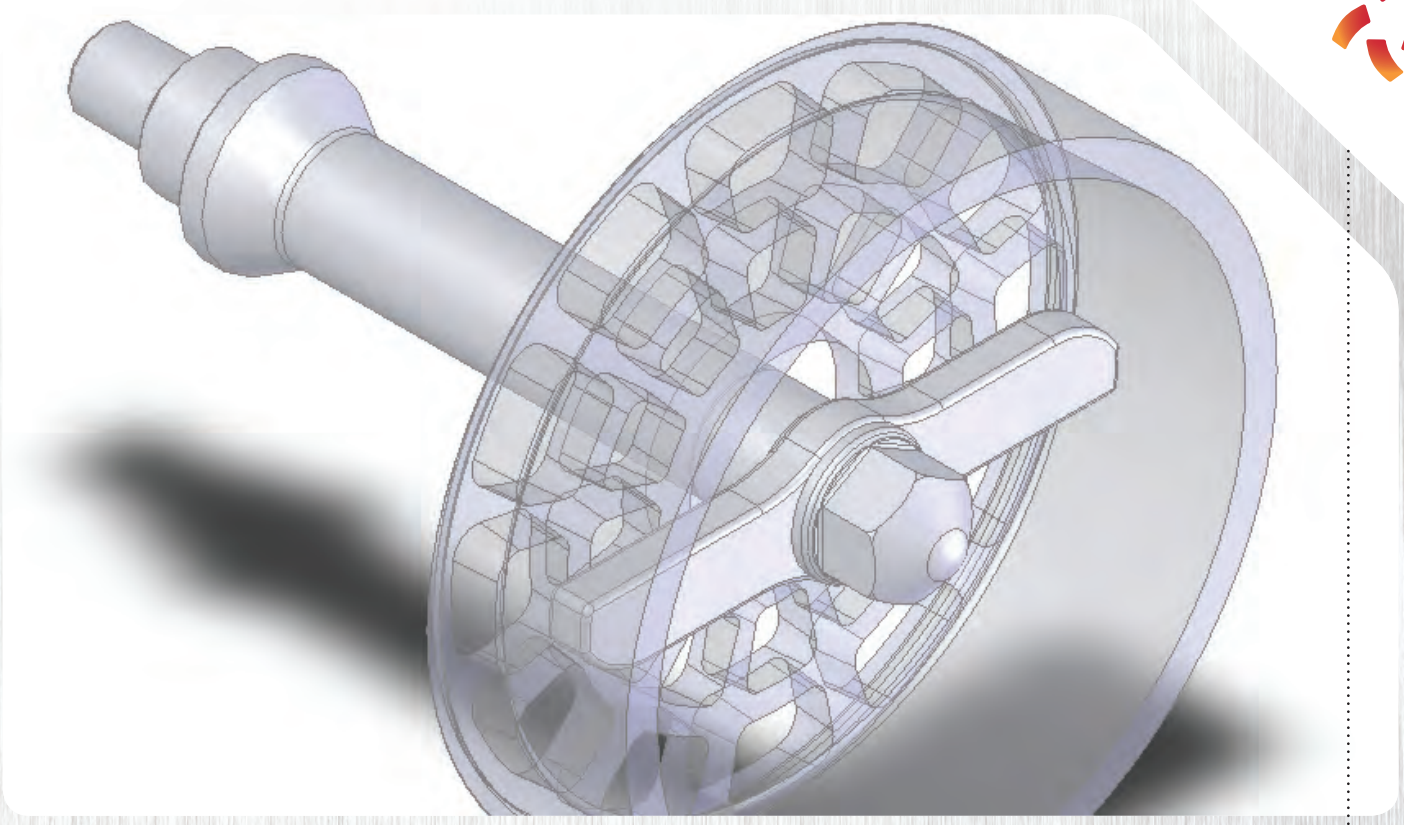
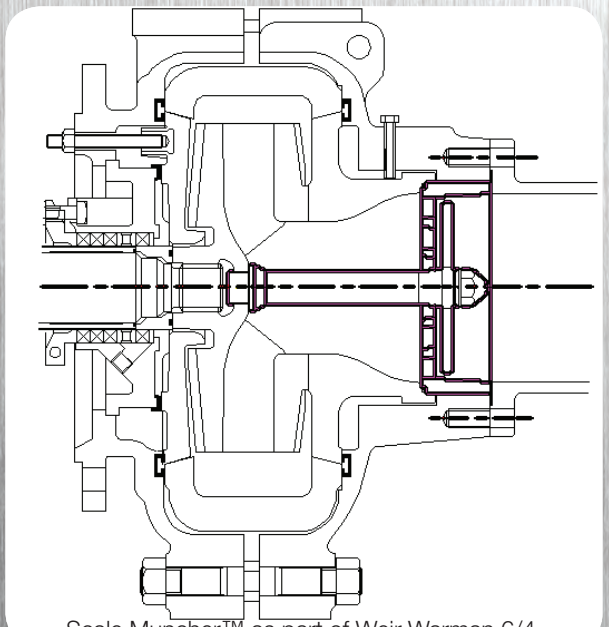


Scale Muncher™

Background

In a variety of industrial applications, pumps are required to transfer fluids that contain a collection of solid and semi solid material. Such slurries have the ability to clog the passages of impellers, thereby rendering the pump ineffective. In the alumina refinery process, bauxite is first dissolved in a hot caustic soda solution.

The resulting bauxite/caustic slurry is then graded on a size fraction with the fine fraction directed to a settling or thickening stage to remove the undissolved impurities in the slurry from the alumina rich liquor. At this stage the settled mud slurry is extracted with the aid of a rake assembly, polymer addition and diluting streams via dual underflow pumps with associated scale traps. In a variety of industrial applications, pumps are required to transfer fluids that contain a collection of solid and semi solid material. The scale traps are designed to protect the underflow pumps from oversized aggregates that can block and/or damage the impeller assembly. These scale traps must be cleaned on a regular basis to ensure maximum life is achieved from the thickener tanks. To clean a scale trap the underflow pump must be first brought off line, then after isolation, the trap can be cleaned. As most scale traps are elevated at a height of approximately one metre, this involves manually pulling the basket from the trap at that height and supporting the weight of the basket (20kg typical) as it swings to the ground. After the basket has been up-ended to remove all the scale, the clean basket is then inserted back into the trap.



Scale Muncher™ as part of Weir Warman 6/4

The Scale Muncher™ device can be retrofitted to existing pumps that previously relied upon scale traps and aggregate screens to prevent choking of the impeller.

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Advantages

No more emptying of the scale trap baskets, eliminating safety and environmental hazards, whilst significantly reducing labour costs.

Improved pipe work arrangement by replacing traps with standard pipe work.

In new installations, there would be a significant impact in the design stage; cost and space savings would be involved.

Significant power savings; head loss across scale traps are very high even in the clean condition, head loss measured in a recent application showed five metres loss. On the application involved, this led to a 12kW power loss (Warman 6/4 pump).

Improved NPSH condition at pump, approximately five metres in the above application. This may mean significant life improvement in some applications due to cavitation elimination.

Continuity of operation, no shutting down of pumps for scale trap emptying.

Fewer number of pump starts and changeovers.

Life of tank can be extended, as it is often practically determined by number of scale trap shutdowns required.

Cost of Ownership

We at PTS are confident that the "Total Cost of Ownership" is far less with the improved slurry pump design and would be willing to demonstrate this. In some instances, payback of capital invested can be within a few months.

Current Pump Conversions

Weir Warman	3/2, 4/3, 6/4, 8/6, 10/8, 12/10, 350 S-LSM
ITT-Goulds	6x8-19 5500
KSB GIW	3x4, 4x6, 6x8, 8x10, 10x12, 12x14
Worthington	4M-223-8"
Kelly & Lewis	3x4, 4x6
IW Hazleton	5" B-CBL
ALCOA	4AR, 6AR
Schabaver	M100, M250