



DELIVERING FOR THE ENERGY TRANSITION AT SCALE

TOPSOE

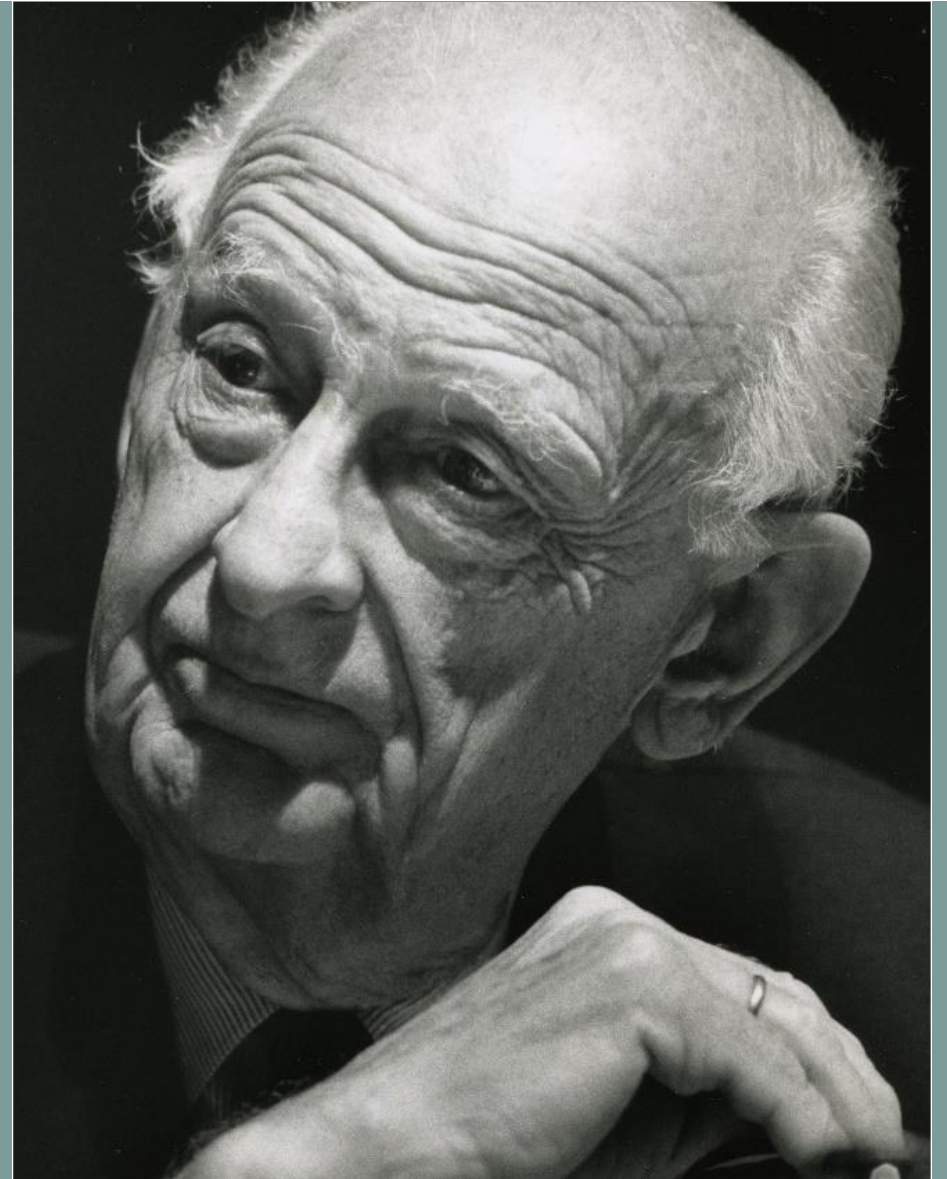


When Dr. Haldor Topsøe founded the company in 1940, he based it on two things:

A passion for science and a determination to make a positive difference in the world. We stay true to his legacy.

OUR PURPOSE

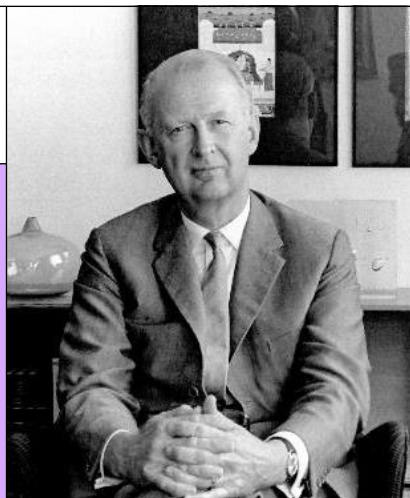
PERFECTING CHEMISTRY FOR A BETTER WORLD



A HISTORY OF TAKING ON SOME OF THE WORLD'S TOUGHEST CHALLENGES

1940

Dr. Haldor Topsøe founds the company based on his passion for science and determination to make a positive difference in the world.



1980s

Acid rain threatens environment and biodiversity
Topsoe technology removes 18 million tons of sulfur oxides every year.



2000s

Changing the fuels landscape through optimized solutions
Topsoe's new diesel technology is the most yield-optimized solution on offer.



1950s

Growing populations put pressure on food supply
Topsoe's ammonia technology produces fertilizer to help feed the growing world population.



1990s

Air pollution threatens environmental stability and public health
Topsoe solutions to ensure cleaner air remove hazardous particles, greenhouse gases, and smog from industrial emissions.

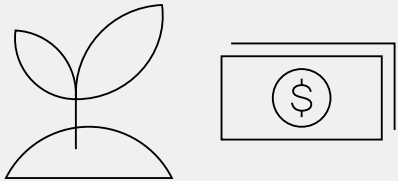


2020s

Decarbonizing the energy-intensive industries and long-distance transportation
Topsoe solutions support all phases of the energy transition.



DEALING WITH A
FUNDAMENTAL DILEMMA



DEALING WITH SULFUROUS EMISSIONS

Protecting the climate
and complying with regulations

Securing profitability



TECHNOLOGIES WITH
COST-EFFECTIVE LIFE
CYCLES

SMARTER SULFUR SOLUTIONS



Turn sulfurous
emissions
into commercial
opportunities



Reduce your costs
for flue gas
emission
compliance



Minimize sulfur
recovery costs
with a
two-in-one solution



Monetize sour
fuel gasses
through
sweetening



Regenerate
spent acid with
minimal
energy costs

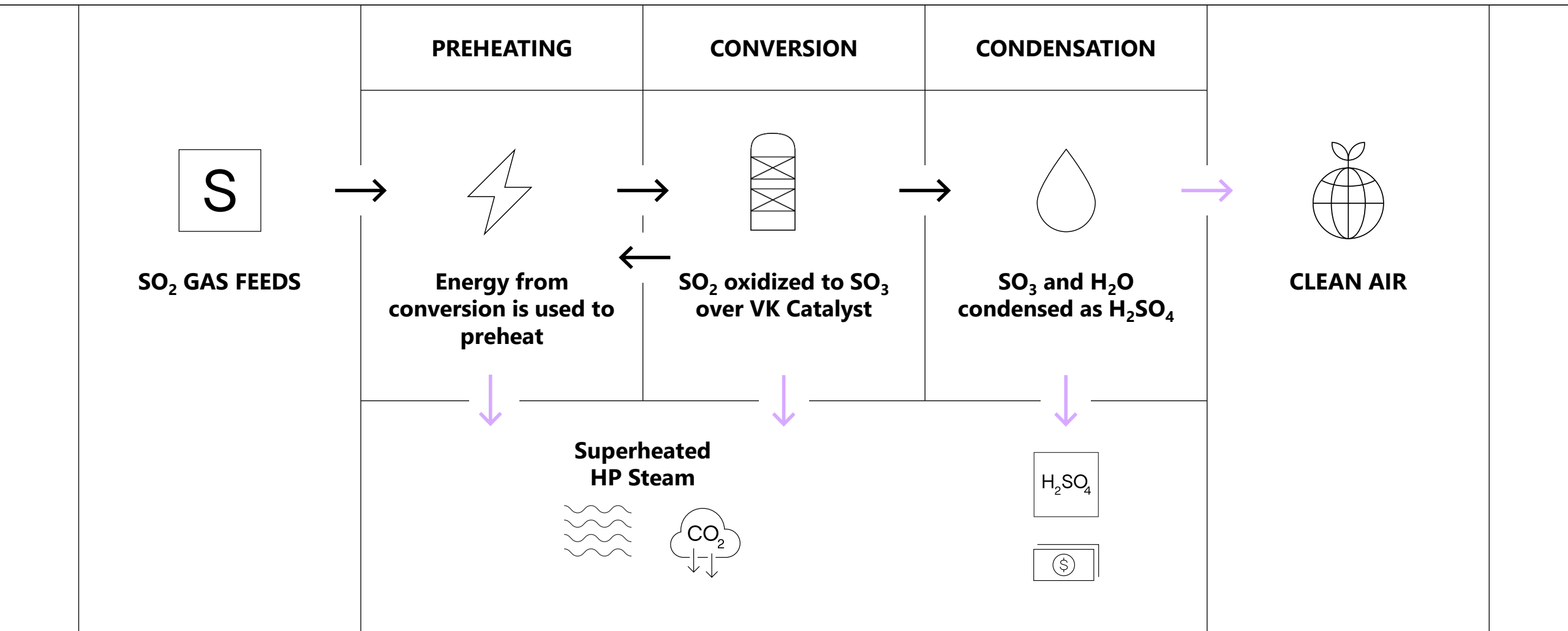
TURN SULFUROUS
EMISSIONS INTO
COMMERCIAL
OPPORTUNITIES



PROTECT YOUR PROFIT WITH WSA



WSA FOR METALLURGICAL INDUSTRY
SINGLE CONDENSATION WSA SO2 GAS FEED



HOW WSA CREATES
COMMERCIAL
OPPORTUNITIES

FROM PROBLEM TO REVENUE

CLEANED GAS

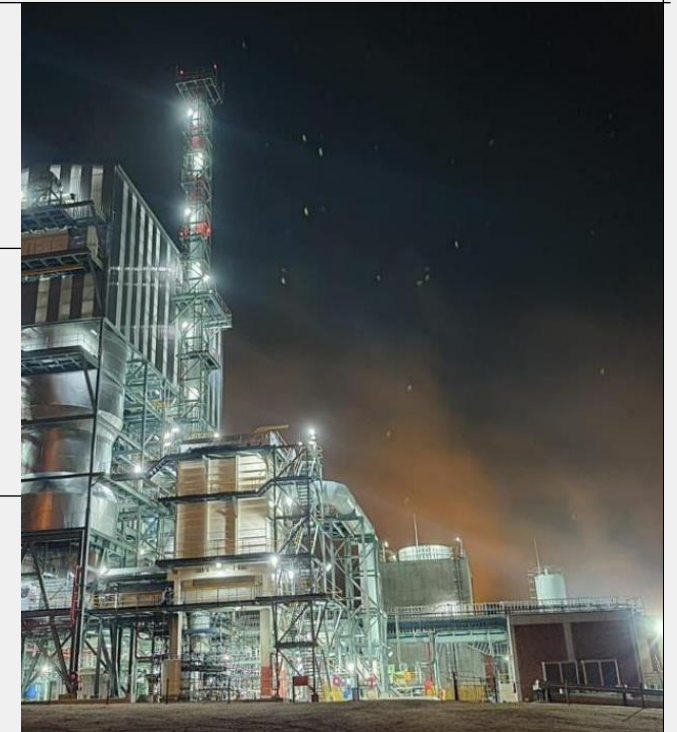
Removes up to 99.99% of the sulfur, ensuring compliance with emission standards

ENERGY (HP steam)

Generates high-pressure superheated steam, reducing your operating costs

SULFURIC ACID

Produces commercial-grade sulfuric acid, opening commercial opportunities



A CLIMATE-FRIENDLY PROBLEM-SOLVER

WHERE WSA CAN HELP YOU

WSA APPLICATIONS	TYPICAL FEED STREAMS
Oil refining	H ₂ S gas, Claus unit tail gas, sour water stripper gas, spent sulfuric acid (SmartSAR™ process), boiler flue gas (SNOX™ process)
Natural gas	Sour gasses
Gasification	Sour gasses (H ₂ S, CO ₂ , COS, etc.)
Coking	Sour gasses, waste gasses and liquids from BTX refining
Viscose	Lean gas and rich gas (H ₂ S and CS ₂)
Pulp and paper	Concentrated non-condensable gasses
Metallurgy	SO ₂ gasses
Boilers	Flue gas (SNOX™ process)
Other	Sour gasses, molten sulfur, chemical spent sulfuric acid



PROTECT YOUR PROFIT WITH WSA

HOW YOUR OPERATION BENEFITS

COMPLIANCE

Obtain effective compliance with specific emissions requirements. WSA ensures an effective sulfur removal (up to 99.99%) from nearly all sulfur-laden gas inputs and spent acid

FLEXIBILITY

Easily deal with changing operating parameters with a versatile technology, proven in numerous applications

LOW EXPENSES

Get a cost-effective technology with low capital outlay and operating costs. WSA doesn't produce waste, consumes no chemicals, and offers high reliability and uptime performance

REVENUE STREAM

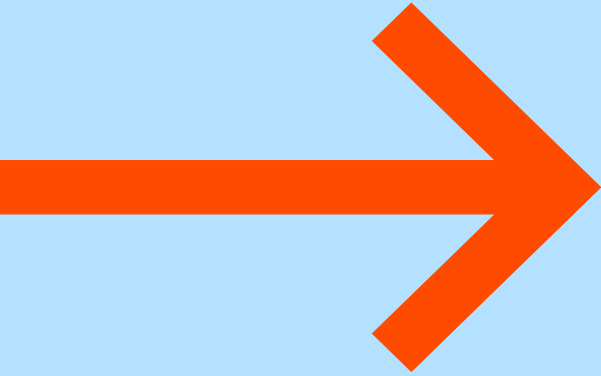
Open up new commercial opportunities by generating valuable sulfuric acid

LOW OPERATING COSTS

Lower your CO₂ emissions significantly with a highly energy-efficient solution that produces high-pressure, superheated steam to be utilized elsewhere

PARTNERING WITH
TOPSOE

A FULL RANGE OF SOLUTIONS



- Proprietary equipment
- Licensing
- Basic engineering
- Technical Services for construction, commissioning and start-up
- ClearView[®] connected services solution
- Unrivalled range of catalysts produced in-house
- Experienced, dedicated team



THANK YOU

TOPSOE

