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Indian Power Boiler Market: Present & Future

Boiler markets in India have been growing continuously for past few years with a CAGR of 24.53%. While the demand outlook is favourable, the domestic BTG industry is faced with strong competition from original equipment manufacturers (OEMs) based in China, as several private sector players have preferred to import boiler-turbine-generator (BTG) sets from China on the grounds of relatively faster delivery schedule and competitive cost of sourcing.

Given the existing energy deficit and likelihood of continued growth in Energy Requirement in the country power boiler markets have a favourable future outlook. According to 17th Electric Power Survey Report:

- The electrical energy demand for 2016–17 is expected to be at least 1392 Tera Watt Hours, with a peak electric demand of 218 GW
- The electrical energy demand for 2021–22 is expected to be at least 1915 Tera Watt Hours, with a peak electric demand of 298 GW

This increase in Future energy requirement is mainly due to the facts:

- India's manufacturing sector is likely to grow faster than in the past
- Domestic demand will increase more rapidly as the quality of life for more

Indians improve

- Currently blackouts and load shedding artificially suppresses demand; this demand will be sought as revenue potential by power distribution companies
- Still 33883 villages are unelectrified

India Plans to add 75,785 MW in 12th with thermal power capacity addition of about 63,781 MW. During 13th plan a capacity addition of 93,000 MW is planned of which 63,400 MW is due to thermal power, thermal power share is suppressed due to increased share of nuclear and hydro power share.

BHEL is the major Indian market leader in boiler manufacturing industry in India with over 60% share in Indian boiler market and installed base of 120,000 MW. Other emerging players are L&T, Siemens, ABB, Doosan Heavy Industries and Crompton Greaves.

Boiler markets in India have been growing continuously for past few years with a CAGR of 24.53%. A graph plotting Capacity additions to the production value of boilers in India have been shown.

Year	Boiler Production Figures(Rs. Cr)	Capacity addition(Mw)
2007-08	8231,34	9263
2008-09	10153,94	3453
2009-10	12763,83	9585
2010-11	20250	12160,5
2011-12	24661	20501,7

Source: Department of Heavy Industries annual report 2009-2012; WG Report on Power for 12th Plan.

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Joint Venture	Indian Partner	Foreign Partner	Boiler Capacity
L&T - Mitsubishi Heavy Industries	51%	49%	4000 MW
BGR - Hitachi	70%	30%	4000 MW
Thermax - Babcock	51%	49%	3000 MW
Bharat Forge - Alstom	51%	49%	2000 MW

Domestic OEMs (including JVs) are however expected to benefit significantly from Government of India (GoI)'s initiated efforts



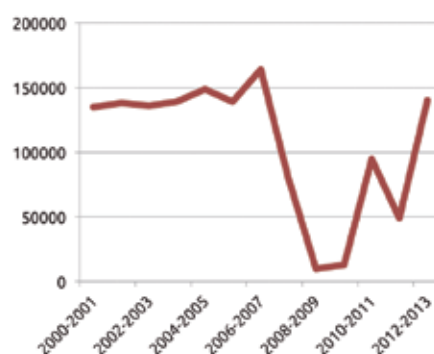
to go for bulk tendering of super-critical units for the projects being developed by NTPC and DVC, with eligibility clause for bidders specifying mandatory domestic manufacturing presence and with a valid technology transfer arrangement. The ability of domestic OEMs (including JVs) to bag orders from private sector IPPs will remain critical, given the increasing share of capacity addition from private sector IPPs. FDI inflows in boiler industry are continuously increasing with a CGR of about 28.5% and they amounted to 3 billion USD during 2012-13.

Trade Statistics

For the period 2000-2013 total imports in boiler equipment grew continuously at a CAGR of 29.63% in terms of Lac Rs and at a CAGR of 26.62% in terms of quantity; with China [38%], Germany [23%], USA [20%], South Korea [10%] and Japan [9%] holding major share.

Whereas on other hand exports grew at a CAGR of 20.79% in terms of Lac Rs

and 17.59% in terms of quantity and India only accounts to 1% of global export market in B-T-G market.



Source: <http://business.gov.in>

Trade deficits are also shown in graph above, with highest deficit in 2009-10 to magnitude of 89,636.38 in lac Rs and are expected to increase unless Government takes strict measures to promote boiler industry in India. In year 2012-13 there is a negative trend in trading parameters that's

totally because of coal issues and market slowdown.

Trade Deficit: Import-Export

More than 83 GW of thermal plants are being developed at present, where foreign players (with Chinese accounting for a major share) have captured close to 45% market share. Supercritical technology is gaining prominence in the Indian market. During the Eleventh Plan, the share of supercritical technology was 14%, while in the Twelfth Plan the share of supercritical technology will be more than 60%. Indian players, as well as the global players focusing on the Indian market, have put in place facilities to manufacture products based on supercritical technology.

More than 80 GW of supercritical sets have been awarded by India till date. Foreign players have been the recipients of the major share of such orders. More than 68 GW have been awarded to foreign players, with Chinese players capturing more than

80%16 of the orders placed on foreign companies. Domestic players lag behind in adding BTG capacity in the supercritical boiler and turbine segments.

FUTURE EXPECTED TRENDS IN BOILER MARKET

Generation Equipment	Cumulative Equipment Demand (Billion USD)
12th Plan	60-70
13th Plan	200-230

Year	Boiler Market Size (Billion USD)
FY 2011	3.8
FY 2017	5.8
FY 2022	11.7

Source: Indian Electrical Equipment Industry Mission Plan 2012-2022: Base Document

Boiler market is expected to grow almost 3 fold to USD11.7 billion by FY22 from USD 3.8 billion in FY11 with a expected CAGR of 10.8%.

Growing Energy Demand

- Power demand is estimated to reach 350,000 MW by 2022
- Government programmes aimed at providing electricity to over 100,000 rural areas and 22.6 million households below poverty line will also boost demand for power

Vast opportunities

- Planned power capacity addition of around 188,500 MW by 2022 will provide significant opportunities
- Maximum share of Indian Boilers installed till now are 20 years old. Replacement or brownfield expansion could provide significant opportunities

Attractive Policy support

- Electrical machinery sector is de-licensed; 100 per cent FDI is permitted
- Significant number of SEZs have been approved for the sector
- Due to policy support, cumulative FDI of USD3.2 billion (1.7 per cent of total FDI inflows) has flown into the country between April 2000 to February 2013

Higher investments

- The sector has witnessed increasing entry of global players through the JV route
- Green technologies are making room for themselves due to increased priority given towards reduction in CO₂ emissions

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- Existing players are planning huge capacity expansion over the next few years

Threats

- Competition from Chinese manufacturers.
 - Relatively cost-competitive sourcing (about 15~25% cheaper for the entire project on EPC basis)
 - Faster delivery (that is, within 36-40 months) than available domestically
 - Lack of manufacturing experience of domestic participants with respect to super-critical based units
- Indian Domestic Boiler manufacturers to win Private contracts
- Clause of domestic manufacturing presence in bulk tendering orders by NTPC and DVC is likely to benefit domestic OEMs. But it's critical to see if domestic OEMs are able to bag orders from IPPs.
- Hindrances in Capacity addition plans
- Increased concerns over coal shortages and dependence upon costlier sources of imported coal, besides the execution challenges, may constrain capacity expansion plans in the power sector, and affect order inflows for domestic BTG participants
- Strong financial & technology support from promoters remains crucial for domestic OEMs
- Domestic OEMs are Exposed to Raw material Price fluctuations
- Raw material costs (including bought-out components) comprise a significant portion (about 70~75%) of overall costs for BTG sets.
- Fluctuations in steel price and availability of imported steel.

SUPER-CRITICAL TECHNOLOGY IN INDIA

	Total Sub-Critical (MW)	Total Super-Critical (MW)	Total Thermal (MW)
10th plan	9620	0	9620
11th plan	44490	7540	52030
12th plan	30473	43640	74113
13th plan	0	64100	64100

During the 11th Plan, the share of supercritical technology was 14%, while in the 12th Plan the share of supercritical technology will be more than 60%. More than 80 GW of supercritical sets have been awarded by India till date. Foreign players have been the recipients of the major share of such orders.

Policy Support in 12th Five-Year Plan (2012-17); Use of Cleaner Technologies

12th Five-Year Plan (2012-17) states that 50% to 60% of additional new coal-fired capacity should be SC. In the Thirteenth Five-Year Plan (2017-22), all new coal plants should be at least SC; with energy audits at coal-fired power plants to monitor and improve energy efficiency. The government expects 15% of power to come from SC by 2018. A policy plan for all post-2017 units to be SC with progression to higher steam parameters in the future. An R&D programme is under way to raise steam temperatures to 700°C and beyond. IGCC is being pursued using both indigenous and international technology suppliers ◀◀

SUPER CRITICAL PROJECTS UNDER EXECUTION

Company Name	Capacity (in MW)
Reliance Power Ltd.	8000
Adani Power Ltd.	3960
Lanco Infratech Ltd.	7920
Tata Power Company Ltd.	4000
Jaiprakash Power Ltd.	5280
L&T Power Ltd.	1320
Sterlite Energy Ltd.	1980
Athena Energy	1320
Essar Power Ltd.	1320
Bajaj Hindustan Ltd.	1980
Thermal Power Tech Corp	1320
Total (Private Sector)	38400
NTPC	2640
APGENCO	1600
MSPGCL	1980
RRUVNL	1320
KPCL	700
Total (Govt. Sector)	8240

10515 MW of SC operational capacity based on BTGs supplied by china based OEMs.79% SC Capacity additions are done by Private sector, other 14 % by state sector and 7% by NTPC.