



Equipment Repair Case Study

Situation: 62,000lb Sump Pump Failure – High vibration levels detected
Waste Treatment Facility

Challenge: Evaluate & repair the pump at Tristar's Delta facility.
The 62,000lb pump assembly was sent to Tristar to evaluate the cause of the high vibration levels. The unit was disassembled to assess the reason for the failure and level of repair required to return the unit to operation as quickly as possible. GVRD had been monitoring the vibration levels over a prolonged period and when the levels exceeded the manufactured tolerances, the pump was pulled from service.



Evaluation:

- Disassembly of the pump revealed that the shaft sections were joined by means of threaded couplings, which were showing extensive corrosion.
- N.D.T. of the shafts indicated that they were not repairable.

Solution:

- Working with the end user's engineering personnel, Tristar undertook the task of re-designing the couplings, while at the same time ensuring the tight tolerance of .001 over all of the fits of the shaft couplings down the full length of the 42 ft long shaft assembly.
- The full scope of repair consisted of manufacturing all new shafts, the newly designed couplings, and repairing the pump housing stages and impeller.
- Throughout the re-assembly process Tristar performed balance checks, utilizing the Schenck hard bearing balancing machine.



Benefits: The re-designed couplings & tightened tolerances will ensure performance longevity and the new zero vibration level readings are now the design standard for the pumps.

Conclusion: Unit was re-assembled to design specification and returned to the Waste Treatment facility where it was re-installed and is now in service at full operational capacity with no measurable vibration. Tristar will be implementing the new designs on the repair of the additional pumps at the waste treatment facility, as they are rotated out of service.



For more information or other case studies:
Please call 1-800-663-5606 or visit [.tristarind.com](http://www.tristarind.com)

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Since 1978

"reliability makes the difference"



Tristar Industries Ltd.

Machine Shop Equipment Capabilities

Delta, B.C. Facility, 1-800-663-5606

74,000sq. ft. facility in Delta, BC. – 3 heated bays,

Rail, Road and Water Access

Tristar operates a low impact environmental site with a controlled and monitored effluent system.

Lifting Capacity:

8 Overhead Cranes

- Up to 110 ton lifting capacity.
- With 379" under the hook.

Machining:

Small – Medium Lathes	5	½" Ø to 18" Ø swing by 12' long.
Large Lathes	4	to 14' Ø by 50' long.
Vertical Boring Mill	4	to 18' Ø by 13' under the Bridge.
Horizontal Boring Mill	5	2 with 5" spindles & 3 with 4" spindles.
Floor Mill	1	6' spindle with 40' horiz. by 124" Vert. travel, c/w 25 ton rotary table.
Cylindrical Grinding	3	to 20" Ø by 120" long.
Roll Grinding	1	to 78" Ø by 295" long at a 30 ton capacity.
Surface Grinding	1	60" Ø by 36" under the head.
Balancing	1	to 122" Ø by 480" long at an 80 ton capacity.

Fabrication Materials:

Titanium
Hastelloy
Austenitic 300 Series Stainless
6 – 7% Moly Stainless
2205, 2304 Duplex Stainless Steel
Ferralium

Welding Process:

Gas Metal Arc
Sumerged Arc
Gas Tungsten Arc
Plasma Transferred Arc
Ultra-jet Micro-Flow, Flame Spray Build-up & Jet Arc Spray Build-up

Weld Control Processes:

"U" Symbol 23,384 – Construction of Pressure Vessels to ASME Code Section VIII, Division 1
"S" Symbol 33,733 – Construction of Power Boilers to ASME Code, Section I
"R" Symbol 2377 – Repair or alteration of the above equipment to the National Board of Boiler & Pressure Vessel Inspectors Code.

Material Testing Capabilities:

(NDT) Non-destructive & destructive testing offsite.

Certifications:

ASME "U", "S" and "R" Stamps

Shop Union:

United Steel Workers of America – Local 2952

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