

## Intelligent solution for electroplating



The view of the electroplating tanks shows the "loose-shirt lining" system, with SIMONA® PP-DWU outside and SIMONA® PVDF inside. Bottom left: View of the steel cross ribbing.

**Nehlsen Flugzeug-Galvanik needed two new tanks for electroplating aircraft components. The process, which takes place in strongly oxidising chromic acid, placed special demands on both material and design solution.**

### Project Summary

#### Project

Manufacture of two electroplating tanks for corrosion protection of aircraft components with a "loose-shirt lining" system

#### Requirements

- Resistance to chemical stress
- Medium: Chromic acid
- Operating temperature: approx. 30 °C

#### Client

Nehlsen Flugzeug-Galvanik Dresden GmbH & Co. KG

#### Contractor

Kunststoffverarbeitung Büttner GbR, Thiendorf

#### Technical support

Applications Technology Department, SIMONA AG, Kirn

#### Manufactured components

Rectangular tank  
Length (ext./int.): 6950/6600 mm  
Width (ext./int.): 1290/920 mm  
Height (ext./int.): 2635/2450 mm

#### Products used

- For the inner tank:
- SIMONA® PP-DWU sheets, thickness = 15 mm
- For the outer lining:
- SIMONA® PP-DWU sheets, thickness = 5 mm
- For the base of the outer tank:
- SIMONA® PP-DWU sheets, thickness = 10 mm
- For the in-liner:
- SIMONA® PVDF sheets, thickness = 4 mm

#### Project period

End of 2003/beginning of 2004



Fig. from left to right: Tanks ready for transport; side view of tanks; tanks in use

## SIMONA® PVDF – the perfect choice for challenging chemical applications

### Initial situation

One method of stemming corrosion damage on metals is electroplating. Put simply, the metal to be protected is coated with another metal, either chemically or using an electric current, i.e. electrolytically. This takes place as part of a cohesive process in an electroplating line. The material to be protected is successively pre-treated, rinsed and coated in tanks filled with aqueous solutions – a challenge for the chemical resistance of the tanks.

### Task

Kunststoffverarbeitung Büttner GbR was commissioned by its customer Nehlsen Flugzeug-Galvanik to design two electroplating tanks for corrosion protection of aircraft components. The following key points were decisive for selecting the material:

- outstanding resistance to the chemical stress resulting from the chromic acid bath
- high resistance to mechanical stress
- a good price/performance ratio of the material

### Solution

Homopolymeric polypropylene (PP-H) is the material predominantly used for chemical tanks, particularly in electroplating. In this case, however, a strongly oxidising acid – chromic acid – is used, and PP-H possesses an inadequate chemical resistance for this purpose. Therefore, the “loose-shirt lining” system, with a highly resistant internal wall material, was selected. As part of this solution, two PP tanks, cross-ribbed with steel profiles, were manufactured from SIMONA® PP-DWU, and a PVDF tank made of 4 mm SIMONA® PVDF was inserted into each one. For reasons of corrosion protection and product aesthetics, the external steel reinforcement was also lined with SIMONA® PP-DWU.

### SIMONA® PVDF

#### Properties

- Outstanding chemical resistance
- Operating temperature range –30 °C to +140 °C
- Corrosion resistance
- Low flammability
- Very good processability
- Particularly weather-resistant
- Physiologically safe

#### The product range

- Extruded and pressed sheets
- Solid rods
- Welding rods
- Pipes
- Fittings
- Valves
- Flanges

#### Further information:

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