FLASH STEAM VENT CONTROL VALVES

BUTTERFLY VALVE REPLACEMENT

Case Study | **Company A**
Document: MNL20100672D

THE PROBLEM

20” Titanium Butterfly Valves

A client near South Africa had been utilizing Titanium butterfly valves to vent steam from their flash vessels. Due to the vapour also containing acids and fine particulates, the butterfly valves were quickly compromised and removed from service after 1 month. If the erosion damage was determined unrepairable, a new butterfly valve was installed in its place.

The valve’s butterfly disc would also accelerate abrasive fluid towards the downstream pipe walls. Over time, this caused the client’s Titanium piping to erode, eventually resulting in a breach. The costs associated with labour, replacement valves, downtime and lost production were significant.

SERVICE LIFE: 1 MONTH

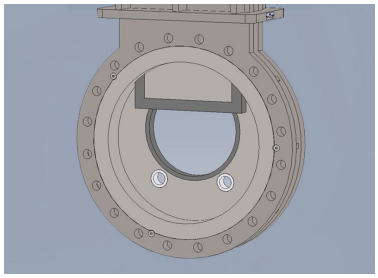
THE SOLUTION

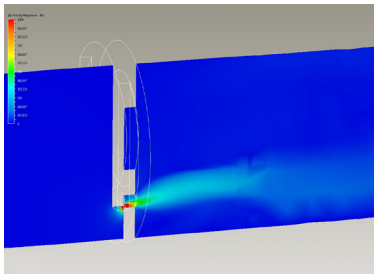
20” Titanium SlurryFlo Control Valves

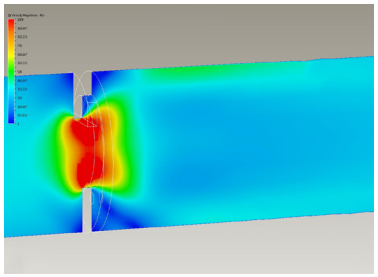
With an analysis of the process conditions and modulating history, Special Alloy Fabricators’ engineering team developed a unique ‘dual purpose’ trim. As the gate opens, it exposes two small ceramic orifices to vent steam. Once the flash vessel has been vented, the gate can be retracted further if additional flow is required. Note that flow is centered within the pipe in both scenarios.

Upon replacing their Titanium butterfly valves with SlurryFlo control valves, the client quickly realized a return on investment. During the first inspection (1 month post installation), the maintenance team observed minimal erosion on the wear components. As the downstream piping also remained in excellent condition, it was decided to operate the valves for several months between inspections. After 12 months of continuous service, the valve trims are replaced and the valves are reinstalled.

SERVICE LIFE: 12 MONTHS







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RETURN ON INVESTMENT
5 YEAR HISTORY

TITANIUM BUTTERFLY VALVES

Month 1 (New Valve)	**$250,000 x 6 Valves = $1,500,000**
Month 2 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 3 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 4 (New Valve)	**$250,000 x 6 Valves = $1,500,000**
Month 5 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 6 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 7 (New Valve)	**$250,000 x 6 Valves = $1,500,000**
Month 8 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 9 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 10 (New Valve)	**$250,000 x 6 Valves = $1,500,000**
Month 11 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 12 (Refurbishment)	$150,000 x 6 Valves = $900,000

TOTAL YEAR 1 COST: **$13,200,000**

Month 13 (New Valve)	**$250,000 x 6 Valves = $1,500,000**
Month 14 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 15 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 16 (New Valve)	**$250,000 x 6 Valves = $1,500,000**
Month 17 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 18 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 19 (New Valve)	**$250,000 x 6 Valves = $1,500,000**
Month 20 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 21 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 22 (New Valve)	**$250,000 x 6 Valves = $1,500,000**
Month 23 (Refurbishment)	$150,000 x 6 Valves = $900,000
Month 24 (Refurbishment)	$150,000 x 6 Valves = $900,000

TOTAL YEAR 2 COST: **$13,200,000**

TOTAL YEAR 3 COST: **$13,200,000**
TOTAL YEAR 4 COST: **$13,200,000**
TOTAL YEAR 5 COST: **$13,200,000**

TOTAL COST AFTER 5 YEARS:
$66,000,000

TITANIUM SLURRYFLO CONTROL VALVES

Month 1 (New Valve)	**$150,000 x 6 Valves = $900,000**
Month 2	-
Month 3	-
Month 4	**-**
Month 5	-
Month 6	-
Month 7	**-**
Month 8	-
Month 9	-
Month 10	**-**
Month 11	-
Month 12	-

TOTAL YEAR 1 COST: **$900,000**

Month 13	**-**
Month 14	-
Month 15	-
Month 16	**-**
Month 17	-
Month 18	-
Month 19	**-**
Month 20	-
Month 21	-
Month 22	**-**
Month 23	-
Month 24 (New Trim)	$50,000 x 6 Valves = $300,000

TOTAL YEAR 2 COST: **$300,000**

TOTAL YEAR 3 COST: **$300,000**
TOTAL YEAR 4 COST: **$300,000**
TOTAL YEAR 5 COST: **$300,000**

TOTAL COST AFTER 5 YEARS:
$2,100,000

*Note: The calculations above exclude downtime and labour costs, as they are unknown to SAF.

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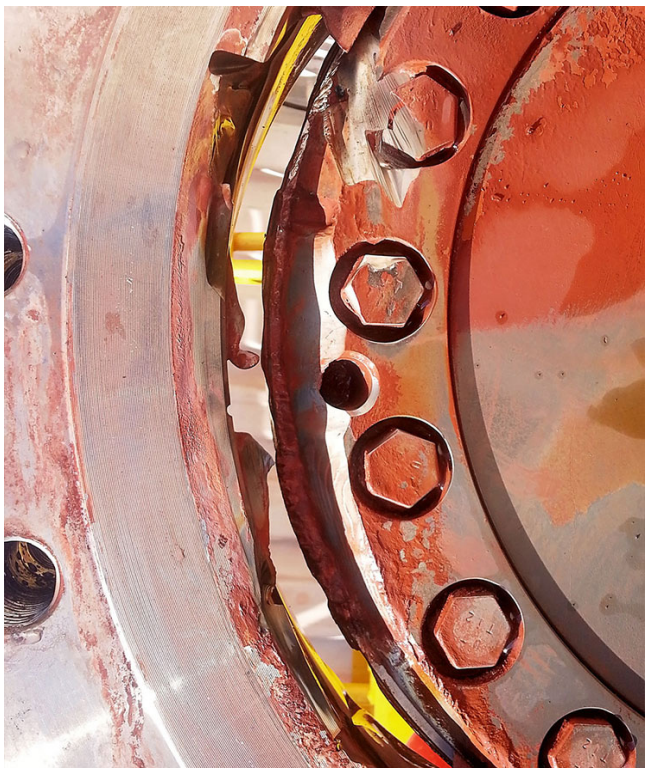
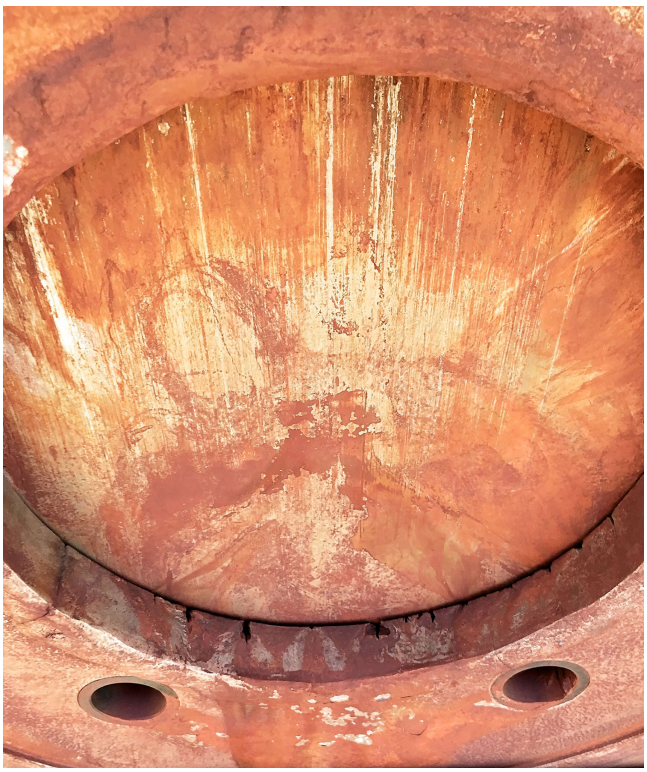


TITANIUM BUTTERFLY VALVES
1 MONTH OF SERVICE



TITANIUM SLURRYFLO VALVES
6 MONTHS OF SERVICE