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Pump and Valve Refurbishment

The flow of liquids and slurries through pumps and pipework can be reduced by internal surface roughness. Corrosion, cavitation, and particle impingement can all contribute to the development of this ongoing roughness, which leads to loss of critical clearances and reduced pump performance shown by reduced head, flow throughput and power consumption. The surface roughness exhibits a drag effect accounting for energy loss in the pump.

The use of ceramic filled epoxy coatings addresses these issues by preventing corrosion and reducing the effect of erosion mechanisms at the pump surface. The reduced friction characteristics of the coating also give benefits in the overall pump performance such as:

- Increased flow at designated pressure
- Increased efficiency over a wide range of flow rates
- Reduced power consumption
- New, uncoated pumps can also benefit from application of these generic coatings

REFURBISHMENT METHODOLOGY

The worn components are initially steam cleaned or solvent degreased, machine surfaces are masked and the component is abrasive blasted to give a profile of approximately 75 microns and a cleanliness of Sa 2.5.

Badly pitted components have an initial treatment with a trowelable epoxy ceramic putty to fill the deep crevices and reinstate the original contours of the components prior to application of the smooth, high gloss coating. Templates for the pump original contours are used to give the correct profile

The high gloss coatings are generally applied by brush, but spray application of larger parts is also possible. The coatings are applied at ambient temperature and cure to give a smooth high gloss finish. This finish is critical in obtaining the improved pump efficiencies. At least two coats at a DFT of 300 microns are applied to the prepared surfaces.

In highly aggressive wear applications alumina ceramic bead filled epoxy can be applied up to 10 mm thick. The putty like nature of the product allows the wear compound to be shaped to the contours of the pump. Finally, two coats of smooth brushable coating is applied.

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The pump and valve exteriors can also be coated with the ceramic filled coating as the system exhibits good corrosion and weathering resistance.

GARC CP is a small bead filled putty suitable for filling damaged areas at a minimum of 3 mm thickness.

GARC WC is a blend of bead sizes and is suitable for filling deeper damaged areas. It is used on larger diameter pumps used in severe wear applications.

Both products can be moulded to the shape of the pump contours and are readily smoothed using a light water lubricated finishing trowel.

GARC LC is a two pack epoxy resin filled with fine alumina particles. The base colour is light grey but green or blue colour pots may be added to enable wear monitoring via a colour change as the top coloured coat wears.