



FIRING UP EFFICIENCY

Capacity & Uptime Boost

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- CS is technology leader in combustion and burner technology
- With more than 15 years independent presence on the market and experienced engineers, CS is known as a competent partner for innovative, complex combustion systems.
- CS is developing long term partnerships with our clients and supporting them to reduce their total cost of ownership

at a glance

- Customized Solutions
- Competent Partner
- Reliable
- Best in Class Design
- ECO friendly Technology
- Flexible

CS competence out of one hand

Feasibility
Studies

Engineering
& Design

Inspection,
Maintenance &
Optimization

Equipment,
Plants &
Spare parts

experiences

& references

Licensors, EPC

- TOPSOE – WSA, SAR
- WORLEY – SAR
- Hugo Petersen
- Metso
- KVT – Oxysulf

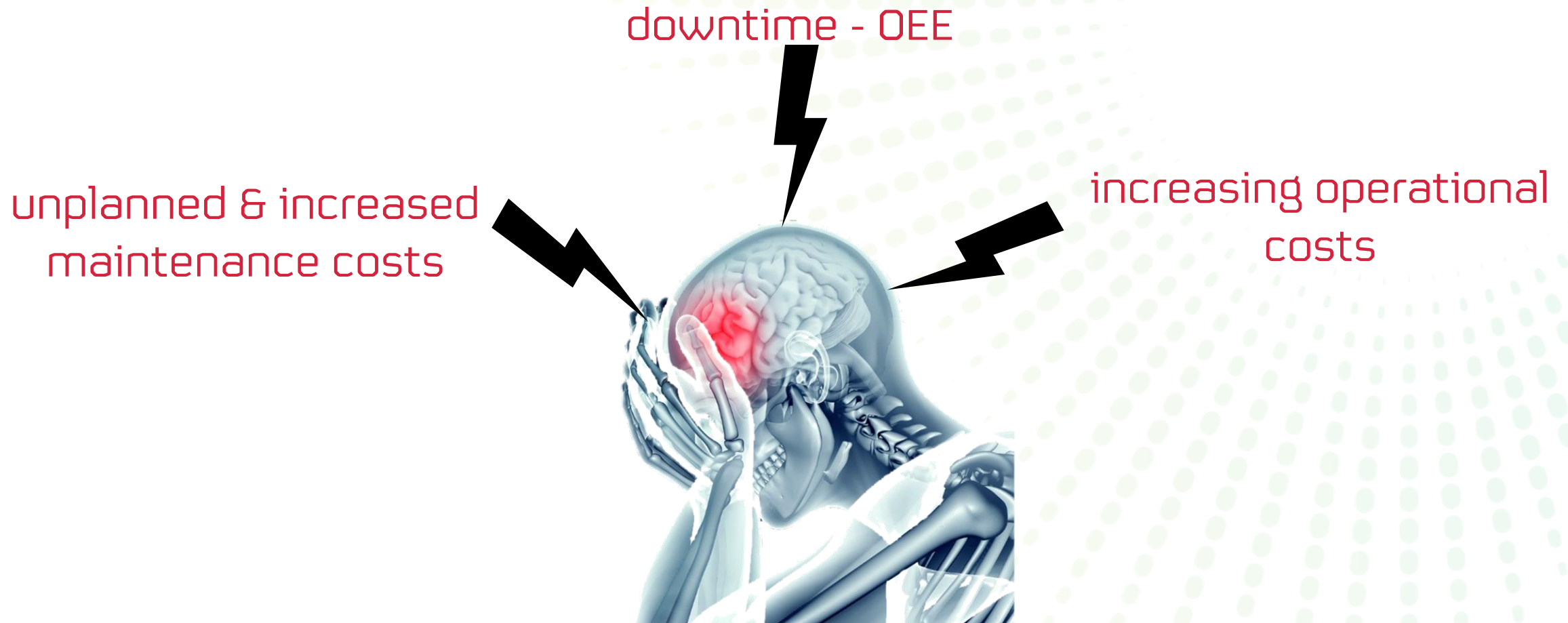
... and many more

Plant Operators

- Grillo Werke, Germany
- South Pacific Viscose, Indonesia
- Lanxess / Envalior, Belgium
- BASF, Germany
- Votorantim Metais / Brazil
- Lenzing Group / Worldwide

... and many more

What causes headache operating a H₂SO₄ plant?



CS approach

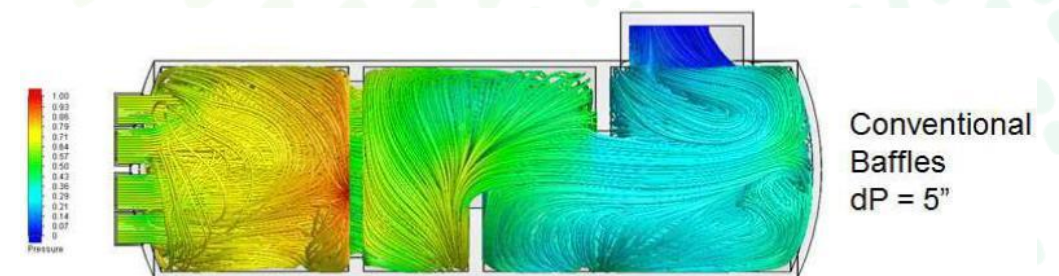
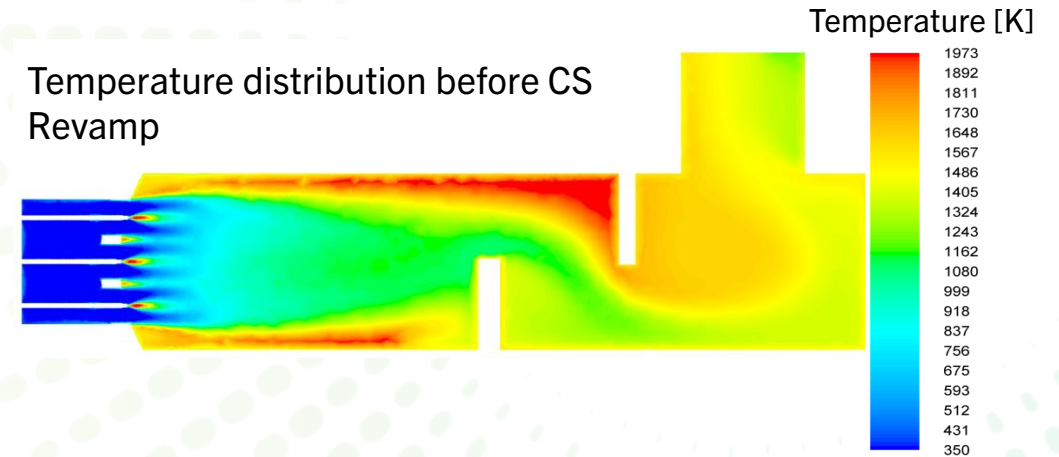
project start

Bad atomization quality

- Unburned Sulphur reaching WHB & catalyst beds & fouling
- Hot spots in the furnace & damaged refractory
- Increased pressure drop through the whole system

Frequent nozzle plugging & high wear

- Increased downtime for cleaning & repair
- High costs for spare parts and pressure booster fans

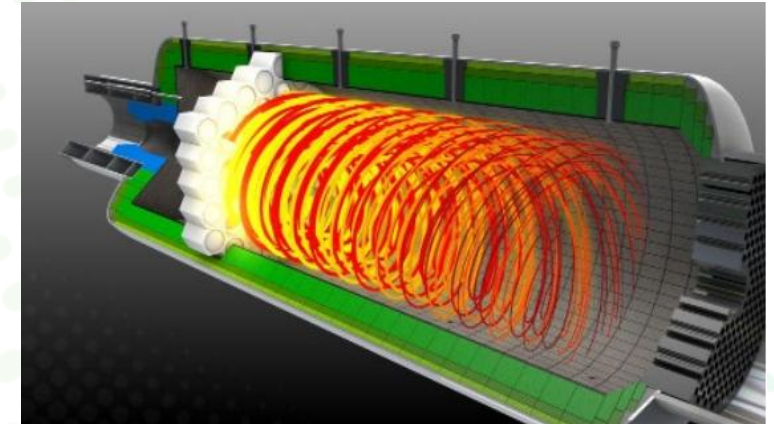


Mixing & pressure drop before CS Revamp

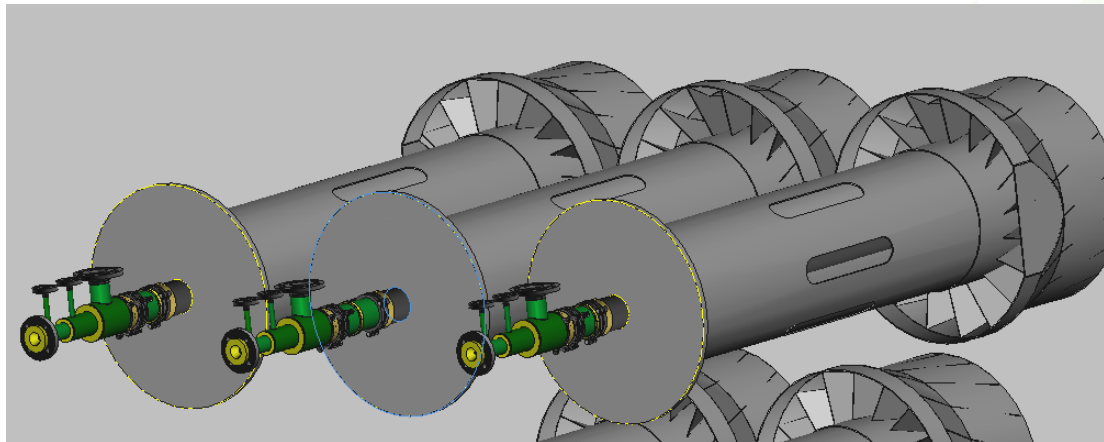
CS approach implementing changes

Equipment changes

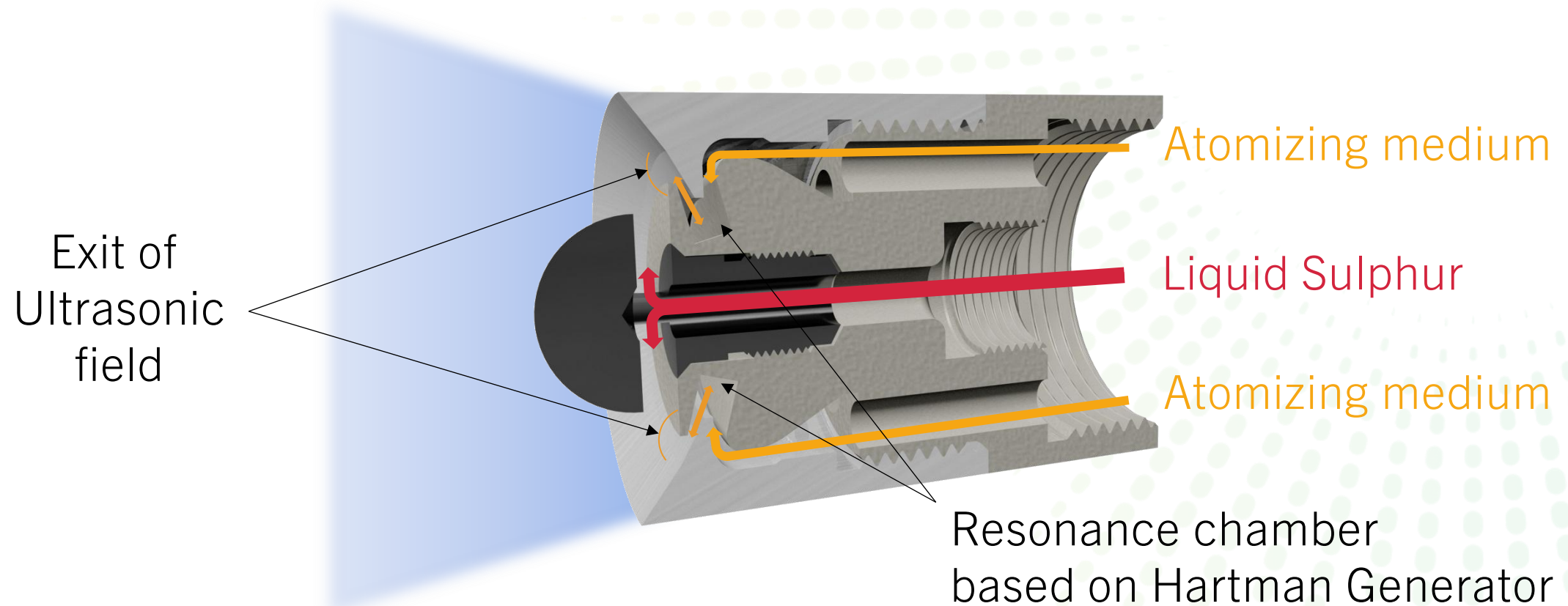
- Ultrasonic nozzles for reduced droplet size and increased capacity
- Swirl bodies to increased intermixture with combustion air
 - Inserted in existing burner housing
 - Sulphur guns removable during operation
- Vector wall for optimal temperature distribution at outlet



Source: Blasch Ceramics



CS approach ultrasonic atomization





VARISPRAY

conclusion

results of case study

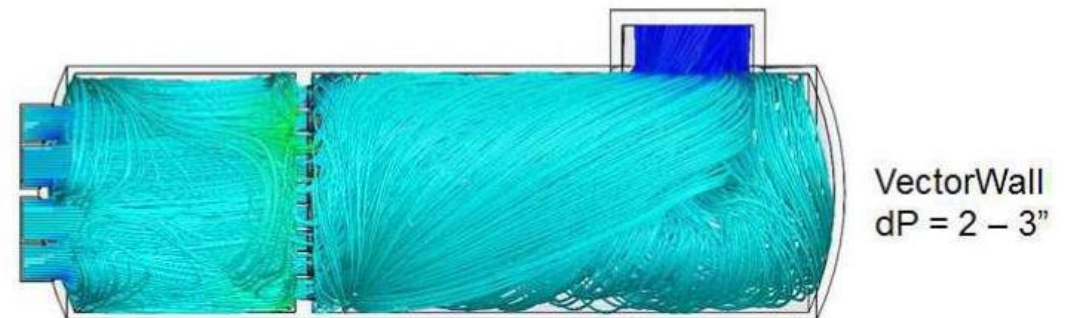
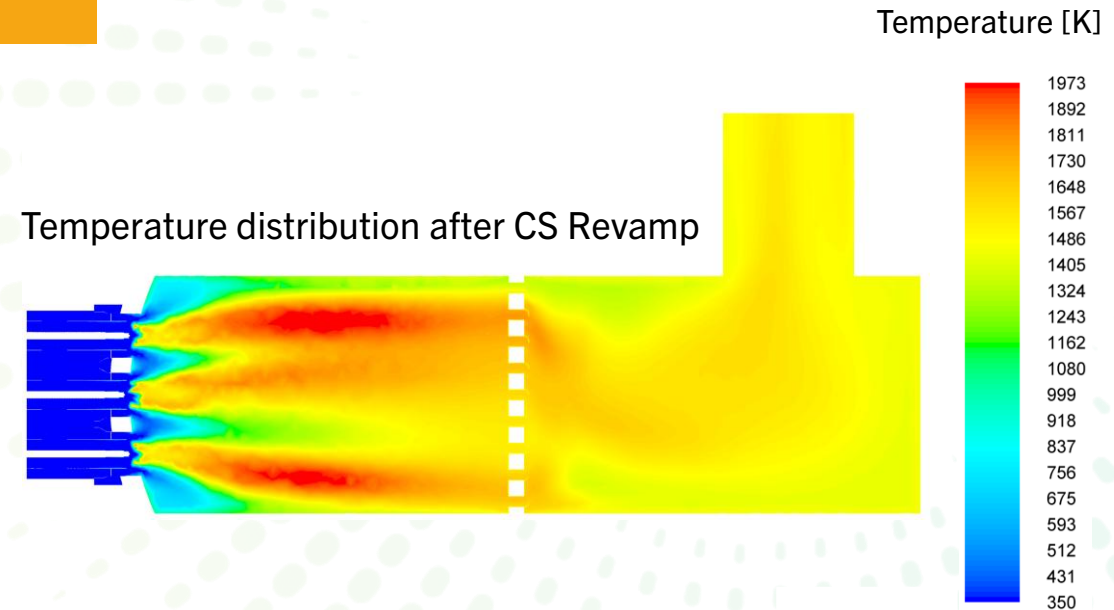
Reduced Maintenance effort

- Eliminated hot spots
- CS sulphur guns retractable while plant stay in operation
- Self-cleaning ultrasonic nozzles

Reduced energy consumption

- Up to -50% pressure drop through complete plant
- ~USD 160k savings in blower operation

+30% Production capacity



Mixing & pressure drop after CS Revamp

conclusion

Various possibilities
supporting operators to

- ✓ Increase capacity
- ✓ Increase uptime
- ✓ Reduce operating costs



Big Thanks
to all operators, who are open
to innovation & improvements.



COMBUSTION SOLUTIONS

FIRING UP EFFICIENCY

Thank you for your attention!

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