

FLUITRONICS

hydraulic systems

Comparison of different Coating Systems for AMCA Valve Program September 2021

inspired hydraulics.

fluitronics.com



Content

- The Goal
- Investigated Coating Systems
- Preparation of the Sample Manifolds
- Salt Spray Test Results (0...1000 h)
- Summary





2



- Ensuring of enhanced valve corrosion protection, e.g. for AMCA APV valve program
- Understanding the performance of different coating systems
- Understanding performance of different coating systems if the surface is damaged
- Evaluation of different coating systems for offshore and maritime applications
- Understanding the commercial situation of different coating systems



3

Investigated Coating Systems



Coating	Additional information	nominal coating thickness	Nominal lifetime within salt spray test*
Protalloy (ZnNi)	manifold 1+2	25 µm	1000 h
SnNi/Cu/Fe	manifold 3+4	15…25 μm	
Fe/Zn + thick film passivation	manifold 5+6	14 µm	
Delta Protect KL120 + DeltaSeal GZ silver (Zn-Lamelle)	manifold 7+8	1030 µm	>1000 h

*)

- Salt spray test according to DIN EN ISO 9227
- The standard specifies a salt content of the sodium chloride solution of 50 +/- 5 g/l.
- The salt solution is prepared with 100 liters of deionized water and 5 kg of salt (sodium chloride ≥99 %).



Preparation

- Coating of 8 sample manifolds, 2 manifolds for each coating
- Samples were prepared as cuboids with an edge length of 100x100x72 mm from GOPAG cast iron
- Preparation of one manifold per coating with scratches on two surfaces











Status after 24 hours within the Salt Spray Test







Status after 264 hours within the Salt Spray Test







Status after 504 hours within the Salt Spray Test







Coating Systems for AMCA Valve Program 8

Status after 744 hours within the Salt Spray Test







Status after 1000 hours within the Salt Spray Test







Coating Systems for AMCA Valve Program 10



Status after 1000 hours within the Salt Spray Test - overview











- Investigation of 4 different coating systems for cast iron manifolds
- Optimal protection of more than 1000 h is given with Protalloy and Zn-Lamelle
- Even damaged surfaces (scratches) did not lead to an enhanced corrosion for those coating systems
- Maritime applications are possible with those coatings
- Cost-wise Protalloy and Zn-Lamelle are suitable for series applications

