

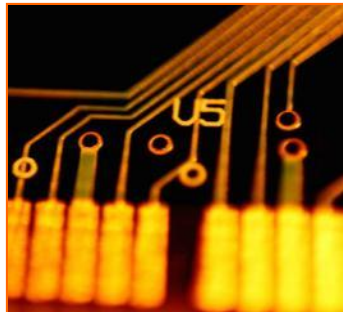


SGS MARINE SERVICES

EGCS ASSOCIATION
10th anniversary Workshop
London, Oct. 9th-10th
Gerd Schneider

WHEN YOU NEED TO BE SURE

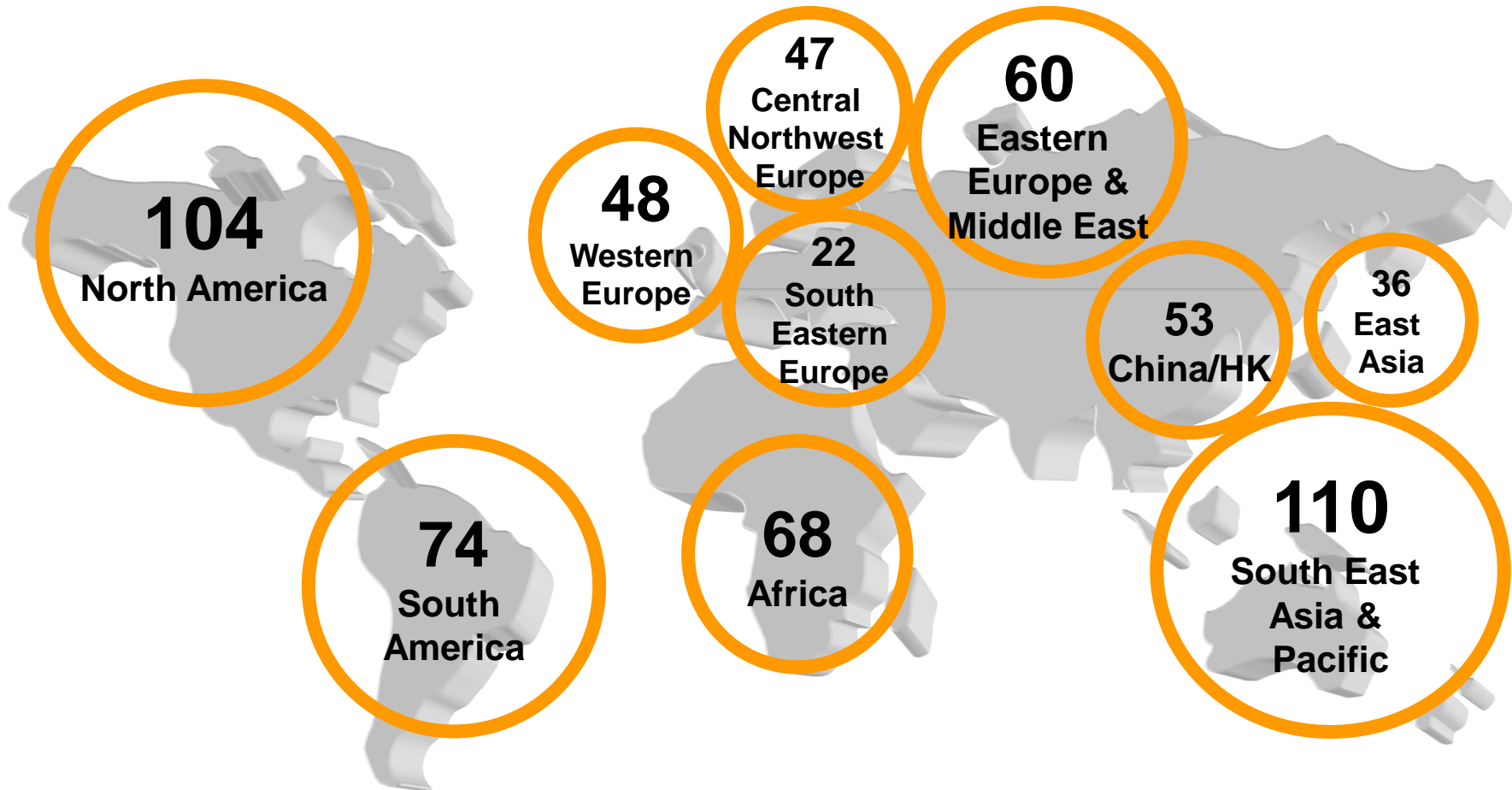




- Founded in 1878 as a grain inspection company
- Expanded beyond agriculture in early and mid 20th century to:
 - Minerals
 - Oil, gas and chemicals
 - Consumer goods
 - Industrial sector
- Listed in 1981
- Growth and diversification continued throughout last half of the century

SGS GROUP WORLD-WIDE

SGS currently operates 622 laboratories in 89 countries with 1,350 offices around the world. 90'000 employees.





WORKING ACROSS ALL INDUSTRIES AND GEOGRAPHIES



SGS World's leading company

- Inspection
- Verification
- Testing
- Certification



SGS MARINE SERVICES



- ❑ EXHAUST GAS CLEANING SYSTEMS SAMPLING AND TESTING
- ❑ SCRUBBER WASH WATER Sampling and Testing
- ❑ ONBOARD STACK EMISSION TESTING/ MONITORING
- ❑ BALLAST WATER Sampling and Analysis
- ❑ SENSORS CALIBRATION
- ❑ BILGE WATER Sampling and Testing
- ❑ GRAY WATER Sampling and Testing
- ❑ BLACK WATER Sampling and Testing
- ❑ POTABLE WATER Sampling and Testing to any Flag State regulation
- ❑ POTABLE WATER Sampling and Testing for Legionella bacteria
- ❑ EU REGULATION 2015/757 Accredited verification of Emission Monitoring Plans
- ❑ INVENTORY OF HAZARDOUS MATERIALS
- ❑ INDOOR AIR QUALITY (IAQ)
- ❑ NOISE & VIBRATION MONITORING
- ❑ FUEL QUANTITY & QUALITY
- ❑ LUBE CONDITION MONITORING

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EXHAUST GAS CLEANING SYSTEMS EMISSIONS SAMPLING AND TESTING



- CEMS (Continuous Emission Monitoring System) audit, validation and calibration
- Data Management and Data interpretation.
- Measuring NO_x, SO₂, CO, CO₂, Oxygen, NH₃, Dust and Flow
- following IMO revised Annex VI, CARB, US EPA and EN Methods.
- On board testing, monitoring and reporting of particulate loading, particle size
- distribution, and chemical analysis of particulate at the EGCS gas inlet and outlet.
- On board EGCS sound level testing, monitoring and reporting
- On board analysis of water samples.
- On shore analysis of water and fuel oil samples.

EXHAUST GAS CLEANING SYSTEMS

WASHWATER



- On board and on shore analysis of wash-water samples
- On shore analysis of water and fuel oil samples
- Both for IMO MEPC and US VGP 2013
- Logistic: SGS sampling or ship crew sampling with logistic for instructions, containers, preservatives and shipping to lab.
- Issues: holding time for MEPC (Nitrite and Nitrate separate) with 24 hours (cooling to 4° C or frozen for 1 month)
- No such issue for US VGP as they ask for sum of Nitrite + Nitrate (Nitrites is naturally converting in Nitrate)
- The Guideline for Exhaust Gas Cleaning System (Resolution MEPC.259(68)) is under revision by IMO (working group is at 4th round) will be presented at next PPR
- It is expected that Total Hydrocarbons and Dissolved Metals will become additional parameters

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EXHAUST GAS CLEANING SYSTEMS

CALIBRATION



- ❑ CALIBRATION IS MANDATORY AND REALLY NECESSARY
- ❑ BOTH FOR GAS ANALYZER AND WASHWATER ANALYZER
- ❑ ALSO WATER FLOW METER CALIBRATION BECOME IMPORTANT AS THE COMPLIANCE IS WATER FLOW DEPENDING
- ❑ PAH IS A CRITICAL CALIBRATION

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EXHAUST GAS CLEANING SYSTEMS

COMMISSIONING

- ❑ Commissioning is viewed as an IMO requirements, in the reality have to be seen as commercial way to approve the supply among 3 parts (shipowner, EGCS builder and shipyard/retrofitter).
- ❑ When an EGCS is supplied also the gas analyzer and the water analyzers are supplied, for this reason the commissioning need to check also the analyzers.
- ❑ Some Class only ask for Nitrite & Nitrates during commissioning as they take results from the analyzer but this way it is not possible to do commissioning of analyzer quality and calibration.



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EXHAUST GAS CLEANING SYSTEMS EMISSIONS SAMPLING AND TESTING

STATISTIC

- ❑ In general the effectiveness of scrubber for SO₂ is very good both during commissioning and during annual monitoring
- ❑ Some issues are encountered on water analyzer installation (conceptual errors) very often easy to be adjusted
- ❑ Some issues are encountered on water analyzer (missed maintenance in terms of cleaning)

EXHAUST GAS CLEANING SYSTEMS EMISSIONS SAMPLING AND TESTING

STATISTIC

- Total Vessels = 387, Cruise = 304, Rest = Ferries, Container, Cargo
- Closed loop = 17, Rest = open loop
- Commissioning = 20, Rest Compliance

- Rate of Compliance close to 100% for PAH and Nitrate
- PAH maximum 10-15 microgram/liter over all samples taken

CHALLENGES

- Missing information on flow rate (wash water) and load (engine)
- Holding Times (Nitrate) (Freezing)
- Mixing up bottles (crew)
- PH, crew only takes readings (calibration?) instead measurements on board
- Documentation not completed (crew)
- Customs can create problems in certain locations regarding delivering of samples kits to/from vessel
- Sample point

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EXHAUST GAS CLEANING SYSTEMS EMISSIONS SAMPLING AND TESTING



PM

- ❑ As for the on shore industry a wet scrubber (but also a dry version) is well know as to be able to remove also PM (particulate matter) from emission.
- ❑ We perform several tests to assess the capability of wet scrubber to remove PM with high success down to 1-3 μm particle
- ❑ A shipowner need to consider that a scrubber installation can controll also PM that will become a future issue (some ship have already such problem in some harbors)

EXHAUST GAS CLEANING SYSTEMS EMISSIONS SAMPLING AND TESTING

OTHER (DeNO_x and Solid Deposits)

- When a scrubber is following a catalytic DeNO_x we need to take in account reaction of SO₂ with Ammonia that is a well know problem on the on shore Power Industry, it can effect more the deNO_x than the DeSO_x process and there is a new pollutant, ammonia, that will be present in discharge water.
- Some scrubber show problems with generation of solid deposit on wash-water circuit, in general due to formation of gypsum and Hannebachite (CaSO₃·0.5H₂O).



- Main debate is on capex and RoI, Low Sulphur availability, effect on engine life.
- But at today is not well considered the matter of fuel stability
- This effect can bring unpleasant surprise to fuel users.
- Fuel stability become an issue due to cracking and blending process.
- For this reason to select low sulphur fuel against an EGCS need a careful attention as such kind of fuel can present a lot of issues on daily life and on long term life of engine (filter clogging, polymerization, change in physical properties, etc.)



- Enhancing quality
- Reducing risk
- Improving productivity
- Ensuring compliance

Become A Partner For Success



- SGS promotes a “partnership” approach to business, as opposed to a client-vendor relationship.
- We view ourself as a provider of solutions, as opposed to just a service.
- The bottom line is that if you are so successful, then so are we.

We invite you to discuss *your ideas and vision*
with us



WHEN YOU NEED TO BE SURE

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