



# SynCOR Ammonia™

Reshaping the future of ammonia

# Global Climate Challenges



Air pollution

A photograph of a city skyline obscured by a thick layer of smog or haze, illustrating air pollution.

Water resources

A photograph of a large dam with water cascading over it, surrounded by green hills, representing water resources.

Energy consumption

A photograph of an industrial power plant with several cooling towers emitting large plumes of white steam into a cloudy sky, symbolizing energy consumption.

# Legislation?

Environment to play a bigger role

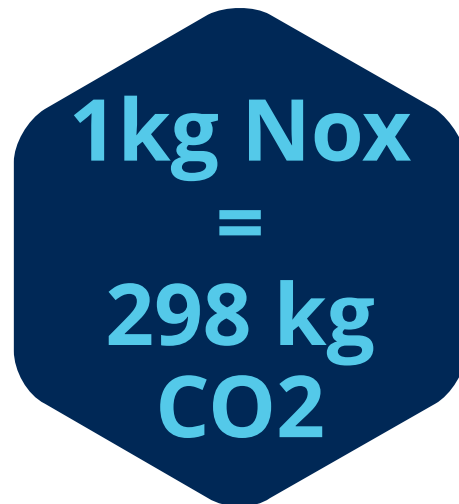
- All GCC have rectified the Paris agreement
- **Push towards the green transformation**
  - UAE to have 24% renewable energy by 2021
  - Oman target 10% renewable energy by 2024
  - Bahrain is collaborating with UN's environmental body to reduce air pollution

Sources:  
*renewablesnow.com*  
*Climateactiontracker.org*

# Implications

for a typical 2000MTPD ammonia plant:

- 200,000 l/h of water - 4% of Bahrain's year rain fall.
- ~3,500 Barrels of fuel per day
- Environment
  - 1 t/d Nox
  - 1,300 t/d CO<sub>2</sub>



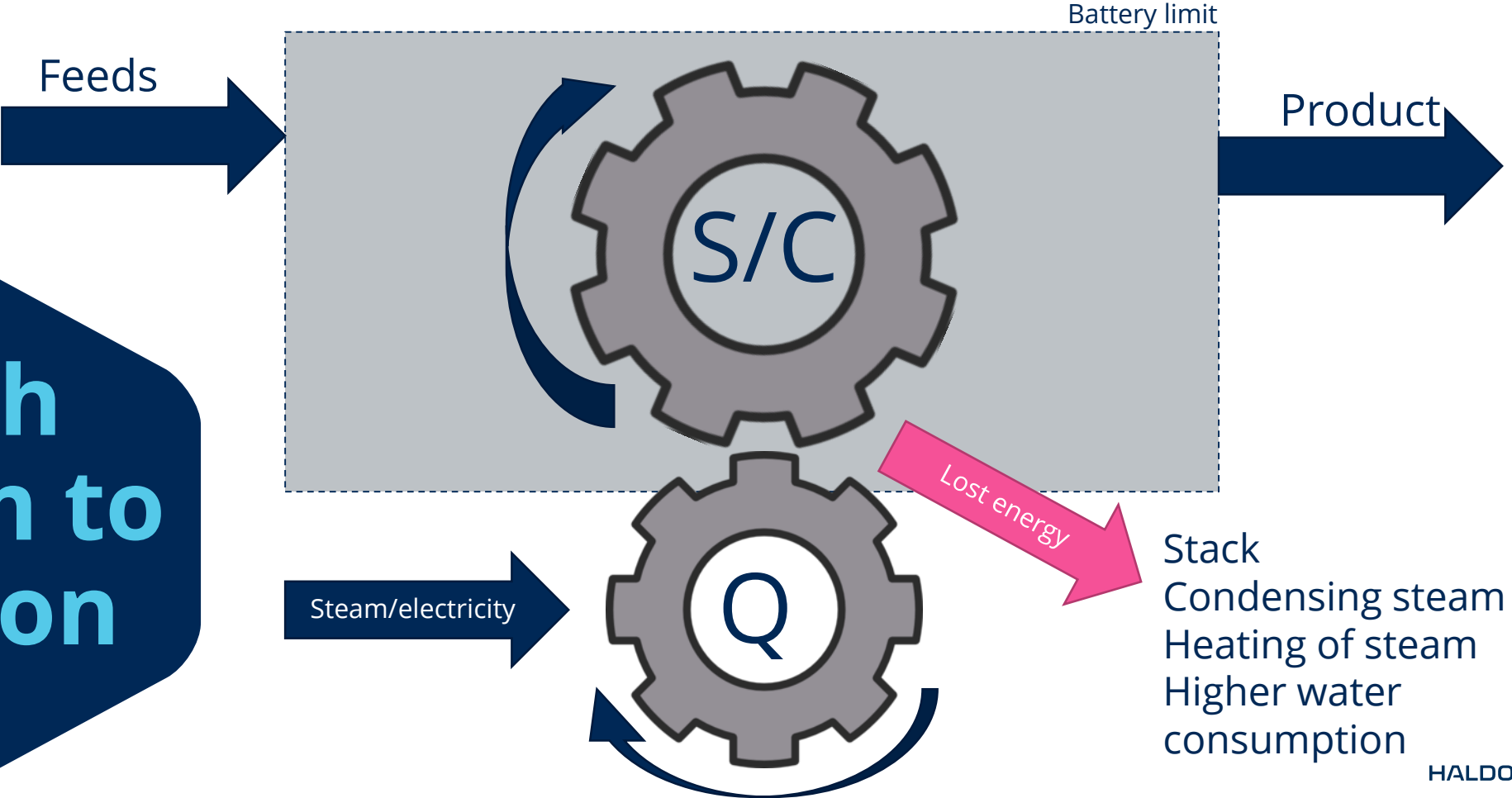
1kg Nox  
=  
298 kg  
CO<sub>2</sub>

=> 620,000 T/d CO<sub>2</sub>e emission

# Todays energy consumers

What is the Main hurdle?

**High  
steam to  
carbon**



## What if...

we could find a way remove the steam barrier?



Reduce CO2 emission by 25-40 %  
Reduce NOx emission by 50 %



Slashes water consumption by 60%



Fuel consumption  
Reduce OPEX with 3 %

>400,000 T/yr  
CO2e

# SynCor™

Replace water with oxygen

SK-501 Flex



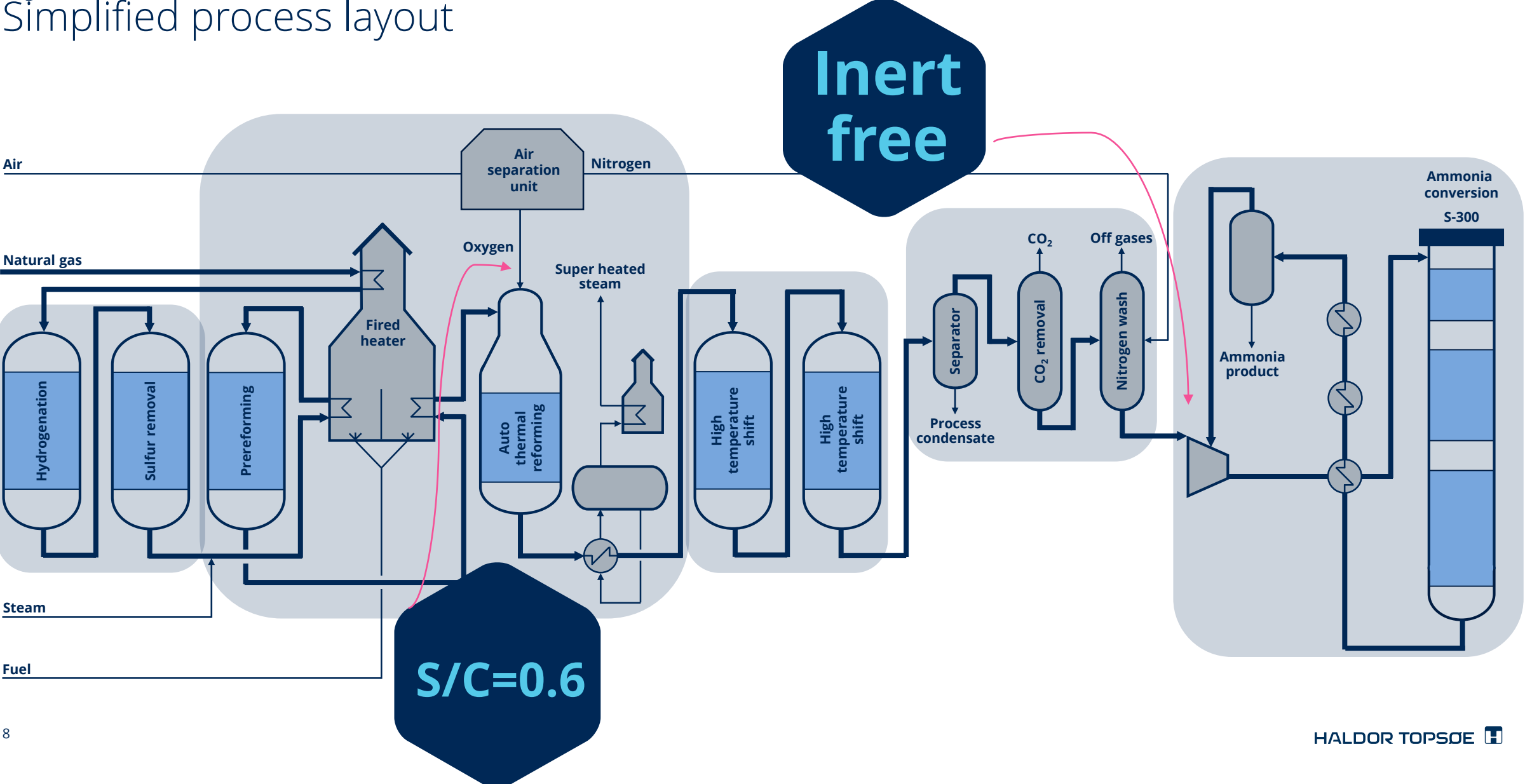
Iron-free formulation  
operate at any S/C  
completely free of chromium

**Reduces steam-to-carbon by using oxygen**



# SynCOR Ammonia™

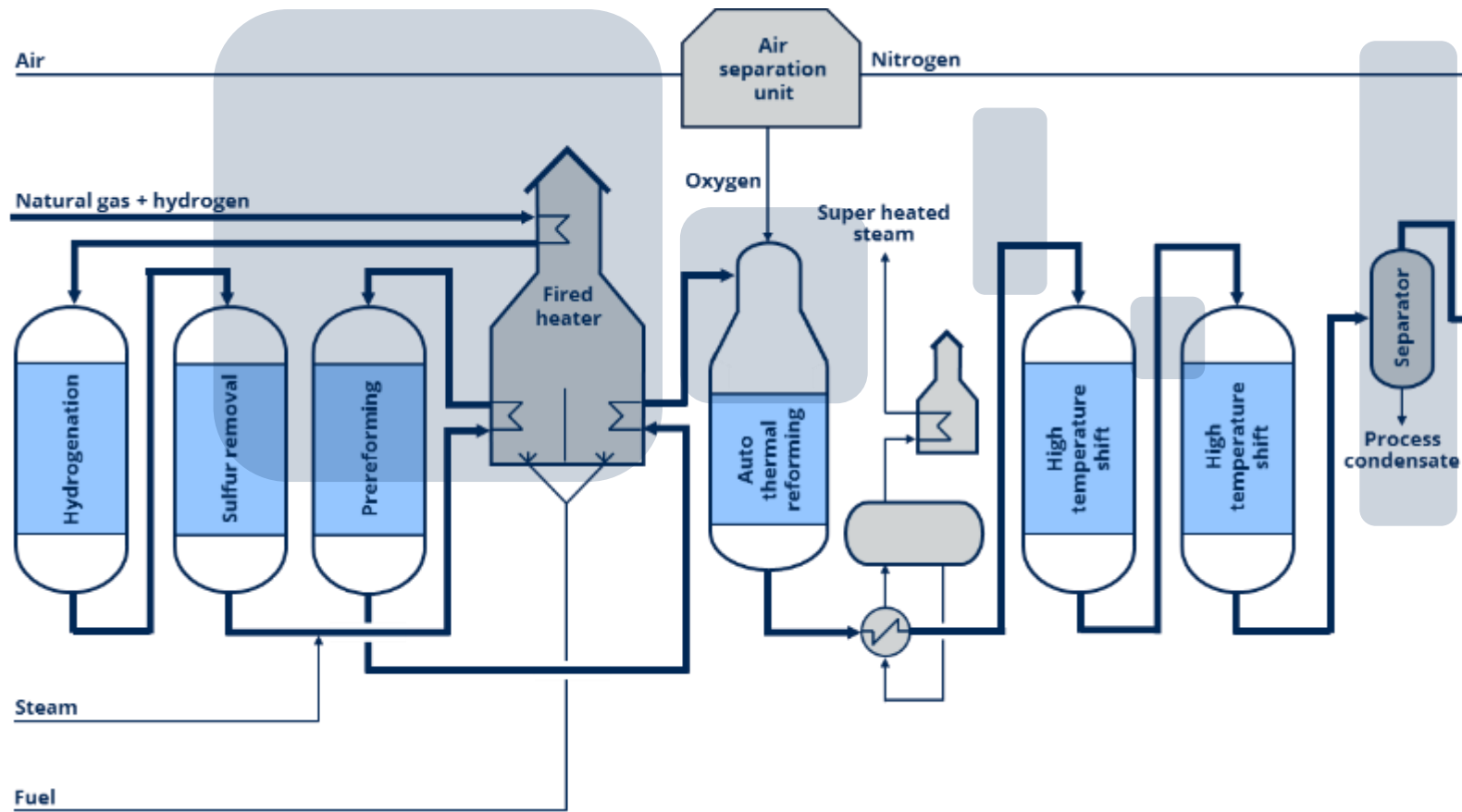
Simplified process layout





# Technology leadership

Proven design



By 2015, the plant started with a compressor/turbine

- A plant release size at
- A significant size of a
- 6000 MW DVC is 100
- Referenced up to an
- single train
- equivalent ammonia
- in a plant size of 100
- MW

# What producers want

Key benefits of SynCOR Ammonia™

**Reduced air  
pollution**

Up to **40% lower CO<sub>2</sub>** emissions and more than **50% lower N<sub>2</sub>O** emissions

**All proven  
technology**

All technology elements are **referenced** at capacities up to 6,000 MTPD

**Economy  
of scale**

**Scale trains** at large capacities

**Lower  
consumption**

Reduced **OPEX**, **30% lower specific net energy consumption**

**Level  
safety**

Significantly **reduced field work** and a high degree of **automation**

**Thank you!**

