

# TVM™ TOTAL VALVE MANAGEMENT

# PERFORMANCE



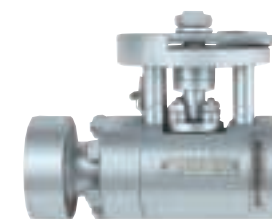
Valvtechnologies, Inc. TVM™ (Total Valve Management) process is a cost effective solution to valve leakage problems.

Valvtechnologies, Inc. offers a management tool in the form of a detailed survey to determine valve leakage providing quantitative results, not qualitative estimates. These results determine the cost of lost steam, return on investment calculations, and are the building blocks of an in-depth history database for predictive replacement analysis. Secondly, this survey will compile a repair/replace list based on safety, economics and reliability. This program is an investment in the profitability of your operation by providing superior services and products backed by our engineering and support staff, as well as our world-wide network of representatives.



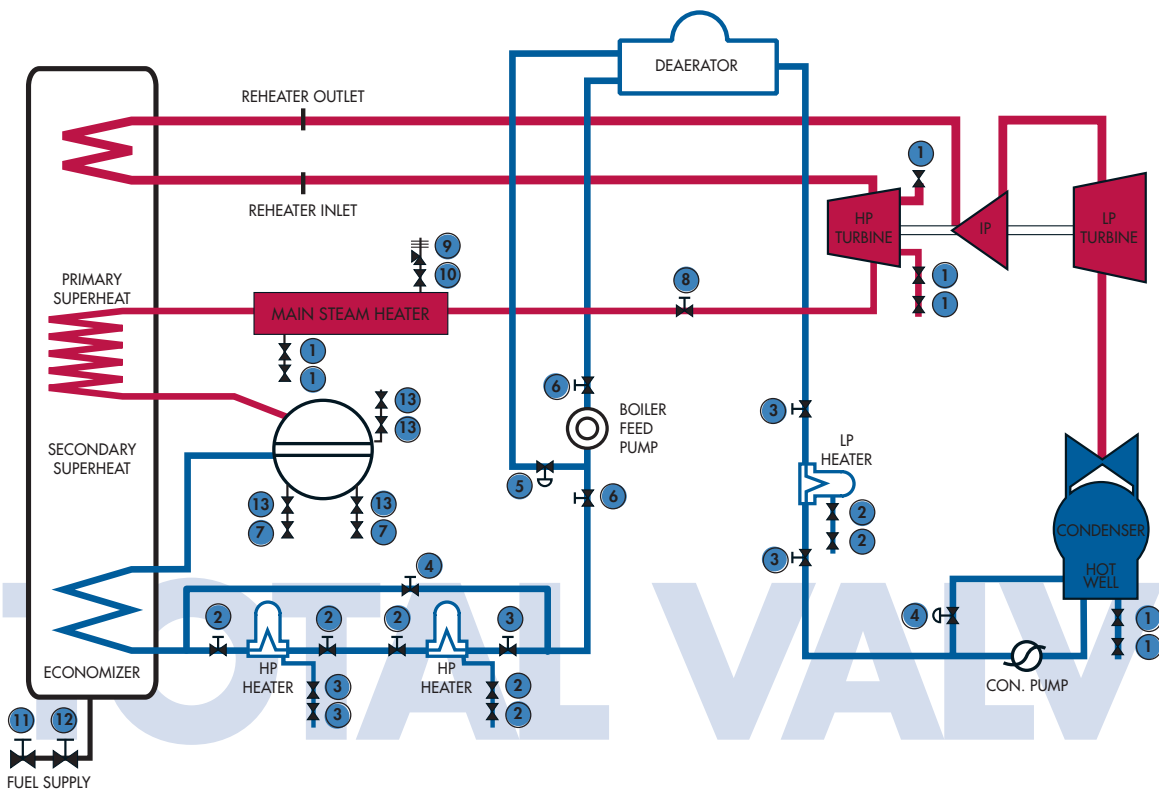
Valvtechnologies, Inc. TVM™ program tracks down the worst offenders in your plant and can replace those valves with true, ZERO LEAKAGE technology.

A 2" ball valve that leaks 802 lbs./hr. has a leak rate cost of \$46,951 per year per valve. (Based on 90% availability and fuel cost based on \$5/MMBtu)



## Typical Valve Applications

- 1 Drain/Vent Valve
- 2 Feed Heater Isolation Valve
- 3 Feed Heater Drain Valve
- 4 Condensate Pump Recirculating Bypass Valve
- 5 Boiler Feed Pump Recirculating Bypass Valve
- 6 Boiler Feed Pump Isolation Valve
- 7 Continuous Blow Down Valve
- 8 Main Steam Stop & Check Valve
- 9 Electronic Relief Valve
- 10 Electronic Relief Valve Isolation Valve
- 11 Fuel Double Block and Bleed Valve
- 12 Fuel System Control & Switching Valve
- 13 Boiler Drain/Vent Valve



## REPAIR VS. REPLACEMENT VALVE COSTS

(based on 2500# class, BW, F22 material)

SIZE	REPAIR COST	% FAILURE w/in1 YEAR	REPLACEMENT VALVE COST
1.5"	\$ 420	85 %	\$ 850
2"	\$ 500	85 %	\$ 1085
4"	\$ 700	85 %	\$ 2725

These values are for illustration purposes only. Actual repair costs will vary depending on valve style and configurations.

## SUMMARY REPORT (American Power Company)

Steam Isolation Valve Survey - Recommended Valve Replacements (Based on payback of 2 years or less)

Leak Rate (lb/hr)	Approximate Energy Loss (MMBtu/hr)	Two-Year Energy Cost (\$ US)	Replacement Valve Cost (\$ US)	Installation Cost (\$ US)	Total Cost (\$ US)	Payback Years	ROI Year 1	ROI Year 2
1,180	1.68	\$ 26,458	\$ 2,650	\$ 600	\$ 3,250	0.25	307%	714%
172	0.24	3,849	2,650	600	3,250	1.69	-41%	18%
2,010	2.86	45,068	2,650	600	3,250	0.14	593%	1287%
850	1.21	19,059	6,210	1,200	7,410	0.78	29%	157%
690	0.98	15,471	2,650	1,200	3,850	0.50	101%	302%
3,860	5.49	86,549	7,850	1,200	9,050	0.21	378%	856%
1,234	1.75	27,669	1,050	600	1,650	0.12	738%	1577%
256	0.36	5,740	1,050	600	1,650	0.57	74%	248%
190	0.27	4,260	1,050	600	1,650	0.77	29%	158%
195	0.28	4,372	1,050	600	1,650	0.75	32%	165%
1,063	1.51	23,835	1,050	600	1,650	0.14	622%	1345%
333	0.47	7,467	1,050	600	1,650	0.44	126%	353%
525	0.75	11,772	1,050	600	1,650	0.28	257%	613%
188	0.27	4,215	1,050	600	1,650	0.78	28%	155%
565	0.80	12,668	2,090	1,860	3,950	0.62	60%	221%

# SURVEY

# TVM™ TOTAL VALVE MANAGEMENT

## Valvtechnologies' 6 Step Survey Process



- 1** Obtain general plant specifications including pressure, temperature, and application. Valve specific information such as model number, make, manufacturer, serial number, etc., is also included.

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- 2** Certified Valvtechnologies, Inc. representatives will travel to the plant site to perform the required survey utilizing state of the art equipment. The survey is completely non-intrusive to the process, and requires only a minimum amount of data collected at any one point. Along with the data collection, a general inspection of the valve will be performed as part of the service, and results included in the final report.  
  
When completed, each individual data site will be restored with insulated markers for identification. These markers will aid in subsequent survey processes and help produce more accurate results for the history database.

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- 3** Final analysis of the data collected is accomplished by thermodynamic modeling at the Houston headquarters. Separate models are used for each individual application ensuring the highest measure of quality and accuracy.

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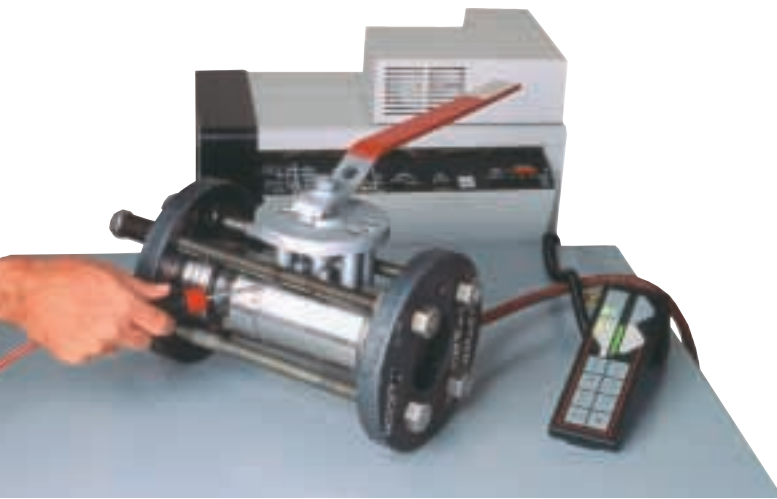
- 4** The results of the modeling and of the field report are compiled in one concise summary. The compiled results are entered into the history database detailing a complete plant history of the surveys and their results. This procedure greatly enhances the ability to provide a more accurate predictive analysis for valve leakage trends subsequently requiring repair or replacement.

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- 5** The typical survey times are:
  1. Pre-outage: Determines the valves that must be repaired immediately due to gross seat leakage.
  2. Post-outage: Verifies results for valves replaced in initial survey and helps build the history database.
  3. Semi-annually: More data for the history database and predictive analysis program for valve replacement.

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- 6** Modeling techniques are cross-checked by sample evaluation of valves that have been modeled and physically verified.



**VALVTECHNOLOGIES**

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## ENERGY LOSS SURVEY & EVALUATION

- Quantitative Results for Definitive Decision Making
- Non-intrusive to the process
- History database for all surveys
- Improves profit margin, safety and reliability

**VALVTECHNOLOGIES**

engineered solutions

