

Market for FGD Valves is Growing Again

After a huge surge in China where FGD system purchases averaged more than 100,000 MW per year in the 2009-13 period, the market slumped. Now with activity in India, Vietnam and a number of other developing countries the market is growing again. In addition there is a big market for replacement and repair of FGD valves. They are in "severe" service due to the abrasive calcium sulfate slurry which also includes varying quantities of chlorides. Since the slurry is recycled, the bleed stream provides the only exit route for chlorides. Chloride excursions can significantly shorten valve life.

By Robert McIlvaine – The McIlvaine Company

The FGD system and repair purchases in 2018 will exceed \$19 billion. Sixteen companies will account for 55 percent of the purchases.

Utilities are starting to incorporate IIoT and Remote Monitoring. This will allow them to create continuous cost of ownership analyses for their FGD valves. Many FGD systems are using knife gate valves for the big recycle slurry systems. Butterfly valves have been successfully employed in Europe. A large FGD system can require an investment of more than \$1 million just for up to eight large 50,000 gpm recycle valves.

FGD Limestone Scrubbing System

Suppliers of butterfly valves are contending that this design is better based on the use of innovative materials and designs to resist corrosion and abrasion. Chloride and fluoride levels in the slurry

can vary from plant to plant and from moment to moment based on bleed flows and coal type. This makes the best decision more complex and requires extracting wisdom from many experts.

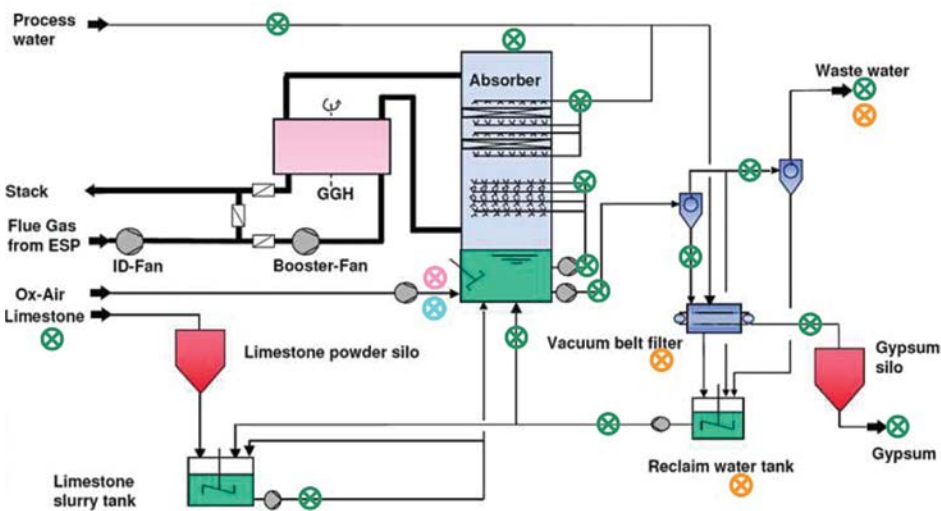
As an example, let's take a plant in a country where knife gate valves have traditionally been used but butterfly valves are available at what is claimed to be a lower total cost of ownership (TCO). How does the purchaser determine whether this alternative is the lowest TCO? The answer is the interconnection of people, the creation of Decision Guides and the rise of subject matter experts (SMEs) to become Subject Matter Ultra Experts (SMUEs). The decision may rest on the performance of new linings. The fact that these linings have been proven in dredging or mining service can be relevant. Therefore, interconnection across industries, processes and product areas in a productive way becomes very important.

FGD System, Component, Consumables and Repair Purchases in 2018

Company	Country	Rank	% of Total Coal-fired FGD Purchases in 2018	FGD Purchases (\$ millions)
AEP	U.S.	9	1.1	209
BWE	U.S.	14	0.6	114
Datang	China	3	7	1,330
Duke	U.S.	10	1	190
Enel	Italy	13	1	190
Eskom	South Africa	5	6	1,140
Guodian	China	2	7.5	1,425
Huaneng	China	1	9	1,710
Huadian	China	6	6	1,140
J-Power	Japan	16	0.5	95
National Thermal Power Corporation (NTPC)	India	4	7	1,330
NRG	U.S.	11	1	190
Shenhua	China	7	4.5	855
Southern	U.S.	12	1	190
Uniper	Germany	15	0.6	114
Vietnam Power (EVN)	Vietnam	8	2	380
Sub Total			55.8	10,602
Other			44.2	8,398
TOTAL				19,000

Valve Expertise from FGD Butterfly Valve Orientation

		Power Plant Fleet						
		Nuclear	Coal Fired	Gas Turbine				
Butterfly valves are used in the steam and feed water cycles in fossil and nuclear power plants. Nuclear plants have additional loop for reactor cooling	Reactor				Butterfly valves are used in many applications. The FAC problem in frequent cycling GTCC plants can be evaluated with corrosion knowledge obtained from FGD			
	Steam	Steam	HRSG					
	Feedwater	Feedwater	Feedwater					
Refining	Biomass	WTE	FGD Slurry Valve	Slurry Valve	Mining	Chemical	Dredging	
These industries also have SO2 and particulate issues and can create similar slurry challenges. Butterfly valves compete with pinch and knife gate for the lime slurry at the ball mill and the large sulfite recycle to the scrubber.			Lime	Recycle	Lots of similar slurry applications in other industries. Mining can be further sub divided into coal, copper, iron phosphate etc. the dredging flows are even larger in some cases than FGD which can be more than 400,000 gpm with multiple pumps and valves.			
		Knife Gate	Pinch	Butterfly Valve				



Courtesy of Crane: Butterfly recycle valve is in pink. Diaphragm valves are in orange. Ball valves are in green and blue.

IIoT, remote monitoring, data analytics, and centralized decision making based on lowest TCO will change the way valves are marketed and

purchased in the future. Suppliers of slurry valves with the lowest TCO will benefit but only if they seize the opportunity.

ABOUT THE AUTHOR



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