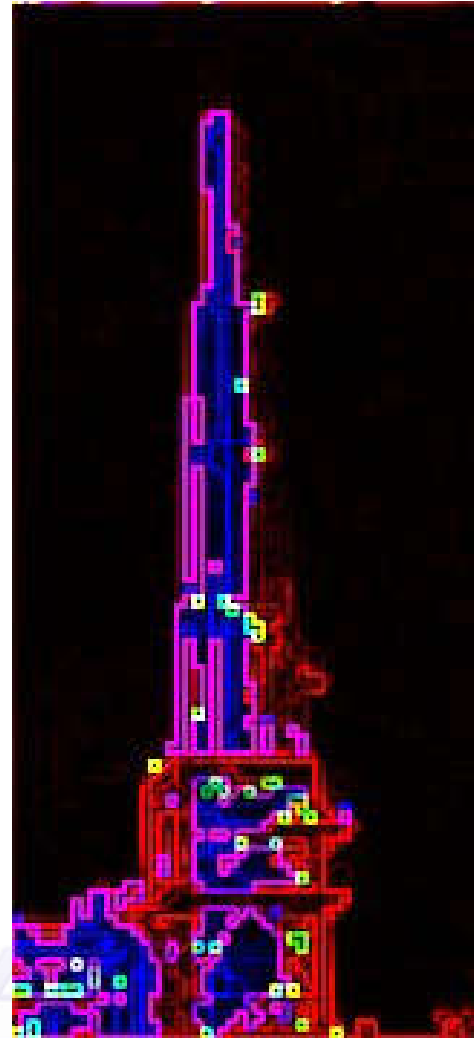


A world map in light blue and white, centered on the Atlantic Ocean. Overlaid on the map is a large, dark blue, three-dimensional 'P' logo. The 'P' has a circular cutout in the center, revealing the map of Europe and Africa. The background of the entire slide is a gradient from light blue at the top to dark blue at the bottom, with white grid lines forming a perspective effect.

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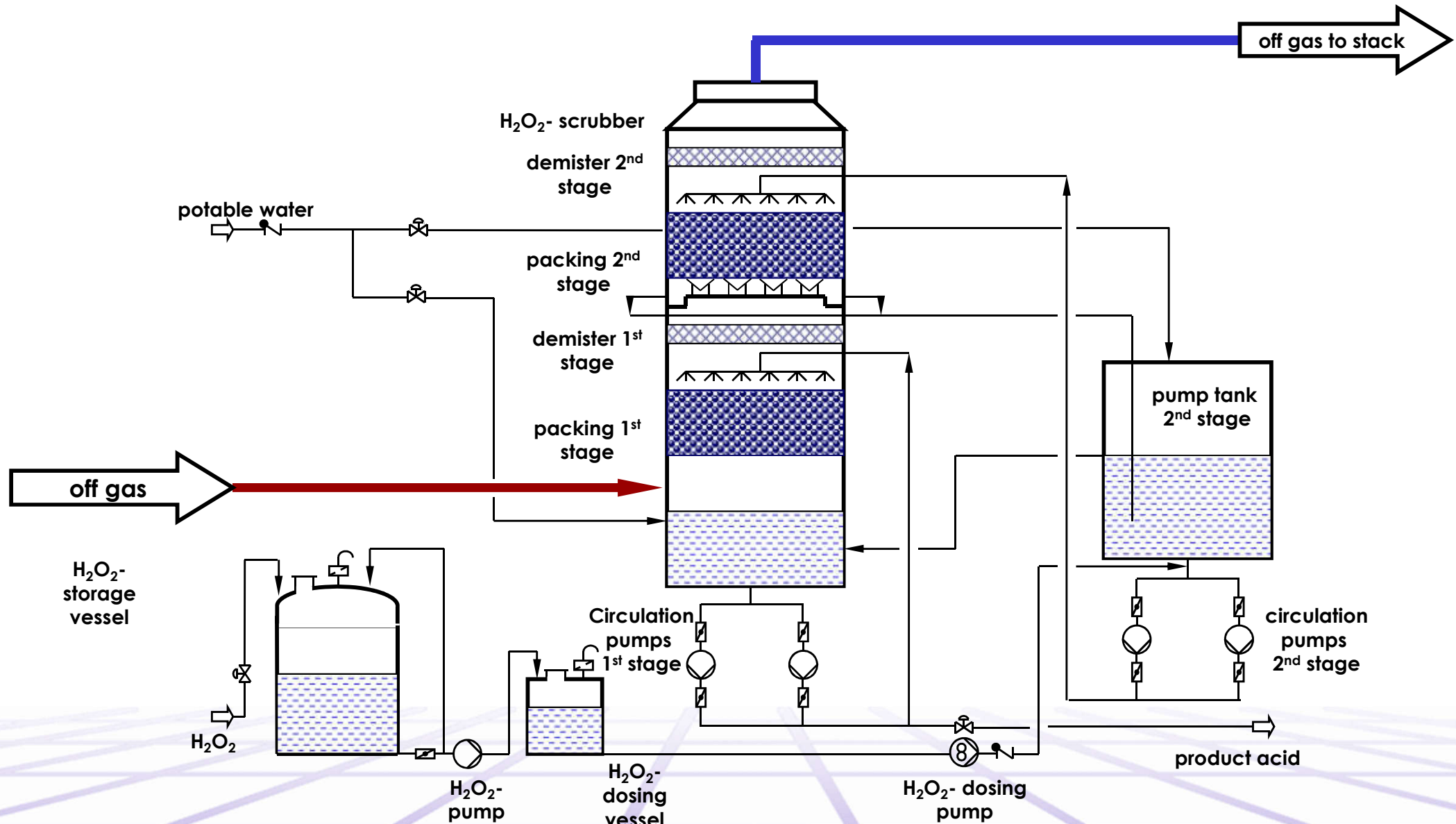
**Your Competent Partner
for Sulphuric Acid and
Gas Cleaning Plants**

PETERSEN SUPER^{OX}-Technology



Typical Scheme of a 2-stage SUPER^{OX}-Scrubbing Unit

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In an acidic environment of sulphuric acid and SO₂ as impurity to remove H₂O₂ is used to produce sulphuric acid

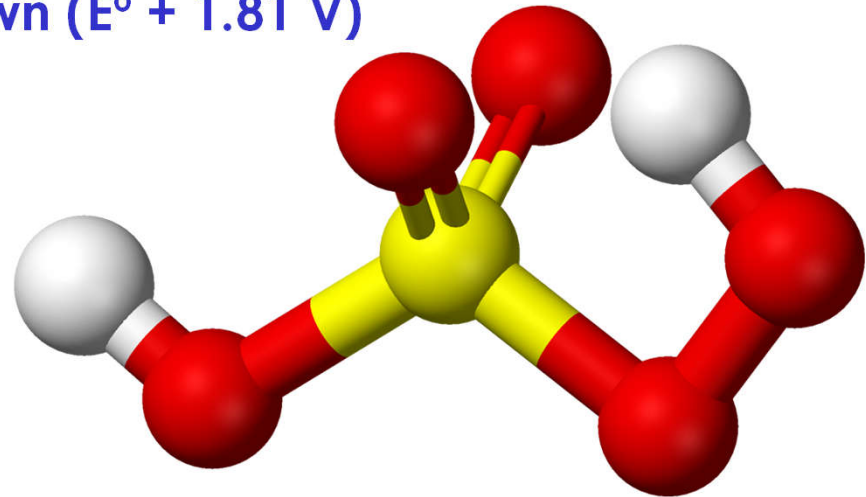
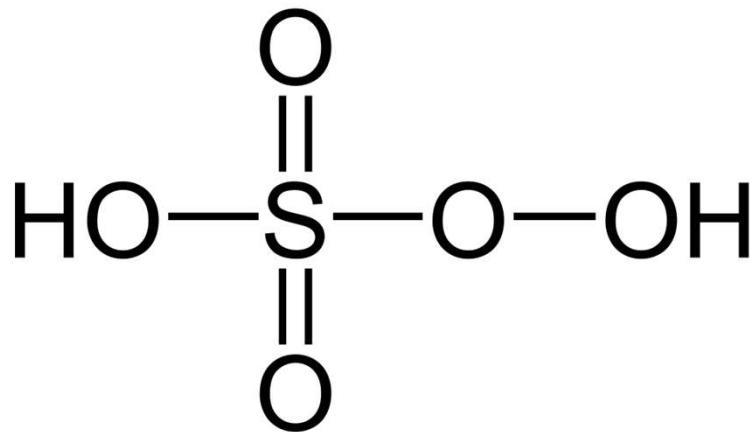


As the reaction does not produce any water as by-product theoretically high concentrated acid could be produced.

But the formation of **peroxymonosulphuric acid** is limiting the acid concentration as it bounds the active H₂O₂

Peroxymonosulphuric acid (POMSA), also known as persulphuric acid, peroxysulphuric acid, or as Caro's acid, is H_2SO_5 , a liquid at room temperature. In this acid, the S(VI) center adopts its characteristic tetrahedral geometry; the connectivity is indicated by the formula $\text{HO}-\text{O}-\text{S}(\text{O})_2-\text{OH}$.

It is one of the strongest oxidants known ($E^\circ + 1.81 \text{ V}$)



H_2SO_5 was first described by Heinrich Caro, after whom it is named.

But **Peroxymonosulphuric acid**, is nearly non-dissociated in higher concentrated sulphuric acid.

Therefore diluted acid is more appropriate for absorption



High Reactivity and Complete Use of H_2O_2

SUPER^{OX}

Double-Stage Absorption Media

→ High Peak Ability

Packed Column-Design

→ Plotsize reduced due to
one in one design

1st 50 up to 70% Acid Conc.
2nd 30 up to 40% Acid Conc.

Traces of H₂O₂ in Product Acid

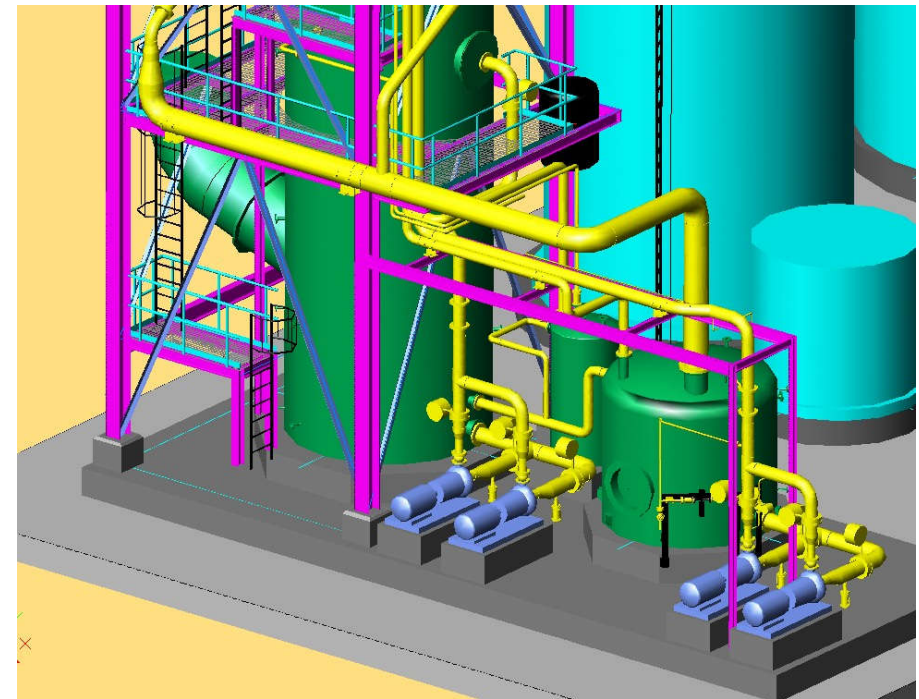
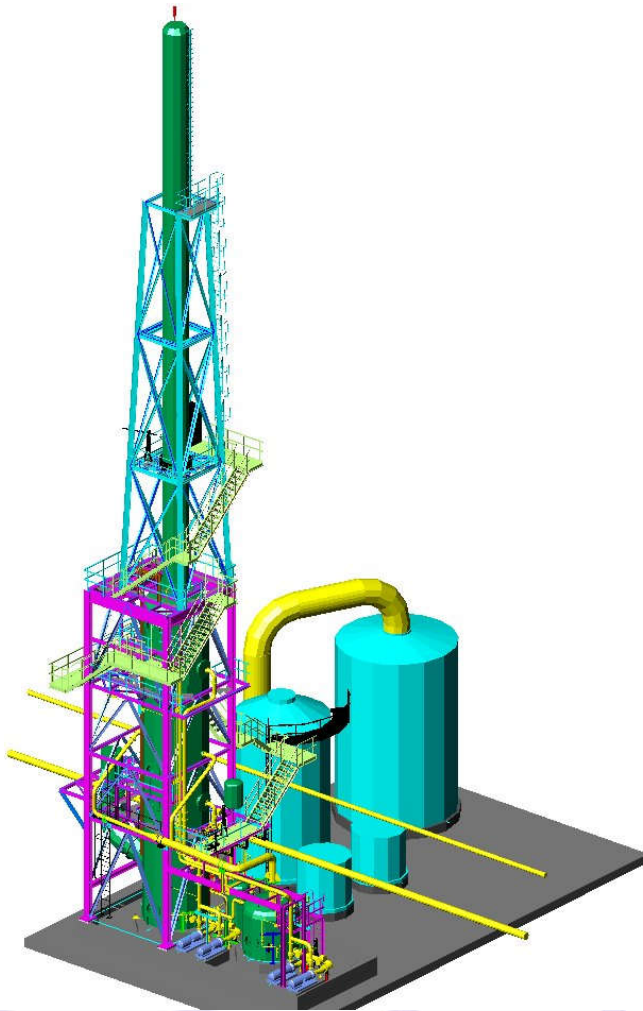
Reference with up to 60%











Project Start:

December 2002

Plant Commissioned:

June 2003

Operational Data:

gas flow:	55'000	Nm ³ /h wet
inlet temperature:	70	°C
outlet temperature:	40	°C
acid concentration 1 st stage:	55-60	weight-%
acid concentration 2 nd stage:	30-40	weight %
pressure drop:	app. 20	mbar
SO ₂ raw gas:	2'500	ppm
SO ₂ clean gas guaranteed:	400	ppm
SO ₂ clean gas achieved:	50	ppm
average peroxide consumption (as 50%):	150	kg/h
water consumption:	1'300	kg/h
product acid:	400	kg/h

Project Start:

May 2014

Plant Commissioned:

January 2016

Operational Data:

gas flow:	130'000	Nm ³ /h wet
inlet temperature:	80	°C
outlet temperature:	35	°C
acid concentration 1 st stage:	55-60	weight-%
acid concentration 2 nd stage:	30-35	weight %
pressure drop:	app. 22	mbar
SO ₂ raw gas:	1'000	ppm
(Peak)	3'000	ppm
SO ₂ clean gas guaranteed:	< 100	ppm
average peroxide		
consumption (as 50%):	380	kg/h
water consumption:	4'500	kg/h
product acid:	880	kg/h



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