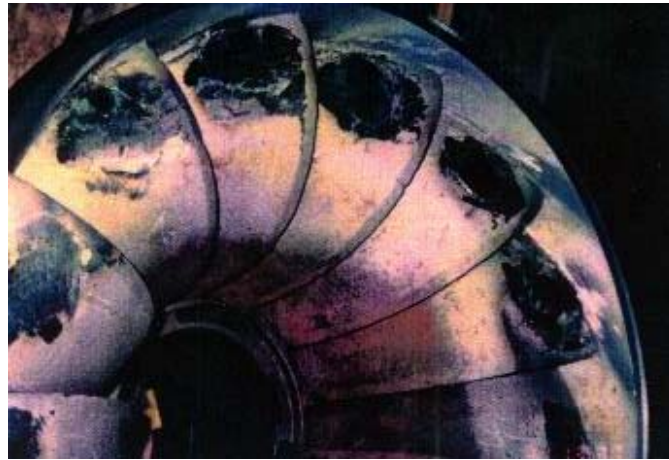




Worldwide repairs carried out with PolymerMetal[®]

REP-# 066



Repair of two turbine rotors. Damages were present at all areas of the blades where the water leaves the blades. First large holes have been welded. Then the erosive areas have been filled up with Ceramium, pasty. Finally a supplementary layer of VP 10-017 has been applied as protection against cavitation.

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REP-# 086



Various purposes of VP 10-017, a viscoplastic polymer-ceramic, which can be applied i.e. on covers, models, pump housings, mountings, pipe works, machines and plants. VP 10-017 offers a durable, elastical, high impact and wear resistant corrosive protection. VP 10-017 can be applied with brush or spatula in one go to a application thickness of 300 μm even on vertical surfaces.

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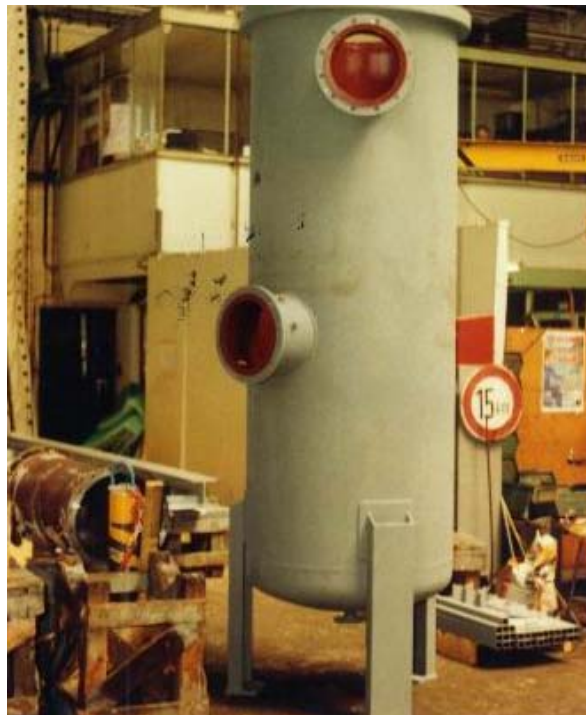
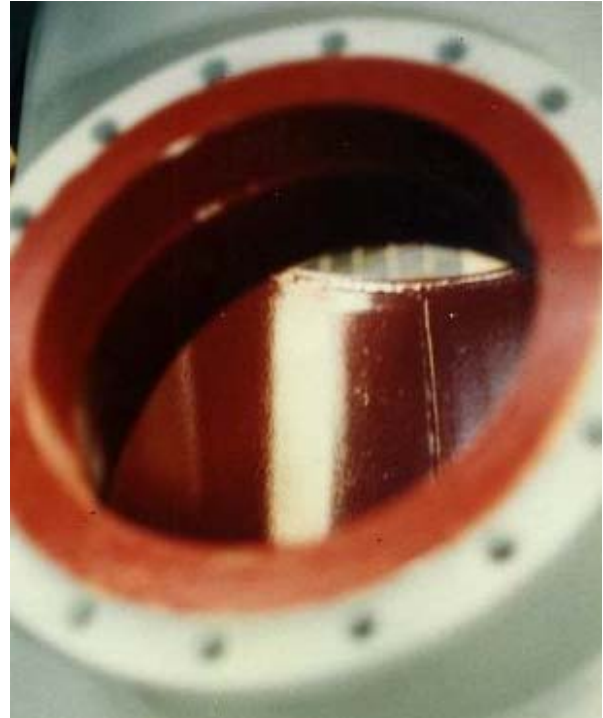
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REP-# 091



Coatings with VP 10-017 for air coolers, tanks and other big surfaces. VP 10-017-coatings as surface protection and protection against corrosion do offer a very smooth, flexible and wear resistant surface. VP 10-017 is temperature resistant up to 100 °C and offers a very high chemical resistance.

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REP-# 098



Coating of a Kort nozzle using VP 10-017 as protection against cavitation and corrosion.

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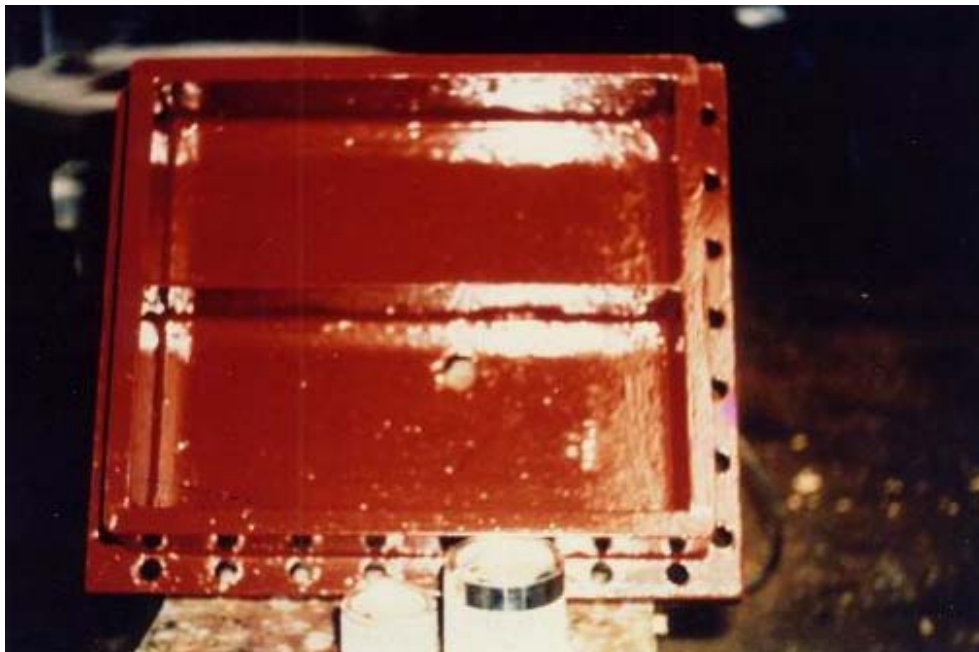
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Worldwide repairs carried out with PolymerMetal®

REP-# 100



Corrosion protective coating of ship hatches with VP 10-017.

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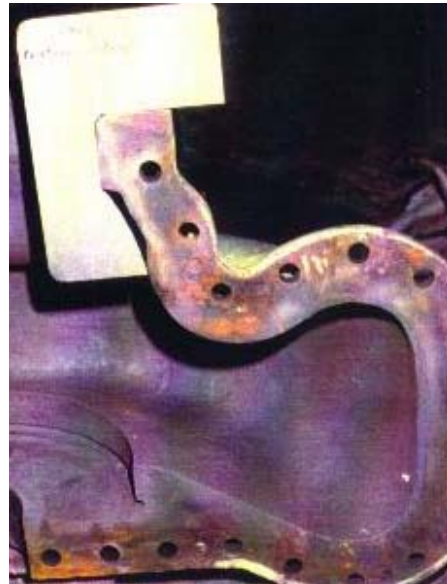
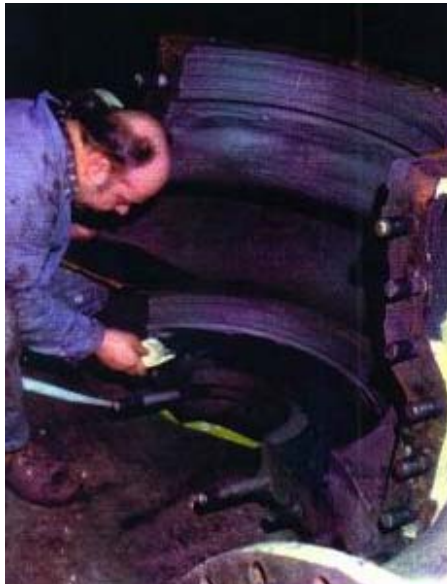
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Worldwide repairs carried out with PolymerMetal®

REP-# 104



An additional water-centrifugal pump being damaged by erosion and cavitation was rebuilt using Ceramium. Housing and flanged socket were coated inside with VP 10-017.

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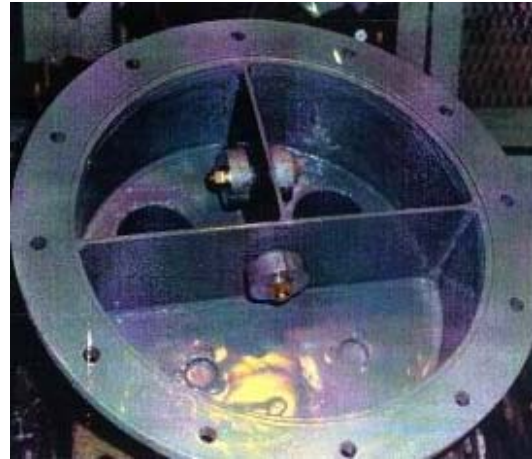
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Worldwide repairs carried out with PolymerMetal[®]

REP-# 129



Durable protection against wear and corrosion on welded constructions i.e. receivers and covers can be achieved by using Ceramium together with an application of VP 10-017 afterwards.

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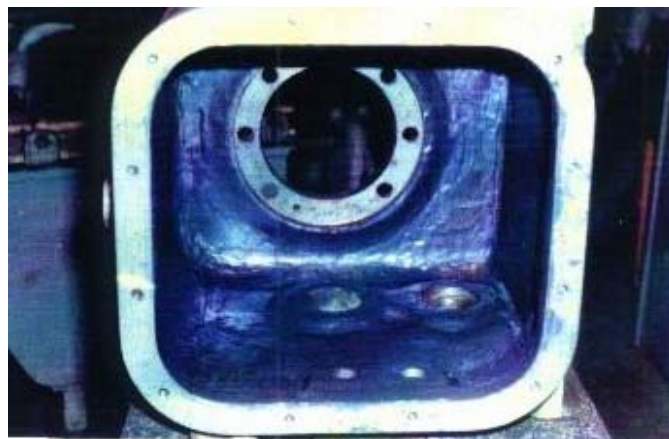
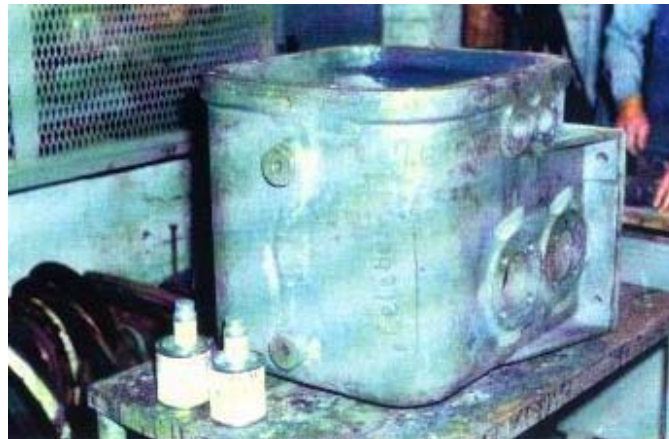


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Worldwide repairs carried out with PolymerMetal®

REP-# 130



A cracked housing of a hydraulic pump in a steering gear made off aluminium was repaired using MM-metal SS-steelceramic with Hardener yellow. Afterwards the whole housing was coated with VP 10-017 in order to seal the pores in the casting.

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Worldwide repairs carried out with PolymerMetal®

REP-#142



Several defective covers of a heat exchange system were repaired with VP 10-017.

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Technical Report PolymerMetal®

TEC-# 001

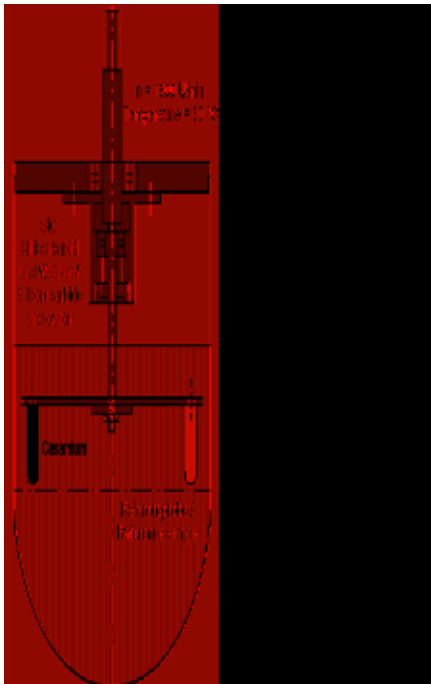
Wear behaviour of polymer materials

Used products

Ceramium, VP 10-017, MM-Elastomer

Description

Mechanical and chemical stress acting on surfaces lead to wear and corrosion. If a high wear resistance is required, usually a very high hardness is needed, too. The hardness – Vickers, Brinell or Rockwell hardness – of polymer materials, like PolymerMetals or polymer ceramics, is meaningless for nearly all wear mechanisms of wear stressed machine parts. Mixtures of



ceramic, metallic and polymer materials as well as elastomers show, that wear resistance and hardness do not correspond. Nowadays, erosive-abrasive wear stress is simulated with the help of a slurry pot or an abrasive wheel. The test in the slurry pot is very meaningful when the metals are exposed to sandy streamings. The water-sand mixing ratio determines the degree of wear. The adhesion between the sand grains is rising when the water content is very low. As a result wear is increasing as well. However, the influencing factors in praxis should not be underestimated. Tests carried out in model experiments help to determine the material's quality and to choose the right material. A guarantee for the durability cannot be given by these tests. Ceramium is a reliable material to protect metals against abrasion and surface destruction provided that the size of the particles is not more than 500 µm. In the following test a medium grain size of a very strong hardness was chosen: SiC ca 60 µm. Water and SiC were mixed in ratio 1 : 2 by volume. It is quite obvious that Ceramium was exposed to a very high stress.

The used materials showed the following results:

Material	Hardness (Vickers)	Wear (after 30 days)
Ceramium	HV 28	2,93 ccm
Tool steel	HV 840	3,60 ccm
Steel St-52	HV 120	7,20 ccm

In case that the particle size is higher than 500 µm the wear of Ceramium increases progressively. MM-Elastomer and VP 10-017 show a better wear resistance, because they are plastically deformable. On the other hand, it has to be considered that the bonding on water-stressed metal surfaces of all elastomer materials is diminishing with advancing time.

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