



**Innovative technological solution
for Serbia**

Key Figures & Achievements

17.000 flat bottom tanks up to 100m diameter and underground tanks up to 200m³ transformed to double wall

5.000 PE piping installations guided

500 Environmental Site Remediation projects guided

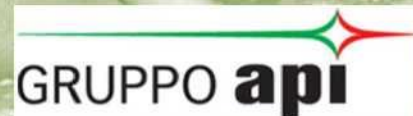
3.000 Leak Detection systems for double-wall tanks and pipes produced and installed

3.500 waste water treatment plants produced and installed

1.000 gas stations remotely controlled

3.000 Oil separator plants produced and installed

500 gas stations built and restructured



... zero incidents track record*

More than 11.000 satisfied customers.

*) 7 year basis

- The safety, reliability, and quality standards for the products and services have been validated and certified.
- The methods have been certified under ISO 9001:2008, IS 14001:2004, OHSAS 18001:2007. Manufacturing of the coatings, paints, and resins is controlled under TÜV SÜD and DIBT warranting a highest quality standard.
- A highest environmental safety standard EN 13160 Class 1.
- The applied engineering and smart solutions have been protected under patents and trademarks.
- The results have been embodied in environmental responsibility insurance „Kasko Ambientale“.





- At the ExxonMobil Safety Day 2014 Woltank Systems has been awarded as a **"Star Performer"** for the **third consecutive time in the Contractor Safety Award Program**.
- Woltank is particularly **proud** of this prestigious award in **recognition of " Safety Leadership** in progressing the Safety Culture and influencing the Safe Behaviour".

- Woltank is OIMS certified.



- At the REPSOL Safety Day 2014 held in Madrid May 28th, Woltank Systems has been awarded with a **Safety Award**



Wolftank Adisa Holding AG Company's Experiences in Renovation of Tanks under Unique Technology DOPA®



- 30 years of work with over **11000** industrial **customers**
- During the above period, the customers achieved **savings** exceeding Euro 600 million
- Manufacturing and installation of **3000 leak detection system** for double-wall tanks and pipelines, of which 1000 facilities are controlled remotely
- **3500 treatment facilities**, of which 1000 facilities are controlled remotely on a continuous basis
- Over **20000** refurbished industrial ground-based and underground storage tanks
- Implementation of over **500** environmental rehabilitation projects (water and soil treatment)

- The Company's offices in Italy, Austria, France, and Russia. The next will be China
- Official European partners in Germany, Switzerland, Belgium, France, Spain, United Kingdom, Turkey, Sweden, and Denmark
- Official partners throughout the world – North Africa, West Africa, East and South Africa, USA, Middle East, China, Japan & Australia





Company Overview French Partner Mäder Group- one of the owner of WTH



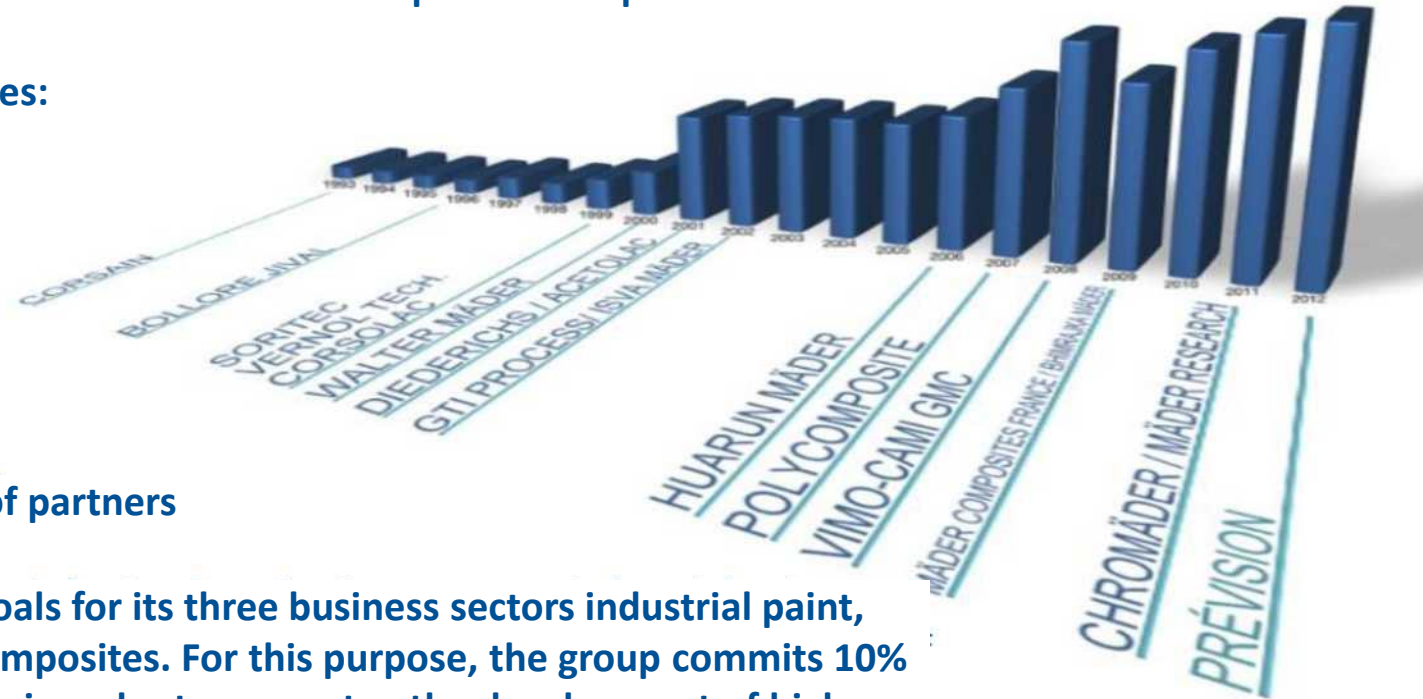
The Mäder Group arose in 1993 after the acquisition of the company Corsain and with internal growth and several successive acquisitions expanded its sales in 13 years by a factor 18.

The group now comprises:

850 employees 22
companies 16
laboratories 14 plants
in Europe 1 plant in
China 1 export centre

a worldwide network of partners

Mäder has ambitious goals for its three business sectors industrial paint, decorative paint and composites. For this purpose, the group commits 10% o sales to R & D projects in order to guarantee the development of high-tech products and to ensure its competitive advantage.





Wolftank Adisa Holding AG and Scientific Instruments JSC present a new product



International partnership entered upon a new phase in October 2018.

Scientific Instruments JSC (Russia) and **Wolftank Adisa Holding AG (Austria)** Companies offer an environmental and engineering safety technology product **DOPA®** adopted under a trademark **DSV®**.

The product relates to implementation of the governmental policy concerning protection of the population and minimization of the social, economic, and environmental damage to the population, areas as a result of natural and man-made emergencies.

We offer a full-cycle Intellectual System to our partners for operation in various sectors: chemistry, petrochemical industry, ecology, environmental monitoring, and environmental safety sector.





Upstream



Refining & Production



Storage & Logistics



Commercial and non-commercial filling stations

- Chemical and petrochemical production
- Storage of chemicals and petrochemicals
- Handling areas

- Storage of chemicals and petrochemicals
- Handling areas
- Industrial facilities
- Strategic facilities (military use)
- Aviation fuel supply
- Water storage & water supply systems
- Gas, air storage & supply systems

- Commercial service station (retail of MOC and NOC)
- Private fleet filling stations
- Public transport fleet filling stations
- Marine filling stations
- Agriculture filling stations
- Military facilities
- Aviation fuel supply



Wolftank Adisa Group: Provider of materials, technologies & solutions for:

Production, Storage and Infrastructures

Distribution

Environmental Engineering



Wolftank Adisa Group

Special Paints, Coatings & Resins



Tank Lining Installation & Maintenance Services



Environmental Remediation Projects



Wolftank Adisa Group

Paints, Coatings and resins
production

**Special Paints,
Coatings & Resins**

Patents and other IP

Application technology and
equipment technique



R&D and product
modification

Technical support and
consulting



System approvals

Wolftank Adisa Group

Atmospheric Corrosion
control

Tank lining

Tank conversion / leak
detection

^ — Concrete sealing

Tank Lining
Installation &
Maintenance
Services



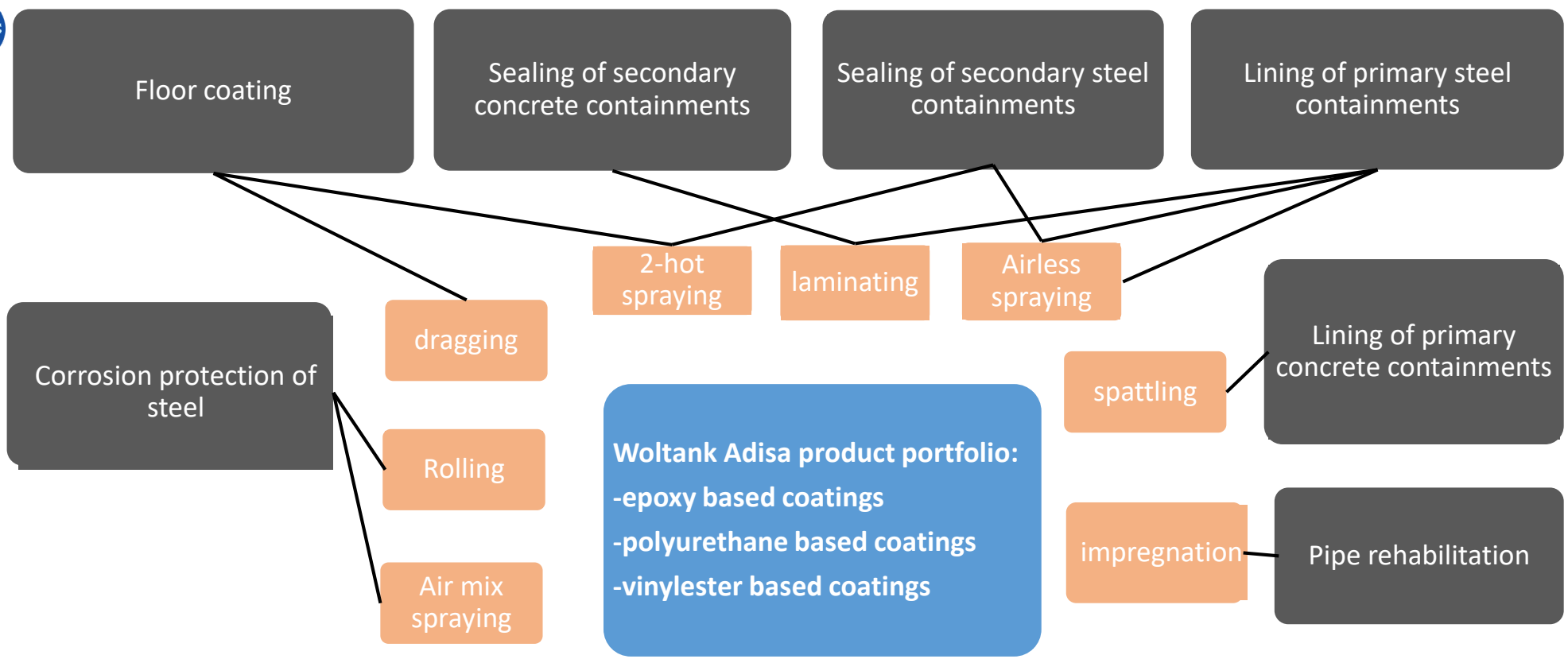
Planning and
Engineering



Technical support for piping,
tanks and others

Training & Inspection
Services

Maintenance Services





 Application techniques
 Application fields for coatings



Framework concept of innovative product is developed with due consideration for requirements of the Industry 4.0 technology

Scope of the project **DOPA**[®] adopted under the trademark **DSV**[®]:



- 1. Assimilation of an innovative tank coating technology** for sustainable use of natural and technical resources, most efficient energy saving , repair instead of a new purchase.
- 2. Use of a modern protected information technology.** Change-over to automated digital manufacturing controlled by smart online systems with continuous monitoring and environmental interface.





Wolftank Adisa Holding AG and Scientific Instruments JSC present the new product DSV®



DSV® product means:

- Assurance of the required environmental, technical safety and protection of investments when solving the obsolescent oil and gas infrastructure repair and refurbishment problems;
- Safety and a service life extension of the tanks in terms of future income utilization efficiency;
- Achievement of the technological development goals in promising, cost effective segments using a remote control system ;
- Gaining access to a multifunctional analytical & technological complex via secure communication links for the purpose of monitoring or control and an online continuous comprehensive monitoring system by means of a smart leak detection system (real-time transmission, analysis using instruments, equipment, methodologies, and proprietary software of Scientific Instruments JSC;
- Information technology networking and/or integration of DSV into a facility status database.



Application Range of DSV®

Fuel Filling Sites and Stations



Drinkable & other water tanks



Sumps



Refineries and Oil Depots



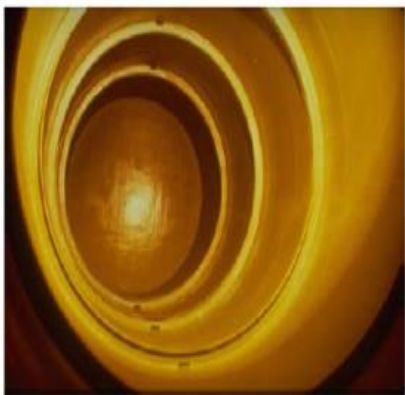
Water treatment plants -Repair and protection of a natural pool



Canals and routes



Inner coatings & resins portfolio



TANK INTERNAL LINING

Chemically resistant coatings

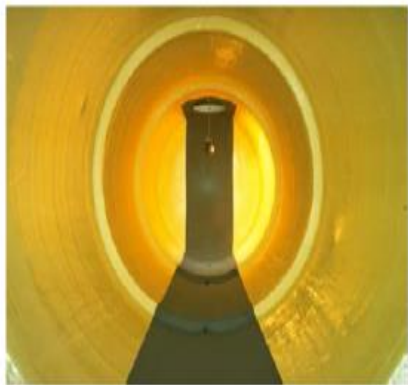
Epoxy-based
Epoflex 2, Epoflex 4
Epoflex 3
Epoflex 6, Epoflex 6 R

Polyester-based
Adalyt 6

Double wall systems

Cylindrical tanks
DOPA 1
DOPA 6

Flat bottom tanks
System TK
System DOPA 2



Filling Stations
Forecourt /
Loading Bay

Polyurea-Systems

Polyurea-Systems
Adaflexsil
Adastar

Special-Coatings

Epoxy-Based-
Coatings

Potable-Water
Epoflex 816 L
Epoflex 6 F
Epoflex 6 F/R

Hot-Water
Epoflex 3 GF

Polyester Based
Coatings

Hot-Water
Adalyt GF

Special-Laminate
Systems



DOPA® - main characteristics

- > Total thickness of the system is around 5mm
- > Leak detection system monitors the under pressure in the interstice
- > The interstice can be divided into different segments. When a leak is detected it can be directly localized.
- > Conductive top layer possible for storage liquids with a flashpoint <55°C
- > Class 1 installation according to EN13160-2 and EN13160-7 ensures:
 - > continuous 24/7 remote monitoring
 - > Secondary containment with same long term resistance to the stored product like primary containment
 - > Corrosion protection of the steel shell due to pinhole free (20kV tested) steel lining



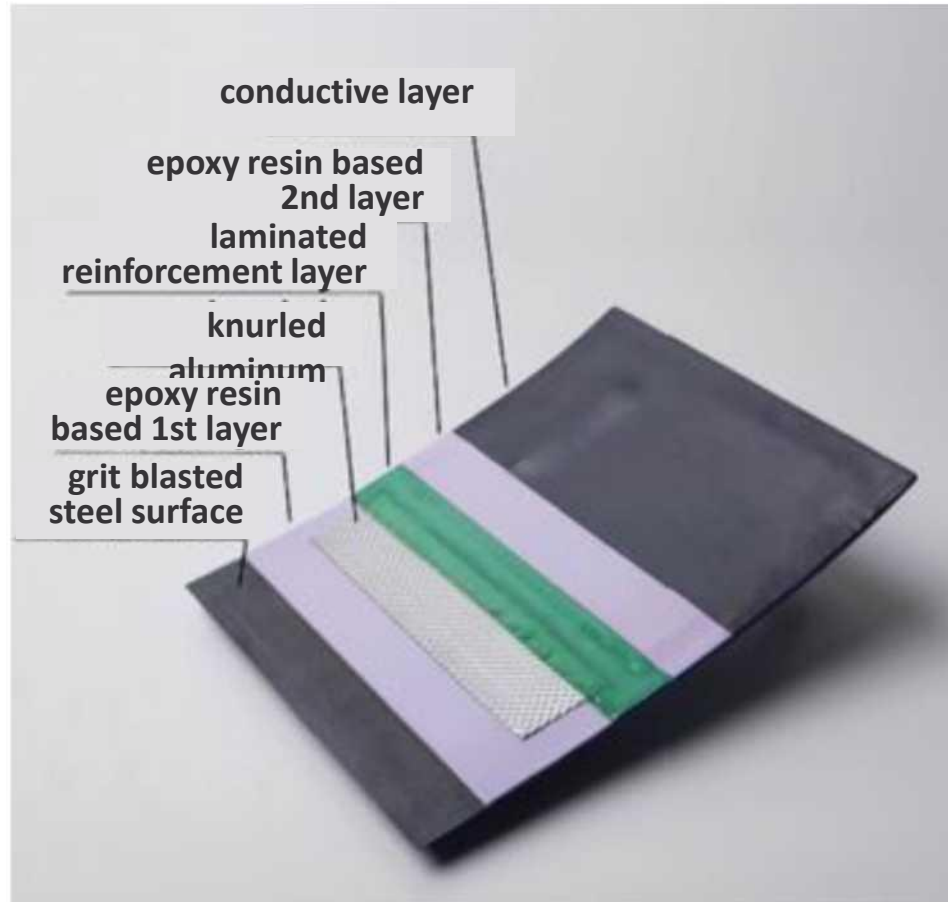
Approval as construction product



Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen.
Diese allgemeine bauaufsichtliche Zulassung umfasst neun Seiten und elf Blatt Anlagen.
Der Gegenstand ist erstmals am 16. Juli 2010 allgemein bauaufsichtlich zugelassen worden.



Structure of the system



Layer system:

- **Base layer** applied on a cleaned (grit blasted surface) steel surface
- **Double wall** creating an interstice and consisting of a composite (knotted aluminum, reinforced epoxy resin layer)
- **Conductive top layer**

The system is applied by a defined application process including airless spraying and rolling.

The double wall system was tested and approved in terms of **mechanical, chemical and thermal properties** by the German TUV in Munich

Single skin relining

1

- Tank Cleaning



2

- Tank Wall Assessment "



3

- Handover to Installation team (if work is carried out by different teams)



4

- Grit Blasting of tank surface



5

- Application of First Layer for long-term conservation of existing tank



→ [Watch the video](#)

DOPA double skin relining (on top of single skin)

6

- Creation of Interstice trough application of 3D-Distance Layer



7

- Application of the new inner tank wall by a Fibreglass reinforced laminate



8

- Application of the final layer of the new inner tank wall by spraying epoxy resin



9

- Grounding of surface by applying a conductive layer



10

- Installation of the Leak detection System



→ [Watch the video](#)

Preparatory (preliminary) operations towards application of **DOPA®** - non-destructive testing and cleaning:

- **Non-destructive testing** (visual and technical expert examination)
 1. Questionnaire-based non-destructive testing with a description of the FFS tank defects and its technical condition
 2. Technical expert examination using non-destructive control instruments

- **Cleaning** of the FFS tank content (both manual and combined), using Woltank robots to minimize the risks and eliminate a «human factor»



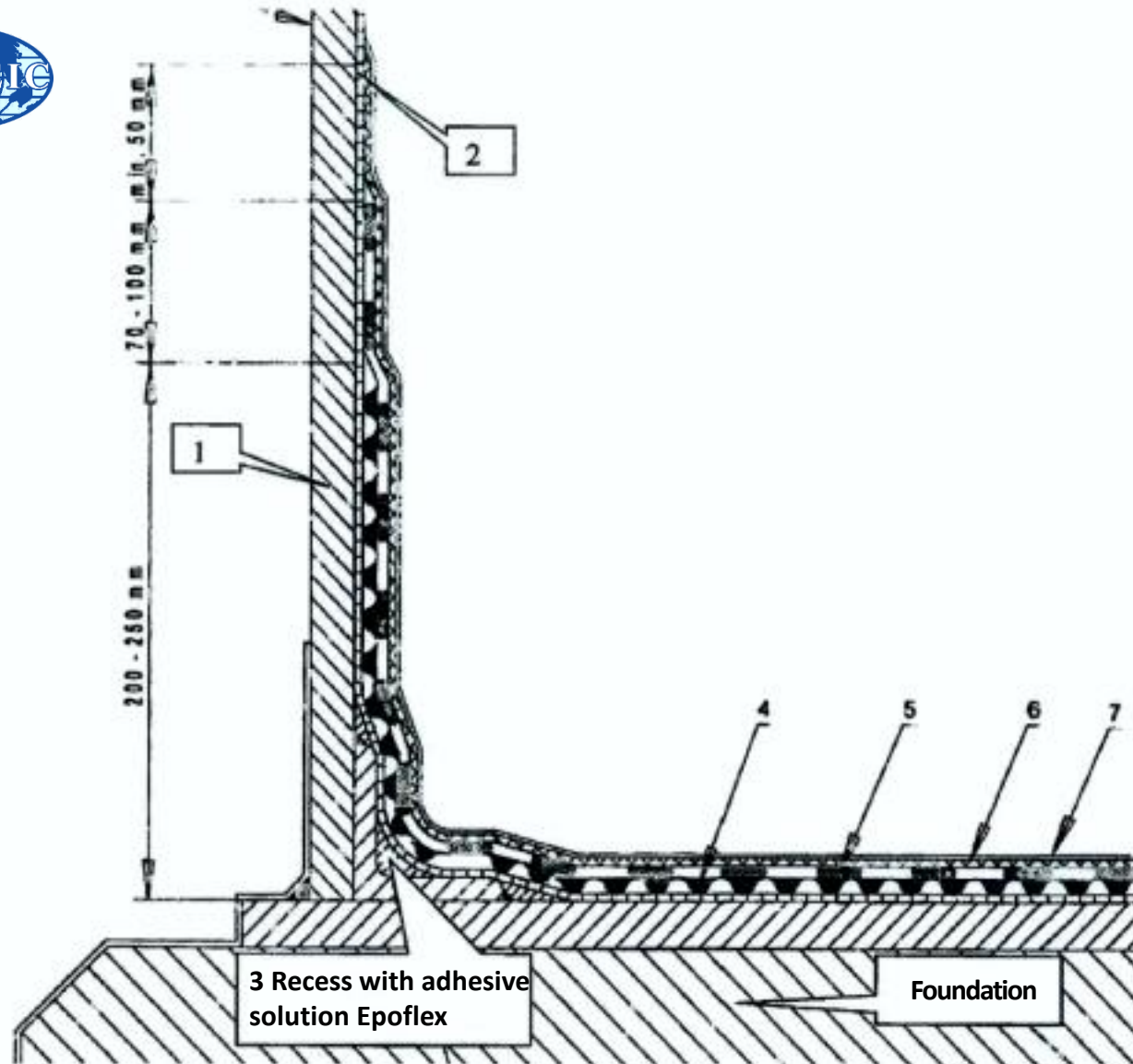
Performance of DOPA® operations

Before application



After application





Legend:

1 – Tank bottom

2 – Internal coating: Epoflex 6N

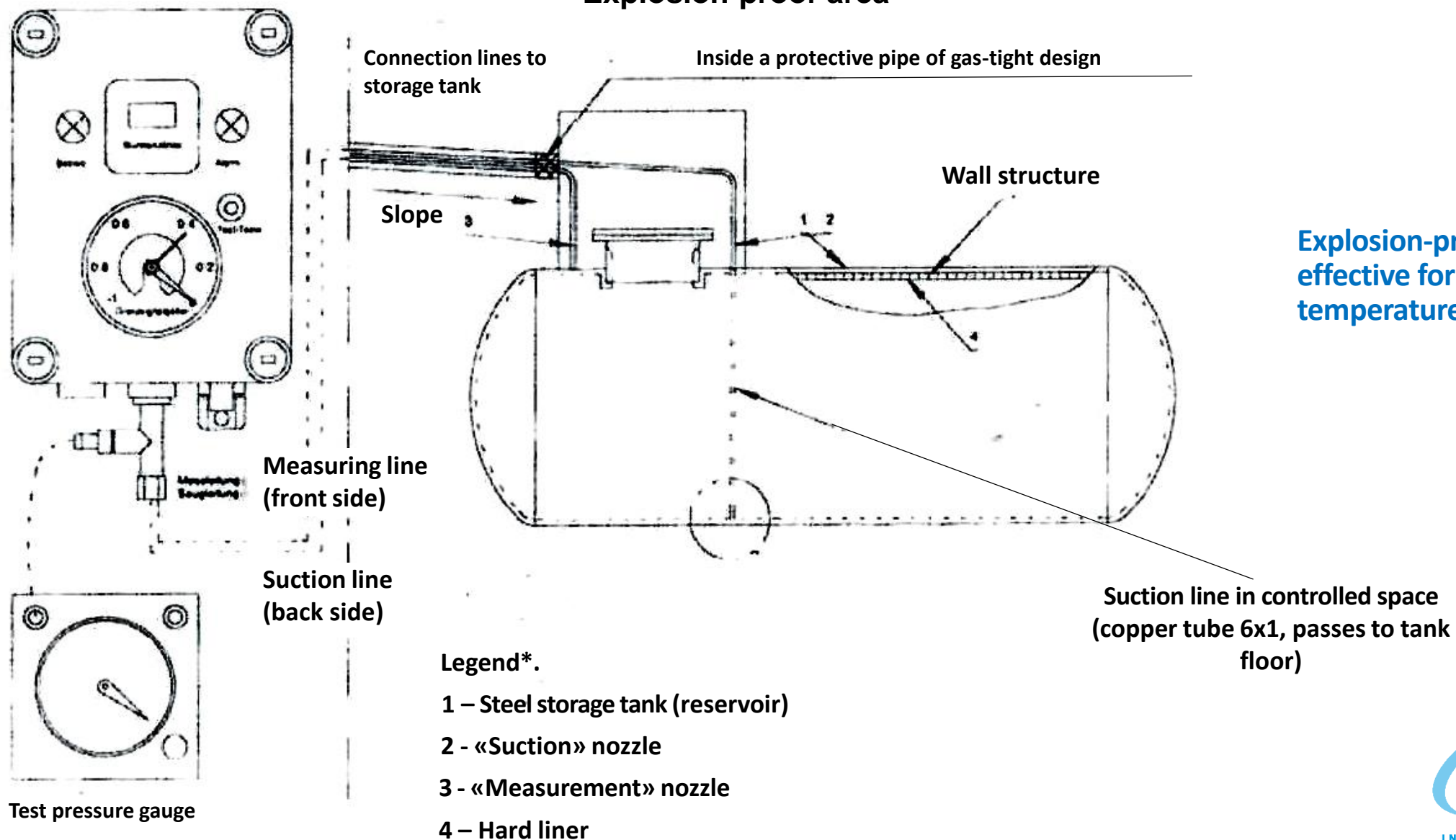
4 – Bubble film with aluminum coating

5 – Laminate with glass fiber cloth 5167,
special glass fiber-reinforced polymer-
impregnated cloth (Epoflex 6N)

6 – Top layer: Epoflex 6N

7 – Conductive layer: Ada-Pox L

Explosion-proof area

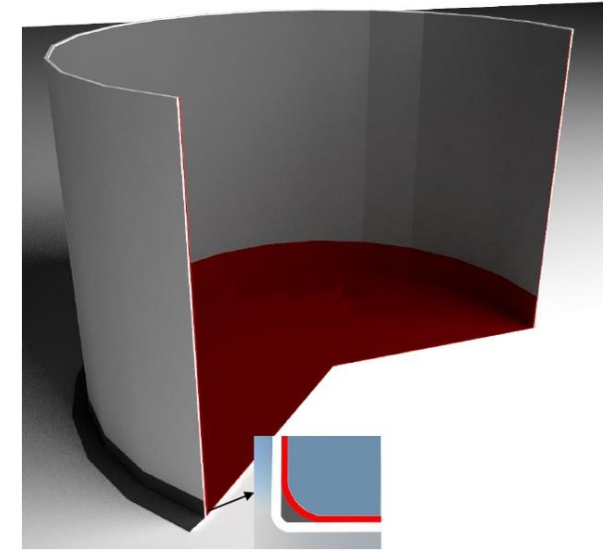


Explosion-proof area is effective for ignition temperatures below 55°C

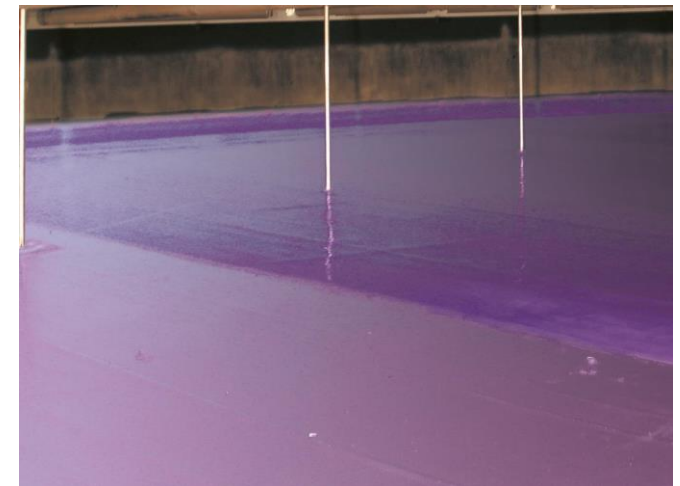
The technology permits to transform the internal surface and build a double bottom of the tank and eliminates a requirement of tank replacement.

An interstitial space is built at the bottom of vertical tanks so as to warrant integrity of the double bottom.

- Replacement of the bottom is eliminated
- The tank capacity is continued due to transformation of the double bottom
- No welding and, as a result, weld inspection is required
- Hydraulic pressure testing of the inner tank shall be eliminated
- Reduced «down time» of the tank during transformation
- Extended service life of the tank
- Corrosion protection and continuous remote leak-tightness control of the bottom
- Support of the mechanical design structure and resistance to hydrostatic pressures in the tank
- Mitigation of the risks due to protection of the most sensitive areas



The double bottom under DOPA® technology is equipped with a class 1 leak detection system.



Application

- > Airless spraying at 300 bar
- > Application temperature 28°C (26°C - 32°C)
- > Spray evenly avoiding the product to drip or leaving areas uncovered
- > Use a wet film gauge (wet film thickness gauge) in order to check the thickness of the applied material
- > Recommended film thickness in range of 0.8 mm (acceptable range from 0.5 mm to 1.5 mm).

Note

- > Do a direct electric grounding of airless machine and heating equipment with tank



Holiday test*

- > high-voltage instrument to create an arc through pinholes between the brush and the conductive layer underneath
- > to find pinholes on the entire tank surface using a voltage between 18.000 V and 25.000V
- > Once a pinhole is detected, it should be marked

Note

- > The application of too high voltages >25.000V can damage the coating layer
- > A locally too low coating thickness could also cause a dielectric breakthrough

The technology permits to:

- Complete the work within 14 days
- Carry out the work without dismantling of the fuel tank, and requires no full stop of the FFS operations
- Repair the corroded areas and local through holes up to 10 cm in size
- Provide for 24/7 continuous remote monitoring
- Detect leaks of and unauthorized access to the tanks





Site preparation works
tank opening,
modification of supports for tubes



Base layer preparation works
Levelling of plates and weldings, and
preparation of connections



Base layer coating
Spraying application, GRP lamination
for local reinforcement



Dobule wall application

Pinhole testing of first layer, creation of interstice with aluminium



APPLICAZIONE DI DOPPIA PARETE

Application of double wall with laminate, final layer and conductive top layer



Installation of leak monitoring systems

Connection kits monitored over the time

The same tank has been opened after 10 years of continuous operation. No aging or damages has been found as it could again be closed without any maintenance costs.



CASE STUDY : Czech Republic – new concrete tanks for strategic reserves (Remediation)

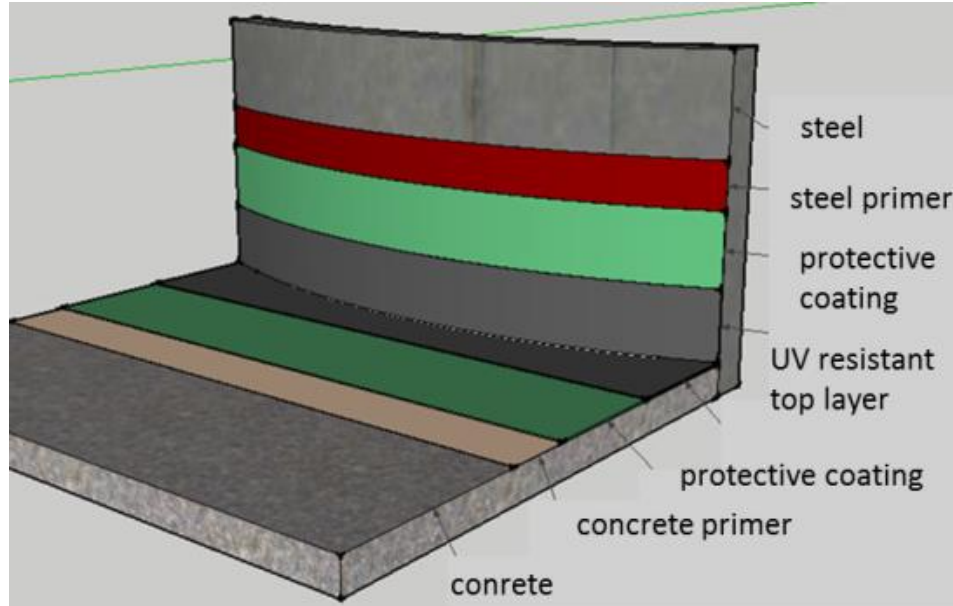
- Storage tanks for fuels (diesel, gasoline, bio-fuels), as part of the total storage capacity of 1.8 mil. M3
- The total volume of 140 000 m³ (4x35 000 m³)
- 4 underground double wall concrete tank with a diameter of 48 m and a height of 22 m
- Rigid roof covered with soil and grass
- Concrete wall thickness 0.6 m
- Application of double-walled composite lining technology ADISA was completed on 30.05.2011

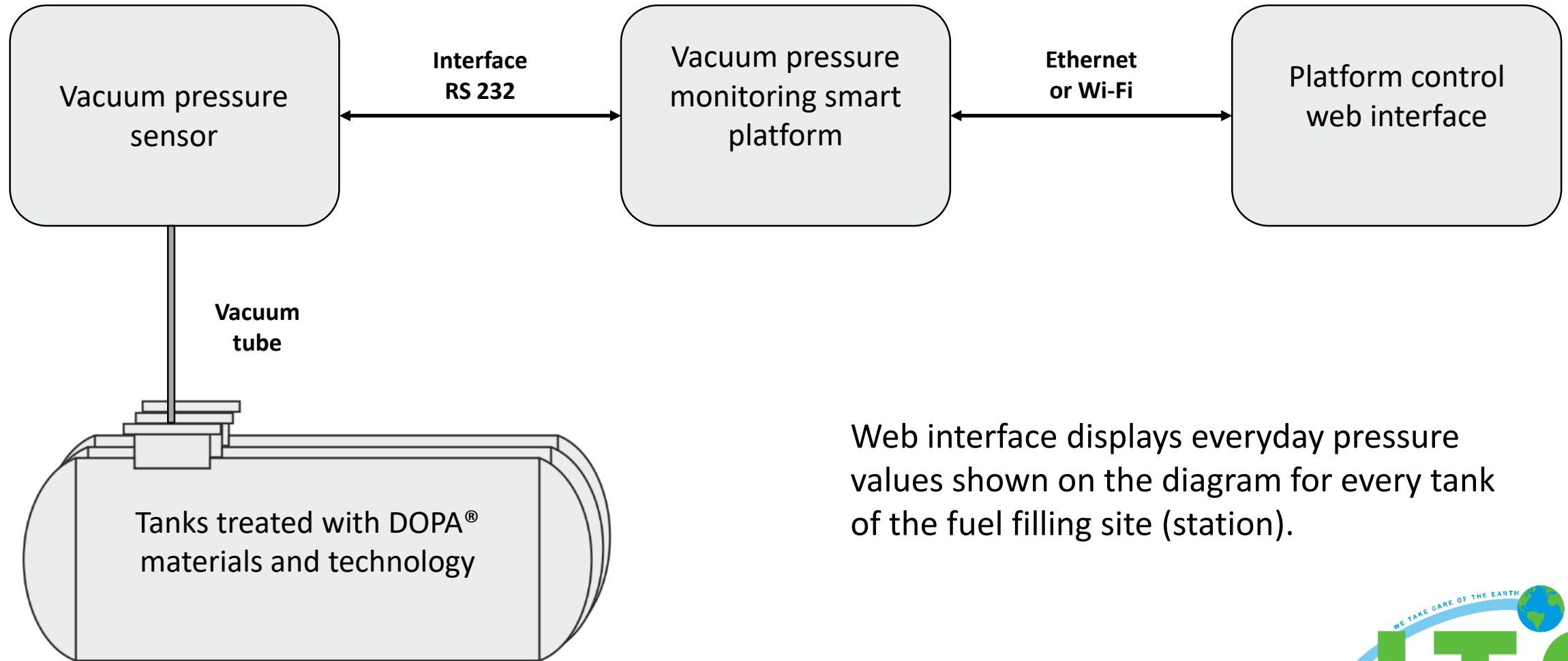


Environmental concrete sealing without product load

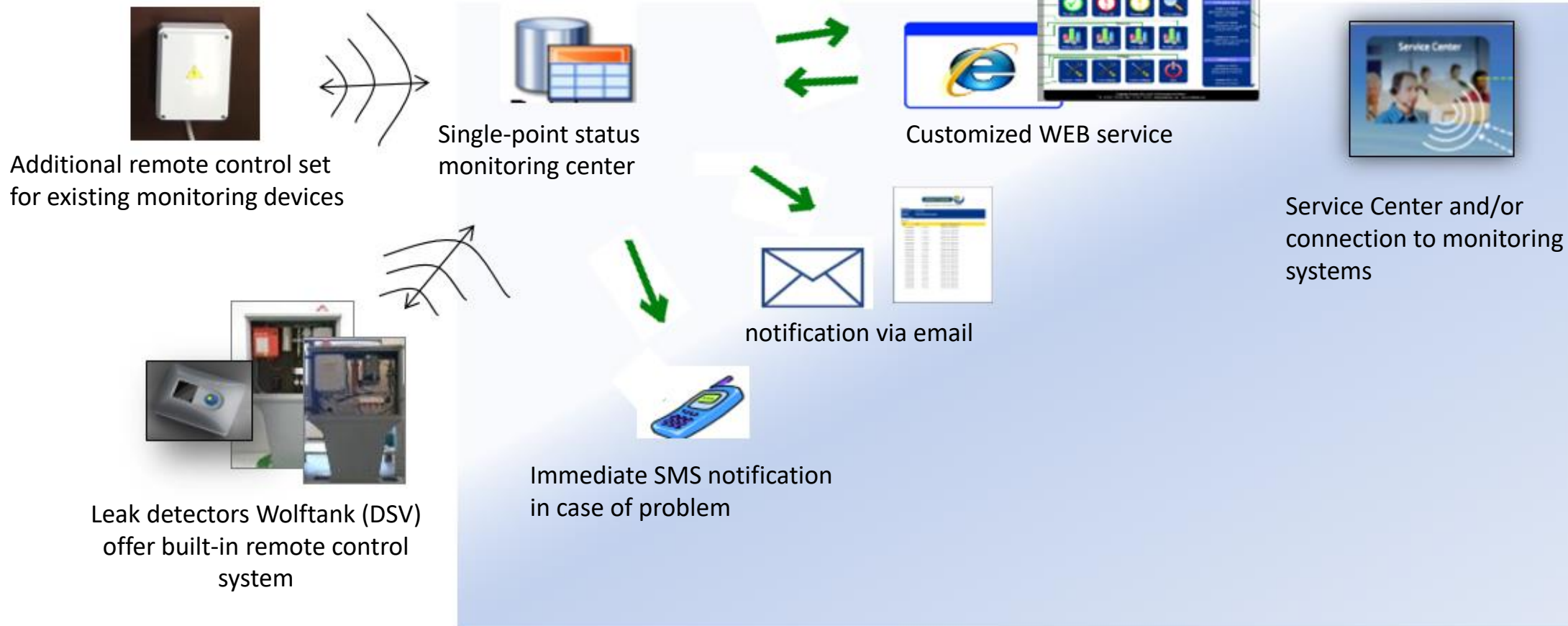
In the outer corners of the bottom of the tank, corrosion caused by exposure to the weather may appear. The welding can, therefore, weaken at the edges and cause damage.

Proper sealed ringwall prevents future underfloor corrosion.





Web interface displays everyday pressure values shown on the diagram for every tank of the fuel filling site (station).

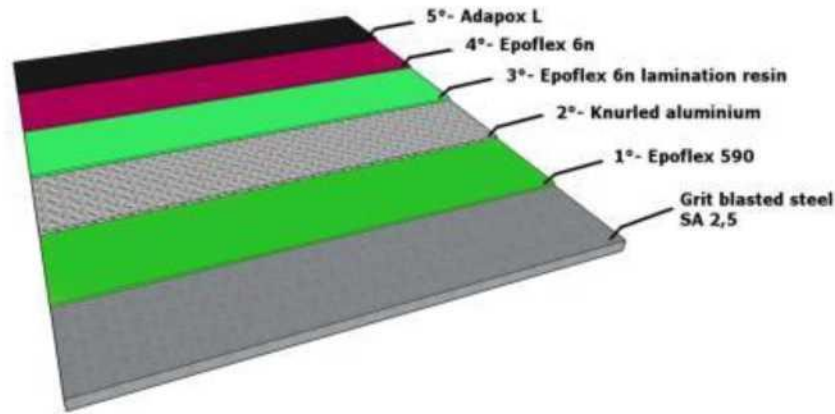


24/7 Remote control of the monitoring devices means:

- notification of a specific problem, prompt action and maintenance
- reporting in case of disconnection from the system due to technical problems (power supply disconnection) or to protect against fraud
- precise monitoring of all the tank parameters immediately after fuel supply
- statistics and reporting in real time on the status of equipment and maintenance forecasting

The technology provides:

- Expansion of the DOPA® technology capabilities due to DSV®
- Total resistance to bioethanol (E100), biodiesel (B100), jet fuel, and a wide range of chemically active substances
- Storage supervision and integrated quality analysis of petroleum products
- Monitoring process for data storage, processing, and transmission
- Creation of a product quality database and systematization of monitoring data
- Development of a preventive and current control methodology
- Application of measurement instruments and non-destructive control methods
- Compliance with the European standards and regulations



1. Site arrangement
2. Gas free, Entering the tank and visual inspection
3. Gritblasting
4. Removal of dust sand
5. Roughness test
6. Tank assessment, repairing and smoothing of reinforcement
7. Dew-point determination
8. First layer application Epoflex 590
9. Holiday, thickness and hardness test
10. Repairing of pinholes
11. Mounting interstice monitoring lines and joints
12. Application of knotted aluminum layer
13. Lamination with Epoflex Laminierharz 6N
14. Suction of vacuum in the interstice space
15. Holiday and hardness test
16. Repairing of pinholes + Sand Paper
17. Bottom plate installation
18. Application of Epoflex 6N
19. Testing: holiday, thickness, hardness
20. Repairing of pinholes
21. Tightness test (12h)
22. Conductive layer application
23. Installation of the leak detection system

Installation teams

Usually, the installation teams are composed of

- Team leader
- Safety supervisor
- Technicians (1-3)

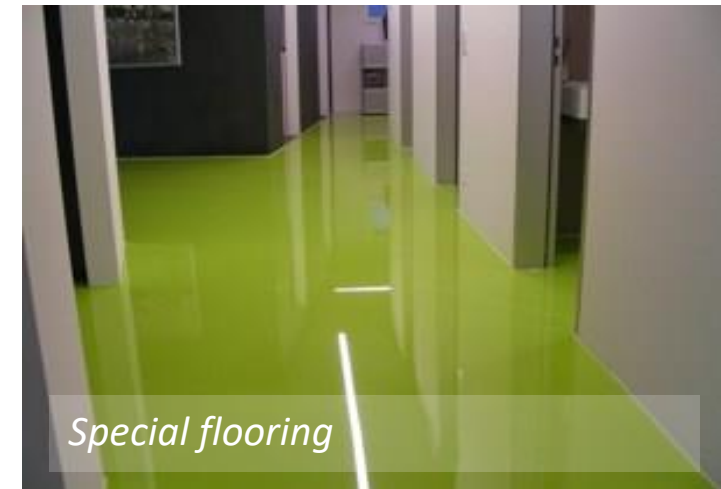
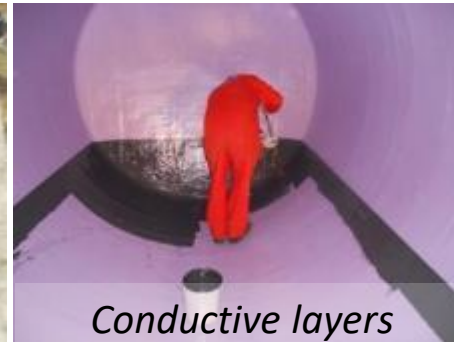
Teams are training expecially for the application of the DOPA® technology. As our processes are conform to OHSAS, SCC and further international safety standards.

Teams have special trainings for

- working in confined spaces and construction site management
- fire prevention and first aid -use of safety PPE



The team is highly qualified and team leaders have between 5 and 20 years of experience for works in confined spaces





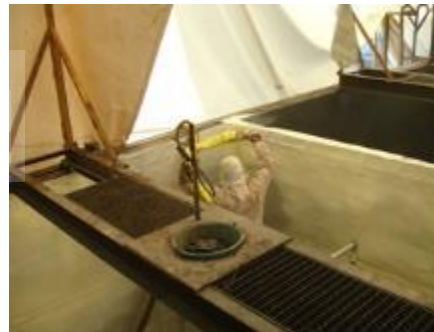
Drinking water stores



Primary water containments



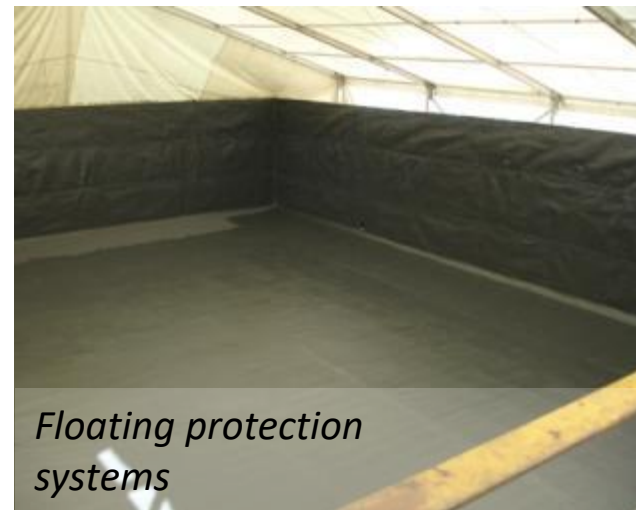
Canals and routes



Water treatment plant

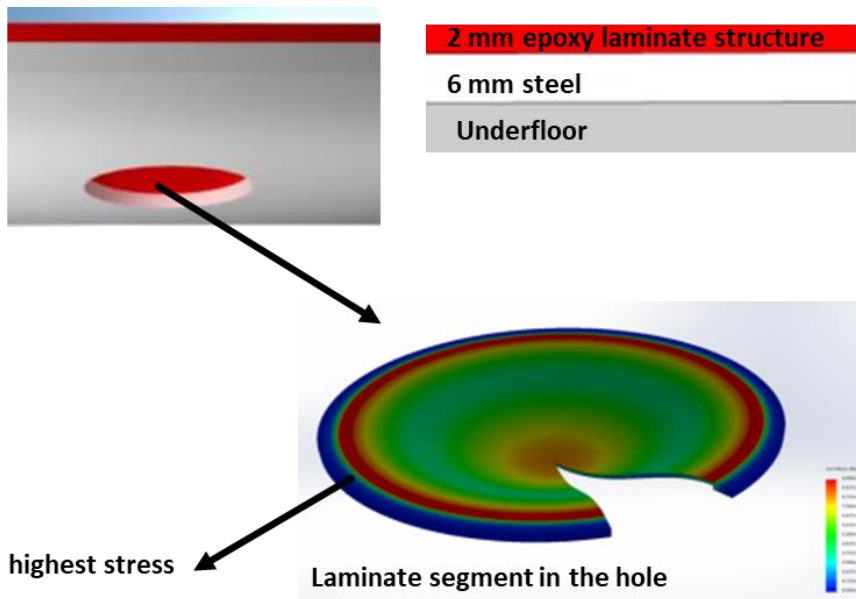


Repair and protection of a natural pool



Floating protection systems

Lamination of steel surface (1) Tanks and steel vessels containing fuels, chemicals and water



Hole bridging effect of laminate:

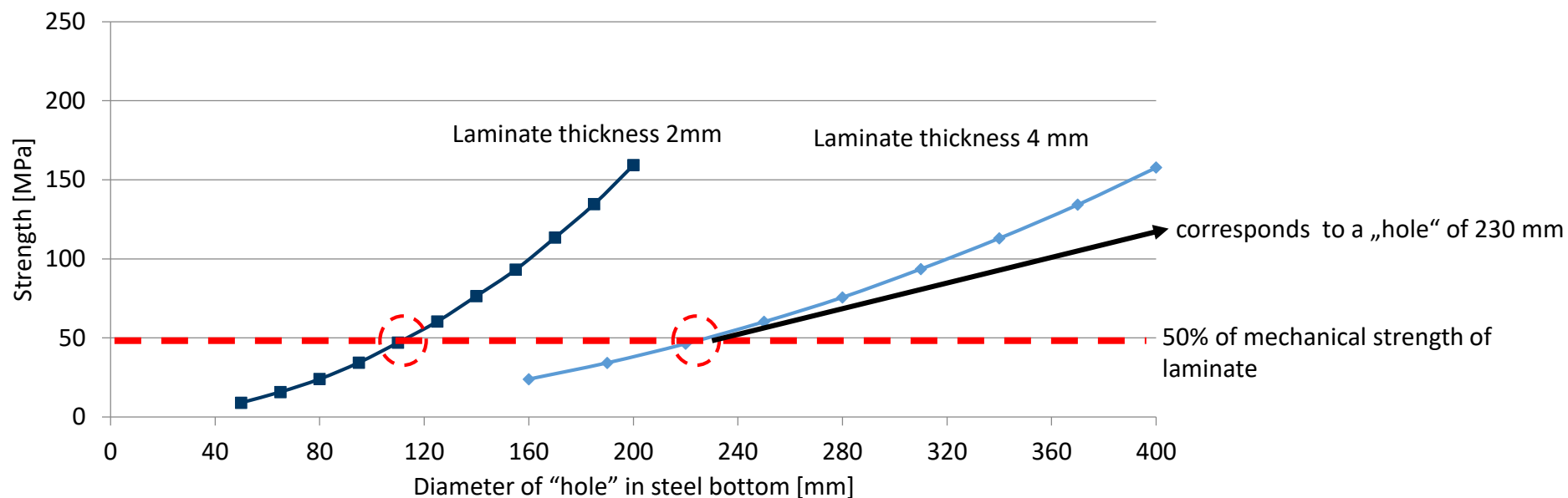
Laminate coatings can prevent integrity failure due to pit corrosion and underfloor corrosion

Simulation of the behaviour of a glass fibre reinforced laminate in case of a „hole“ in the steel below



Recognized in Austria as second (non monitored) floor due to the hole bridging effect in case of steel corrosion

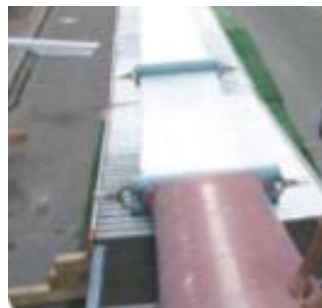
Maximum size of the „hole“ before laminate failure (when exposed to hydrostatic pressure)



➤ Laminate system is a reinforcement of the steel floor to ensure floor integrity in case of old pit corrosion and underfloor corrosion.



Robotic cleaning and inspection



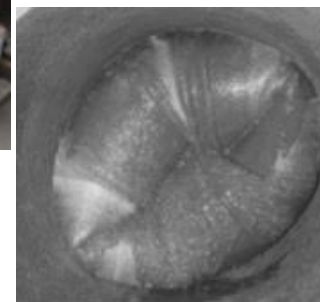
Fiber impregnation



Fixturing the pipe entrance



**Pressure integration
2 solutions:***
-pressurized drum
-water column



High temperature curing



**Reverse integration
Into pipe to be refurbished**

*applicable for different fiber/resin solution

Application process

- Cleaning and drying of the sump
- Application of concrete primer (rolling)
- Leveling with epoxy mortar (spattling)
- Application of glass fiber reinforce laminate (rolling)





We protect your tanks !

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