ENGINEERING AND CAPITAL GOODS
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Increasing industrialisation and economic development drives growth in the capital goods market.

Turnover of the capital goods industry is estimated to have reached US$ 70.00 billion by 2017 and is forecasted to grow to US$ 115.17 billion by 2025.

Growth in the power industry is expected to drive growth in the electrical equipment industry.

Electrical equipment market production is forecasted to reach Rs 500,000 crore (US$ 100 billion) by 2022 from Rs 175,000 crore (US$ 27.3 billion) in 2017-18.

The industry grew 19.1 per cent year-on-year between Apr-Sep 2018.

Engineering research and design segment revenues to increase fourfold by 2020.

ER&D revenues projected to reach US$ 42 billion by FY22F from US$ 28 billion in FY18.

Note: *As per Business Today article dated November 15, 2017, *including product engineering services, F-Forecast, Data for capital goods for 2017-18 may be available by March 2019, Electrical equipment production data may be available by July 2019 from IEEMA, Engineering R&D revenues may be available in February 2019 from NASSCOM

Source: Dept. of Heavy Industries, India Electrical and Electronics Manufacturer Association, NASSCOM, Business Today
EXECUTIVE SUMMARY … (2/2)

- Construction equipment sales in India increased from 47,889 in 2014 to 78,109 in 2017. Sales are forecasted to advance to 99,115 and 110,815 in 2018 and 2022, respectively.


- Indian telecom equipment market to increase at a rate of 50 per cent by 2020.

- Exports of telecom instruments have increased from US$ 880.75 million in 2015-16 to US$ 1,771.37 million in 2018-19*.

- Increased production of Central Public Sector Enterprises (CPSEs).

- Production by CPSEs under DHI increased to Rs 34,290.91 crore (US$ 5.1 billion) in FY18A from Rs 31,939.18 crore (US$ 4.88 billion) in FY16.

Note: DHI - Dept. of Heavy Industries, A – Anticipated, T – Tentative, E – Estimate, 2018-19* - up to December 2018
Source: Booz and Company, Ministry of Heavy Industries and Public Enterprise, DGCIS, Off highway Research

For updated information, please visit www.ibef.org
ADVANTAGE INDIA

- India was the world's eighth largest consumer of machine tools globally, as of 2017.
- Capacity creation in sectors such as infrastructure, power, mining, oil and gas, refinery, steel, automotive and consumer durables is driving demand in the engineering sector.
- Rising demand for electrical and construction equipment.

ADVANTAGE INDIA

- Nuclear capacity expansion to provide significant business opportunities to the electrical machinery industry
- Infrastructure investments are expected to increase to Rs 50.2 trillion (US$ 778.90 billion) in FY18-22E, which will provide a significant boost to demand for capital goods.

- Comparative advantage vis-à-vis peers in terms of manufacturing costs, market knowledge, technology and creativity leading to higher investments.
- Highly organised sector, dominated by large players employing over 4 million skilled and semi-skilled labour

Notes: FDI - Foreign Direct Investment, FY - Indian Financial Year (April – March), US$ - US dollar, ^CRISIL Infrastructure Yearbook 2017
Source: Government of India, Ministry of Heavy Industries, Department of Industrial Policy and Promotion, India Electrical and Electronics Manufacturer Association
MARKET OVERVIEW
TWO MAJOR SEGMENTS

Engineering and Capital goods

Engineering

Light Engineering

Heavy Engineering

Heavy electrical

Heavy engineering and machine tools

Automotive

Low technology products

High technology products
## HEAVY ENGINEERING – KEY SEGMENTS ... (1/2)

### 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.
- Nearly 200 machine tool manufacturers are operational in the organised sector along with 400 small-scale units.
- Production of machine tools grew 25.7 per cent year-on-year to Rs 7,293 crore (US$ 1.13 billion) in 2017-18, while exports reached Rs 355 crore (US$ 55.08 million). Production is forecasted to increase to Rs 9,000 crore (US$ 1.40 billion) in 2018-19.

### Textile machinery
- It comprises over 1,446 units involved in churning out machinery and components; another 600 units manufacture complete machinery.
- Market size of textile machinery stood at US$ 3.8 billion in 2017 and is expected to reach US$ 5.2 billion by 2021.
- The industry produced total machinery worth Rs 6,900 crore (US$ 1,070.60 million) in 2017-18, including spares and accessories worth Rs 920 crore (US$ 142.75 million).
- In FY18, total exports of textile machinery stood at Rs 2,939 crore (US$ 456.01 million).

### Cement machinery
- Cement plants based on raw mill grinding, pre-processing and cement grinding process technology (for capacities up to 10,000 TPD) are being manufactured in India.
- Currently, 100 per cent FDI is allowed under the automatic route.
- The industry is capable of catering to the domestic demand, the growth in construction to drive cement demand in coming years owing to new government’s policy.

### Material handling equipment
- Material handling equipments have four categories: storage and handling equipments, engineered systems, industrial trucks and bulk material handling.
- With around 50 units in the organised sector, the material handling equipment industry is engaged in the setting up of coal/ore/ash handling plants and manufacturing associated equipment.

**Notes:** TPD - Tonnes Per Day, *As per latest data available, F - Forecast  
**Source:** Indian Machine Tool Manufacturers’ Association, Textile Machinery Manufacturing Association, Cabinet Committee on Infrastructure report, ITMACH India
### Plastic processing machinery
- There are 11 major and nearly 200 small and medium manufacturers of plastic processing machinery in India.
- Demand for plastic processing machinery is expected to increase from 7,695 in 2016-17 to 8,395 and 9,155 in 2017-18P and 2018-19P, respectively. Demand is projected to increase further to 9,975 machines in 2019-20P.
- Out of the total machinery demand in 2019-20P, Injection Moulding Machinery is expected to comprise 6,675 machines, Extrusion machines will comprise 1,875 and Blow Moulding Machines will comprise 1,425 machines.

### Dies, moulds and tools industry
- It includes over 500 commercial tool manufacturers.
- Market size of the Indian tooling industry is expected to increase at CAGR of 11 per cent from Rs 14,650 crore (US$ 2.18 billion) in 2016-17E to Rs 20,000 crore (US$ 2.98 billion) by 2019-20.
- Exports of dies, moulds and press tools stood at Rs 1,700 crore (US$ 253.39 million) in FY17.\(^\text{1}\)

### Process plant equipment
- Over 200 manufacturers are engaged in the production of process plant machinery.
- Nearly 65 per cent of the total manufacturers are small and medium enterprises.
- Production and exports stood at US$ 2.91 billion and US$ 1.38 billion in FY17, respectively.\(^\text{1}\)

### Earth moving, construction and mining equipment
- Currently, 20 large and global manufacturers and 200 small and medium manufacturers operate in the industry.
- The construction equipment industry’s size is estimated to reach US$ 5 billion by FY20 from around US$ 4.3 billion in FY18.

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**Note:** Information is as per latest available data, *As per Plastindia Foundation estimates, E – Estimated, P-Projected, ^Data for 2017-18 is expected to be released in DHI Annual Report 2018-19*  
**Source:** Ministry of Heavy Industries and Public Enterprise Annual Report 2012-13 and 2013-14, PLEX Council, Plastindia Foundation, Aranca Research
Casting and forging

- With 11 million tonnes of casting production in 2017, India overtook US to become the second largest casting producer globally.
- Turnover of the Indian forging industry grew nearly 12 per cent year-on-year to Rs 35,000 crore (US$ 5.43 billion) in 2017-18.
- Total production of the Indian forging industry increased to 2.524 million tonnes in 2017-18 from 2.398 million tonnes in 2016-17.

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 indigenous industry caters to 40 per cent of demand, while the remaining is met through imports.
- Exports of medical and scientific instruments reached US$ 1.08 billion between April-December 2018.

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.

Source: Ministry of Heavy Industries and Public Enterprise Annual Report, Association of Indian Forging Industry (AIFI), IVG Research, Aranca Research
# HEAVY ELECTRICAL – KEY SEGMENTS

<table>
<thead>
<tr>
<th>Boilers</th>
<th>Turbines and generator sets</th>
<th>Transformers</th>
<th>Switchgear and control gear.</th>
</tr>
</thead>
<tbody>
<tr>
<td>As per the latest data available, the Indian boiler industry has the capability to manufacture boilers with super critical parameters up to 1000 MW unit size.</td>
<td>As per the latest data available, the industry manufactures various turbines in the range of 800–7000 MW per annum and generators ranging from 0.5 KVA to (ones even higher than) 25000 KVA.</td>
<td>A whole range of power and distribution transformers, including special type of transformers required for furnaces, electric tracts and rectifiers, are manufactured in India. Revenues are expected to grow at CAGR of 14 per cent till 2018.</td>
<td>The market size of HV Switchgear (including panels) and LV Switchgear (including panels) stood at Rs 4,665 crore (US$ 723.82 million) and Rs 15,800 crore (US$ 2.45 billion) in FY18, respectively.</td>
</tr>
<tr>
<td>The industry’s market size was US$ 3.8 billion in FY11 and reached US$ 5.8 billion in FY17 and expected to reach US$ 11.7 billion in FY22.</td>
<td>Foreign players like Siemens also in race to supply Indian market.</td>
<td>The power transformer and distribution transformer market reached Rs 6,665 crore (US$ 1.03 billion) and Rs 7,000 crore (US$ 1.09 billion) in FY18, respectively.</td>
<td>Exports of High Voltage Switchgear (including panels) and Low Voltage Switchgear (including panels) reached Rs 1,098 crore (US$ 170.36 million) and Rs 3,638 crore (US$ 518.38 million) between Apr-Sep 2018, respectively.</td>
</tr>
<tr>
<td>Notes: MW - Mega Watt, KVA - KiloVolt - Ampere</td>
<td>Total production of turbines and generators stood at approximately US$ 6.6 billion in FY17 and is expected to reach US$ 13.4 billion by FY22.</td>
<td>Exports of power transformers and distribution transformers stood at Rs 512 crore (US$ 72.96 million) and Rs 707 crore (US$ 100.74 million) between Apr-Sep 2018, respectively.</td>
<td>Exports of High Voltage Switchgear (including panels) and Low Voltage Switchgear (including panels) reached Rs 1,098 crore (US$ 170.36 million) and Rs 3,638 crore (US$ 518.38 million) between Apr-Sep 2018, respectively.</td>
</tr>
</tbody>
</table>

Source: Ministry of Heavy Industries and Public Enterprise Annual Report, Aranca Research
# AUTOMOTIVE – KEY SEGMENTS

## Passenger and utility vehicles
- India is the seventh largest manufacturer of commercial vehicles globally, as of 2017.
- Total production in the automobiles sector reached 29.08 million units in 2017-18.
- Passenger vehicle sales in India increased 9 per cent in FY18.

## Auto components
- The auto components industry has more than 500 companies in the organised sector and about 10,000 entities in the unorganised sector.
- It contributes nearly 2.3 per cent of the country’s GDP.
- Turnover of Indian auto components industry grew 18.3 per cent to US$ 51.2 billion in 2017-18 from US$ 43.5 billion in 2016-17. The industry turnover is expected to increase to US$ 200 billion by 2026.

## Agriculture machinery
- Agricultural tractors dominate the agriculture machinery sector.
- The Indian tractor industry is the world’s largest and accounts for one-third of the global production.
- Indian tractors are exported to the Malaysia, Turkey and other countries.
- As the cost of tractors manufactured in India is the least in the world, there is a lot of scope for enhancing exports of tractors from the country.

*Note: Data on global rank in commercial vehicle production in 2018 is expected after March 2018 from OICA, Automobile production data for 2018-19 is expected after April 2018 from SIAM, 2018-19 data for auto components turnover is expected around September 2019 from ACMA. Source: Ministry of Heavy Industries and Public Enterprise Annual Report, SIAM, Cabinet Committee on Infrastructure report, ACMA, Aranca Research*
ROBUST GROWTH IN INDIA’S ENGINEERING EXPORTS OVER THE YEARS

- Engineering exports include transport equipment, capital goods, other machinery/equipment and light engineering products such as castings, forgings and fasteners.
- During FY08–FY18, engineering exports from India registered growth at a CAGR of 8.50 per cent.
- Engineering exports from India grew 16.81 per cent to US$ 76,204.38 million in FY18 from US$ 65,239.19 million in FY17. Exports grew 11.27 per cent year-on-year to reach US$ 46.49 billion during Apr-Oct 2018.
- Engineering exports are expected to reach US$ 80 billion in FY19 on the back of healthy growth in key markets, including US and Europe.

Notes: FY - Fiscal Year, ^CAGR is up to FY18, FY19* - up to October 2018
KEY CATEGORIES OF ENGINEERING EXPORTS

- Engineering exports of India can be divided into eight major categories.
- Out of these eight categories, Iron and Steel and Products of Iron and Steel form a substantial share (23.59 per cent) of the total engineering exports.
- Automobiles (20.59 per cent) and Industrial Machinery (16.56 per cent) also contribute a major share of total exports.

Note: Data for FY19 is expected after April 2018 from EEPC
Source: Engineering Export Promotion Council
### KEY PLAYERS ... (1/2)

<table>
<thead>
<tr>
<th>Company</th>
<th>Revenues* (FY18)</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larsen and Toubro</td>
<td>US$ 18.79 billion</td>
<td>Engineering and construction, cement, electrical and electronics</td>
</tr>
<tr>
<td>Bharat Heavy Electricals Ltd</td>
<td>US$ 4.60 billion</td>
<td>Power generation, transmission, transportation</td>
</tr>
<tr>
<td>ABB India Ltd</td>
<td>US$ 1.42 billion^</td>
<td>Transformers, switch gears, control gears</td>
</tr>
<tr>
<td>CG Power and Industrial Solutions Ltd.</td>
<td>US$ 0.97 billion</td>
<td>Power generation and transmission equipment</td>
</tr>
</tbody>
</table>

*Note: ^Standalone Revenue for Calendar Year 2017, Exchanges rates used are average of the period, provided on page 44, *Consolidated Total Revenue

*Source: Company Annual reports, News article, Money control, Bloomberg, Aranca Research*
<table>
<thead>
<tr>
<th>Company</th>
<th>Revenues* (FY18)</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers India Ltd</td>
<td>US$ 0.31 billion</td>
<td>Highways and bridges, mass rapid transport systems construction, specialist materials manufacturing</td>
</tr>
<tr>
<td>Kirloskar Oil Engines Ltd</td>
<td>US$ 0.49 billion</td>
<td>Engines, engine bearings and valves, grey iron casting</td>
</tr>
<tr>
<td>Cummins India Ltd</td>
<td>US$ 0.82 billion</td>
<td>Power generation, construction and mining equipment, fire pumps and cranes, compressors</td>
</tr>
<tr>
<td>Thermax Ltd</td>
<td>US$ 0.71 billion</td>
<td>Boilers, heaters, air pollution and purification, absorption cooling</td>
</tr>
<tr>
<td>BGR Energy Systems Ltd</td>
<td>US$ 0.52 billion</td>
<td>Boilers, turbines, generators</td>
</tr>
</tbody>
</table>

*Note: Exchanges rates used are average of the period, provided on page 44, *Consolidated Total Revenue

*Source: Company Annual Report, News article, Aranca Research*
NOTABLE TRENDS
STRATEGIES
ADOPTED
NOTABLE TRENDS IN THE INDUSTRY

**Diversification**
- Several companies in the engineering sector have diversified, either geographically (mainly to Middle Eastern countries) or sector-wise
- BHEL plans to foray into Ukraine
- Simplex Infra has moved to the Middle East
- Larsen and Toubro (L&T) has diversified into power equipment manufacturing
- Thermax 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 line with global requirements
- More than 2,500 firms in the engineering sector have ISO 9000 accreditation
- Companies are increasingly focusing on R and D and product development
- To enhance competitiveness in India’s capital goods industry, the Dept. of Heavy Industry has approved 4 Centres of Excellence in textile machinery, machine tools, welding technology and smart pumps.

**Entry of international companies**
- With 100 per cent FDI allowed through the automatic route, major international players such as Cummins, ABB and Alfa Laval have entered the Indian engineering sector due to growth opportunities
- As of December 2018, SANY India, the Indian arm of Beijing-headquartered construction equipment maker SANY Group, is planning to invest Rs 1,000 crore (US$ 142.49 million) to expand its construction machinery production capacity to 25,000 units.

*Notes: BHEL - Bharat Heavy Electricals Ltd  
Source: Aranca Research*
## STRATEGIES ADOPTED

### Leveraging Indian operations
- Bigger companies are currently focusing on process improvement and a smaller set of key strategies
- ABB has set up global R&D centre in Bengaluru and is also aiming at making India as production hub for markets worldwide due to its labour cost advantage
- Cummins has also opened R&D centre in Pune, for providing designing and technical abilities worldwide

### Operational efficiency
- Companies are understanding the need of operations management following the crisis period
- Good set of operational structure in place helps them target future business opportunities with better precision
- There is emphasis on human resource management, automation and higher labour productivity

### Geographical expansion
- Most Indian companies are increasing their global footprints
- Cheap cost of labour in India is giving them an edge over companies in higher wage economies
- Besides targeting the developed economies of Europe and US, Indian companies are currently diversifying in the developing markets of Africa, South America and the Middle East

### Skill Improvement
- Many companies are collaborating with institutions for developing skilled manpower for the highly technical engineering sector.
- In June 2017, Schneider Electric signed an MoU with Kalinga Institute of Technology (KIIT) and CV Raman College of Engineering in Odisha for training students to enhance their engineering skills.

### PSU Stake Sale
- In September 2018, the Government of India decided to divest 10 per cent stake in the IRCON International for around Rs 467 crore (US$ 66.54 million).

**Source:** Aranca Research, KPMG Report on Engineering sector
GROWTH DRIVERS
GROWTH DRIVERS FOR THE INDIAN ENGINEERING SECTOR

Demand-side drivers

- Capacity addition for power generation
- Increase in infrastructure spending
- Rise in exports which touched US$ 76.20 billion during FY18

Growth drivers

Policy
- De-licensing
- Reduction in tariff and customs
- Supportive government policies leading to higher investments

Investment
- Increasing FDI inflows
- Higher M&A
- Easy credit facilities for manufacturing companies
India’s energy requirement is expected to grow from 1,212.13 BU in FY18 to 1,566 BU in FY21 and further to 2,047 BU in 2026-27.

The growing energy requirement will require enhancement of installed power capacity. As per the National Electricity Plan 2018, the total installed power capacity is projected to increase from 344.00 GW in FY18 to 479.42 GW in FY22P.

The increase in installed power capacity is expected to boost demand for power generation and transmission equipment.

Notes: P – Projected, Data for FY19 is expected in May 2019 from CEA
Source: CEA, Ministry of Power Annual Report, National Electricity Plan 2018
INFRASTRUCTURE, ONE OF THE KEY DEMAND DRIVERS FOR MACHINERY... (1/2)

- Infrastructure investments in India increased from US$ 369.28 million in 2008-12 to US$ 577.19 million in 2013-17 RE and are further expected to grow to US$ 778.90 million.
- Government of India has also renewed its focus on development of infrastructure of the country.
- With development of infrastructure, demand for construction equipment and other machinery is expected to rise significantly.

![Graph showing Infrastructure Investments (US$ million)]

*Note: RE – Revised Estimates, E - Estimated
Source: Office of the Economic Adviser, CRISIL Infrastructure Yearbook 2017*
India has one of the largest road networks (5.48 million km) comprising expressways, national, state highways, districts and village roads.

Demand for related machinery in building roads has increased significantly due to large-scale public and private investments in roads.

An outlay of Rs 6.92 trillion (US$ 107.64 billion) was approved by the Government of India in October 2017 to build a road network of 83,677 km over the next five years.

The Infrastructure Supporting Industries Index (part of the wider Index of Industrial Production) comprises eight core industries: coal, crude oil, natural gas, petroleum refinery products, fertilisers, steel, cement and electricity. The index rose to 125.7 in FY18, implying a growth rate of 4.32 per cent in the year.

Note: FY19^ - as of November 2018, 2018-19* - up to November 2018
Source: National Highway Authority of India, Ministry of Road Transport and Highways, Aranca Research
STRONG POLICY SUPPORT CRUCIAL FOR THE SECTOR…(1/2)

| De-licensing | The engineering industry has been de-licensed and 100 per cent FDI has been permitted in the sector |
|             | Foreign technology agreements are allowed under the automatic route |
| Tariffs and custom duties | The government has eliminated tariff protection on capital goods |
|             | It has reduced custom duties on a range of engineering equipment |
| Focus on power generation and infrastructure | Governmental infrastructure projects such as Golden Quadrilateral and the North-South and East-West corridors fuelled growth in the engineering sector |
| Special Economic Zones (SEZs) | The government approved a significant number of SEZs across the country for the engineering sector |
|             | Delhi Mumbai Industrial Corridor (DMIC) is being developed across 7 states; it is expected to bolster the sector |
| Make in India | Under the Make in India initiative, the central government has approved the policy giving preference to domestically produced steel and iron products for government procurement in May 2017. |

Notes: GW - Giga Watt
Source: DHI Annual Report, Ministry of Power Annual Report, Make in India, Aranca Research
STRONG POLICY SUPPORT CRUCIAL FOR THE SECTOR…(2/2)

Tax Holiday For MSMEs
- The government would give 3 years Tax Holiday with a stipulation that this money should be used (the tax amount that works out for the unit) to invest in the plant, machinery or new land for the expansion of the current line of business.

Cut in excise duty to aid the auto industry
- A cut in excise duty on chassis for ambulance is being reduced from 24 per cent to 12.5 per cent. Short-term crop loans to farmers at 7 per cent per annum and additional subvention of 3 per cent for prompt paying farmers so that they can take tractors.

Investment on building Internal and External Infrastructure in Smart Cities
- The government has planned to build 100 smart cities, by allocating US$ 8.29 billion. The plan would need more PPP’s for better and fast execution.
- In February 2017, Government of Tamil Nadu allotted land to 14 companies, for setting up an Aerospace park in Sriperumbudur, along with establishing an Advanced Computing and Design Engineering Centre, with an outlay of US$ 52.06 million.

Higher allocation to the defence sector
- Allocation to the defence sector was raised to US$ 40 billion. Make in India policy is being carefully pursued to achieve self-sufficiency in the defence equipment sector including air-craft.

Budgetary support
- In the Union Budget 2018-19, the government allocated US$ 92.22 billion for the infrastructure sector.

Notes: Capex - Capital Expenditure, JNNURM - Jawaharlal Nehru National Urban Renewal Mission
Source: Union Budget FY14, Union Budget 2018-19
### SPECIAL ECONOMIC ZONES (SEZs) TO PROMOTE EXPORTS ... (1/3)

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

**Source:** SEZ India, Aranca Research
### SPECIAL ECONOMIC ZONES (SEZs) TO PROMOTE EXPORTS ... (2/3)

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

**Source:** SEZ India, Aranca Research
**SPECIAL ECONOMIC ZONES (SEZs) TO PROMOTE EXPORTS ... (3/3)**

<table>
<thead>
<tr>
<th>Developer</th>
<th>Location</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen Infrastructures Ltd.</td>
<td>Vadodara, Gujarat</td>
<td>High-tech Engineering products and related Services</td>
</tr>
<tr>
<td>Aspen Infrastructures Ltd.</td>
<td>Karnataka</td>
<td>High-tech Engineering products and related Services</td>
</tr>
<tr>
<td>Quest SEZ Development Private Ltd.</td>
<td>Belgaum District, Karnataka</td>
<td>Precision Engineering Product</td>
</tr>
<tr>
<td>Khed Economic Infrastructure Limited (Bharat Forge Ltd.)</td>
<td>Pune, Maharashtra</td>
<td>Engineering and Electronics</td>
</tr>
<tr>
<td>State Industries Promotion Corporation of Tamil Nadu</td>
<td>Vellore, Tamil Nadu</td>
<td>Engineering</td>
</tr>
<tr>
<td>State Industries Promotion Corporation of Tamil Nadu</td>
<td>Erode, Tamil Nadu</td>
<td>Engineering</td>
</tr>
<tr>
<td>Aspen Infrastructures Ltd.</td>
<td>Coimbatore District, Tamil Nadu</td>
<td>High-tech Engineering products and related Services</td>
</tr>
</tbody>
</table>

*Source: SEZ India, Aranca Research*
FDI inflows into the miscellaneous mechanical and engineering sector stood at US$ 3.45 billion during April 2000-June 2018.

The government’s increasing focus on attracting foreign investors in manufacturing and infrastructure is likely to boost FDI in the sector.

Note: *up to June 2018
Source: Department of Industrial Policy and Promotion, Aranca Research
## INFLOW OF FOREIGN INVESTMENTS; RISE IN M&A ACTIVITY ... (2/2)

### M&A deals

<table>
<thead>
<tr>
<th>Acquirer</th>
<th>Target</th>
<th>Type</th>
<th>Acquisition date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shinryo Corporation</td>
<td>Suvidha Engineers India</td>
<td>Acquisition</td>
<td>October 2018</td>
</tr>
<tr>
<td>Schneider Electric and Temasek</td>
<td>Larsen &amp; Toubro’s Electrical &amp; Automation business</td>
<td>Acquisition</td>
<td>May 2018</td>
</tr>
<tr>
<td>Adani Transmission</td>
<td>Reliance Infrastructure (Mumbai Power business)</td>
<td>Acquisition</td>
<td>March 2018</td>
</tr>
<tr>
<td>Aaxiscades</td>
<td>Mistral Solutions</td>
<td>Acquisition</td>
<td>November 2017</td>
</tr>
<tr>
<td>ABB Group</td>
<td>GE Industrial Solutions</td>
<td>Acquisition</td>
<td>September 2017</td>
</tr>
<tr>
<td>Hero Electronix</td>
<td>Spectrum Integrated Technologies and Lynxemi Pte Ltd</td>
<td>Acquisition</td>
<td>August 2017</td>
</tr>
<tr>
<td>Warburg Pincus</td>
<td>Tata Technologies Ltd.</td>
<td>Minority Stake</td>
<td>June 2017</td>
</tr>
<tr>
<td>Havells India</td>
<td>Lloyd Electricals – consumer durables unit</td>
<td>Acquisition</td>
<td>February 2017</td>
</tr>
<tr>
<td>Birla Corp. Ltd.</td>
<td>Reliance Cement Company Pvt. Ltd.</td>
<td>Acquisition</td>
<td>July 2016</td>
</tr>
<tr>
<td>Fairfax India Holdings Corp. and Fairfax Financial Holdings Ltd.</td>
<td>Bangalore International Airport Ltd.</td>
<td>Minority stake</td>
<td>March 2016</td>
</tr>
<tr>
<td>Royal Enfield</td>
<td>Harris Performance company</td>
<td>Acquisition</td>
<td>March 2016</td>
</tr>
<tr>
<td>Balasore Alloys Ltd – Ispat Group</td>
<td>Rohit Ferro-Tech</td>
<td>Acquisition</td>
<td>May 2015</td>
</tr>
<tr>
<td>Reliance Infrastructure</td>
<td>Pipavav Defence and Offshore Engineering</td>
<td>Majority stake</td>
<td>March 2015</td>
</tr>
<tr>
<td>Systra S.A</td>
<td>SAI Consulting Engineers</td>
<td>Majority stake</td>
<td>December 2014</td>
</tr>
<tr>
<td>Tractors India Pvt Ltd</td>
<td>Caterpillar Global Mining LLC</td>
<td>Acquisition</td>
<td>February 2014</td>
</tr>
<tr>
<td>Geometric*</td>
<td>3Cap Technologies GmbH</td>
<td>Acquisition</td>
<td>January 2013</td>
</tr>
</tbody>
</table>

*Note:* *Acquired by its German subsidiary - Geometric Europe GmbH*

**Source:** Grant Thornton, Aranca Research, Thomson Banker, VC circle
### Growth Opportunities in the Engineering Sector … (1/2)

#### Defence Sector
- Allocation to the defence sector was raised to US$ 45.57 billion under Union Budget 2018-19. In addition, Make in India policy is being carefully pursued to achieve greater self-sufficiency in the area of defence equipment including air-craft.
- Government initiatives, such as allowing private sector participation, have been reinforced by opening up the sector to 100 per cent FDI (49 percent through automatic route), and its offset policy is expected to enhance private sector (including SME) participation.
- Ministry of Defence has eased its procurement norms, making it easier for Indian companies and start-ups to offer equipment and other products to the Indian armed forces.

#### Civil Nuclear Sector
- India’s nuclear power installed capacity was 6.78 GW in November 2018. Nearly 3,300 MW of nuclear capacity is expected to be commissioned during 2017-2022.
- It represents business opportunity worth US$ 312 million for the 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.
- Domestic auto component production is projected to grow 10-12 per cent annually between FY18 and FY23 to Rs 5,223 billion (US$ 81.04 billion).*
- In auto components sector, 100 per cent FDI is allowed under the automatic route.

*Notes: GW - Giga Watt, SME - Small and Medium Enterprises, CY – Calendar Year, *As per CRISIL Research
Source: Aranca Research
GROWTH OPPORTUNITIES IN THE ENGINEERING SECTOR … (2/2)

Power Transmission and Distribution (T&D)
- T and D expenditure is set to increase on growth in power generation and privatisation of distribution
- In FY18, 23,119 ckm of transmission lines have been commissioned. This is 100.14 per cent of the annual target of 23,086 ckm fixed for 2017-18.

Material handling equipment
- The material handling equipment sector is expected to gain from robust demand from steel, power, mineral and other infrastructure industries
- India’s material handling industry is expected to grow at a CAGR of 10 per cent up to 2020.

Machine tools
- Demand for machine tools from the capital goods sector (especially automobile and textile industries) is projected to remain high
- 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

Note: CKM- Circuit Kilometres
Source: Aranca Research
India’s electrical equipment industry has witnessed significant growth in the last few years.

Major electrical equipment manufactured include Electric power equipment and parts, Electric wires and Cables, Boilers and Parts and Transmission line towers and parts.

India imported electric machinery and equipment worth US$ 8.31 billion during FY18. Imports during Apr-Nov 2018 stood at US$ 6.75 billion.

The electrical equipment industry grew 19.1 per cent year-on-year between Apr-Sep 2018.

**Note:** T&D - Transmission and Distribution, BTG - Boilers, Turbine, Generator, FY19* - up to December 2018

**Source:** Indian Electrical and Electronics Manufacturers Association, Department of Heavy Industries, DGCIS
India’s electrical equipment industry witnessed a record seven-year high growth of 12.8 per cent in 2017-18, on the back of increase in government spending on rural and household electrification schemes and programmes to improve power distribution.

- The generation equipment (BTG) segment is projected to grow to US$ 25 billion by the year FY22
- Production of generation equipment (boilers, turbines and generators) in India is estimated at around US$ 5.7 billion by 2022
- Demand for generation equipment is projected to rise to US$ 25.1 billion in FY22 from US$ 3.3 billion in FY15
- Exports of electrical machinery grew at a CAGR of 7.00 per cent during FY10-18 to reach US$ 6.7 billion in FY18. Exports during Apr-Nov 2018 stood at US$ 5.61 billion.

Note: BTG - Boiler, Transmission and Generation, FY19* - up to December 2018, ^CAGR is up to FY18
Source: Indian Electrical and Electronics Manufacturers Association
GROWTH POTENTIAL IN THE CONSTRUCTION EQUIPMENT INDUSTRY

- India’s Earthmoving and Construction Equipment (ECE) industry has enjoyed strong growth over the last seven years due to rapid economic development.
- The organised construction sector in India (for example, roads, urban infrastructure) accounts for approximately 55 per cent of the ECE industry. Mining, irrigation and other infrastructure segments (power, railways) account for the remaining.
- Earthmoving sector is continuing to make headways and could command a share of 56.2 per cent, followed by concrete equipment and material handling equipment.
- Construction equipment industry recorded sales of 78,109 units and 66,613 units of construction equipment in 2017 and 2016 respectively. Sales are forecasted to increase to 99,115 in 2018* and further to 110,815 in 2022*.

**Expected unit sales by 2021**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>2015 (Actual Sales)</th>
<th>2016 (Actual Sales)</th>
<th>2017 (Actual Sales)</th>
<th>2018*</th>
<th>2022*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backhoe Loaders</td>
<td>21,192</td>
<td>29,847</td>
<td>32,728</td>
<td>45,000</td>
<td>45,000</td>
</tr>
<tr>
<td>Crawler Excavators</td>
<td>11,013</td>
<td>16,491</td>
<td>20,062</td>
<td>24,000</td>
<td>34,000</td>
</tr>
<tr>
<td>Mobile Compressors</td>
<td>3,542</td>
<td>4,678</td>
<td>5,108</td>
<td>5,200</td>
<td>5,500</td>
</tr>
<tr>
<td>Mobile Cranes</td>
<td>4,863</td>
<td>5,492</td>
<td>7,749</td>
<td>11,000</td>
<td>11,000</td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>2,771</td>
<td>3,865</td>
<td>4,765</td>
<td>5,500</td>
<td>5,000</td>
</tr>
<tr>
<td>Wheeled Loaders</td>
<td>2,097</td>
<td>2,206</td>
<td>2,781</td>
<td>3,300</td>
<td>3,500</td>
</tr>
<tr>
<td>Crawler Dozers</td>
<td>391</td>
<td>435</td>
<td>534</td>
<td>450</td>
<td>600</td>
</tr>
</tbody>
</table>

*Forecast

Source: NBM and CW
INDUSTRY ASSOCIATIONS
<table>
<thead>
<tr>
<th>Agency</th>
<th>Contact Information</th>
</tr>
</thead>
</table>
| 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 |
| Fluid Control Research Institute                                    | Kanjikode West, Palakkad - 678623.  
Phone: 91-491-2566120/2566206  
Fax: 0491-2566326  
E-mail: fcri@fcriindia.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: eepc@eepcindia.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
- ICEMA: Indian Construction Equipment Manufacturer’s Association
- HAL: Hindustan Aeronautics Limited
- IEEMA: Indian Electrical and Electronics Manufacturers Association
- 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
- US$: US Dollar
- FY: Indian Financial Year (April to March)
- Wherever applicable, numbers have been rounded off to two decimals
## Exchange Rates

### Exchange Rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR Equivalent of one US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–05</td>
<td>44.95</td>
</tr>
<tr>
<td>2005–06</td>
<td>44.28</td>
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<tr>
<td>2006–07</td>
<td>45.29</td>
</tr>
<tr>
<td>2007–08</td>
<td>40.24</td>
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<tr>
<td>2008–09</td>
<td>45.91</td>
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<tr>
<td>2009–10</td>
<td>47.42</td>
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<td>2010–11</td>
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<td>2011–12</td>
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<td>2012–13</td>
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<td>2014–15</td>
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<td>2015–16</td>
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<td>2016–17</td>
<td>67.09</td>
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<td>2017–18</td>
<td>64.45</td>
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<tr>
<td>Q1 2018–19</td>
<td>67.04</td>
</tr>
<tr>
<td>Q2 2018–19</td>
<td>70.18</td>
</tr>
<tr>
<td>Q3 2018–19</td>
<td>72.15</td>
</tr>
</tbody>
</table>

### Exchange Rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR Equivalent of one US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>44.11</td>
</tr>
<tr>
<td>2006</td>
<td>45.33</td>
</tr>
<tr>
<td>2007</td>
<td>41.29</td>
</tr>
<tr>
<td>2008</td>
<td>43.42</td>
</tr>
<tr>
<td>2009</td>
<td>48.35</td>
</tr>
<tr>
<td>2010</td>
<td>45.74</td>
</tr>
<tr>
<td>2011</td>
<td>46.67</td>
</tr>
<tr>
<td>2012</td>
<td>53.49</td>
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<tr>
<td>2013</td>
<td>58.63</td>
</tr>
<tr>
<td>2014</td>
<td>61.03</td>
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<tr>
<td>2015</td>
<td>64.15</td>
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<tr>
<td>2016</td>
<td>67.21</td>
</tr>
<tr>
<td>2017</td>
<td>65.12</td>
</tr>
</tbody>
</table>

*Source: Reserve Bank of India, Average for the year*
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