

Management Discussion and Analysis

About Bharat Forge Limited

Bharat Forge Limited (BFL), headquartered in Pune, is India's largest and a leading global forging Company with strong metallurgical knowledge, design, engineering and manufacturing capabilities. Its manufacturing footprint extends across India, Germany, Sweden, US and France. The Company, while nurturing existing competencies, stepped forward to focus on innovation, technology and value addition and evolved from a component supplier to a preferred development partner. The Company leverages its engineering and R&D expertise along with its integration advantage to develop innovative and customized solutions for clients across multiple sectors.

The Company has focused on portfolio diversification to amplify growth and de-risk business. While automobile continues to be its primary business, it has created a significant presence in Industrial sectors like Defence and Aerospace, Power, Oil & Gas, Construction & Mining, Agriculture, Railways & Marine and General Engineering. These segments provide more resilience and stability to the business, enabling it to effectively diversify and grow.

Taking its journey ahead, the Company is progressing well to tap newer areas of e-mobility, Light-weighting and high-precision transmission & driveline solutions.

ECONOMIC REVIEW

GLOBAL ECONOMY

The global economy grew by 3.6% in 2018 after recording a 3.8% in CY 2017. Though the economic activity acceleration gained in CY 2017 continued in early parts of CY 2018, several factors weighed down the momentum later. This included credit policy tightening, declining financial market sentiments and business confidence and more notably the sharp slowdown in global trade amidst escalating trade-tensions.

Economic growth in the Emerging Markets and Developing Economies (EMDEs) declined from 4.8% in CY 2017 to 4.5% in CY 2018. This was primarily due to softening of industrial activity in China, impacted by tightening credit policy and trade tensions.

In the Advanced Economies (AEs), the economic growth slowed from 2.4% in CY 2017 to 2.2% in CY 2018 due to weak consumer and business confidence and softened external demand in the euro area. In the US, strong consumption growth, led to economic expansion by 2.9% in CY 2018 compared to 2.2% in CY 2017.

Globally, most countries benefited from lower oil prices that declined from USD 81 a barrel in October 2018 to around USD 61 a barrel in February 2019, resulting in muted consumer inflation.

(Source: World Economic Outlook April 2019, International Monetary Fund)

Outlook

The global economy is expected to grow by 3.3% in CY 2019. Policy accommodation by major economies, improving financial market sentiments, absence of inflationary pressure, fading drags in Euro area and gradual stabilization of conditions in stressed economies is likely to support growth. Economic activities across AEs are

likely to remain subdued with the fading impact of the US fiscal stimulus. While the growth of AEs is projected at 1.8% for CY 2019, the activities in EMDEs are likely to start picking momentum towards the second half of CY 2019 and continue into CY 2020. Their growth is projected at 4.4% for CY 2019.

(Source: World Economic Outlook April 2019, International Monetary Fund)

INDIAN ECONOMY

India began FY 2019 on a strong note with broad-based growth across sectors. However, with rising global volatility, external trade disputes, impact of crude shocks on the rupee and outflows accounted for a slower growth rate towards the end of the year. Despite these conditions, the country remained one of the fastest growing major economies, least affected by global turmoil and supported by strong fundamentals, favorable policies and economic reforms.

India's GDP is expected to have grown by 6.8% in FY 2019, supported by sustained upswing in consumption and revival in investments. Domestic demand strengthened with harmonization of GST, bank recapitalization and reformative initiatives, helped boost investments and ease banking sector concerns.

The Government's prudent financial decisions and strong focus on meeting fiscal targets have been commendable and enabled it to strengthen its fundamentals. Fiscal deficit, inflation and current deficit have been largely under control. For FY 2019, fiscal deficit is expected to be 3.4% of GDP despite a higher expenditure commitment in welfare schemes. The year is likely to end with consumer price inflation declining to 2.86% and current account deficit narrowing to 2.1%. The country's foreign exchange reserves remained strong towards the end of the year at ₹ 26,802 Billion.

(Source: Deloitte Insights, Central Statistics Office, Reserve Bank of India April 2019 Monetary Policy Report, RBI Weekly Statistical Supplement)

Outlook

As per IMF, India is likely to continue its growth momentum in FY 2020, albeit at a slower pace of 7.3% compared with the earlier projection of 7.5% due to the impact of global turmoil. Continued recovery of investment and robust consumption from an expansionary monetary policy, fiscal policy impetus and lower oil prices are likely to support growth. RBI's shifted focus from inflation to sustaining the growth momentum underscored by back-to-back rate cuts of 25 basis points, will improve liquidity and provide growth impetus to the economy.

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India: Real GDP growth and its components

	FY 2018 (First revised estimate)	FY 2019 (Provisional estimate)
Private final consumption expenditure	7.4	8.1
Government final consumption expenditure	15.0	9.2
Gross fixed capital formation	9.3	10.0
Exports	4.7	12.5
Imports	17.6	15.4
GDP at market prices	7.2	6.8

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BUSINESS ENVIRONMENT

AUTOMOBILE BUSINESS

Global Automobile Industry

The landscape of the global automobile sector is undergoing a transformation. CASE mobility or Connected, Autonomous, Shared, Electric vehicles have disrupted business models of automotive companies. Players are making big investments in these trends and building partnerships to be prepared for the changing landscape.

The global automotive industry in CY 2018 witnessed a slowdown amidst these disruptions. The impact was further amplified with a sharp contraction in the world’s largest auto market in China and implementation of WLTP (Worldwide harmonized Light-duty vehicle Test Procedure) in Europe.

Increased sales in countries like Russia, Brazil and India was offset by a 1.1% sales decline in Europe and a 2.8% decline in China. It was for the first time in two decades that Chinese vehicle sales fell sharply, led by slowdown in economic activity, reversal of tax cuts and deceleration in credit growth. Sales in US at 17.32 Million units was the third best on record as the market benefited from tax reform that freed up a significant amount of cash for businesses.

(Source: JATO)

In the heavy-duty vehicles segment, strong economic activity and high freight demand led to improved sale of trucks in North America and Europe. CY 2018 was one of the strongest years for North America Class 8 trucks and Europe HCV have grown steadily over the last 3 years.

(Source: FTR Transportation Intelligence)

Outlook

Going forward, the changing automotive industry landscape is likely to open immense opportunities for diverse stakeholders. New concepts like Light-weighting, e-mobility, new emission rules, connected mobility and autonomous vehicles will transform the automotive industry landscape. Success of industry stakeholders depends upon how fast they respond to these changes and build fresh strategies.

The overall auto industry scenario looks a little weak in the short term, with sales projected to remain mostly flat as the pace of global economic activity subsides. China will remain a big concern as it faces internal economic problems as well as possible trade tension escalation with the US. In Europe, auto players are experiencing pressure due to the government’s push to make combustion engine vehicles more fuel efficient and the possibility of trade disruptions as Britain exits the EU.

(Source: Scotiabank Global Auto Report, Moody’s, Forbes)

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Crankshaft Heat Treatment



Machining Line

FY 2019 was an exceptional year for the commercial vehicle export business as it flourished amidst strong demand across key markets.

Company’s Review of the Export Market

Commercial vehicles

FY 2019 was an exceptional year for the commercial vehicle export business as it flourished amidst strong demand across key markets. With revival of economic activity and robust freight demand, the year was one of the strongest for North America Class 8 truck market. The European truck market has been going strong with its economy revving up. Demand in this market continued to be

good as a result of high freight activity and operator profitability.

The Company leveraged market conditions with its proven capabilities and recorded its highest ever revenues from the export commercial vehicles business in FY 2019 at ₹ 15,912 Million, a growth of 22% as compared to FY 2018.

Order activity has moderated in the initial months of CY 2019 and expected to normalize going ahead in the second half of the year as compared to last year’s

Heavy Vehicle Production Trend (Nos.)

US Class 8 Trucks (Nos.)

CY 2018	324,289
CY 2017	255,590
CY 2016	228,347
CY 2015	323,282
CY 2014	297,120
CY 2013	249,412

Europe HCV (Nos.)

CY 2018	316,889
CY 2017	305,401
CY 2016	296,226
CY 2015	267,280
CY 2014	225,140
CY 2013	238,697

[Source: ACT Research, European Automobile Manufacturers’ Association (ACEA)]

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record numbers. However, this year is still expected to show modest increase in production on account of a robust build schedule and strong order backlog. The Company's focus on increasing content per vehicle and increasing share with customers with new product development is expected to yield good results.

Passenger Vehicles

The Company's PV exports business during FY 2019 continued to grow strongly. Its endeavor to be on the growth trajectory by moving up the value chain remained on track, with new value-added products and enhancement of market share with the existing customers. This is substantiated by the growth of revenues from ₹ 420 Million in FY 2014 to ₹ 4,875 Million in FY 2019.

Next year, the Company expects to expand its presence in this segment driven by a healthy growth momentum as it starts to ramp-up new programs.

Indian Automobile Industry

The Indian automobile industry has significantly progressed in the recent years, adopting new technologies and capabilities in line with the changing global landscape. Its diversified nature provides players the much-needed scale and risk-hedging ability to face market vagaries. India is currently the world's fourth-largest automotive market. Rapid economic development, ongoing urbanization, a burgeoning middle-class and supportive regulations and policies have provided a fillip to the industry.

Despite the various positives, the Indian auto industry recorded a moderate growth of 5% in FY 2019-its slowest in four years, due to a slowdown in sales towards the end of the year owing to a weaker consumer sentiment.

(Source: SIAM)

The Government's emphasis on rural economy and infrastructure, structural reforms with supportive policy measures to improve liquidity and develop India as a global manufacturing and R&D hub, supports the automobile sector. National Automotive Testing and R&D Infrastructure Project (NATRiP) Centers and National Automotive Board have been set-up as facilitators between the Government and the industry.

Passenger Vehicles

Sales of passenger vehicles increased by 2.70% in FY 2019, led by a strong growth of 13.10% in the Vans segment. Other segments of passenger cars and utility vehicles grew marginally by 2.0%.

(Source: SIAM)

Commercial Vehicles

The commercial vehicles' segment recorded a holistic growth with strong performance across categories. While sales in this segment grew by 17.55% in FY 2019, sales of medium & heavy commercial vehicles increased by 14.66% and light commercial vehicles rose by 19.46%.

(Source: SIAM)

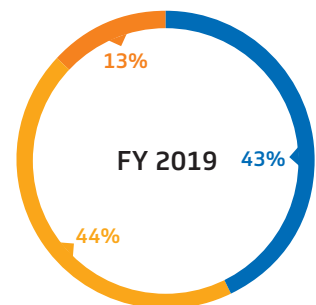
Outlook

India is expected to emerge as the world's third-largest passenger vehicle market by FY 2021, supported by Government efforts to ease liquidity and make policies favorable. The announcement of individual tax rebate and assured income to farmers in the Union Budget should bring in positive customer sentiment. This is expected to pull up demand for Two Wheelers, LCVs and tractors.

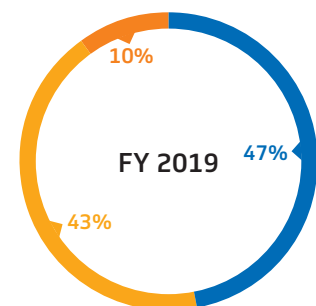
Micro factors such as implementation of BS-VI (from BS-IV) by FY 2020 and emerging concepts like Light-weighting and e-mobility will help to shape the

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Exports



Domestic



- Commercial Vehicles
- Non Auto
- Passenger Vehicles

structure of the industry in future. In the coming fiscal though, sales are likely to be tepid during the first half and expected to pick up in the second half ahead of BS-VI implementation. In fact, the industry body SIAM has appealed to the Government to reduce GST rates on cars, scooters and bikes to ensure moderate price rise, which does not impact demand.

(Source: IBEF, SIAM)

Company Review of the Indian Auto industry

Commercial Vehicles

FY 2019 was a good year for the domestic commercial vehicle industry post a sluggish period after GST implementation. The industry witnessed a revival in volumes due to a sharp pick-up in infrastructure projects, particularly in roads, urban infrastructure and affordable housing. Recovery in construction and industrial activity have further supported the demand for bigger haulage trucks and tippers, that was somewhat impacted

by year-end due to a tightening credit environment, revision in axle load norms, fuel prices increase and subdued freight rates.

The Company recorded its highest revenues from the domestic commercial vehicle segment. The Company continued using its R&D expertise and innovation to develop new products and increase content per vehicle. This segment witnessed a revenue growth of 6% to ₹ 10,988 Million in FY 2019.

Going into FY 2020, the industry is likely to be weak in the near term. However, with expansion of potential pre-buying ahead of BS-VI norms implementation, the overall outlook seems positive. BS-VI will also open opportunities for new product lines.

Passenger Vehicles (PV)

FY 2019 was an encouraging year for the domestic passenger vehicle business. The Company’s efforts to expand and diversify its offerings was successful, as it acquired new customers and orders. The Company’s revenues from domestic passenger vehicles increased by 16% to ₹ 2,373 Million. Commencement of serial production and ramp-up of aluminum products for domestic PV OEM was an important development during the year.

The passenger vehicle segment in India unveils new opportunities with new products and potential increase in usage of aluminum components. The Company will focus on innovation to enhance its portfolio with better products to gain market share.

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Commercial Vehicles Production Trend (Nos.)

FY 2019	1,112,176
FY 2018	895,448
FY 2017	810,253
FY 2016	786,692
FY 2015	698,298
FY 2014	699,035

Source: SIAM

Management Discussion and Analysis

INDUSTRIAL BUSINESS

The Company engages in the manufacture of components for Defence & Aerospace, Power, Oil & Gas, Construction & Mining, Agriculture, Railways, Marine and General Engineering sectors. This segment marks an important diversification for the Company and enables it to de-risk its business from dependence on the automotive sector. The Company has significantly grown this business, which now accounts for 44% of the overall FY 2019 revenues. This year also marked record revenues earned from the Industrial Business in both the domestic and export markets.

Company Review of the Export Industrial Segment

The Company witnessed increased traction in the export industrial segment in FY 2019, driven by improving macro-conditions in its end markets. Robust growth in Oil & Gas, Railways and Construction & Mining sustained its growth trajectory. Consequently, the Company's revenues from this segment increased by 21% to ₹ 16,472 Million.

Constant impetus on R&D in new product development areas helped the Company win new orders and add new customers, accounting for important sectoral and customer diversification of the business.

Going forward, the global industrial outlook looks cautious amidst global trade tensions. The Company will continue to nurture these business areas and focus on new product development in existing sectors, to tap global opportunities and explore new sectors.

Company review of Domestic Industrial Segment

The Company has made steady progress in its domestic industrial segment, although

delays in tender-based business have prevented stronger take-off. Significant traction was witnessed in defence, general engineering and agri related businesses. In FY 2019, revenues grew by 28% to ₹ 10,094 Million.

Railways is another focus area. The Company perceives an opportunity in replacement and refurbishment of existing diesel locomotives, besides high-speed rolling stock components and systems for passenger rail. The Government's strong focus on infrastructure besides upsurge in construction and mining will help strengthen the growth momentum.

DEFENCE AND AEROSPACE BUSINESS

The Company leverages its strengths in metallurgy, metal forming, forging and machining, to manufacture high value products and systems for Defence & Aerospace. Its focus areas in Defence include land systems, air defence systems and aerospace (helicopters). Across its focus areas, it aims to indigenize the three aspects of any defence manufacturing - design and technology; manufacturing capability and infrastructure; and maintenance and life cycle support.

The Company targets 'Make in India' program, which is likely to present multiple opportunities for indigenization and offsets in Defence and Aerospace. These segments will drive business growth and reduce cyclicity. The Company is working towards becoming a full supplier of indigenously developed systems.

Company review of Defence Segment

In defence, the Company has invested in creating a manufacturing ecosystem for artillery guns. With its full-service supply capability, it has achieved a breakthrough in artillery segment with its ATAGS (155 mm / 52 caliber) program. Developed in

The Company has significantly grown the industrial business, which now accounts for 44% of the overall FY 2019 revenues.

partnership with Defence Research and Development Organization (DRDO), it is a program of national importance and a future battlefield solution. The product has been recognized with CII Pinnacle Awards for Excellence in Manufacturing and Golden Peacock Innovative Product Award.

The Company has also made in-roads in its protected vehicle segment and is supplying its vehicles to Indian defence forces and export markets.

The Company continues to pursue various opportunities in other segments like marine systems, air defence systems and helicopters. It has engaged with Ordnance Factory Board (OFB) and Hindustan Aeronautics Limited (HAL) in meeting their component and subsystem level requirements.

The Company has made steady progress in its 'Make in India' strategy wherein it is targeting import substitution across all verticals. It is working on several collaborative projects with global OEMs to bring in technology and undertake joint production and manufacturing in India.

STRATEGIC BUSINESS

The Company's strategic business is a newly formed division, focused on the areas of Light-weighting, transmission components, e-mobility and future technologies. It was formed with the intent of tapping the emerging market requirements, the need for which is rising due to rapid technological changes. Our foray into this business will enable the Company to be future-ready and create new growth verticals.

Strategic business focus areas

- **Light-weighting:** The Company is pursuing opportunities in the areas of Light-weighting of vehicles and industrial products to achieve greater operational



Golden Peacock Innovative Product Award 2019

efficiency. Primary work area would entail working on structural components along with components for e-mobility requirements. The present focus areas primarily include automobile and industrial applications

- **Transmission components:** Under this segment, the Company is undertaking development of high-tech, high precision, low NVH and high DIN standard requirements for the transmission and driveline components
- **E-mobility:** The Company is exploring opportunities in the electric vehicle component development segment targeted at two/three-wheelers and commercial vehicles. To gain technical know-how and a faster go-to-market strategy, the Company has bought stakes in Tork Motors and Tevva Motors.

Tork Motors is a leading developer of technology for electric motorcycles and electric three-wheeler powertrains. The Tork Motors team has done an extensive research in building solutions for Indian market and now possesses the technological expertise to indigenously manufacture electric motorcycle and electric three-wheelers.

In defence, the Company has invested in creating a manufacturing ecosystem for artillery guns.

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Tevva Motors are the experts in development of electric vehicle components and powertrain solutions for commercial vehicles and buses. Tevva undertakes complete design, manufacture and assembly of the entire electric commercial vehicle including integration of its core technologies. With the Tevva e-Powertrain solution, range anxiety can be got eliminated. As part of this investment, Bharat Forge has also acquired exclusive sales & technology license for the Indian market, while also working on component supplies for the above applications.

The Company’s investment in Tork and Tevva provides it, the access to low voltage and high voltage electrification technologies for working towards increasing content per vehicle.

Review of Businesses

The Company’s strategic business has progressed well during the year. In the Light-weighting business, it has successfully operationalized a ‘Center of Light Weighting Technologies’ (CLWT) at Nellore which will start manufacturing

from H2 CY 2019. The division has started with a focus on aluminum/magnesium components primarily for automotive segment and has won its maiden domestic and exports orders.

In the transmission components space as well, the Company has tied-up good businesses for both the Indian and export customers.

During the year, the Company worked on several projects in e-Mobility along with Tevva and Tork. With Tevva, it has worked towards developing go-to-market channels including launch of pan-European initiative and growing OEM relationships in India and Europe to support technology sales of Tevva’s core system. With Tork, the Company has developed strategy for launching its new motorcycle T6X and entering into partnerships to supply electric three-wheeler powertrains to major OEMs.

Bharat Forge is adequately supporting these companies with its funding and skilled manpower to expedite the new product developments and provide a robust supply chain to gain speed to market at reduced costs.

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Tork Motorcycle

FINANCIAL REVIEW

STANDALONE

Analysis of Standalone Profit and Loss Statement

(In ₹ Million)

Particulars	FY 2019	FY 2018	% change
Total Revenue	65,200	53,160	22.6
Raw Material	24,357	18,870	29.1
Manufacturing Expenses	11,428	9,282	23.1
Manpower Cost	4,863	4,359	11.6
Other Expenditure	5,791	4,886	18.5
Total Expenditure	46,439	37,397	24.2
EBITDA	18,761	15,763	19.0
EBITDA (%)	28.8%	29.7%	-
Depreciation	3,466	3,068	13.0
Interest	1,024	848	20.8
Other Income	1,660	1,182	-
PBT	15,931	13,029	22.2
Exchange Gain/(Loss)	300	(390)	-
PBT	16,231	12,639	28.4
Exceptional Item	-	(1,332)	-
PBT	16,231	11,307	43.5
Taxation	5,518	4,234	-
PAT	10,713	7,073	51.5

Analysis of the Standalone Balance Sheet Statement

(In ₹ Million)

Particulars	FY 2019	FY 2018
Long-term Debt	15,722	13,462
Working Capital Loan and Bill Discounting	16,220	11,666
Equity	53,982	46,143
Cash	17,252	16,028
D/E	0.59	0.54
D/E (Net)	0.27	0.20
Long-term D/E (Net)	(0.03)	(0.06)
RoCE (Net of Cash)	24.7%	22.5%
RoNW	19.8%	17.7%

D/E-Debt Equity

RoCE - Return on Capital Employed

RoNW-Return on Net Worth

Management Discussion and Analysis

CONSOLIDATED

Analysis of Consolidated Profit and Loss Statement

(In ₹ Million)

Particulars	FY 2019	FY 2018	% change
Total Revenue (net)	101,457	83,577	21.4%
Raw Material	42,143	32,811	28.4%
Manufacturing Expenses	16,171	13,778	17.4%
Manpower Cost	12,463	10,892	14.4%
Other Expenditure	10,396	8,309	25.1%
Total Expenditure	81,173	65,790	23.4%
EBITDA	20,284	17,787	14.0%
EBITDA (%)	20.0%	21.3%	-
Depreciation	5,208	4,669	11.5%
Interest	1,272	1,065	19.4%
Other Income	2,028	1,420	42.8%
PBT	15,832	13,473	17.5%
Exchange Gain/(Loss)	272	(557)	-
Exceptional Item	-	(954)	-
Share of (loss)/profit of Associates & Joint Venture	(114)	(4)	-
PBT	15,990	11,958	33.7%
Taxation	5,664	4,418	-
PAT	10,326	7,540	36.9%

Analysis of Consolidated Balance Sheet

(In ₹ Million)

Particulars	FY 2019	FY 2018
Long Term Debt	19,350	16,721
Equity	54,059	46,811
Cash	18,352	17,246
Long Term D/E	0.36	0.36
Long Term D/E (Net)	0.02	(0.01)

INFORMATION TECHNOLOGY

SCALING THE INDUSTRY 4.0

Bharat Forge established “Industry 4.0 Center of Excellence” in partnership with PTC Inc. This facility is designed as a working Center of Excellence (CoE) built on Bharat Forge’s Industry 4.0 thought leadership to incubate digital transformation ideas, develop and experience new cutting-edge technologies and train its people to be able to deploy it on the shop floor.

This CoE will help Bharat Forge build the “Digital Thread” with horizontal & vertical integrations of various technologies like IIoT (Industrial Internet of Things), AR (Augmented Reality), AI/ML (Artificial Intelligence/Machine Learning), CRM (Customer Relationship Management), ERP (Enterprise Resource Planning), DQM (Digital Quality Management) and PLM (Product Lifecycle Management). This Center is also building the foundation for Machine Learning and Artificial Intelligence. It is now helping Bharat Forge to enable preventive maintenance, improve operational efficiency, product quality and time to market.

Bharat Forge’s Industrial IoT deployment project has gathered momentum. The Company has connected all forging lines on this platform. Machining lines connections has also begun. At this moment, more than 13,000 tags are throwing real-time information and helping the organization to work proactively on the basis of sensor information.

Bharat Forge is also in the process to connect all energy meters in the organization. It will provide real-time information of energy consumption and quality of energy and help carry out right interventions to save power.

The Company also launched Integrated portal “UDAN” for its Aerospace Business Vertical. The primary aim of this initiative is to create a single platform to manage entire data across Aerospace Business Unit (BU) and eliminate the manual processes. This involves integration of PLM, IIoT and ERP.

Bharat Forge also started the deployment of integrated HRMS (Human Resources Management System) using DarwinBox solution. This will help Bharat Forge manage the entire lifecycle of the employee throughout the enterprise. Following processes will get digitized:

- Core HR Information Management
- Talent Management and Development
- Recruitment and On-Boarding
- Employee Performance Management
- Employee Movements

The project is planned to go live fully by H1 FY 2020.

Salesforce Cloud was chosen as the Customer Relationship Management solution. This will be integrated with the automated Cost Estimation System. This will help the Company manage entire information throughout the customers’ lifecycle.

Focus Areas for FY 2020

- Building a Digital Thread to transform the process efficiencies
- Deploying Digital Quality Management Solution to reduce manual intervention
- Deployment for Customer Relationship Management solution at all Subsidiaries
- Digitizing entire supplier interaction including the invoicing process
- Digitizing end-to-end Import Purchase Process
- Ongoing journey of Industrial IoT platform deployment

5%

Increase in Productivity over the previous year

9-10%

Approx. energy savings over the previous year

Management Discussion and Analysis

INNOVATION AND INTELLECTUAL PROPERTY RIGHTS (IPRS)

R&D and innovation are important business drivers for the Company, enabling it to strengthen its competitive positioning and create new areas of growth. The industries in which the Company operates are constantly evolving. To succeed in this scenario, requires it to explore new ideas, develop new and better products and work on futuristic technologies to deliver transformative solutions and become a preferred partner.

A key facet of the Company's innovation charter is its robust ideation process. Forecasting trends, identifying and evaluating right ideas through international market research, global researchers, research institutes and internal teams, to deliver innovative solutions ensures sustainable growth. The Company's teams work in tandem with partners to help them develop customized solutions.

The Company is presently working on R&D projects including development of technologies to minimize the carbon footprint, Light-weighting of vehicles to lower energy consumption, aerospace prototyping and assembly, development of unmanned aerial vehicles and defence electronics.

LIGHT-WEIGHTING PROGRAM

The Company is working on introduction of innovative Light-weighting concepts that can improve functional performance of vehicles, in terms of enhancing fuel efficiency and lowering emission levels. The Company leverages its expertise in sophisticated design, simulation techniques and 3D printing to develop relevant products. Research activities are targeted towards use of new

materials like aluminum or composite fiber to develop existing components and modify the design using honeycomb structures. During the year, the Company operationalized its Center for Light-Weighting, for advanced research work on achieving greater effectiveness.

Kalyani Center for Technology & Innovation (KCTI) has always been one of the biggest enablers for the Company in working towards technology advancement because of its steadfast focus on innovation, research and development. The facilities, capabilities and technical contributions of KCTI have helped the Company significantly in developing new products and technologies.

KCTI's expertise on Additive Manufacturing (3D printing) of metals and its capability to test various critical metallurgical parameters of materials has helped in the development of several technologically advanced and critical components related to Defence and Aerospace. NABL accreditation and NADCAP approval are the essential requirements to supply materials in these segments, which are completely met by KCTI.

Several R&D projects in the area of high strength steels and alloys of exotic metals have helped the Company in building a portfolio of components with application across different sectors.

KCTI has developed simplified processes and cost-effective technologies for various forging processes, improvement of die life and machining of components. These initiatives have helped the Company in saving operational costs.

Key innovation highlights

57

patents filed till date

₹ 40 Million

approx. operational cost savings during the year

Operationalized new Corrosion Lab

HUMAN RESOURCE MANAGEMENT - BUILDING A PURPOSEFUL ORGANIZATION

Bharat Forge has achieved exponential growth in recent years. During this journey, the Company has leveraged its strengths of customer focus, execution excellence and technology orientation. It has also invested significantly in the expansion of capabilities and capacities for future growth through greenfield plants, brownfield plants and inorganic approach. Fundamental to the Company's growth agenda is its Human Resource (HR) strategy that drives new ways of working and sustaining existing strengths.

In the year under review, the following were the focus areas of the HR strategy:

- 1 Talent development to support business growth
- 2 Digital talent development to build a smart workplace
- 3 Drive alignment across the existing and new business teams

In the area of talent development, several technical capability building initiatives were designed and implemented. The focus of these initiatives was the assessment of the current level of talent with the required level of competence and bridging the gap through interventions. Further, these initiatives were customized to meet the unique requirements of the workforce in the forging and machining areas.

DIGITIZED WORKPLACE

In today's digital world, the required skills and competencies are evolving fast. During the previous year, keeping pace with the changing times, the Company had invested significantly in creating capacity to develop

employees in the area of digital technology. In the year under review, this capacity of three in-house Industry 4.0 capability development Centers was leveraged to implement customized capability building initiatives. These initiatives have various difficulty level and challenge participants to apply the same at their workplace. This has enabled creation of smart workplaces which eventually will lead to building smart factories. Today, there are more than 500 skilled engineers who are equipped with Industry 4.0 technology, and the Company is gaining the benefits of the same in its manufacturing processes.

BUILDING A PURPOSEFUL ORGANIZATION

The Company is also driving alignment across teams to move to the next level of performance. A shared framework, a road map and the guiding principles that govern the performance of teams were initiated through the Company's new initiative called "Navigating through Change". The objective of this initiative was to develop the purpose of Bharat Forge and align all the teams in the organization around this mission. Post a series of workshops, the Company's purpose was defined as "Propelling the World through Passionate Engineering". This will help to build a purpose-driven organization, unifying all employees towards the common goal and instilling meaning to their contributions.

The Company has commenced the journey of moving in the direction of its purpose. First level workshops have been completed across various teams, wherein each team has defined their priorities, the execution process and the habits that need to be implemented. In the current year, the focus will be on driving the teams to achieve the purpose and have coherent conversations around the goals of the organization.

Fundamental to the Company's growth agenda is its human resource (HR) strategy that drives new ways of working and sustaining existing strengths.

6,192

Employee Strength

Management Discussion and Analysis



Management Training Session

The existing employee engagement programs continued to be implemented across the year, many of which involved family participation.

Driving engagement

The Company remains committed to driving employee engagement and maintaining a conducive work environment. A new initiative of “Quarterly Communication” forum was started during the year to enhance employee engagement. As part of these communications, the senior management team shares with the employees the performance highlights and key challenges of the respective quarters. The existing employee engagement programs continued to be implemented across the year, many of which involved family participation. In the area of industrial relations, the Company continues to partner with Unions to ensure cordial and proactive industrial relations across all the plants.

CORPORATE SOCIAL RESPONSIBILITY (CSR)

Bharat Forge understands its social responsibility to develop assets that co-exist in harmony with the environment and with the communities. The Company continues to advance its policies on corporate activities in social, environmental and ethical aspects, while respecting the interests of and being responsive towards its key stakeholders – the communities.

Bharat Forge aims to support those from the socially and economically backward groups – the underprivileged and marginalized sections of the society. As an integral part of its commitment to Good Corporate Citizenship, the Company believes in providing support and assistance in improving the quality of life of people in the communities.

It is contributing to the local society, working with communities and producing ways of living for the future. It continues to maintain sustainable growth together with locals by carrying out activities based on the chosen pillars for Corporate Social Responsibility.

BHARAT FORGE’S KEY PILLARS FOR CSR

Sector 1 – Village Development Project

The Company is developing 69 villages from Maharashtra in five districts and working on five major indicators – Water (for Drinking & Agriculture), Livelihood (increase in family income), Roads (internal), Health & Hygiene (children and women) and Education. The impact of the work done is tangible and is generating trust in the villagers and is helping in increasing their family income.

Districts Covered

Pune	29 Villages
Ahmednagar	6 Villages
Satara	15 Villages
Kolhapur	15 Villages
Solapur	4 Villages
Total	69 Villages

Water Harvesting Project

I. Work done at Taluka Koregaon, District Satara

Areas Covered



- Water for Drinking and Agriculture
- Internal Roads
- Health
- Education

a. Dhamner Village, Taluka Koregaon, Satara

The Company constructed a drinking water tank at Dhamner Village, Tal. Koregaon at the Satara district. The project has enabled water at the doorstep of the villagers.

30,000 Liters

Capacity of Water Tank

2,300

No. of Beneficiaries from the Project

b. Bodhewadi Village, Satara

For the past 100 years, the village had no source for drinking water and the women had to fetch water from a distance of 4-5 kms. The Company constructed an open well, a distribution pipeline and a water tank at the village, with storage capacity of 15,000 liters.

15,000 Liters

Capacity of Water Tank

c. Village Nagzari

The Pazar Talav was deepened at the village by removing the silt. The dimensions of the work are – 20 meters depth, 70 meters length and 65 meters width. The silt removed during the deepening was spread over 100 acres of unproductive land, thereby helping it regain its fertility to grow ginger crop.

10.88 TCM

Storage Capacity

3,000

No. of Beneficiaries



Before



After

Taluka: Panhala, District: Kolhapur

Management Discussion and Analysis

II. Work done at Taluka Ambegaon, District Pune

Areas Covered



- Water for Drinking and Agriculture
- Livelihoods
- Internal Roads
- Health
- Education

a. Thakarwadi Village

The Mati Nala Bandhara at Thakarwadi Village, has a depth of 4 meters, length of 40 meters and a width of 30 meters.

4.20 TCM

Storage Capacity

300

No. of Beneficiaries

Benefits of Land Leveling

The Company undertook leveling of the lands of some villages from Thakarwadi, Kotamdara and Ambegaon Taluka. The silt removed at the time of desilting was spread on these lands. During the rainy season, the villagers can grow potatoes and groundnuts. The villagers, who have been working as laborers for generations, have now got an opportunity to do farming on their own land. With this, their income level is likely to increase multi-fold.

59 TCM

Storage Capacity of Water Tank

3,000

No. of Beneficiaries

b. Gangapur (Khurd) Village

The Company accomplished the work of desilting of Pazar Talav in Gangapur Village. This site is surrounded by the mountains from all sides. The Mati Nala Bandhara has a depth of 3 meters, length of 50 meters and a width of 40 meters.



Before



After

Construction of Water-Bodies (Bandhara) Village: Thakarwadi, Taluka: Ambegaon, District: Pune

III. Work done at Taluka Purandar, District Pune

Areas Covered



- Water for Drinking and Agriculture
- Internal Roads
- Education

2,200+

Total Population of the Village

a. Pawarwadi Village

The Company supports the Pawarwadi Village situated at the Purandhar block of Pune district, located 60 kms from its Pune office.

Case Study: Project – ‘Purandar Upasa Sinchan’ – Phase II

The Company implemented the ‘Purandar Upasa Sinchan’ - Phase I project for the availability of water for farming. By laying a pipeline in the village, it put 300 acres of land under irrigation. The Government has now come forward to help the Purandar project - Phase II. This is aimed towards developing the remaining dry land (around 400 acres), which will also be taken up for irrigation. The Company has developed 10 villages in Purandar Taluka.

IV. Work done at Taluka Shevgaon, District Pune

Areas Covered



- Water for Drinking and Agriculture
- Internal Roads
- Education

a. Aakhegaon Village

The Company undertook water harvesting work at Village Aakhegaon, Tal. Shevgaon at District Ahmednagar. The project included deepening and widening work of Nani river, Mahadev Bandhara. The work will increase the water storage capacity by 165 TCM. Due to this work, 4,000-5,000 acres of land will come under irrigation and 1,000 families from Aakhegaon will be benefited. The work has been appreciated by all. Despite scanty rainfall, it has provided immense benefit to the village in terms of water availability. The material from the deepening work has been used to construct an internal road.

b. Vadgaon-Gupta

The Company constructed a Bandhara of 3.5 meters depth, 900 meters length and 30 meters width. This has a storage capacity of 94.5 TCM and will benefit 1,000 villagers. It used the material from the deepening work to construct a 25 km internal road.

The water harvesting work at village Aakhegaon, will increase the water storage capacity by 165 TCM. Due to this work, 4,000-5,000 acres of land will come under irrigation and 1,000 families of the village will be benefited.

Management Discussion and Analysis

c. Vadule Wagholi

The Company constructed a Bandhara of 3.8 meters depth, 950 meters length and 36.5 meters with a storage capacity of 131.76 TCM. It has benefited 1,750 villagers. It also constructed 12 kms internal road by using the material from the deepening work.

Sector 2 – Environmental Sustainability

Tree Plantation Drive, 2018

Since the last two years, the Company has been supporting Tree Plantation initiative announced by the Government of Maharashtra.

This project has been undertaken by involving employees, their families and villagers and communities.

14,017

No. of Trees planted under the tree plantation drive

Sector 3 – Cleanliness Drive

Swachhata Hi Seva Campaign, 2018

Swachhata Hi Seva is a campaign initiated by the Hon'ble Prime Minister for working towards the national vision of 'Clean India'. As a responsible corporate citizen with the objective of developing clean and sustainable communities, the Company has embarked on this journey in support of the national campaign.

Swachha Sundar Shala

The 'SWACHHA SUNDAR SHALA' competition was organized for the Zilla Parishad schools and Corporation schools from nearby areas and from the villages being developed.

Novel Initiatives

- Awareness rallies
- Awareness sessions
- Cleanliness and beautification of surroundings, schools, communities and villages

Bharat Forge reaches out to villagers, local communities, students, teachers and instructors through active involvement of employees.

The Beneficiaries

- 154,000 Community People
- 32 Villages
- 137 Communities
- 32,650 Households
- 47 Educational Institutes

Sector 4 – Education

In collaboration with CII and College of Engineering, Pune, the Company is supporting the second batch of 90 graduates from the College of Engineering, Pune. The objectives of these students from rural backgrounds is to bridge the gap between the academics and industry requirements and enhance the employability of engineering students.

Soft skills imparted

- Communication skills
- Presentation skills
- Motivation

Sector 5 – Skill Development

We are "Industry Partners" with the Government of Maharashtra for 3 ITIs under Public Private Partnership and are actively working for its development.

Renovation work of the ITI premises at Bhore was completed during the year (painting of buildings and landscaping). The Company imparted training on Technical Educator Reinvention (soft skills) to all the ITI instructors from Bhore Taluka.

Our ITI Khed is considered as a role model in India.

Awards & Recognition

Received "CSR Leadership" award at the National Swachhata Summit 2019 organized by CSR times. The award was presented by Shri Hardeep Singh Puri, Union Minister of State.

Received "Appreciation Award" from Pune Zilla Parishad – for all our CSR projects.



Imparting education at a Government school

RISK MANAGEMENT

Risk management is an integral part of the Company's operations. Risk management policies are formulated in a manner to ensure swift response and adequate monitoring, while striking the right risk-return balance. The Company has devised a robust risk management framework, which facilitates identification and analysis of various internal and external risks, their impact of business and mitigation measures. All risks are regularly reviewed, and areas of concern are flagged off to the relevant department.

INDUSTRY RISK

The Company's operations are spread globally with over 50% of its revenues being derived from the US and European markets. An adverse macro-economic scenario or unfavorable regulatory regime in developed economies could negatively impact the Company's performance.

Mitigation measures

The Company has created strategic multi-sectoral portfolios across geographies to diversify its business. This has helped shift focus between industries, customers and geographies based on the prevailing scenario. The Company's entry into emerging areas of Light-weighting and e-mobility, which are current thrust areas due to environmental and fuel-efficiency concerns is another such measure.

FOREIGN EXCHANGE RISK

The Company has significant exposure to exports and foreign currency liabilities. Any adverse movement in currency prices can impact its bottom line.

Mitigation measures

The Company practices hedging to protect itself from exchange rate fluctuation. It enters into simple forward contracts on a rolling basis to protect its export realization. Additionally, the Company

ensures that at any time its exports remain higher than foreign currency borrowings to ensure a natural hedge.

RAW MATERIAL RISK

Any sharp increase in the price of key raw materials such as steel, energy and freight or their shortage or unavailability can adversely impact the Company's profitability and operations.

Mitigation measures

The Company has undertaken several productivity enhancement initiatives to optimize production costs. A large part of the Company's steel requirement is met through a group company, located in proximity to the plant, thereby mitigating inventory risks. Besides, the Company includes a raw material pass-through clause in all its contracts to protect itself from commodity price fluctuations.

FUNDING RISK

The Company's scaling investment in expansionary plans of both Indian and overseas operations, R&D activities and new business projects entails capital. Inability of the Company to source low cost funds and control debt-levels may impact its profitability.

Mitigation measures

The Company has maintained a healthy debt-equity ratio, an outcome of efficient financial planning, funding of expansion projects with a judicious mix of internal and external funds besides its ability to efficiently manage working capital. The Company's strong business model facilitates a healthy cash flow from operations, which supports its operations and reduces dependence on external funds.

MANPOWER RISK

Inability of the Company to attract and retain key personnel can impact its business operations.

Risk management policies are formulated in a manner to ensure swift response and adequate monitoring, while striking the right risk-return balance.

Management Discussion and Analysis



Impeller Machining

Bharat Forge has in place a well-defined and adequate internal control system that authorizes, records and reports transactions and thereby helps safeguard assets and protect against loss from unauthorized use or disposition.

Mitigation measures

The Company has one of the best teams in the industry. With its people-centric policies and initiatives on employee skilling, career development, engagement and motivation, the Company has a high retention ratio. It ensures that employee performance is appropriately recognized.

INTERNAL SYSTEMS AND THEIR ADEQUACY

Bharat Forge has in place a well-defined and adequate internal control system that authorizes, records and reports transactions and thereby helps to safeguard assets and protect against loss from unauthorized use or disposition. It also ensures the reliability of recorded data and financial information to maintain accountability of assets. These internal controls are supplemented by extensive internal audits, management review and documented policies, guidelines and procedures.

CAUTIONARY STATEMENT

The Management Discussion and Analysis contains statements that describe the Company's objectives, projections, estimates and expectations, which may be forward-looking in nature. These statements are made within the meaning of applicable laws and regulations and are based on informed judgments and estimates. The Company's actual performance might differ substantially or materially from projections, expressed or implied, due to various factors beyond its control. Important developments that could affect the Company's operations include a downtrend in the forging industry – global or domestic or both, significant changes in political and economic environment in India or key markets abroad, tax laws, litigation, labor relations, exchange rate fluctuations, interest and other costs. The Company does not undertake any responsibility to update these statements.