



Analysing Best Practices & Strategizing the Growth in Indian Steam market

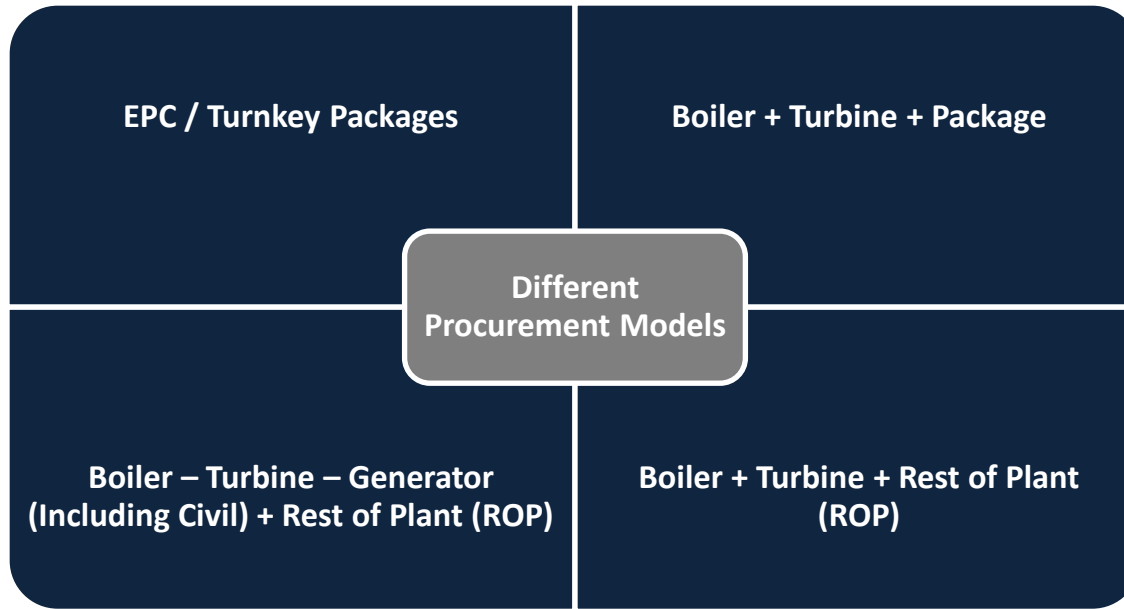


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Best Practices / Competitive Benchmarking Analysis in Indian Steam Market

Scope I : Best in Class Procurement Models in the Indian Market



Competition & Select Customers



Scope II: Benchmarking of Key Performance Indicators

KPIs Benchmarking

Business Strategy	EPC Approach	Financial Facility	Commercial Practices
<ul style="list-style-type: none"> ▪ Growth and profit through volume vs. Niche approach? ▪ Commercial strategies on low prices based on volume? 	<p>Engineering</p> <ul style="list-style-type: none"> ▪ Product standardization ("Available On the Shelf standard platforms") <ul style="list-style-type: none"> – Boiler design: Number of standard models versus various Coal specs (Indian/Blended) – Effect of standardization on Efficiency and other performance parameters – Various Design Optimization to reduce cost and delivery – Component Level standardization – Trends in Unit Sizes ▪ Proposal and Project Engineering cycle time <p>Procurement: Pricing & Cost Base Analysis</p> <ul style="list-style-type: none"> ▪ Sourcing Knowledge & Cost base information <ul style="list-style-type: none"> – Purchasing Strategy: Volume Buying and/or Strategic Alliance – Delivery of major Components: Imports (Country of origin) and/or local <p>Execution / Construction</p> <ul style="list-style-type: none"> ▪ EPC Strength & Strategic alliance with others ▪ Site construction strategy 	<ul style="list-style-type: none"> ▪ As an Equity Partner ▪ Facilitating soft loans 	<ul style="list-style-type: none"> ▪ Analysis on Commercial & Risk acceptance guidelines on the terms and conditions (T&Cs)

Competition & Select Customers



Competition Players Presence in Indian Domestic Supercritical Projects

Company	Operations Status	Presence in Supercritical projects	Technology / Brand awareness	Order booking
BHEL	Plant started	Started production of Supercritical Boilers & Turbines	High	High
L&T-MHI	Plant started	Started production of Supercritical Boilers & Turbines	High	High
Thermax	Plant under construction	Supercritical plant construction work is under progress	Medium	Medium
BGR Energy / Hitachi	Plant under construction	Supercritical plant construction work is under progress	High	High
Ansaldo / Gammon	Plant under construction	Supercritical plant construction work is under progress	Medium	Medium
Cethar Vessels	Plant started	Yet to start production of Supercritical Boilers	Medium	Medium



Plant started



Plant under construction



High



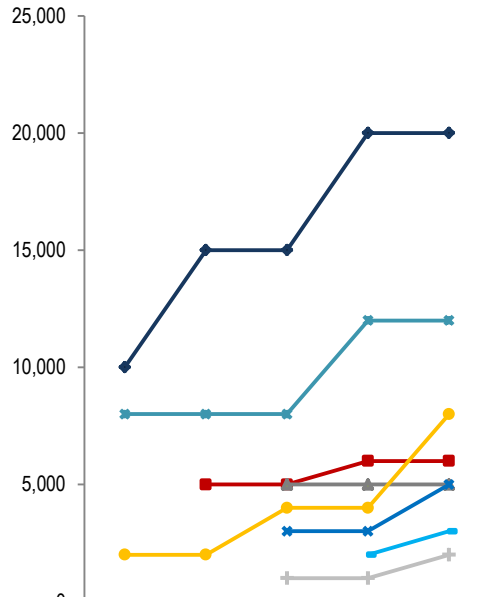
Medium



Low

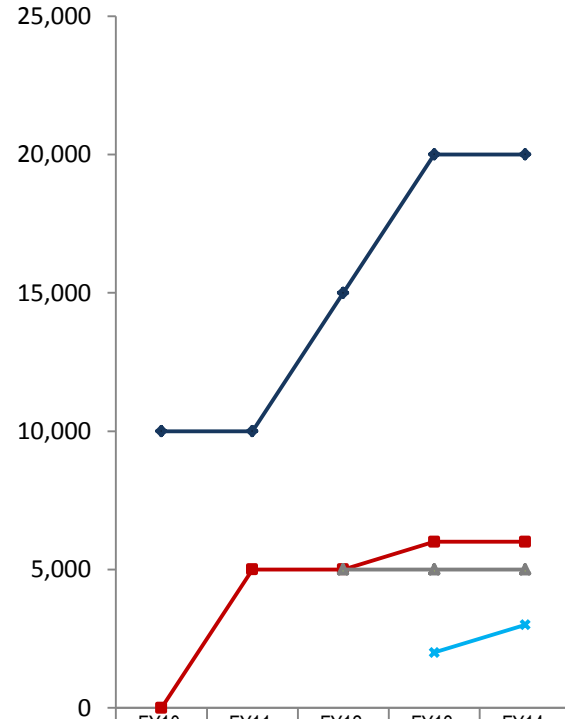
Domestic Supercritical Power Equipment Production Capacity (MW)

Boiler



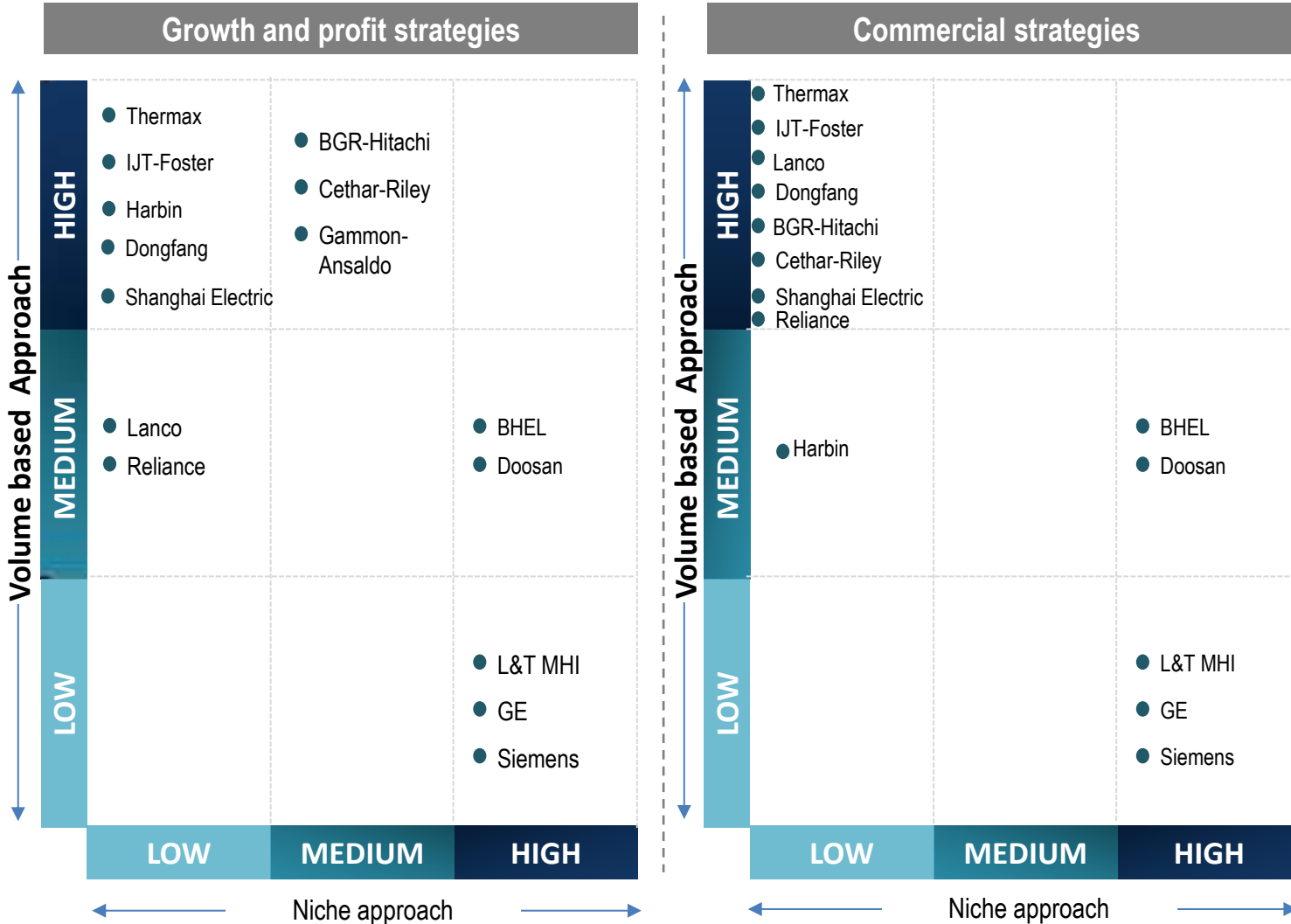
	FY10	FY11	FY12	FY13	FY14
BHEL	10,000	15,000	15,000	20,000	20,000
L&T-MHI		5,000	5,000	6,000	6,000
BGR Energy			5,000	5,000	5,000
Thermax			3,000	3,000	5,000
Cethar Vessels	8,000	8,000	8,000	12,000	12,000
IJT - Foster wheeler	2,000	2,000	4,000	4,000	8,000
Ansaldo / Gammon			1,000	1,000	2,000
Doosan				2,000	3,000

Turbine

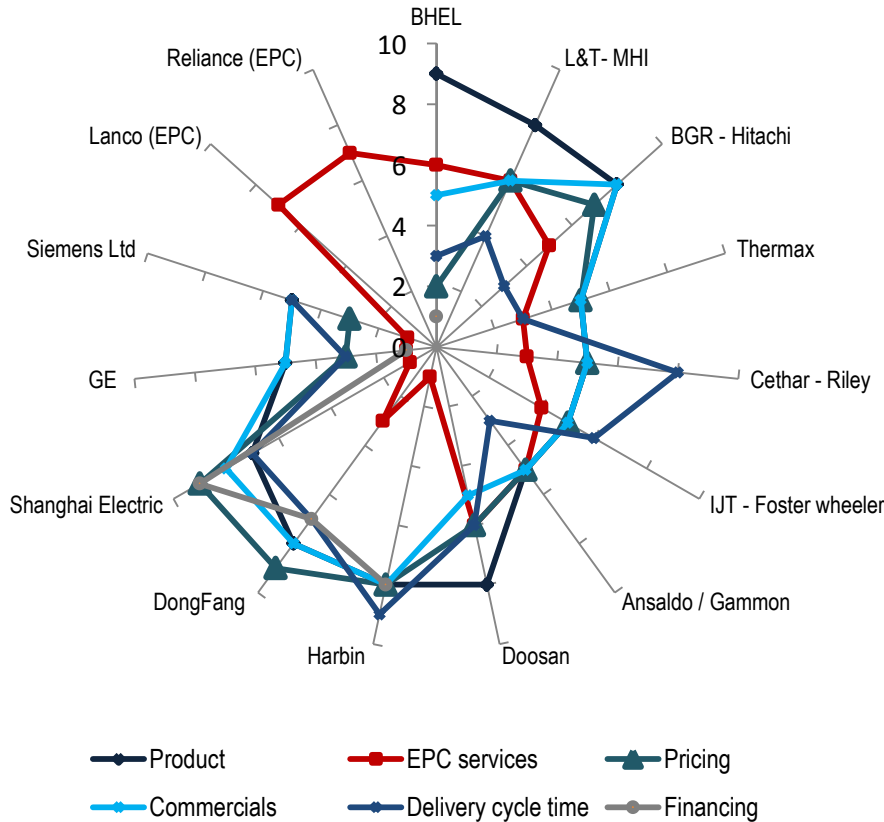


	FY10	FY11	FY12	FY13	FY14
BHEL	10,000	10,000	15,000	20,000	20,000
L&T-MHI	0	5,000	5,000	6,000	6,000
BGR Energy - Hitachi			5,000	5,000	5,000
Doosan				2,000	3,000

Business Strategy



Competition Presence in Supercritical Projects in India



Parameter	Definition	Rating scale	
		9	1
Product	Product range, technology, availability	High	Low
EPC	EPC services	High	Low
Pricing	Product price	Low	High
Commercials	Better commercial support – Low advance, higher credit period	High	Low
Delivery cycle time	Product delivery and project execution cycle time	Low	High
Financing	Product and project finance (soft loans support)	High	Low

Competition Product Range by Boiler Fuels

Company	Coal		Lignite		NG		Bio-Gas		Oil		Biomass / Agri-waste	
	Indian	Imported	Indian	Imported	Indian	Imported	Indian	Imported	Indian	Imported	Indian	Imported
BHEL	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	
BGR Energy	✓	✓										
L&T MHI	✓	✓										
Thermax	✓	✓	✓				✓				✓	
Cethar	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	
IJT - Foster wheeler	✓	✓	✓	✓	✓		✓		✓	✓	✓	
Ansaldo / Gammon	✓	✓	✓	✓	✓		✓		✓	✓	✓	
Doosan	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
Harbin	✓	✓	✓	✓								
Dongfang	✓	✓	✓	✓								
Shanghai Electric	✓	✓	✓	✓								
GE												
Siemens Ltd												
Lanco (EPC)												
Reliance (EPC)												

High

Medium

Low

Purchasing Strategy

Company name	Vendor listing for raw materials	Volume buying	Rate contract with suppliers
BHEL	<input type="checkbox"/> Yes	<input type="checkbox"/> For few major components volume buying takes	<input type="checkbox"/> Rate contract with suppliers & vendors (Around 48 vendors)
BGR / Hitachi	<input type="checkbox"/> Yes*	<input type="checkbox"/> Yes, for few major components	<input type="checkbox"/> Rate contract with suppliers as per requirements *
L&T-MHI	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes, for few major components	<input type="checkbox"/> Rate contract with very few suppliers
Thermax	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes, for few major components	<input type="checkbox"/> Rate contract with suppliers as per requirements
Cethar	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes, for specific components involved in volume buying	<input type="checkbox"/> For few components have rate contract with suppliers for one year
IJT - Foster wheeler	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes, for few major components	<input type="checkbox"/> Rate contract with suppliers as per requirements
Ansaldo / Gammon	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes, for few major components	<input type="checkbox"/> Rate contract with few suppliers
Doosan	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes, for few components	<input type="checkbox"/> Rate contract with few suppliers
Harbin	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes, for all major components	<input type="checkbox"/> Rate contract with few suppliers

* Planned

** Only for EPC services

NA Not applicable

Delivery of Major Components : Import Vs. Local Manufacturing

	BHEL	L&T MHI	BGR Energy	Thermax	Cethar
Own manufactured Components	<ul style="list-style-type: none"> ❑ Few Pressure parts ❑ Few non pressure parts 	<ul style="list-style-type: none"> ❑ Very few non Pressure parts 	<ul style="list-style-type: none"> ❑ Few major Pressure parts & non-pressure parts* 	<ul style="list-style-type: none"> ❑ Pressure parts 	<ul style="list-style-type: none"> ❑ Pressure parts & non-pressure parts
Outsourced components from local suppliers	<ul style="list-style-type: none"> ❑ Few non pressure parts 	<ul style="list-style-type: none"> ❑ Non-pressure parts, structural**, piping & others 	<ul style="list-style-type: none"> ❑ Non-pressure parts, structural, piping & others* 	<ul style="list-style-type: none"> ❑ Non-pressure parts, structural*, piping & others 	<ul style="list-style-type: none"> ❑ No-pressure parts & structural & piping
Outsourced components from imports	<ul style="list-style-type: none"> ❑ Few Pressure parts 	<ul style="list-style-type: none"> ❑ All Pressure parts & few non-pressure parts** 	<ul style="list-style-type: none"> ❑ Few Pressure parts & few non-pressure parts* 	<ul style="list-style-type: none"> ❑ Few Pressure parts 	<ul style="list-style-type: none"> ❑ Pressure parts

* Planned

**Structural parts : India (60%); China (40%)

**Plans to start own manufacturing of components by Dec 2011

High	Medium	Low
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Financial Facility

	BHEL	L&T MHI	BGR Energy	Thermax	Cethar
As an Equity Partner	<input type="checkbox"/> Yes, Recently started getting into equity partnership	<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No
Facilitating soft loans	<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No
No financial facility	<input type="checkbox"/> Project & equipment finances are arranged by the customers	<input type="checkbox"/> Project & equipment finances are arranged by the customers	<input type="checkbox"/> Project & equipment finances are arranged by the customers	<input type="checkbox"/> Project & equipment finances are arranged by the customers	<input type="checkbox"/> Project & equipment finances are arranged by the customers

Yes
No

Commercial Practices

	BHEL	L&T MHI	BGR Energy
Payment terms	<ul style="list-style-type: none"> <input type="checkbox"/> 25 - 50% Advance <input type="checkbox"/> Rest against project commissioning in stages 	<ul style="list-style-type: none"> <input type="checkbox"/> 40 - 50% Advance <input type="checkbox"/> 30 - 40% against project commissioning <input type="checkbox"/> 10-20 % after successful trial 	<ul style="list-style-type: none"> <input type="checkbox"/> 20 to 50% Advance depends upon the order <input type="checkbox"/> Rest against project commissioning in stages <input type="checkbox"/> 10% after successful trial
Credit period	<ul style="list-style-type: none"> <input type="checkbox"/> 3 months 	<ul style="list-style-type: none"> <input type="checkbox"/> 3 months 	<ul style="list-style-type: none"> <input type="checkbox"/> 3 to 6 months
Penalty	<ul style="list-style-type: none"> <input type="checkbox"/> As agreed upon with customers on project schedule timelines 	<ul style="list-style-type: none"> <input type="checkbox"/> As agreed upon with customers on project schedule timelines 	<ul style="list-style-type: none"> <input type="checkbox"/> As agreed upon with customers on project schedule timelines
Other Terms & conditions	<ul style="list-style-type: none"> <input type="checkbox"/> As per contract with customers <input type="checkbox"/> Terms & conditions are standard as per company rules 	<ul style="list-style-type: none"> <input type="checkbox"/> As per contract with customers <input type="checkbox"/> Terms & conditions are standard as per company rules 	<ul style="list-style-type: none"> <input type="checkbox"/> As per contract with customers <input type="checkbox"/> Terms & conditions are standard as per company rules