



ENHANCED PERFORMANCE PRODUCTS

Because you said "Change It....."

The History of PumpEng®

Why was PumpEng® formed?

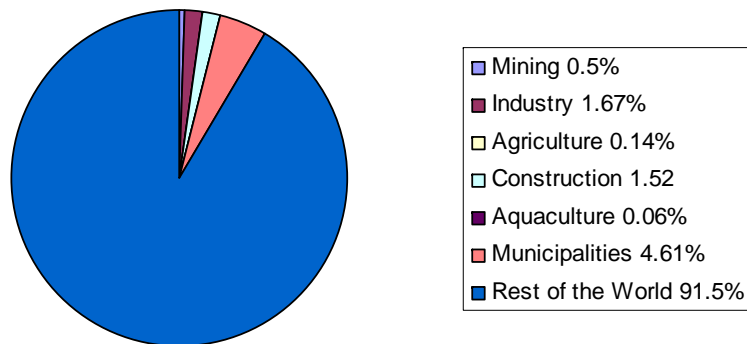
To modify OEM, mass produced pump components so that they are better suited to Australian operating conditions

PumpEng® are a West Australian company with local experience in submersible dewatering

Why don't Flygt make changes to suit our conditions?

Because the Asia Pacific mining market represents only 0.5% of their annual turnover. To make changes to their Global manufacturing design the sales do not warrant it. (Info Source: ITT Flygt 1999 Annual Sustainability Report)

Asia Pacific Market Share to Flygt Worldwide Sales





PumpEng Enhanced Performance Parts

Because you said "Change It....."

Why you should consider PumpEng ® Enhanced Performance Parts

- ⇒ Cost savings *PumpEng parts cost on average 20% less than OEM parts*
- ⇒ Improved service life *PumpEng patented design parts keep your pump performing longer through the shrouded impeller design*
- ⇒ PumpEng parts are 100% interchangeable with OEM product
- ⇒ West Australian designed, owned, manufactured, stocked and operated
- ⇒ "Designed tough for Australian Mining conditions"
- ⇒ Because "We Listen!" and are prepared to design our products to suit your particular application
- ⇒ Patented products which allow quicker and easier replacement
- ⇒ Because we are constantly working to improve your pumps performance through improved products and service facilities
- ⇒ PumpEng parts offer innovative design improvements
"Such As....."



ENHANCED PERFORMANCE PRODUCTS

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PumpEng® Shrouded Impeller Design

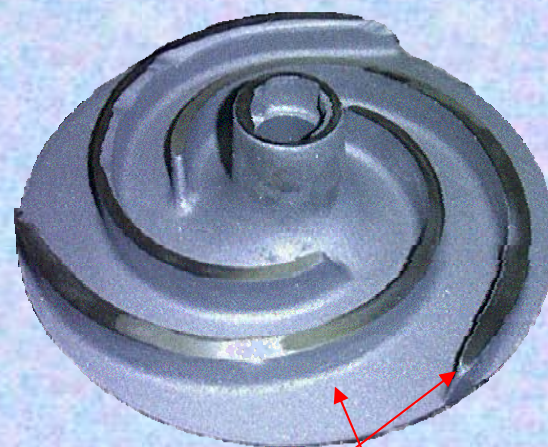


Problem 1

If the vane tips are knocked during assembly or should a rock pass into the wet-end during operation they can break off causing additional consequential damage to the suction cover, diffuser etc

Problem 2

When the back of the vanes wear, clearances increase & the opportunity for slippage past the vanes increases thereby decreasing pumping performance



Solution 1

Impeller tips are protected by shroud ensuring no breakage

Solution 2

Shroud ensures fluid doesn't slip past vanes causing slippage, wear & loss of head

PumpEng® 20kw Shrouded Impeller



PumpEng Enhanced Performance Parts

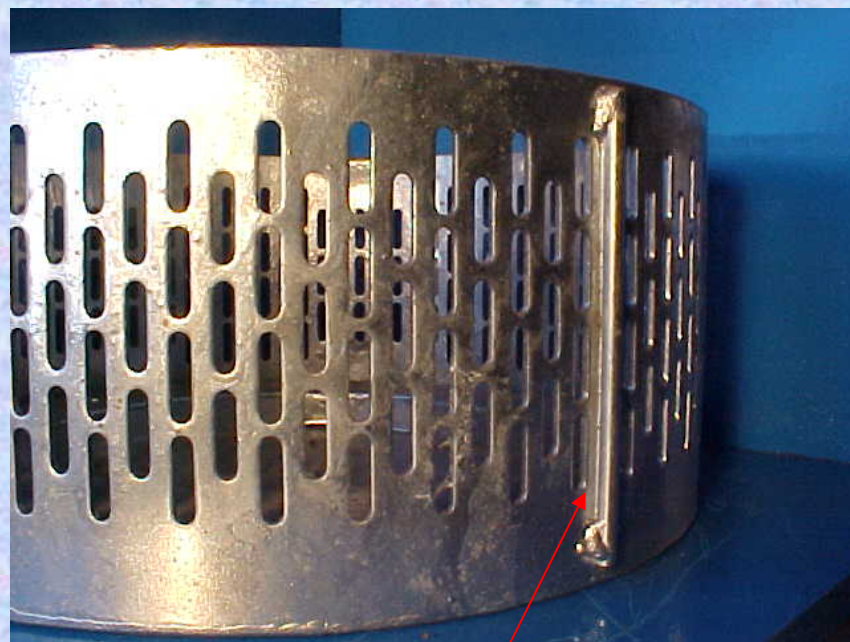
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PumpEng® Heavy Duty Suction Strainer



Problem

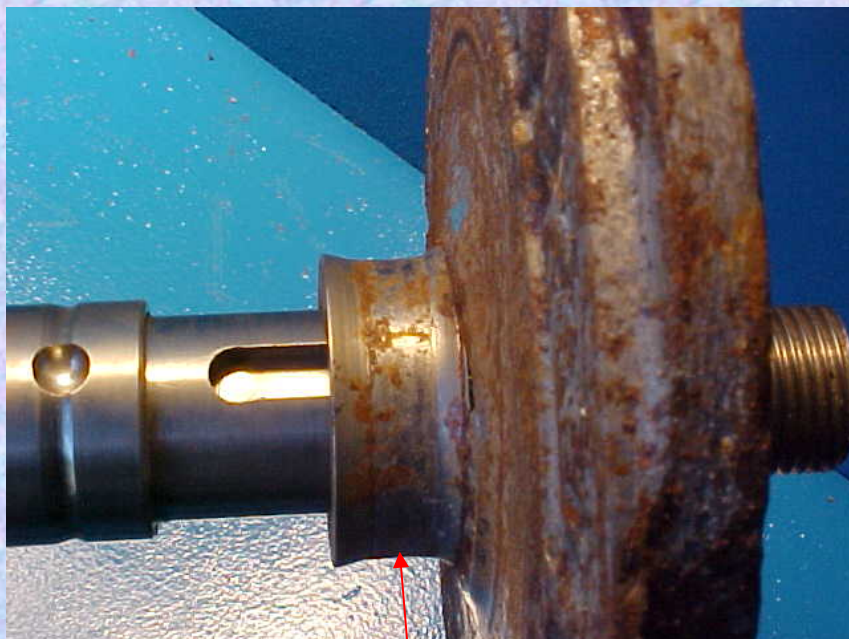
Suction strainer gets damaged & holes open up & allow large rocks to enter wet-end causing premature failure of impellers or soft components



Solution

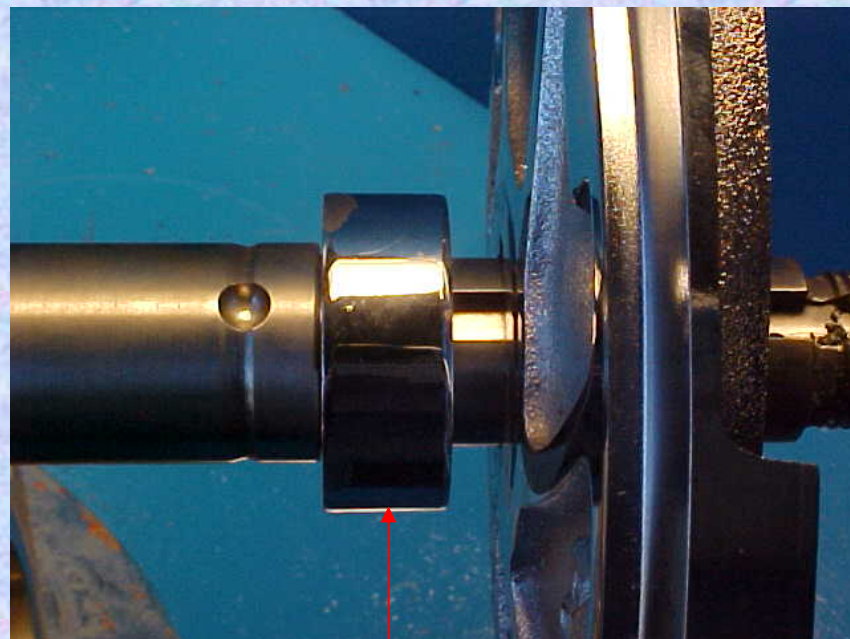
PumpEng have designed their Strainers with heavier wall thickness material & fitted reinforcement bars

8kw Impeller with replaceable neck bush (Patent No 2003100499)



Problem

Flygt standard impellers have a fixed neck bush which when worn causes premature replacement of the impeller even though the impeller vanes may be in good condition



Solution

PumpEng have designed their impeller with a replaceable neck bush which when worn can be replaced at a 1/10th the cost of a replacement impeller

PumpEng ® 316 S/S Outer Casings

20kw Outer Casing

8kw Outer Casing



Problem

Flygt standard outer casings are fabricated from Aluminium which is affected by the high salt content found in West Australian mines & also is subject to physical damage from operators



Solution

PumpEng have designed their outer casing from 316 stainless steel which not only resists the effects of corrosion but has been proven to resist the effects of operator damage. PumpEng casings are priced at the same level as the Flygt aluminium unit



PumpEng Enhanced Performance Parts

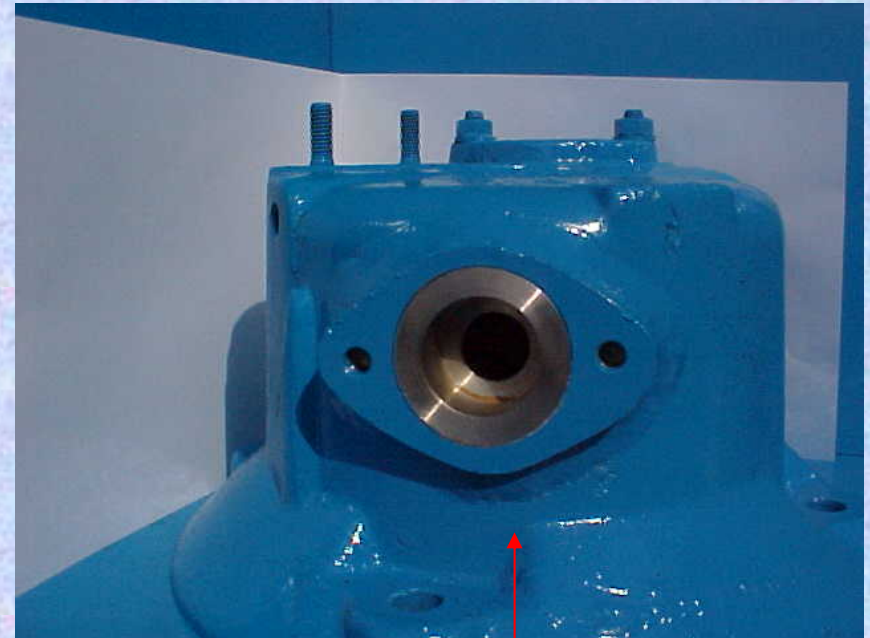
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PumpEng ® 8kw Side Cable Entry Junction Box



Problem

Flygt standard 8kw design junction box cover incorporates a top entry cable connection which is subject to damage due to operators lifting the pump via the handle & hitting the cable. This is a serious concern particularly being used on 1000v in water.



Solution

PumpEng have designed their 8kw junction box cover with a side entry cable connection ensuring adequate cable protection when being lifted. New design will also incorporate a removable top cover for ease of access to wiring

PumpEng ® 8kw Pump Out Vanes



Problem

Flygt standard design impeller pump out grooves become blocked with fines quite quickly thereby allowing fines to build up on the back of the impeller & causing premature wear & failure



Solution

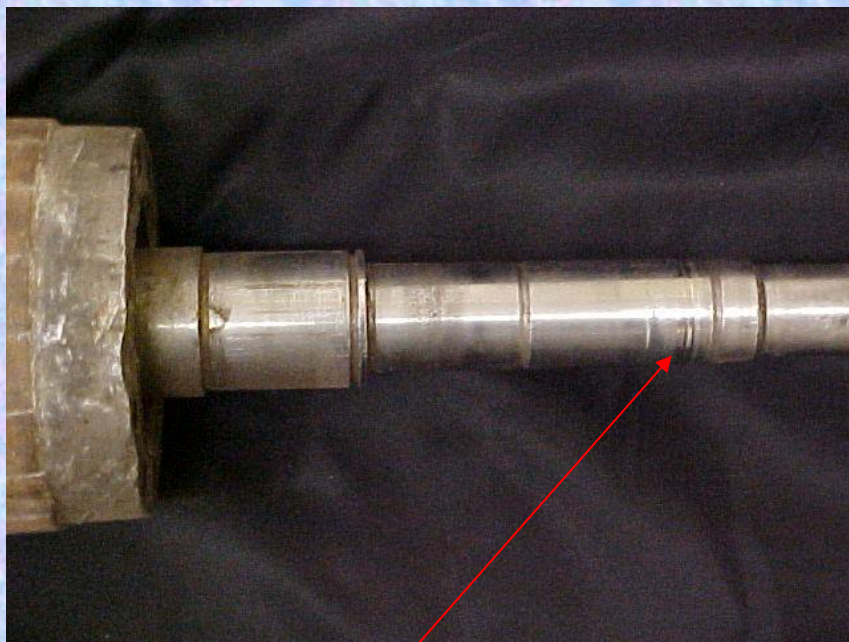
PumpEng have designed their impeller with rear pump out vanes of the type typically used on purpose designed slurry pumps. These vanes effectively force fines away from the back of the impeller ensuring wear is kept to a minimum



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PumpEng ® 8kw Replaceable Rotor Shaft Sleeve



Problem

Rotor shaft corrodes under the mechanical seal area. In underground conditions this is not uncommon due to low PH water through high salt contents of up to 200,000ppm



Solution

PumpEng have designed a replaceable shaft sleeve which negates the need for total strip down of the pump & refurbishment of the rotor at 1/4 approximate cost of reclamation of the rotor seal area

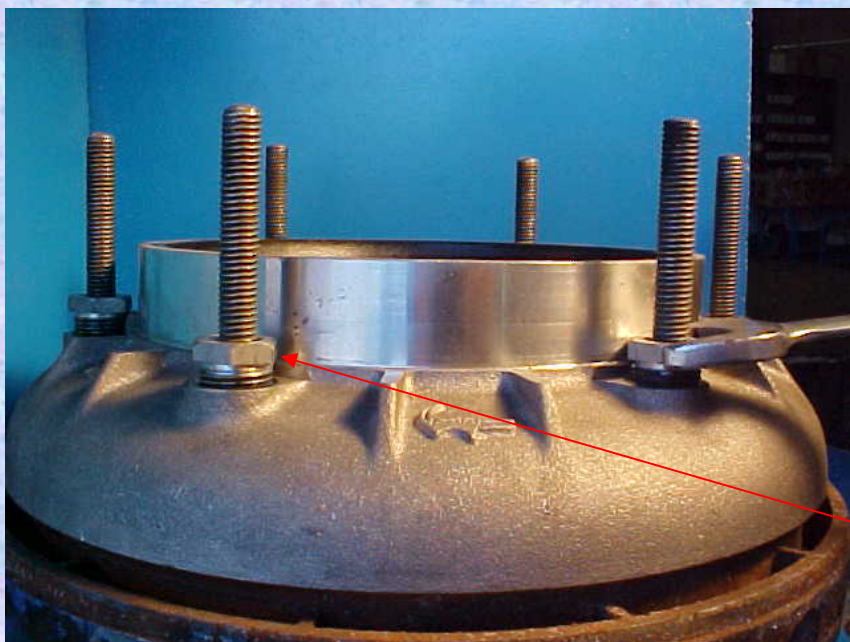


PumpEng Enhanced Performance Parts

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Innovative Solutions

PumpEng ® 8kw shimless diffuser (Patent No 2003100498)



Problem

Fitters take up to 30 minutes to set the critical impeller clearances using shims with a standard diffuser



Solution

PumpEng patented design shimless diffuser eliminates the need for shims & all adjustment is done via external setting nuts. A setting tool ensures that a 8kw impeller is set in less than 5 minutes & also means that critical clearances are set each & every time

Innovative Solutions



Problem

Standard design suction strainers become blocked with the new carbon fibre grout re-inforcement currently being used in some mines. These problems cause premature failures through dry running & necessitates complete strip-down of the pumps



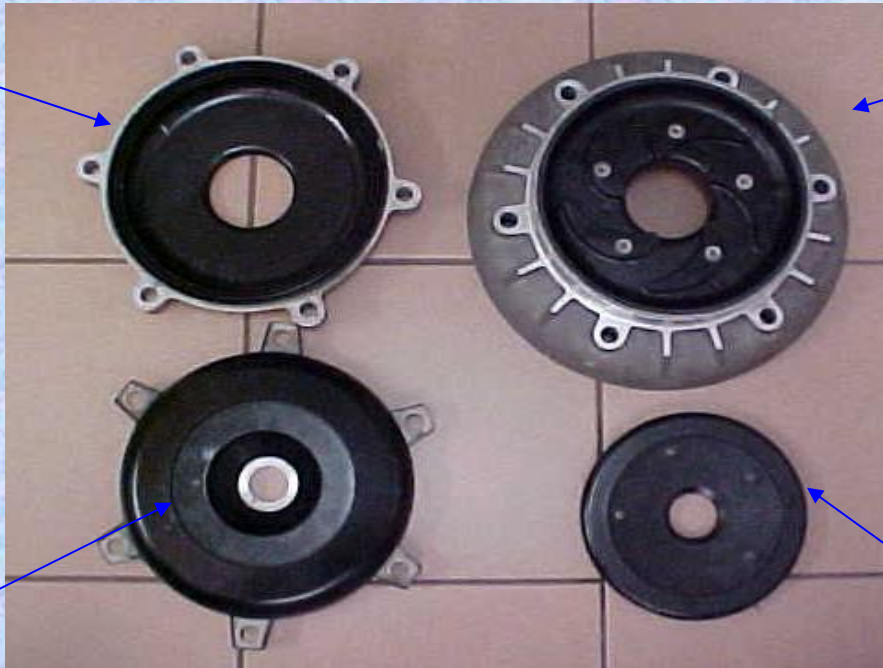
Solution

PumpEng have designed a bottom suction strainer which virtually eliminates this problem. Tests have determined that the fibre re-inforcement floats on the surface of the water & doesn't get drawn in on the bottom suction design

General Products

Suction Cover

Diffuser



Oil Housing

Diffuser Disc

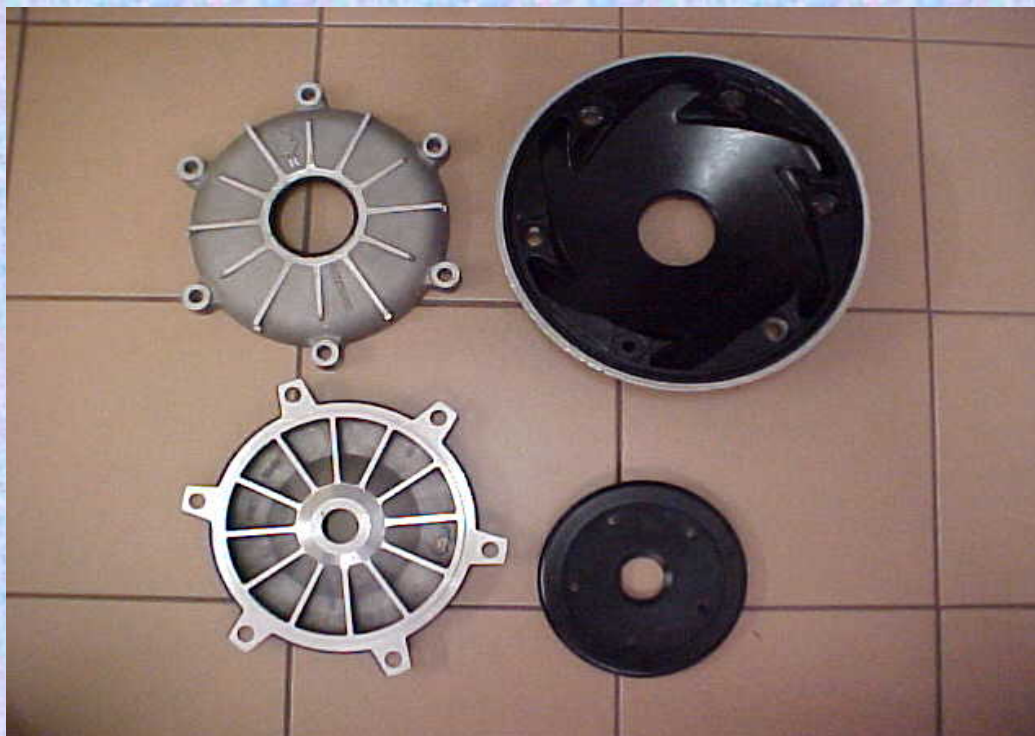
PumpEng components utilise urethane soft components. Urethane is renowned in the mining industry for its wear resistance capabilities in difficult & abrasive applications



PumpEng Enhanced Performance Parts

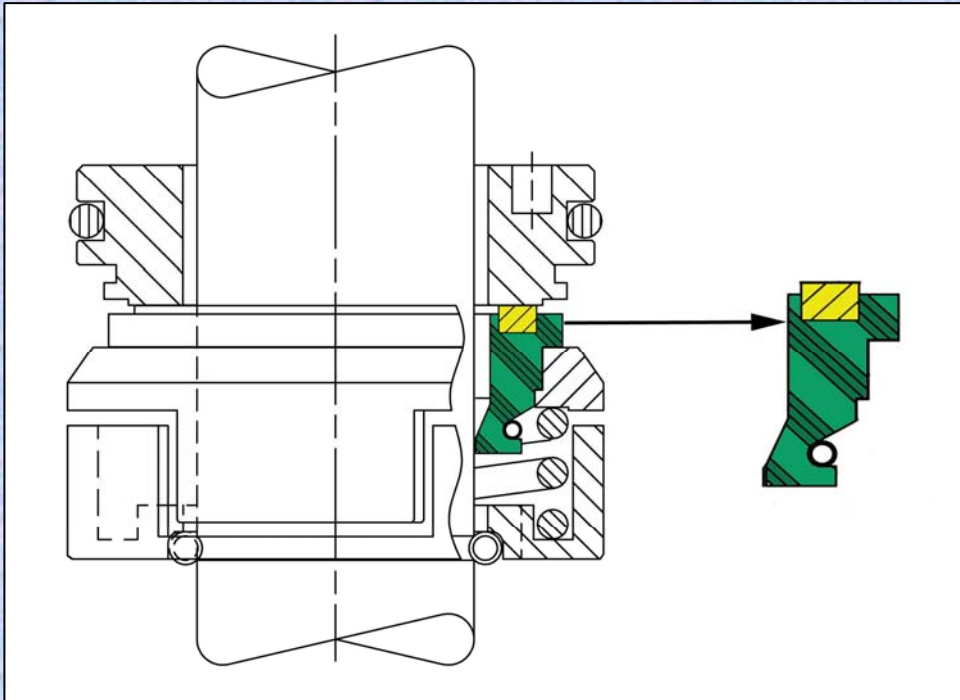
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General Products



*All components are "Manufactured in
Australia to suit Australian Mining
Conditions"*

Mechanical Seals



5kw, 8kw and 20kw upper seals

Problem

When using hard faces with buna rubber at higher temperatures, original seals required viton rubber to maintain integrity of bond between insert and rubber, causing duplication of stock or potential to use wrong seal in wrong place.

Solution

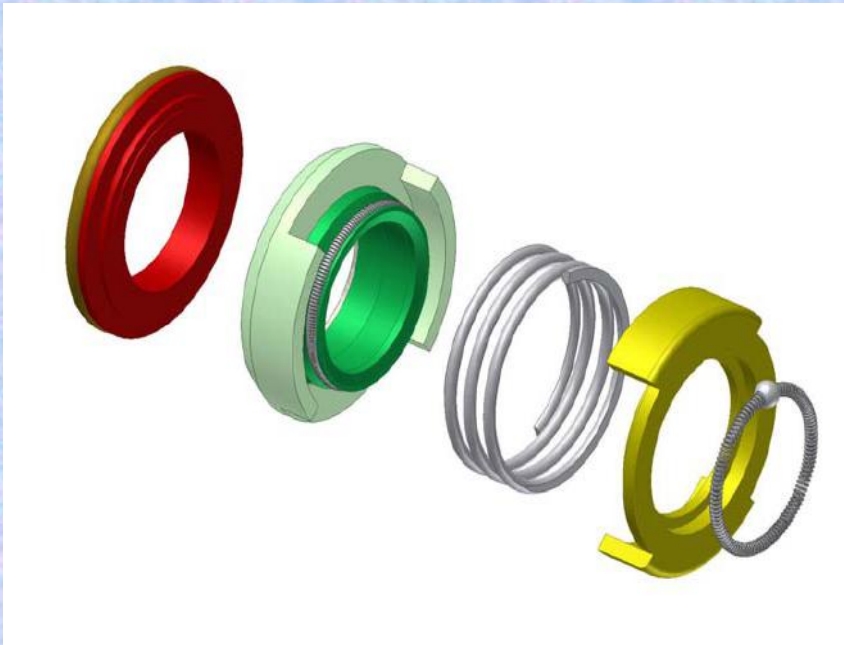
PumpEng have improved the vulcanisation bond and drive design between the tungsten carbide insert and the rubber seal allowing the buna rubber part to perform in higher operating temperatures without losing drive.



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Mechanical Seals



Typical 5kw and 8 kw seals

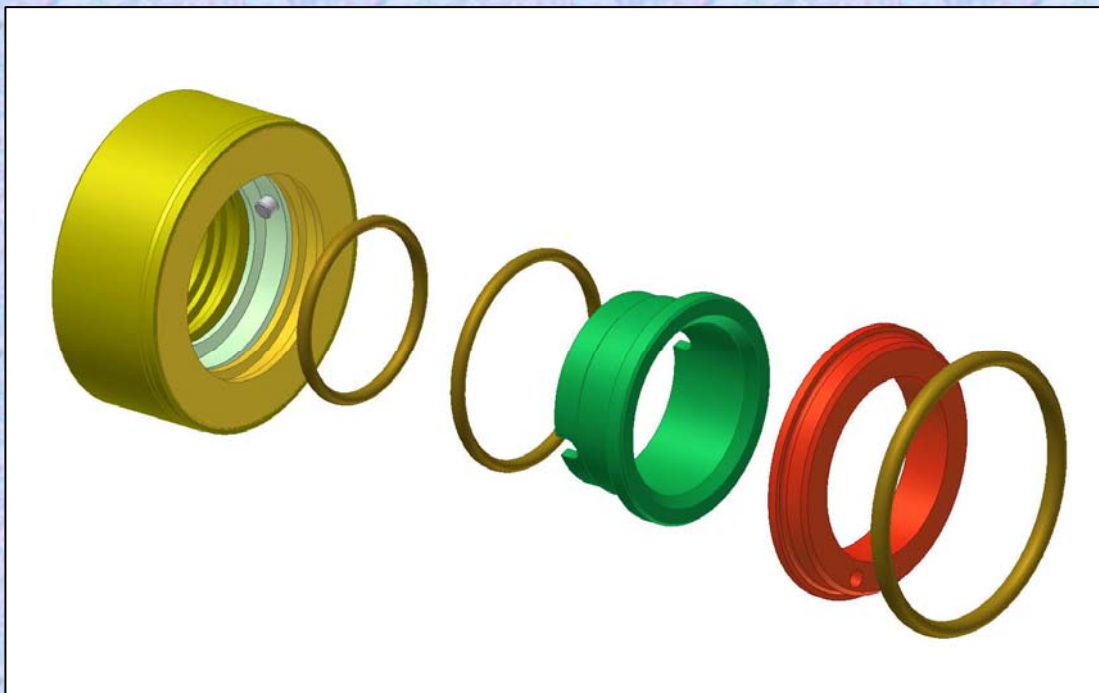
Problem

Removal of stationary seats has been a problem in 5Kw and 8Kw pumps. In some cases it is necessary to remove the motor housing to take the stationary seat out.

Solution

PumpEng have made the solid tungsten carbide faces with a special "extraction groove" to allow simple removal of the stationary seat.

Mechanical Seals



20kw Lower Seal

Problem

Original seals have wafer's of tungsten carbide inserted into a different base material. Distortion takes place between the dis-similar metals causing premature seal face leakage or the insert comes loose in the holder.

Solution

PumpEng have manufactured both rotary and stationary seats in "solid tungsten carbide", thus eliminating distortion and potential for inserts to come loose.



PumpEng Enhanced Performance Parts

Because you said "Change It....."

"Huge Savings Potential!"

Flygt Versus PumpEng Cost of Ownership

