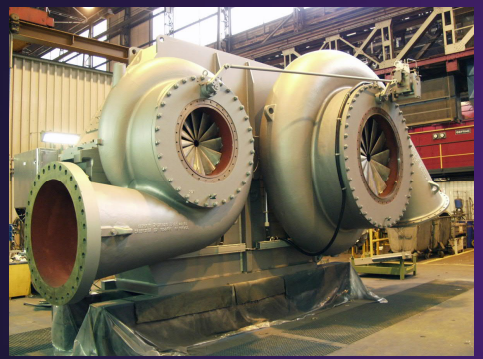
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Our Compression Solutions for the Energy Transition

- Best in class compressor technologies (turbo & reciprocating) - giving you the power of choice
- Optimal solutions for harsh environments and all mol weight fluids - customized and flexible, optimized for your process
- Reliable and efficient, reducing operating cost - highest availability and efficiency for your application
- Empowered by digital service solutions



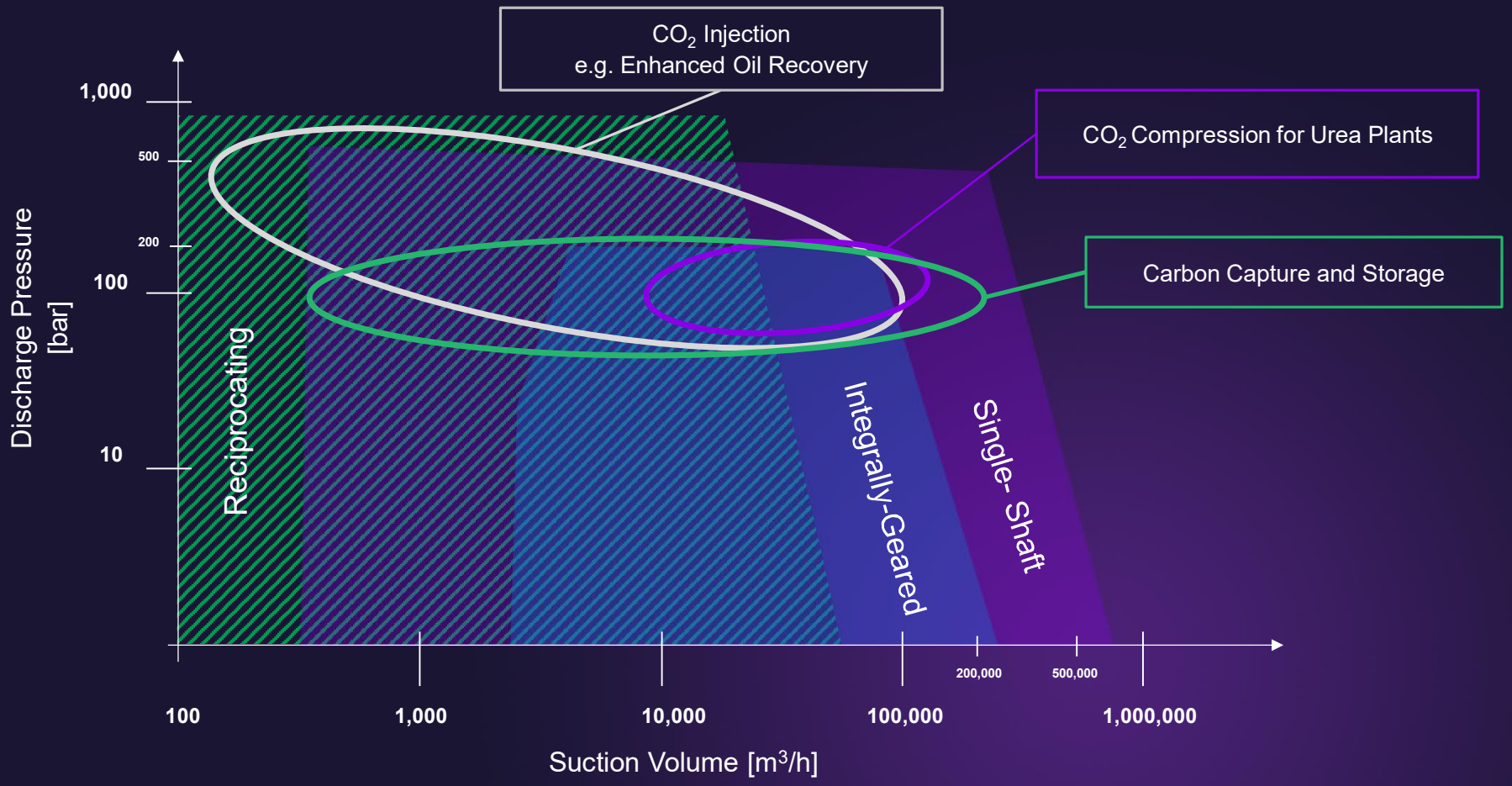




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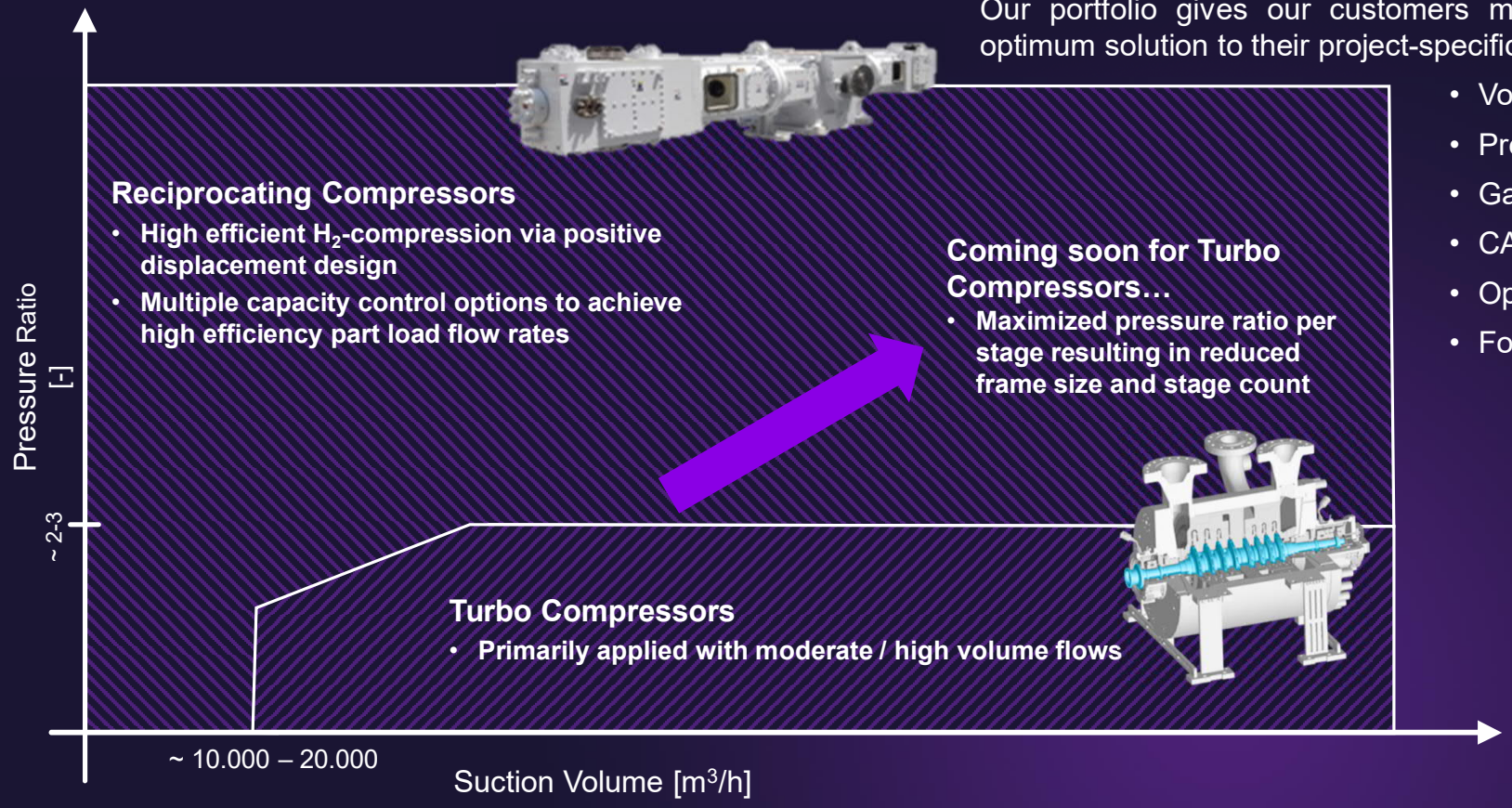
Comprehensive Portfolio for CO2 Compression



*) rough application scenarios; product-application to be optimized project specific

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Comprehensive Portfolio for Hydrogen Compression



Our portfolio gives our customers more technology choices for an optimum solution to their project-specific requirements, considering…

- Volume Flow
- Pressure Ratio
- Gas Composition
- CAPEX & OPEX
- Operating range required
- Footprint

area give indication only, to be evaluated and confirmed project specific

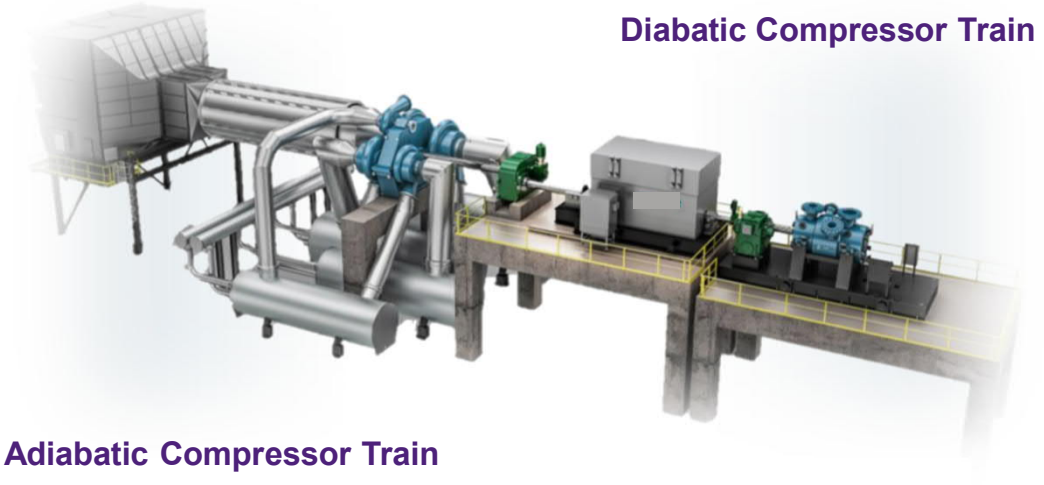
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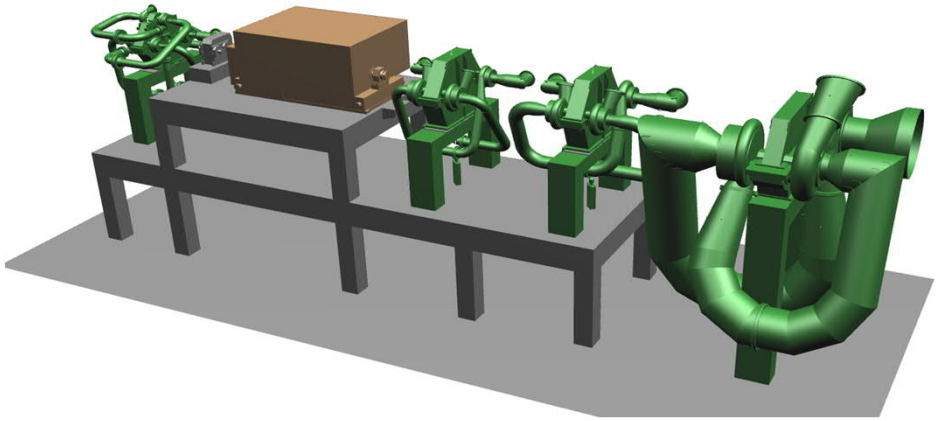
Compression Portfolio for Compressed Air Energy Storage (CAES)

The enabler for energy transmission

Diabatic Compressor Train



Adiabatic Compressor Train

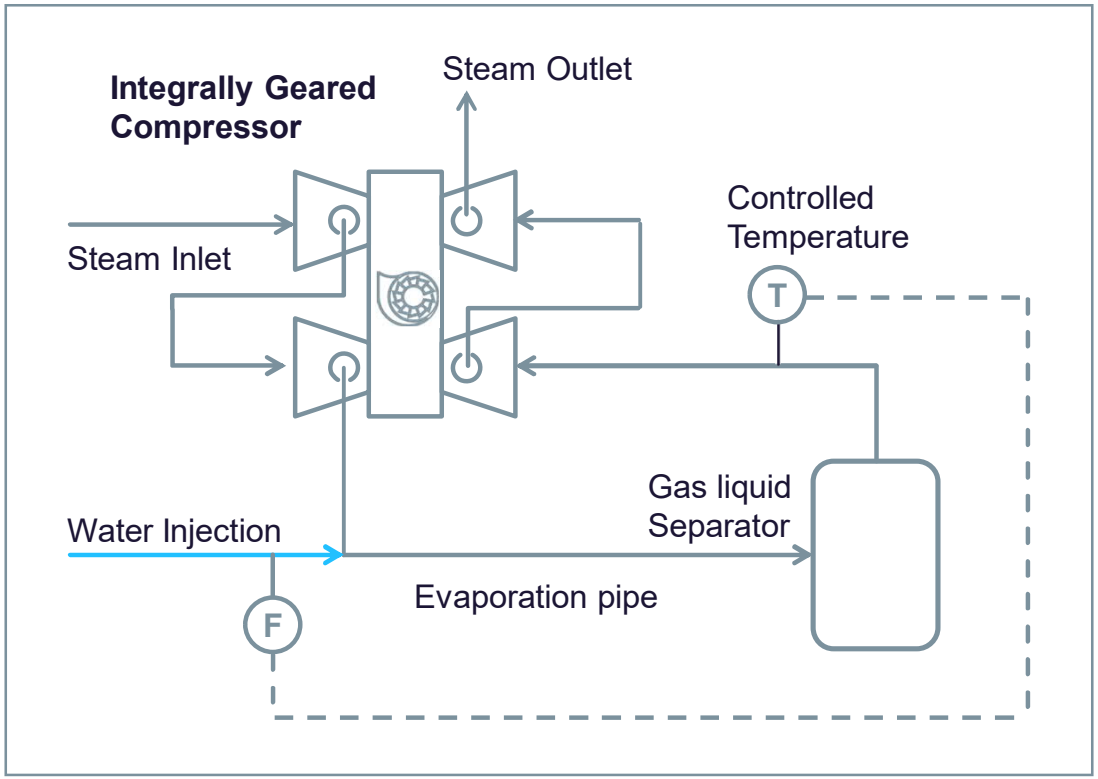


- **Integrally-geared centrifugal compressor as best choice for air compression**
- **High flexibility, can adapt to any process**
- **Cooling after each stage possible**
- **Temperature level can be adjusted to thermal storage (water, sand, oil, molten salt)**
- **Market leader in large air compression with more than 110 super large air compressors sold in the last 10 years**

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Compression Portfolio for Decarbonized Heat

Steam compressor with water injection



- Integrally-geared centrifugal compressor as optimal technology choice
- Ideal temperature control through multiple de-superheaters
- High availabilities through gas liquid separators
- Lean system, no additional refrigerant to be handled
- Abundant experience for multistage integrally geared compressors

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Reference
Woodfibre eLNG, Canada

- **Sized for 2.1 Mtpa and utilizes clean, renewable hydroelectricity, reducing greenhouse gas emissions by more than 80%**
- **Providing key equipment associated with the main refrigeration, boil-off gas, and feed gas booster trains, including compressors, synchronous motors, variable speed drives, converter transformers, harmonic filters, and numerous e-houses**
- **Main refrigeration compressor trains are one of the key components of the liquefaction process**
- **Main refrigerant compression installation: Year 2027**

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LNG will play an essential role in a more sustainable future - as we continue to look at ways to decarbonize the natural gas chain.



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Reference
FlagshipONE Plant, Sweden

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Ørsted is building Europe's largest commercial production facility for carbon-neutral marine fuels.

- **Siemens Energy is project partner to Liquid Wind AB, the original developer of FlagshipONE, who develops replicable facilities to produce e-fuel and has plans to develop at least ten facilities in Scandinavia by 2030**
- **Providing PEM electrolyzers (70 MW), compressor systems, plant-wide electrification and automation systems, including innovative digitalization solutions (e.g. digital twins), and the entire power distribution**
- **E-fuels production installation: Year 2025**



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Key Take Away: Compression for Decarbonization

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Compression is a key element of energy transition
in hydrogen, decarbonized heat, CCUS, energy storage



Giving you the power of choice
best in class compressor technologies (turbo & reciprocating)



Efficient, reliable and flexible compression solutions
with a life-time service supporting your plant availability

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