

The Coal Fired Boiler Pump Repair and Replace Market

There is a big market for replacement pumps and for pump repair in coal fired power plants. World coal fired power capacity will only be growing at one percent per year. Suppliers of pumps will find that the market at existing plants is ten times larger than for new plants.⁽¹⁾ This is based on a product life of 10 years. Ten percent of the products will be replaced each year compared to an equivalent of only one percent which will be sold for new plants.

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In Western Europe and NAFTA, coal fired capacity will be shrinking. So, the entire market will be for replacement and upgrades. Many U.S. plants are ancient and require a high level of upgrading and repair. The only area where there is almost as much business in new plants as in existing ones is West Asia. India is building new plants and is also retrofitting FGD & DeNOx at existing plants.

This high ratio of replace to new requires an adjustment in sales strategy. Most suppliers rely on sales leads rather than targeted efforts. The replacement market is predictable and needs to be addressed by targeted efforts months or even years in advance of any order. Most large coal fired boiler operators are embracing IIoT and data analytics. This gives them the ability to make purchases based on lowest total cost of ownership. With IIoT and remote O&M, they can monitor pump performance continuously. Therefore, the true cost of any specific pump in any process can be determined. The supplier who can furnish a better pump for that purpose will have a receptive audience. However, the communicators will need to have a great deal of knowledge about the customer’s processes and their operating experience with pumps. This communication is enhanced by a Decision System which interconnects the knowledge and subject matter ultra-experts.⁽²⁾

Fewer than 200 coal fired utilities will buy most of the replacement equipment. Let’s take Shenhua Guodian as an example. There are many pump applications in coal fired plants. One is flue gas desulfurization (FGD). The forecast below takes into account only the pumps and other components purchased for plants owned by the operating companies — but some operators are also OEMs. Last year, Guodian, which was the second largest operator of coal fired power plants, merged with Shenhua, the seventh largest operator

World Coal Fired Capacity - MW

Region	CAGR %	Replace/New
Total	1	10
Africa	4	2.5
CIS	2	5
East Asia	3	3.3
Eastern Europe	2	5
Middle East	2	5
NAFTA	(5)	All Replace
South & Central America	3	3.3
West Asia	7	1.4
Western Europe	(2)	All Replace

of coal fired power plants, as well as the largest coal mining company. The Guodian equipment subsidiary is supplying a number of FGD systems in Turkey and is buying pumps for those systems, as well. In fact, Guodian is now the world’s largest air pollution equipment supplier.

Sixteen companies will buy 56 percent of the FGD pumps in 2018. Another 180 companies will buy 35 percent of the pumps.⁽³⁾ The other 9 percent will be purchased by a large number of small power plant operators. The large centrifugal scrubber recycle pumps in these systems handle up to 400,000 gpm of abrasive and corrosive slurry. Chloride levels can exceed 20,000 ppm. The replacement pump market for this specific application is over \$80 million/yr. The other pumps associated with ball mills and FGD wastewater



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

add another \$30 million/yr. International suppliers include Duchting, Weir and KSB. ⁽⁴⁾

Because of the large size and severe service encountered with the FGD recycle slurry pumps, there is a big potential for product improvement. If the international suppliers keep innovating, they can overcome the Asian-based newcomers. The opposite is also possible. Chinese manufacturers can also innovate and capture international markets.

Pump suppliers who have been accustomed to working with U.S., European and Japanese OEMs and utilities are going to have to spread their wings and pursue the big markets in the non-OECD countries. While coal fired capacity is shrinking in the OECD, it is growing robustly in India, Vietnam, Indonesia, Turkey and a number of other countries. In many of these countries, there is

a very large Chinese investment, which then favors Chinese component suppliers.

The good news is that there will be relatively few large players. Therefore, identifying opportunities will not be difficult. The bad news is that unless the international pump supplier has an edge, he will not be successful in these new markets. The edge can be created by innovation and product development, which provides a lower total cost of ownership (TCO). Existing plants will increasingly buy the pumps with the lowest TCO.

Innovation and the lowest TCO can be a result of pump design or materials — but it can also be with an IIoT package, which includes an edge computer and process management for a pump or an array of pumps. If this unique package results in lower TCO, it can be successfully sold throughout the world. ⁽⁵⁾



The offering of IIoT packages which can be remotely monitored increases the opportunity to sell ongoing services. The edge computer feeds data into a cloud-based system which, in turn, feeds data back to the pump supplier as well as to the operator. This allows the pump supplier to be a partner in the operation and maintenance of the plant.

This remote O&M is being embraced by coal fired power plant operators. MHPS has a remote-control center in the Philippines to remotely monitor and help control coal fired power plants across Asia. Luminant is not only monitoring its own coal plants, but also offers this service to industrial power plants in its service area. GE is very active in providing its Predix systems to coal fired power plants.

Although wind, solar and gas turbine combined cycle capacity will be growing faster than coal fired capacity, coal will remain the largest pump market because of the big replacement demand. There are relative few owners and they will be receptive to a better pump or pump package. The market is therefore an attractive one for pump suppliers.

References

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About the Author

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