



# GLASS LINED EQUIPMENT

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## ENGINEERING AND MAINTENANCE



# OUR SERVICE CENTER BASED IN VICTORIA



 MELBOURNE, VIC

## FIELDS OF ACTIVITY

PROCESS INDUSTRIES / FOOD & BEVERAGES

MINING / WATER TREATMENT

## RELIABILITY - SOLUTIONS - ENGINEERED

- TAILOR MADE SOLUTIONS FOR OUR CUSTOMERS' PROCESS
- PREVENTIVE AND CORRECTIVE MAINTENANCE SERVICES
- ON-SITE EMERGENCY TROUBLESHOOTING WITH THE SUPPORT OF EXPERT TECHNICIANS
- FULL REFURBISHMENT SERVICE ON-SITE OR IN OUR SERVICE CENTER
- DETAILED REPORTS AND RECOMMENDATIONS AFTER EACH OPERATION
- OEM OR AFTERMARKET SPARE PARTS SUPPLY

# OUR GLASS LINING PARTNER



- Privately owned company
- Global presence
- 650 employees
- 200 million Euros revenue



New plant near Venice  
Max vessel size 40,000L



# NEW GLASS LINED PRODUCTS

- VESSELS



- AGITATORS



- PIPING



# PREVENTATIVE MAINTENANCE GLASS LINING

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- GLASS LINING SHOULD BE INSPECTED REGULARLY:
  - VESSELS WITH/WITHOUT AGITATORS -> EVERY YEAR
  - STORAGE TANKS -> APPROXIMATELY 3 YEARS
  - REPAIRED EQUIPMENT -> 3-6 MONTHS THEN YEARLY ONCE REPAIR IS SECURE
- SEVERAL TYPES OF TESTING CAN BE DONE TO EXAMINE THE CONDITION OF THE LINING
  - VISUAL INSPECTION
  - THICKNESS MEASUREMENT
  - SPARK TESTING
  - STATIFLUX TESTING
- VESSELS CAN ONLY BE TESTED FROM INSIDE, THEREFORE CONFINED SPACE OPERATION IS NECESSARY. WE WILL COLLABORATE WITH YOUR PERSONNEL TO PREPARE ALL RISK ANALYSES, **SWMS**, ETC.

# VISUAL INSPECTIONS

- ALL INSPECTIONS SHOULD START WITH A VISUAL INSPECTION.
- MANY IMPERFECTIONS AND DAMAGE CAN BE SEEN VISUALLY BY A TRAINED PERSON.



# THICKNESS TESTING

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- THICKNESS MEASUREMENT DETERMINES IF THE LINING THICKNESS IS DECREASING DUE TO CORROSION.
- ACCORDING TO DIN 28063, ENAMEL THICKNESS MUST BE BETWEEN 1.0 – 2.2MM (SOME DEVIATION IS ALLOWABLE UNDER SPECIFIC CIRCUMSTANCES).
- THICKNESS TESTING IS DONE WITH SPECIFIC INSTRUMENTS AND IS NOT DESTRUCTIVE TO THE GLASS.



# STATIFLUX TESTING

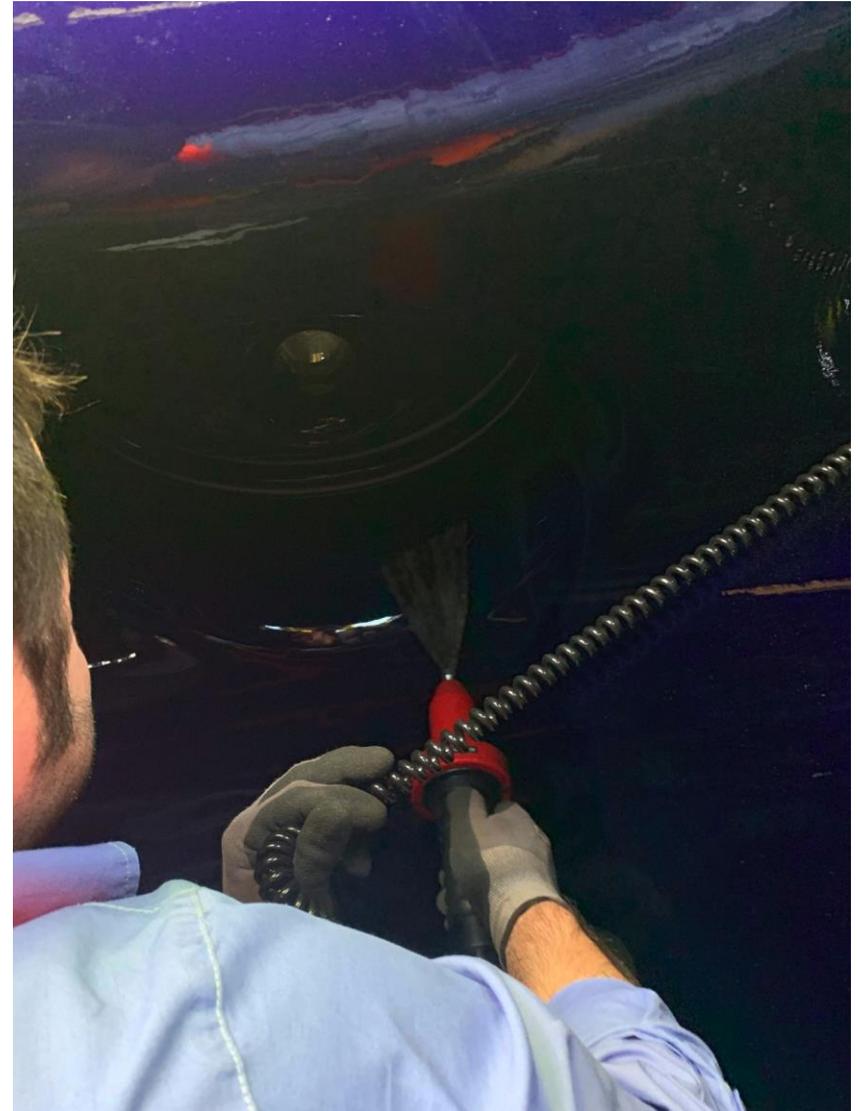
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- TESTS FOR MICROCRACKS CREATED BY MOVING THE VESSEL OR THERMAL SHOCK.
- ELECTRICALLY CHARGED PARTICLES ARE SPRAYED ON THE GLASS LINING. THE PARTICLES SEEK OUT CRACKS HIGHLIGHTING THEM.
- THIS TEST DOES NO DAMAGE TO THE GLASS LINING.

# SPARK TESTING

- 3V PERFORMS SPARK TESTS AT 30KV, THE HIGHEST IN THE INDUSTRY, ENSURING UNPARALLELED QUALITY. ONSITE OUR TECHNICIANS USE A LOWER VOLTAGE.
- SPARKS ARE APPARENT SHOULD ANY DAMAGE EXIST IN THE GLASS LINING AT THE POINT OF FAILURE.



# GLASS LINING REPAIRS

- DAMAGE TO THE GLASS LINING CAN BE REPAIRED USING DIFFERENT COMPONENTS DEPENDING ON THE SIZE
  - SMALL – TANTALUM STUD
  - MEDIUM – TANTALUM WASHER
  - LARGE – TANTALUM PLATE





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