Case Study

GOULDS PUMPS
An ITT Brand

Save $1M with TCO
CONSEQUENCES: $1M Lost in Annual Production

[How (TCO) Total Cost of Ownership can = Serious Savings] *This article provides a real life TCO savings example that saved one company more than $1.2 million annually.*

All too often, Total Cost of Ownership (TCO) considerations are forgotten.

With careful expert planning, TCO considerations can save a business millions. Ten dollars, saved ten times each shift – three shifts a day and in ten places – equals $1,095,000 per year.

This is a real story of a similar scenario.

A large U.S. southeastern paper manufacturer had been experiencing reduced throughput. Poor performance of two of their fill pumps (which were no longer being manufactured) was to blame.

After carefully examining the challenges associated with increasing the old pumps performance and throughput, a decision was made to install a larger impeller in the existing pump. Even with careful planning the results of this effort did not improve flow-rate, and cavitation issues worsened.

ITT Goulds Pumps got involved.

The customer's Technical Manager and Process Engineer contacted contacted an ITT Goulds Pumps Senior Sales Engineer.

Upon getting the call the engineer travelled to the plant site, where the customer's team brought him up to speed on their challenges. He reviewed the application in detail: traced pipe, determined optimal flow-rates, and took a thorough inventory of the existing installation.

In short order ITT Goulds Pumps recommended appropriate tests, to determine:

Can the existing pumps be modified?

- Are larger pumps with lower NPSH and higher head capacity needed?
- Will a variable frequency drive (VFD) be required?
- Can friction loss be reduced by replacing small diameter pipe sections, and other constrictions?

Test results were clear

OBJECTIVE

The purpose of these tests is to determine if this pump can be run on a VFD and/or Max diameter impeller to increase flow and reduce the fill time of the digester. This pump pumps into a common header with like pump supplying Black Liq. This pump has an inline spare and we will: 1. Run pumps at shut-off to verify impeller diameters, 2. Run this pump and the spare pump to determine if the two running together can provide desired flow. If not we are to determine what can be done to get required flow and friction losse (system curve).

MOTOR INFO	RPM	VOLTS	HP	FRAME	FL AMPS
Pump 1 East	1780	480	100	445U	121.3
Pump 2 West	1780	480	100		115

FLUID INFO	NAME	SPGR	TEMP	VAPOR PRESS.	NPSHa (Ft.)
	Wht Liq / Caustic	1.1	192 F	23 Ft.	24.7

PUMP INFO	IMP. DIA.	MODEL	SIZE	CONST.	SERIAL #
Pump 1 East	12	CSO	8X6X13	CF8M	781-27443-1-2
Pump 2 West	11	CSO	8X6X13	CF8M	781-27443-1-2

HIGHEST VERTICAL ELEVATION (ABOVE PUMP ELEVATION) IN DISCHARGE PIPE - FT.

Comments: East pump cavitates when run alone and slightly cavitates when both pumps are run together.

	DISCH. PRESS.	SUCT. PRESS.	DIFF. HEAD	GAUGE ADJ.	TDH	MOTOR AMP.	AMP HP	CURVE Q	CURVE EFF.	CURVE HP	FLOW METER GPM
Test 1 East *Pump Dead Head*	80	8	151	2	153						1309
Test 2 East *Pump Running*	50	8	88	2	90	110	96	3040	0.70	109	2468
Test 3 West *Dead Head Pump 2*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Test 4 West *Pump Running*	42	7	74	4	78	89	73	2440	0.77	68	2319
Test 5 East *Both Pumps Running*	65	8	120	2	122	100	87	2320	0.83	94	2955
Test 6 West *Both Pumps Running*	65	8	120	2	122	83	68	760	0.70	37	2955

Goulds recommendations were:

Keep the existing pumps. The pumps themselves were not the problem. They were in good condition and were sufficient to support the increase in flow-rate required.

Install 13" impellers, in both pumps, and run them in parallel operation. Estimates showed that each pump would produce a flow-rate of 2,000 GPM "each" when using 12 Feet of NPSH. At this operating point, running both pumps in parallel, cavitation would be eliminated and head/flow requirements met.

Install larger motors – 125 horse power. Demands created by increased flow-rate and pressure, required larger motors capable of efficiently supporting the pumps.

Modify base plates, couplings to accommodate larger motors. Installation of larger motors required upgrades of related hardware.

Test data, and a case for TCO savings were presented.

The engineer reviewed the test results with the customer. ITT Goulds Pumps' reputation for expert advice was known and trusted, but the customer wanted to be sure that their investment was justified.

Based upon ITT Goulds Pumps' recommendations, an upfront investment was necessary; $3,000 needed to be spent. But with this investment, would increased the flow-rates be accomplished? Would a return-on-investment be achieved? The answer was, yes.

The changes recommended by him were approved and implemented within a few weeks. Subsequent production results showed increased throughput and elimination of cavitation issues.

Net Result = $1,160,500.00 increase in production, achieved the first year.

customer reported to Walters that the ITT Goulds recommendations resulted in an astronomical savings that year, and that the upgraded installation performed precisely as predicted.

HOW WE FIXED IT:

A large U.S. southeastern paper manufacturer was experiencing reduced throughput, and it was costing them. Poor performance of two of their fill pumps (no longer manufactured) was occurring. Non-OEM parts were to blame. After reviewing the situation, determining the solution and performing tests, ITT Goulds Pumps resolved the problem. Not only was the problem resolved, being TCO focused, ITT Goulds Pumps implemented an OEM based solution that saved the company an incredible amount of money.

This is what TCO is all about.

The customer continued to experience these production increases and savings, year after year.

Best Efficiency Point (BEP), and Total Cost of Ownership (TCO)

(TCO) are two principals inextricably linked as best business practices, practiced by Goulds. Learn more about what the ITT Goulds team can do for your operation. Contact your regional sales representative and ask them what they can do for your company's operations today.