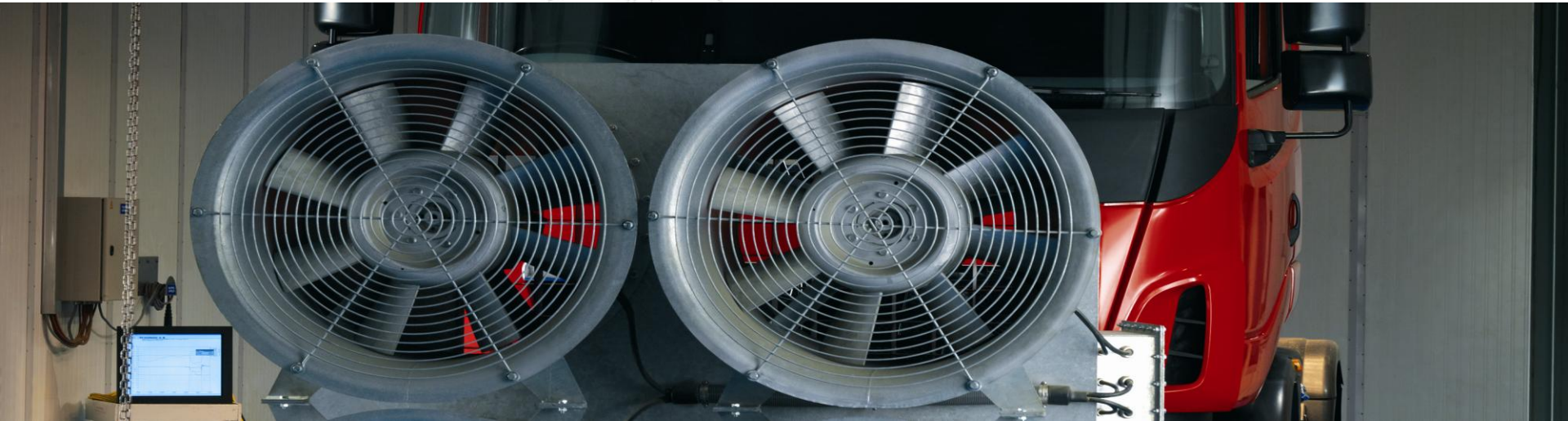


Engineering

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Advantage India

Growing demand

- Capacity creation in sectors like infrastructure, power, mining, oil & gas, refinery, steel, automotives, and consumer durables is driving demand growth in the engineering sector

Opportunities

- Nuclear capacity expansion is expected to provide significant business opportunities to the electrical machinery industry
- Machine tools industry is set to benefit from growing demand for capital goods

FY15E

Engineering exports from India:
USD68.0 billion

Advantage India

Competitive advantages

- India has a comparative advantage in manufacturing costs due to lower design, research and labour costs, and economies of scale
- Availability of skilled manpower is facilitating the expansion of the industry

Policy support

- The engineering sector is delicensed; 100 per cent FDI is allowed in the sector
- Due to policy support, cumulative FDI of USD11.2 billion, accounting for 8.9 per cent of total FDI into the country, has flown in since April 2000

FY10

Engineering exports from India:
USD33.8 billion

Source: Engineering Export Promotion Council (EEPC)
Notes: E – Estimate, FDI – Foreign Direct Investment

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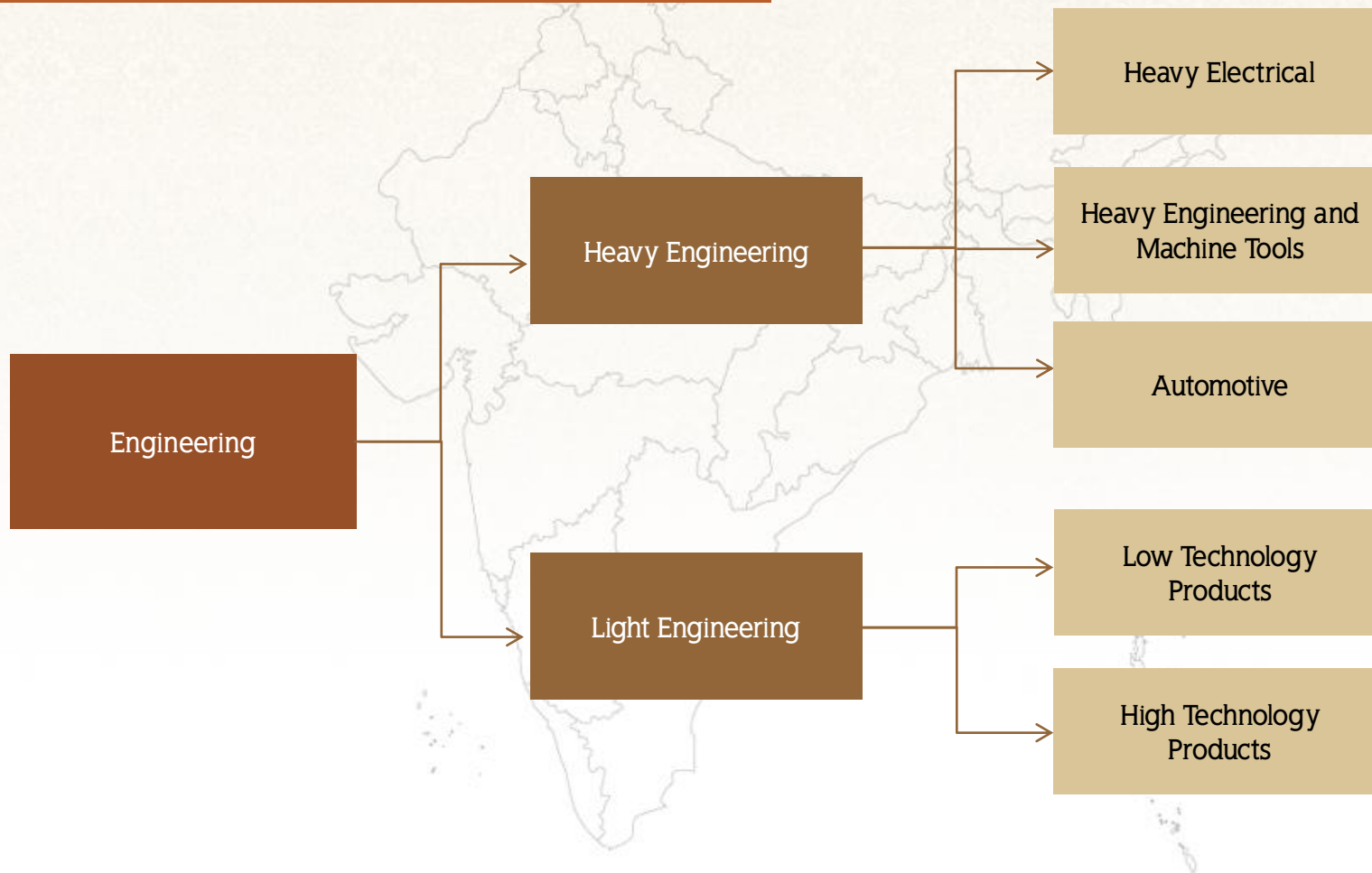
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Engineering has two major segments



Heavy Electrical - Key segments

Boilers

- The Indian boiler industry has the capability to manufacture boilers with super critical parameters up to 1000 MW unit size
- Market size of the industry increased to USD2.7 billion in FY10 from USD1.7 billion in FY08

Turbines and generator sets

- India's turbine industry manufactures various kinds of turbines, some with a capacity of more than 7000 MW per annum
- AC generator manufacturers in India are capable of producing generators ranging from 0.5 KVA to 25000 KVA and above

Transformers

- Whole range of power and distribution transformers are manufactured in the country, including special type of transformers required for furnaces, electric tracts and rectifiers
- Energy-efficient amorphous core transformers with lesser losses and low noise levels are also being developed to meet rising demand

Switchgear and control gear

- This is a matured industry with a wide variety of products ranging from circuit breakers (bulk oil, minimum oil, air blast, etc.)
- Significant advances in technology have allowed the control gear industry to shift to production of digital relays in place of conventional relays

Source: DHI Annual report 2010-11, Aranca Research
Notes : MW - Mega Watt, KVA – KiloVolt - Ampere

Heavy Engineering – Key segments

Machine tools

- This segment churns out basic machinery for all major industries and determines competitiveness in other sectors such as automobiles, heavy electrical and defence
- 200 machine tool manufacturers are operational in the organised sector along with 400 small scale units. Size of the machine tool industry was around USD345 million in FY10

Textile machinery

- The textile machinery industry comprises over 600 units that manufacture complete machinery and more than 850 units, which produce parts and accessories
- The industry is de-licensed and FDI up to 100 per cent is allowed
- The industry has an installed capacity of USD1.68 billion, and has produced goods worth USD0.9 billion in FY10

Cement machinery

- Cement plants based on raw mill grinding, pyroprocessing and cement grinding process technology for capacities up to 10000 TPD are being manufactured in India
- Currently, there are six major suppliers of complete cement plant machinery
- With an installed capacity of around USD125 million, the industry is fully capable of meeting domestic demand

Material handling equipment

- With around 50 units in the organised sector, the material handling equipment industry manufactures a range of equipment, including coal/ore/ash handling plants and associated equipment
- The industry's exports stood at USD401 million during FY10

Source: DHI Annual report 2010-11, Cabinet Committee on Infrastructure report, Aranca Research
Notes: TPD: Tonnes per day

Automotive - Key segments

Passenger and utility vehicles

- Currently, there are 16 manufacturers of passenger cars and multi-utility vehicles, 13 manufacturers of commercial vehicles, and 16 manufacturers of two-wheelers and three-wheelers
- The automobile sector manufactured approximately 14 million units and exported around 1.8 million units in FY10

Auto components

- The auto components industry has more than 500 companies in the organised sector and about 10,000 companies in the unorganised sector
- The industry's turnover stood at USD21.6 billion, with exports worth USD3.3 billion accounting for 15 per cent of the turnover

Agriculture machinery

- The agriculture machinery sector is primarily dominated by agricultural tractors
- The Indian tractor industry is the world's largest and accounts for one-third of global production
- More than 250,000 tractors are manufactured every year by 13 manufacturers
- During April–December 2010, around 40,000 tractors were exported

Source: DHI Annual report 2010-11, Cabinet Committee on Infrastructure report, Aranca Research

Light Engineering – Key segments

Casting and forging

- India is the fourth largest producer of casting components, with a casting production capacity of 7 MMT in FY10
- The forging industry comprises around 10 organised players, with around 100 players in the small and medium sector
- The industry exports a substantial part of its production apart from meeting local demand

Medical and surgical equipment

- The medical and surgical equipment industry manufactures a wide range of medical equipment such as ECG and X-ray scanners
- The industry is highly fragmented and dominated by small players
- The indigenous industry meets 40 per cent of demand and the rest is met through imports

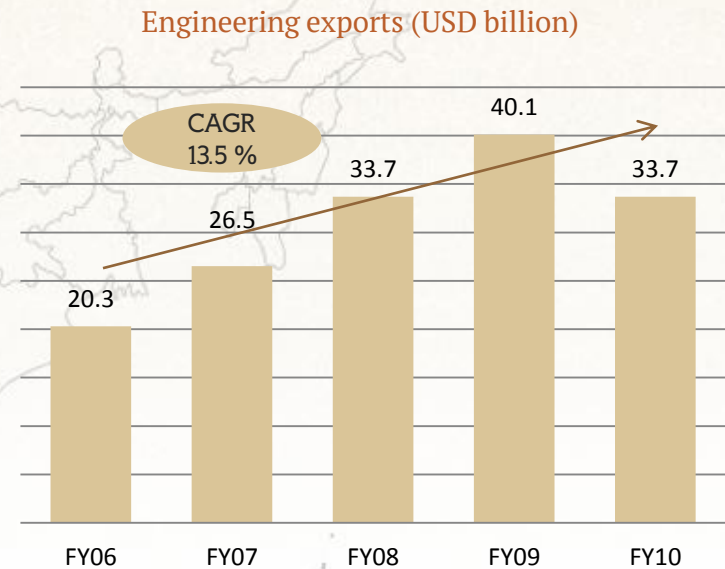
Industrial fasteners

- The fastener industry in India can be classified into high tensile and mild steel fasteners
- Mild steel fasteners are primarily manufactured by the unorganised sector, while the high tensile steel segment is dominated by the organised sector
- The fastener industry's exports exceeded USD253 million for the year FY10

Source: DHI Annual report 2010-11, IVG Research Aranca Research
Notes: MMT – Million Metric Tonnes

Capital goods, primary iron & steel are major export segments ... (1/2)

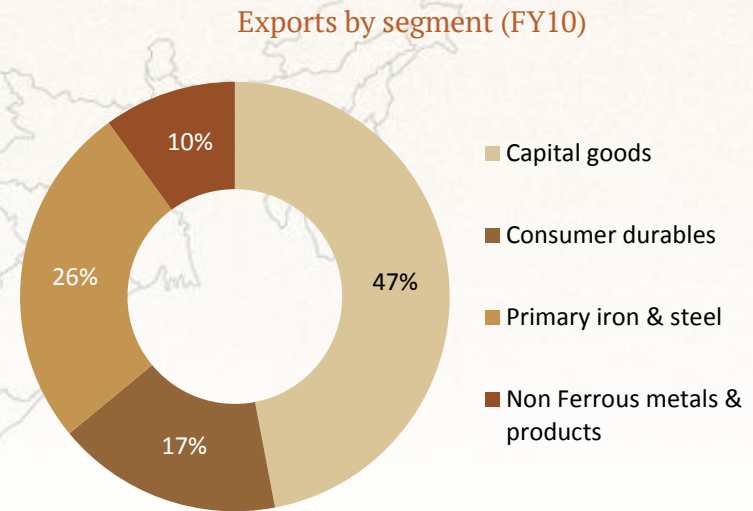
- Indian engineering exports stood at USD33.7 billion in FY10
- India's engineering exports increased at a CAGR of 13.5 per cent during FY06-10



Source: Engineering Export Promotion Council (EEPC) India, Aranca Research






Capital goods, primary iron & steel are major export segments ... (2/2)

- Capital goods is the leading contributor of engineering exports, accounting for 47 per cent of Indian engineering exports in FY10
- Primary iron & steel is the other major contributor with a share of 26 per cent








Source: Engineering Export Promotion Council (EEPC) India, Aranca Research

Key Players ... (1/2)

	Company	Revenues	Products
	Larsen & Toubro	USD9.0 billion	Engineering & Construction, Cement, Electrical & Electronics
	Bharat Heavy Electricals Ltd	USD6.9 billion	Power Generation, Transmission, Transportation
	Siemens India Ltd	USD2.0 billion	Power Generation and Distribution equipment, Transportation Systems, Communication and Healthcare Products
	ABB Ltd	USD1.3 billion	Transformers, Switch gears, Control gears
	Crompton Greaves Ltd	USD1.9 billion	Power Generation and Transmission Equipment

Key Players ... (2/2)

	Company	Revenues	Products
	Engineers India	USD0.4 billion	Highways & Bridges, Mass Rapid Transport Systems Construction, Specialist Materials Manufacturing
	Kirloskar Oil Engines Ltd	USD0.5 billion	Engines, Engine bearings & Valves, Grey Iron Casting
	Cummins India Ltd	USD0.6 billion	Power Generation, Construction and Mining Equipment, Fire Pumps & Cranes, Compressors
	Thermax	USD0.7 billion	Boilers and Heaters, Air Pollution and Purification, Absorption Cooling
	BGR Energy	USD0.6 billion	Boilers, Turbines, Generators

Notable trends in the industry

Diversification

- Many companies in the engineering sector have diversified, either geographically (mainly to the Middle Eastern countries) or sector-wise
 - BHEL plans to export its products to Syria and Vietnam
 - Simplex Infra has moved to the Middle East
 - Larsen & Toubro (L&T) has forayed into power equipment manufacturing
 - Thermax has entered the power utility segment

Shift to value-added products

- Rising competition is driving domestic players to focus on improving their capabilities, become more quality conscious, and upgrade their technology base in sync with the global market requirements
- More than 2,500 firms in the engineering sector have the ISO 9000 accreditation
- Companies are now increasingly focusing on R&D and product development efforts

Entry of International companies

- With 100 per cent FDI through the automatic route being permitted, major international players such as Cummins, ABB and Alfa Laval have entered the Indian engineering sector, given the growth opportunities offered by this market
- This has increased industry competitiveness

Source: Aranca Research

Engineering

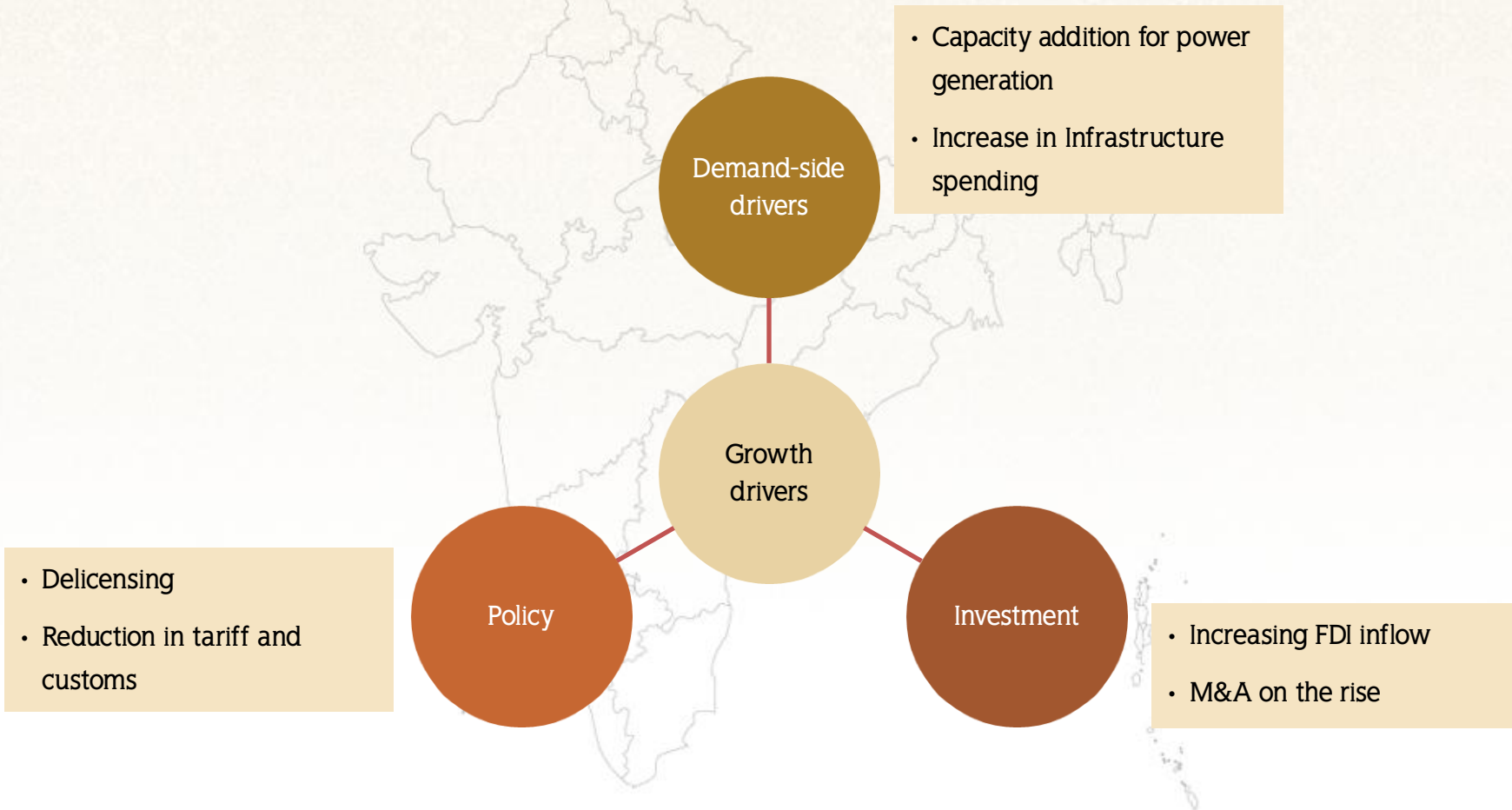
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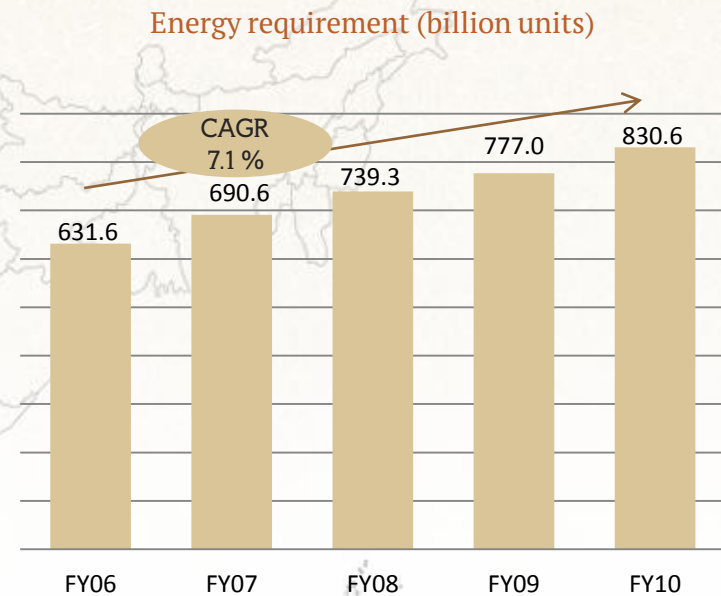
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Growth drivers of the Indian engineering sector



Capacity augmentation leads to increasing demand ... (1/2)

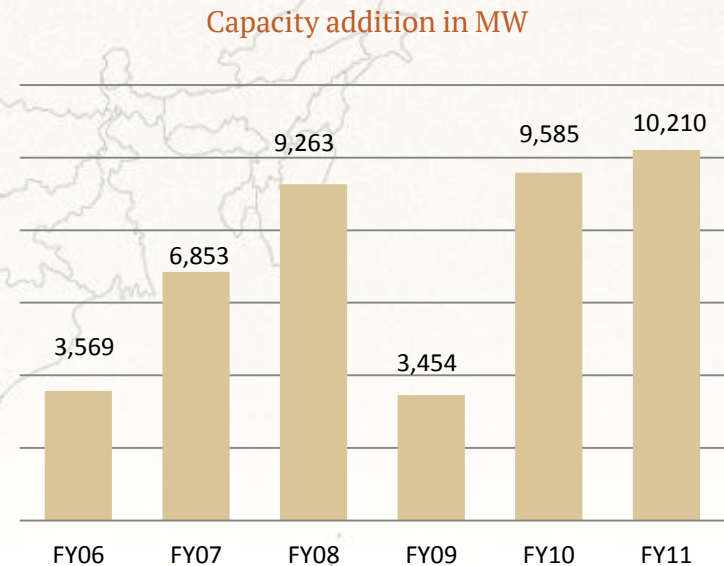
- India's energy requirement increased at a CAGR of 7.1 per cent to 830.6 billion units in FY10 from 631.6 billion units in FY06
- The rising demand for energy has led to increasing capacity addition for power generation



Source: Central Electrical Authority, Annual report 2010-11,
Aranca Research

Capacity augmentation leads to increasing demand ... (2/2)

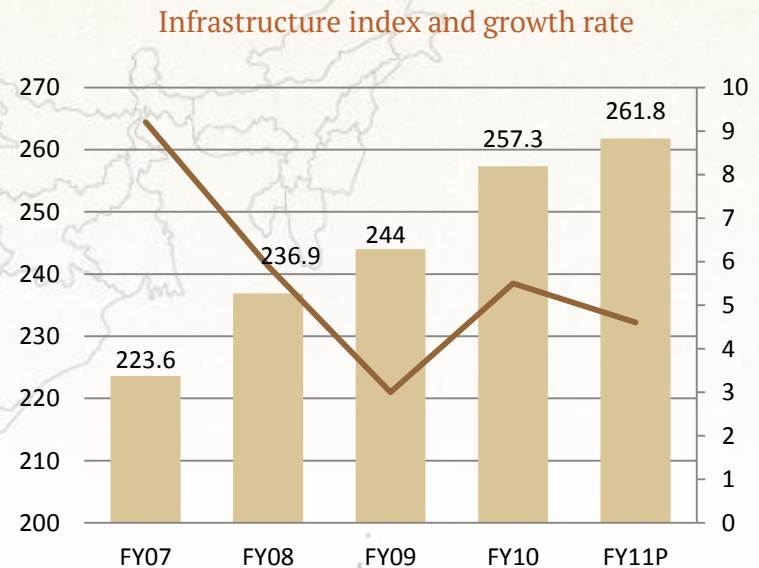
- The increasing capacity addition has resulted in rising demand for power generation and transmission equipment
- Capacity addition for power generation increased to 10,210 MW in FY11



Source: Ministry of power, Annual report 2010-11, Aranca Research

Infrastructure growth is driving demand for machinery ... (1/2)

- The infrastructure index comprises industries in electricity, coal, cement, steel, crude and petroleum refinery products sectors
- The index rose to 261.8 in FY11 and registered a growth rate of 4.6 per cent over FY10



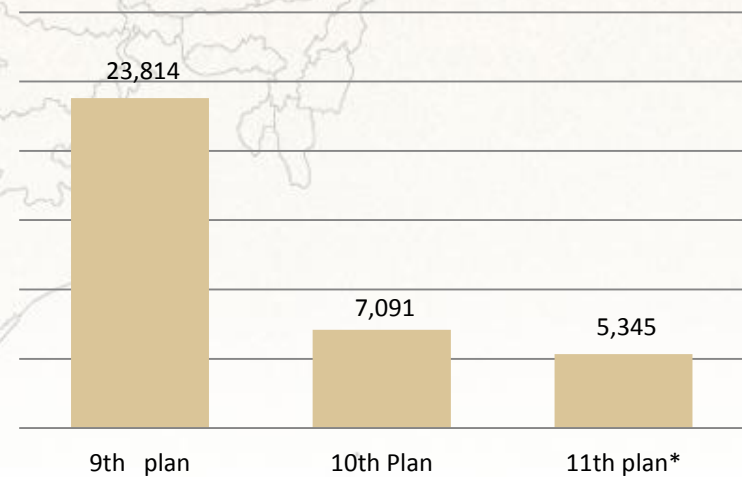
Source: Hand Book of Indian Statistics 2011, Reserve Bank of India, Aranca Research

Notes: P – Provisional, data for FY11 is only upto June 2010

Infrastructure growth is driving demand for machinery ... (2/2)

- Roads is one of the primary segment in the infrastructure sector. It reflects the growing emphasis on infrastructure in India, which is driving the engineering sector
- The length of highways added during the 11th Five Year Plan is 5,345 Km (as of 2011)

Total highway length added during Five Year Plans (km)



Source: National Highway Authority of India, Ministry Of Road Transport and Highways, Aranca Research
Notes: * - 11th five year plan is currently going on, and the figure provided is the current estimate

Strong policy support has been crucial for the sector

Delicensing

- The engineering industry has been delicensed; 100 per cent FDI is allowed in the sector
- Foreign technology agreements are also permitted under the automatic route for this sector

Tariffs and custom duties

- Government has removed tariff protection on capital goods
- It has reduced custom duties on a range of engineering equipment

Initiatives focussed on power generation and infrastructure development

- The government has an ambitious mission of 'Power for all by 2012' and has planned capacity addition of 120 GW in the Twelfth Five-Year Plan
- Government infrastructure projects such as Golden Quadrilateral and the North-South and East-West corridors fuelled growth in the engineering sector

Special Economic Zones (SEZs)

- Government has granted significant number of SEZs for the engineering sector across the country
- Delhi Mumbai Industrial Corridor (DMIC) being developed across seven states could boost engineering sector

Source: DHI Annual report 2010-11, Ministry of Power annual report, Aranca Research
Notes: GW – Giga Watt

Special Economic Zones (SEZs) will promote exports ... (1/2)

Developer	Location	Product
Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC)	Ranga Reddy, Andhra Pradesh	Aerospace and precision engineering
Deccan Infrastructure and Land Holdings Ltd	Nalgonda, Andhra Pradesh	Light engineering
M/s Essar Hazira SEZ	Hazira, Gujarat	Engineering
Gujarat Industrial Development Corporation Ltd (GIDC)	Gandhinagar, Gujarat	Electronic products
N.G. Realty Pvt Ltd	Ahmedabad, Gujarat	Engineering
M/s Synefra Engineering and Construction Ltd	Vadodara, Gujarat	High-tech engineering and related products
E. Complex Pvt Ltd	Amreli, Gujarat	Engineering
Dishman Infrastructure Ltd	Ahmedabad, Gujarat	Engineering
Ansal Properties and Infrastructure Ltd	Sonepat, Haryana	Engineering
Raheja Haryana SEZ Developers Pvt Ltd	Gurgaon, Haryana	Engineering
Ansal Kamdhenu Engineering SEZ Ltd	Sonepat, Haryana	Engineering
Karnataka Industrial Areas Development Board	Shimoga, Karnataka	Engineering
Suzlon Infrastructure Ltd	Mangalore, Karnataka	Port-based for high-tech engineering products

Source: SEZ India, Aranca research

Special Economic Zones (SEZs) will promote exports ... (2/2)

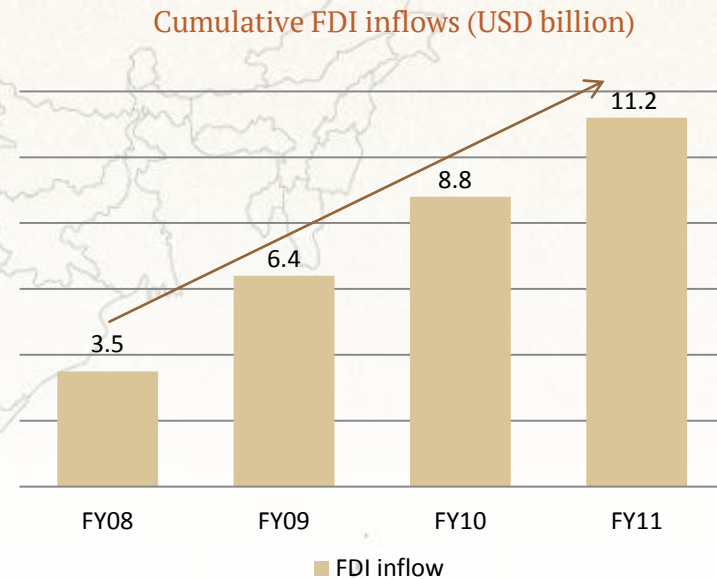
Developer	Location	Product
Quest Machining and Manufacturing Pvt Ltd	Belgaum, Karnataka	Auto, aerospace and industrial engineering
Viraj Profiles Ltd	Thane, Maharashtra	Stainless steel engineering products
Navi Mumbai SEZ Pvt Ltd	Navi Mumbai, Maharashtra	Light engineering
Maharashtra Industrial Development Corporation (MIDC)	Satara, Maharashtra	Engineering
Township Developers India Pvt Ltd	Pune, Maharashtra	Engineering
Orissa Industrial Infrastructure Development Corporation (IDCO)	Jajpur, Orissa	Metallurgical engineering
Vividha Infrastructure Pvt Ltd	Patiala, Punjab	Engineering
Mahindra Worldcity (Jaipur) Ltd	Jaipur, Rajasthan	Light engineering
New Chennai Township Pvt Ltd	Kanchipuram, Tamil Nadu	Engineering
Perundurai Engineering SEZ by SIPCOT	Erode, Tamil Nadu	Engineering
Uttar Pradesh State Industrial Development Corporation (UPSIDC)	Kanpur, Uttar Pradesh	Engineering

Source: SEZ India, Aranca research

Foreign investments flowing in; rise in M&A activity ... (1/2)

- Cumulative FDI inflows over FY00-11 stood at USD11.2 billion
- The figure more than trebled over the period FY08 to FY11

Notes: FY08: Cumulative from April 2000 to March 2008 and so on.



Source: Department of Industrial Policy & Promotion, Aranca Research

Foreign investments flowing in; rise in M&A activity ... (2/2)

M&A deals

Acquirer	Target	Type	Year
Diamond Power Infrastructure Ltd	Utkal Galvanizers Ltd	Acquisition	2011
Yash Birla Group	Aircon Engineering Services	Majority stake	2011
Gaji Mercantile	Bharat wire ropes Ltd	Acquisition	2010
HBL power systems	Igarashi group-Agile Electric Drives Technologies and Holdings	Majority stake	2010
Weir Group PLC	BDK Engineering industries ltd- Valve business	Increasing stake to 60%	2010
Baumer Group	Waree Instruments Ltd	Majority stake	2010
Hitachi Construction Machinery Ltd	Telco construction equipment	Increasing stake to 60%	2010
Legrand	Indo Asian Fusegear Ltd-switch gear business	Acquisition	2010

Source: Grant Thornton, Aranca Research

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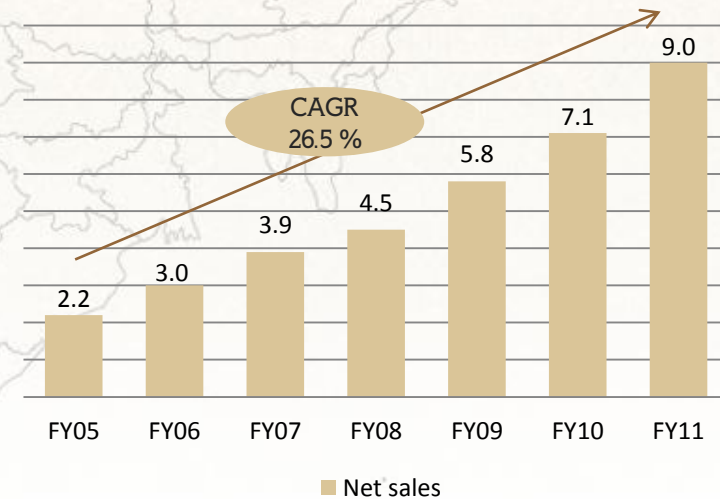
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BHEL – Mainstay of the electrical machinery industry ... (1/2)

Salient features

- A USD9.6 billion enterprise with 'Navratna' status
- One of the major integrated power plant equipment (IPPE) manufacturers in the world
- Profit-making company since 1971–72
- Installed base of more than 115,000 MW
- 15 manufacturing units, two subsidiaries and seven joint ventures
- Turnover quadrupled in six years, registering a 26.5 per cent year-on-year growth over FY05–11

Net sales (USD billion)

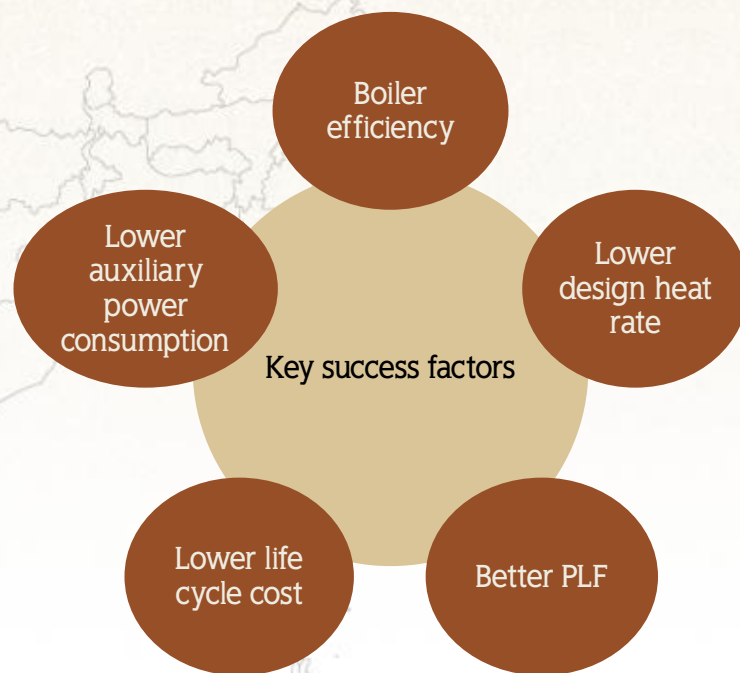


Source: Company reports, Aranca Research

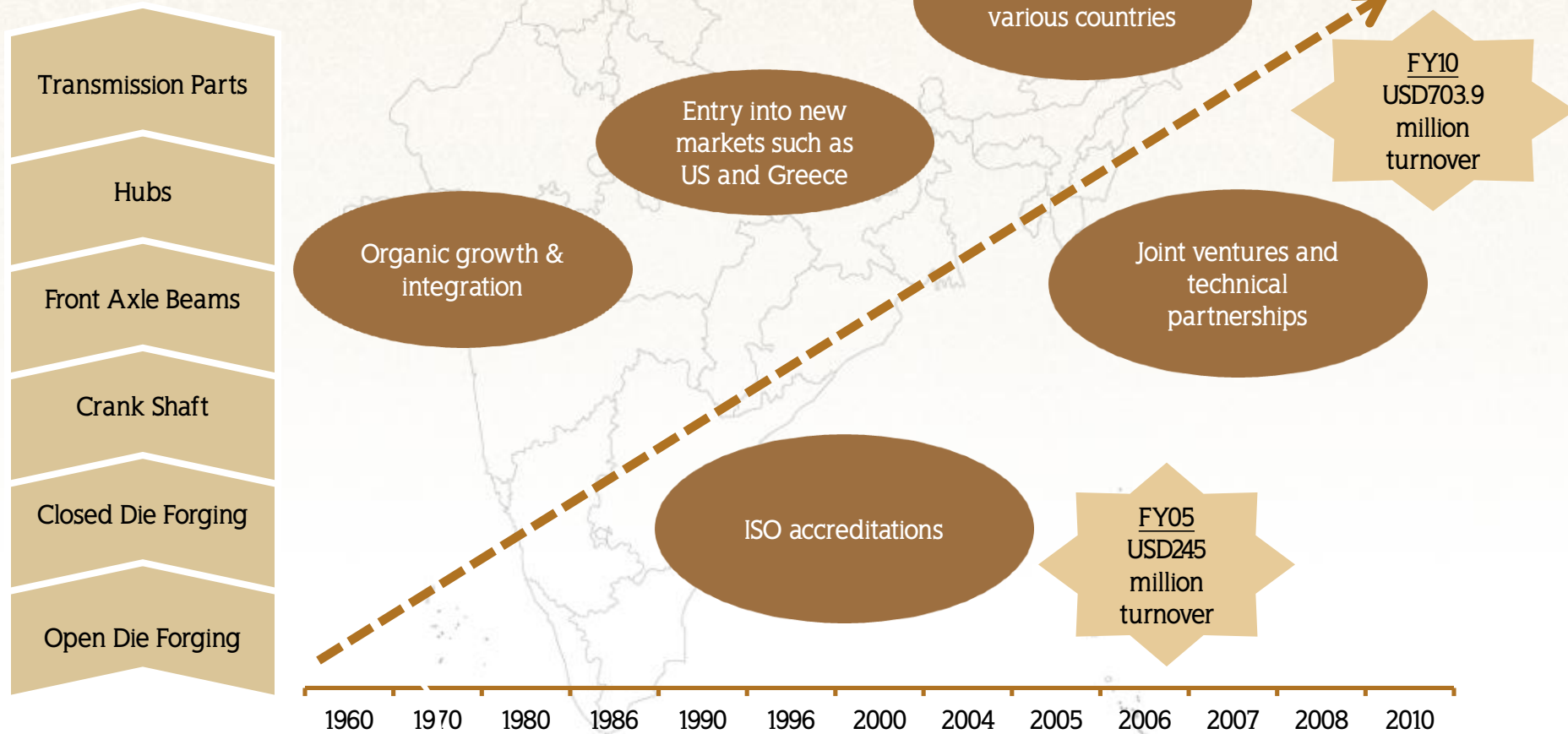
BHEL – Mainstay of the electrical machinery industry ... (2/2)

Recent Awards and Recognitions

- Golden Peacock Award 2011 for Occupational Health and Safety (2011)
- Intellectual Property Award from the Government of India (2011)
- Essar Steel Infrastructure Excellence Award (2011)
- DSIJ Gentle Giant Award from the Government of India (2011)
- CII-Thompson Reuters Innovation Award (2010)



Bharat Forge: India's largest auto components exporter



Source: Company reports, Aranca Research

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Growth opportunities in the engineering sector ... (1/2)

Defence

- Budget for the defence sector is expected to grow at the rate of 8 per cent till 2014; 54 per cent of the budget share would be spent on procuring manufactured items, which is likely to translate to a market opportunity of approximately USD91 billion over 2010–2014
- Government initiatives such as allowing private sector participation have been reinforced by opening up the sector to 26 per cent FDI inflows, and its offset policy is expected to enhance private sector (including SME) participation

Civil nuclear sector

- India's nuclear capacity is expected to be strengthened by 3.8 GW between 2007 and 2012; an addition of 12,000 MW is being planned for the next five-year period (2012–2017)
- This presents a total business opportunity worth about USD312 million for the manufacturing industry; of this, a significant 61 per cent can be captured by the domestic manufacturing industry

Auto components

- Global auto majors are rapidly ramping up the value of components they source from India, steered by the country's advanced engineering skills, established production lines, a thriving domestic automobile industry and competitive costs
- Industry sales are expected to increase to USD40 billion by 2016, with about USD20 billion generated from exports

Source: Aranca Research

Notes: GW – Giga Watt, SME –Small and Medium Enterprises

Growth opportunities in the engineering sector ... (2/2)

Power transmission and distribution

- T&D expenditure is set to increase as a result of growth in power generation and privatisation of distribution
- By 2012, the transmission network is expected to be about 60,000 circuit km, with a potential demand for 630,000 transformers

Material handling equipment

- The material handling equipment sector is expected to gain from the robust demand from steel, power, mineral and other infrastructure industries
- Market demand for material handling equipment is estimated at USD30 billion over 2007–2014

Machine tools

- With the projected demand for the capital goods sector being high (especially the automobile and textile industry), there is going to be significant demand for machine tools
- Considering the industry's demand for higher productivity, superior precision and accuracy, as well as low-cost manufacturing solutions, computer numerically controlled (CNC) machine tools are set to be in greater demand

Source: Aranca Research

ESO is a huge opportunity for India over the next few years

By 2020, the ESO market in India is expected to reach USD40–50 billion, propelled by the increasing onshore to offshore movement of services

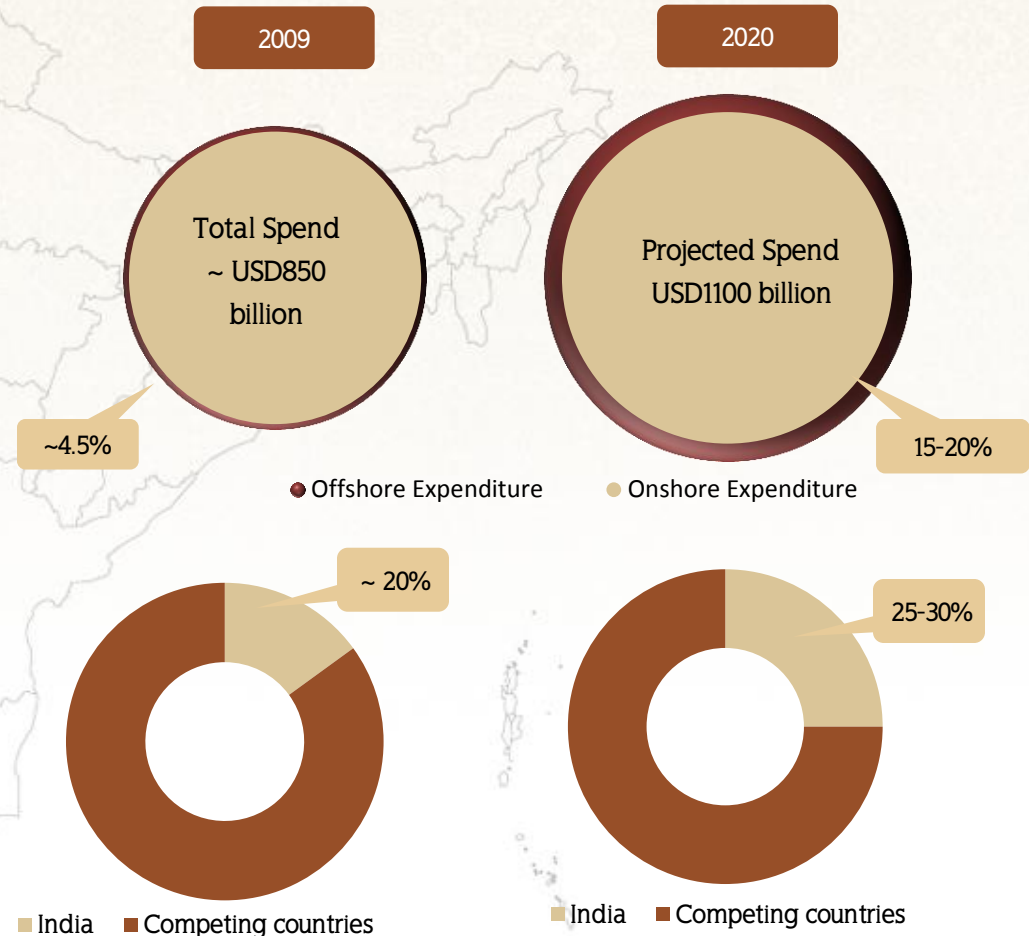
2009

- The global engineering services spend is estimated to be around USD850 billion
- About USD40 billion flows through the outsourcing channel into vendor countries
- India accounts for about 20 per cent of this outsourced market

2020

- The global engineering services spend is projected to reach USD1100 billion
- About USD180 billion is expected to flow through the outsourcing channel into vendor countries
- India can bring home about 25–30 per cent of this outsourced revenue

Source: Booz Allen Hamilton, Nasscom, Aranca Research



Notes: ESO is Engineering Services Outsourcing

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Industry Associations ... (1/2)

National Automotive Testing and R&D Infrastructure Project (NATRiP)

NBCC Place, South Tower,
3rd Floor, Bhishma Pitamah Marg,
Pragati Vihar, Lodhi Road,
New Delhi - 110003
Tel : + 91-11-49215555
Fax : +91-11-24369333
E-mail : team@natrip.in

The Automotive Research Association of India

Survey No 102, Vetal Hill, Off Paud Road,
Kothrud, Pune - 411 038
P.B. No 832, Pune - 411 004
Tel. No : +91-020-30231111
Fax No : +91-020-25434190
Email Id: info@araiindia.com

Industry Associations ... (2/2)

Fluid Control Research Institute

Kanjikode West,
Palakkad - 678623.
Phone : 91-491-2566120/2566206
Fax : 0491-2566326
E-mail : fcricriindia.com

Engineering Export Promotion Council (EEPC)

'Vanijya Bhawan', 1st Floor
International Trade Facilitation Centre
1/1, Wood Street
Kolkata, West Bengal-700016
Phone: 91-33-22890651, 22890652
Fax: 91-33-22890654
E-mail: eepec@eepecindia.org

Glossary

- **BTG** : Boilers, Turbines, Generators
- **BHEL** : Bharat Heavy Electricals Limited
- **MHI**: Mitsubishi heavy industries
- **DHI** : Department of Heavy industries
- **BHEL** : Bharat Heavy Electricals Ltd
- **EEPC** : Engineering Export Promotion Council
- **TPD** : Tonnes Per Day
- **NHAI** : National Highway Authority of India
- **MORTH**: Ministry of Road Transport and Highways
- **CEA** : Central Electrical Authority
- **HVDC**: High Voltage Direct Current
- **USD**: US Dollar; Conversion rate used: USD1= INR48
- **FY**: Indian Financial Year (April to March)
- **Wherever** applicable, numbers have been rounded off to one decimal

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