

**INSTITUTE  
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Confederation of Indian Industry



# PROGRESS @ TPM

Newsletter from CII TPM Club India



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June 2016

## 2015 JIPM TPM AWARD WINNERS

### Special Award for TPM Achievement

Bajaj Auto Ltd. Chakan Plant, Pune	01
Bajaj Auto Ltd. Motorcycle Division (MCD), Waluj Plant, Aurangabad	02
Mahindra & Mahindra Ltd. Farm Division - India, Mumbai Plant, Nagpur Plant & Rudrapur Plant	03

### Award for Excellence in Consistent TPM Commitment

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## From the Chairman's Desk

Dear Members,

*With the first Newsletter of the year from TPM Club India, I extend my greetings to you and your families for a very happy, exciting and satisfying year ahead. Today TPM has become a big movement in India and the credit for this goes to the foundation laid down by a number of Japanese TPM gurus. I am saddened to inform you that one such guru - Tokutaro Suzuki San passed away on 15th of January 2016 at the age of 89 years. His contribution to the growth of TPM has been immense and will be remembered forever. May his soul rest in peace.*

*This is also the quarter where the results of JIPM (Japan Institute of Plant Maintenance) TPM Excellence Awards are announced. This year, Indian Industry has reaped an excellent number of awards – the highest ever with 26 awards! As you may be aware, TPM was initiated in India in 1991. Over the last 25 years, many companies have adopted TPM and have won laurels through the JIPM. The first company in India received the award in 1995 and it took 12 years for the first 100 Indian companies to receive this award. Today, after another 7 years we are at the threshold of 200 companies (199 companies have received the TPM Excellence Award so far). India continues to be the leader in the number of awards received in the World over the last 5 years.*

*The 2015 TPM awards ceremony was organized by JIPM on 23rd March 2016 at Kyoto, Japan where delegates and award winners from across the globe were present. Congratulations to the Indian Industry on keeping the Indian Flag flying high.*

*TPM Club India has its own contribution in this wonderful journey with 90 companies & 119 Awards over the last 13 years. Our counsellors have built a very high level of technical capability to guide all types of manufacturing companies in their journey of TPM and competitiveness. This can be visibly seen in the above achievement. I also take this opportunity to recommend the Indian industry to utilize their services to become competitive at a global level.*

*I look forward to your continued commitment and support to make TPM a way of life in your organizations and thereby contribute to the government's vision of "Make in India". Let us all strive to make Indian products known all over the globe for their high quality. I look forward to a great year in our TPM journey.*

Best regards  
**Ashok Sharma,**  
 Chairman, CII TPM Club India and  
 President and Chief Executive,  
 Agri and Africa & South Asia Operations,  
 Member of the Group Executive Board,  
 Mahindra and Mahindra Limited

## CII Institute of Quality (CII-IQ)

CII Institute of Quality is the leading authority on quality in organisations and industries. For over 100 years, CII has provided Indian industries with the support, systems and tools to make a mark in the competitive world. It realised that the best way to enhance an organisation's competitiveness was through the quality route.

What started as the Total Quality Management Division (TQMD) in the mid-eighties has now evolved to CII-IQ. As a champion of the quality movement, CII-IQ is powered by the responsibility of enriching the lives of its members, improving their workplaces and making the world a better place by applying quality tools, techniques and systems. CII-IQ provides the best training and consulting services for organisations to help improve their performance and set a standard of excellence.

CII-IQ has tied up with several international organisations to bring the best of practices to India. It has helped several organisations improve their Total Quality Management besides winning recognition for some of them through the Deming Prize and the Japan Quality Medal.

### CII IQ Vision:

To be a Centre of Excellence of international repute that provides role model products and services for the continuous betterment of organizations and society.

### CII IQ Mission:

To evolve and leverage a Quality Movement that transforms India by offering standard solutions, creating practical insights, driving tangible results, thereby enhancing competitiveness and inclusive growth.

### What we do

CII-IQ opens a world of opportunities to improve the quality of workplaces, communities and lives by providing information, contacts and more. CII-IQ provides the best training and consulting services for organisations to help improve their performance and set a standard of excellence. It realises the importance of creative sustainable programs that are critical to an organisation's quality management system.

### Services provided by CII Institute of Quality:

The portfolio of products offered by CII-IQ covers wide-ranging products and services on quality and competitiveness. This includes

- Business Excellence
- Total Quality Management
- Total Productive Maintenance
- Lean Management
- Six Sigma
- Quality Tools and Techniques
- Industrial and Legal Metrology
- Conformity Assessment & Standards

### Services delivery mechanisms of these products and services include:

- Training programs (Open and in-house)
- Counselling Support
- Competitiveness Clusters
- Assessment Services
- Awards and Recognitions
- Seminars, Conferences and Events
- Best Practice Study Missions (domestic and international)
- Publications Research

### TPM

Total Productive Maintenance (TPM) talks of better utilisation of maintenance and production resources. In order to promote TPM in India, CII has tied up with JIPM and JIPM Solutions Co. Ltd., Japan. The services provided by the TPM club are:

- Spreading TPM
- Seminars and workshops
- Plant visits to TPM practicing companies
- Spreading of information through books on different aspects of TPM
- Data dissemination through Newsletters and website
- Handholding for TPM implementation
- Training through in-house programs
- Consultancy to Indian and overseas companies
- Conducting TPM facilitators course
- TPM Awards

## AWARD FOR TPM EXCELLENCE, CATEGORY B

Company : HIL Limited  
 Factory : Unit Kondapalli , Roofing sheet manufacturing plant  
 Product : Fiber cement corrugated roofing sheets and accessories  
 TPM Kick off : 28 January, 2010

Award for TPM Excellence – Second Category : 2015



Mr. V. Jayachandran  
COO

### Company Profile

Established in 1946, HIL Limited is part of the CK Birla Group's Home and Building cluster. Being the world's largest manufacturer and seller of fibre cement roofing, HIL Limited offers comprehensive building solutions. The company has a strong focus to achieve market leadership by developing and marketing advanced, high quality, innovative, and sustainable products for the building materials industry. HIL has two major brands - Charminar and Aerocon. The company has a pan India presence with 17 manufacturing facilities, reiterating its commitment to innovation through a dynamic R&D facility and offering products that are affordable, strong and durable. Given its strong emphasis on customer centricity, HIL Limited also ensures a widespread reach through an extensive sales and distribution network spread across the country with representation in all the states.

### Kondapalli Plant

HIL's Kondapalli plant (Vijayawada, Andhra Pradesh) was commissioned in 1998. In 2008, TPM practices were initiated in the plant. Presently, the plant produces 0.3Million MT/Annum of Fibre Cement Sheet from 2 manufacturing lines which are fully automated.

### Expectation from TPM

For a successful business it is essential to achieve excellence in all spheres and continuously look for opportunities to upgrade and improve. The Manufacturing facilities are the backbone of the business and effectiveness here can provide the much required edge to the business. These were some of the key reasons that led to the implementation of TPM. With TPM, the processes and procedures have become streamlined and systematic. Our major focus is on optimum utilization of the machinery with the elimination of waste and to have proper protocols which increase the machine life. Some additional benefits are that people have become more proactive, with a sense of ownership as well as the interpersonal dynamic between production and other departments has been simpler. Roles are now clearly defined, with increased awareness, knowledge and accountability at all levels.

### Achievement area – Tangible benefits

Cate- -gory	Index	UOM	Benchmark 2009-10	Actual 2015-16	Target 2016
S	No of Work related accidents	Nos / annum	6	0 ↓	0
P	Production rate	Qty in MT/Hr	9.75	1.7 times ↑	1.8 times
	OLE (Overall Line Effectiveness)	%	63.62	1.38 times ↑	1.4 times
	No. of Breakdowns	Nos. / annum	528	80% ↓	82%
Q	No of Customer complaints (Manufacturing related)	Nos. / annum	163	91% ↓	0
	Scrap	%	1.83	63% ↓	67%
	Rejection (Scrap & Rework)	%	7.27	69% ↓	79%
D	Delivery performance	%	99	100 ↑	100
S	Safety index	Nos / 100000	0.88	0 ↓	0
M	No of employee suggestions	Nos/emp/ annum	0.90	3.70 times ↑	4 times

## SPECIAL AWARD FOR TPM ACHIEVEMENT

Company : Bajaj Auto Limited  
 Factory : Chakan Plant, Pune, Maharashtra  
 Product : Two Wheeler - Motorcycle  
 TPM Kick off : 8 December 2004

Award for TPM Excellence : 2006  
 Award for Excellence in Consistent TPM Commitment : 2012  
 Special Award for TPM Achievement : 2015



Mr. Ravindra Pise  
Vice President  
(Chakan & Akurdi)

### Company Profile

The Bajaj group was founded in 1926 by Shri Jamnalal Bajaj. The Group is amongst the top 10 business houses in India. Bajaj Auto Ltd. (BAL), is a Flagship company of Bajaj group and is amongst the **FIVE Most Innovative Indian Companies** and the **only automotive company** featuring in the coveted list of **Forbes World's Top 100 Most Innovative Companies** of the year 2014. Bajaj Auto is India's **5th Most Valuable Brand** with a value of \$3 billion, according to the **first ever BrandZ TM Top 50 Most Valuable Indian Brands ranking**. Bajaj Auto has a global footprint, with presence in 60 countries and market leadership positions in more than 10 countries. **Bajaj Auto is India's No. 1 exporter in terms of the share of total production that is being sold abroad**. BAL's all 3 Manufacturing Plants in India – Waluj (Aurangabad), Chakan (Pune) & Pantnagar (Uttarakhand) are ISO14001 & OHSAS18001 certified.

**BAL's Chakan plant** was started in the year 1998 and it manufactures **High Performance bikes** in Pulsar & KTM Family under Sports & Premium Sports category. Chakan Plant is treated as a **Manufacturing Laboratory** to invent/adopt new Production Technology & Techniques. The newly developed Technologies / Processes are perfected for manufacturing and practiced at Chakan first. Once proven and established, these are deployed at Other Plants. Chakan Plant strength is **Flexible Production System** and we produce 22 Models with 122 Variants. Green Coverage is 72% & our Plant is Positive water balance Plant.

### Expectations from TPM

By adopting TPM, Our aim is:

- To achieve & sustain zero accident, zero breakdown and zero defect in all areas.
- To improve the reliability and reduce the Product cost.
- To produce globally accepted products.
- To minimize pollution & conserve natural resources to protect the environment.
- To achieve high level of excellence in our work in terms of Change in Attitude, System Orientation, Analytical Approach & Flexibility.

TPM provides a holistic, structured and quantifiable methodology for **Deeper** and **Wider** continuous improvement in an integrated way.

After successfully challenging "**Award for Excellence in Consistent TPM Commitment**", we continued our TPM Journey with same momentum and passion. While doing so we extended loss reduction & improvement activity through interface to our Business & Management functions. "**Widely**", "**Deeply**" & "**Interface Loss**" become key features of our TPM activities. For sustenance of the improvement, we have initiated standardization of the activates through systems & documentations.

### Achievement area - Tangible Benefits

**PRODUCTIVITY:**

- OLE increased from 87% to 94.56%
- Output per man increased by 2.8 times

**QUALITY:**

- Warranty claim reduced by 97%
- In-process defect reduced by 98.5%

**COST**

- Manufacturing Cost reduced by 47%

**DELIVERY:**

- Customer delivery adherence achieved 100%
- Lead time reduced by 59.5%

**SAFETY, HEALTH & ENVIRONMENT:**

- No major accident since inception of Plant
- Health & Environment parameters well within BAL Standards, which are more stringent than Legal Norms

**MORALE:**

- 9.4 Kaizens / man / year

## SPECIAL AWARD FOR TPM ACHIEVEMENT

Company : Bajaj Auto Limited.  
 Factory : Motorcycle Division, Waluj, Aurangabad  
 Product : Two Wheeler - Motorcycle  
 TPM Kick off : 21 October, 2002

Award for TPM Excellence : 2006  
 Award for Excellence in Consistent TPM Commitment : 2012  
 Special Award for TPM Achievement : 2015



**Mr. Naveen Nijhawan**  
 Vice President  
 (MCD-Waluj)

### Company Profile

The Bajaj group was founded in 1926 by Shri Jamnalal Bajaj. The Group is amongst the top 10 business houses in India. Bajaj Auto Ltd. (BAL), is a Flagship company of Bajaj group and is amongst the **FIVE Most Innovative Indian Companies** and the **only automotive company** featuring in the coveted list of **Forbes World's Top 100 Most Innovative Companies** of the year 2014. Bajaj Auto is India's 5th Most Valuable Brand with a value of \$3 billion, according to the **first ever BrandZ TM Top 50 Most Valuable Indian Brands ranking**. Bajaj Auto has a global footprint, with presence in 60 countries and market leadership positions in more than 10 countries. **Bajaj Auto is India's No. 1 exporter in terms of the share of total production that is being sold abroad.** BAL's all 3 Manufacturing Plants in India - Waluj (Aurangabad), Chakan (Pune) & Pantnagar (Uttarakhand) are ISO14001 & OHSAS18001 certified.

**BAL Waluj plant** started its operation in 1985 with manufacturing scooters. Motorcycle Plant was started in 1990 and caters to Economy, Value, Premium & Sports segment for both Domestic and Export market.

#### Following are the Key Features of MCD Waluj Plant:

Export Hub - Plant caters major export needs of Bajaj Auto & contributes more than 85% of BAL's total export. It is also Gear Hub which caters to all gear requirements of all BAL Plants. Experienced, skilled, target oriented and self driven work force manages production, quality and equipment maintenance.

### Expectations from TPM

#### By adopting TPM, Our aim is:

- To achieve & sustain zero accident, zero breakdown and zero defect in all areas.
- To improve the product durability and reduce the product cost.
- To minimize pollution & conserve natural resources to protect the Environment.
- To minimize manufacturing Lead time.
- To achieve high level of excellence in our work in terms of Change in Attitude, System Orientation, Analytical Approach & Flexibility.

TPM provides a holistic, structured and quantifiable methodology for **Deeper** and **Wider** continuous improvement in an integrated way.

After successfully challenging **"Award for Excellence in Consistent TPM Commitment"**, we continued our TPM Journey with same momentum and passion. While doing so we extended loss reduction & improvement activity through interface to our Business & Management functions. **"Widely", "Deeply" & "Interface Loss"** become key features of our TPM activities. For sustenance of the improvement, we have initiated standardization of the activities through systems & documentations.

### Achievement area - Tangible Benefits

#### PRODUCTIVITY:

- OLE increased from 81% to 95.75%
- Output per man increased by 4.2 times

#### QUALITY:

- Warranty claim reduced by 83%
- In-process defect phenomenon reduced by 99%

#### COST

- Manufacturing cost reduced by 52%

#### DELIVERY:

- Customer delivery adherence achieved 100%
- Component lead time reduced by 77%

#### SAFETY, HEALTH & ENVIRONMENT:

- No major accident since inception of Plant
- Health & Environment parameters well within BAL Standards (more stringent than Legal Norms)

#### MORALE:

- 9.50 Kaizens / man / year

## AWARD FOR TPM EXCELLENCE, CATEGORY B

Company : AVTEC LIMITED-CK BIRLA GROUP  
 Factory : AVTEC LIMITED, PITHAMPUR  
 Product : POWERTRAIN & PRECISION ENGINEERED PRODUCTS  
 TPM Kick off : 09 / MAY / 2012

Award for TPM Excellence - Second Category : 2015



**Dr. Vikas Manjrekar**  
 Executive Vice President

### Company Profile

AVTEC is a part of USD 1.6 billion diversified CK Birla Group. Leading Independent Manufacturer of Power-train and Precision Engineered Products. Wide range of Engine & Transmission aggregates, and, Components for Automotive & Off-Highway Industry.

State of the art infrastructure with three manufacturing units in India at Pithampur, Hosur and Chennai, one Design & Batch production facility in Switzerland and setting up a manufacturing unit in Russia. Corporate Headquarters is situated at New Delhi, India. AVTEC operates in three business segments (also called as Strategic Business Unit-SBU), viz. Automotive, Off Highway and Components.

Customer base including big manufacturers viz. Ford, General Motors, Caterpillar, Daimler, Eaton, Renault Nissan, Ashok Leyland Nissan, BEML, Allison Transmissions, Voltas, Godrej and many more. AVTEC's manufacturing units are TS 16949 certified for quality management systems and QS 14001 for environment management.

### Achievement area - Tangible Benefits

S.No.	PQCDSM	Parameter	UOM	Benchmark (FY11-12) Actual	Actual FY15-16*	Good
1	P	MOST - MOP (min)	min.	229	275	↑
2	P	Breakdown Nos. - Auto	Nos./month	558	118	↓
	P	Breakdown Nos. - Comp	Nos./month	128	49	↓
3	P	Reduction in CLIT	min.	52	15	↓
4	P	Workmen Skill Index	Index No.	2.45	3.6	↑
6	P	OEE (%)	%	46	81	↑
7	P	MTBF - Auto	hrs.	321	710	↑
	P	MTBF - Comp	hrs.	317	1041	↑
8	P	MTTR - Auto	hrs.	6.5	2.1	↓
	P	MTTR - Comp	hrs.	5	1	↓
9	Q	Cost of Poor Quality (COPQ) - Auto	% of Sales	0.72	0.37	↓
	Q	Cost of Poor Quality (COPQ) - Comp	% of Sales	1.28	0.46	↓
10	Q	Customer Rejection (PPM) - Auto	ppm	337	222	↓
	Q	Customer Rejection (PPM) - Comp	ppm	1240	66	↓
11	Q	Internal Rejection - Auto	ppm	3879	3791	↓
	Q	Internal Rejection - Comp	ppm	8332	1783	↓
12	Q	SPR - Auto Engines	%	95	98	↑
	Q	Warranty Cost	% of sales	0.25	0	↓
13	C	Cost Savings through Kaizen	Rs. Lacs	-	303	↑
14	C	Oil and Consumables cost	Rs. Lacs/month	16.75	9.30	↓
15	C	Repair and Maintenance Cost	Rs. Lacs/month	40.51	23.00	↓
16	D	Delivery Performance	% adh	94	GMI-100 DICV-100	↑
17	S - S	Accidents	No./year	2	0	↓
18	S - H	Hygiene Index	Index No. (out of 100)	-	95	↑
19	S - E	Legal Compliance	% compliance	100	100	↑
20	M	Kaizens/ Employee Suggestion	Nos./year	<100	>1500	↑

## AWARD FOR TPM EXCELLENCE, CATEGORY B

Company	: AVTEC Limited - C K Birla Group
Factory	: AVTEC Limited, Hosur
Product	: Power train & Precision Engineered Products
TPM Kick off	: May 2012
Award for TPM Excellence, Category B	: 2015



**Mr. Bhalchandra Wadekar**  
Vice President

### Company Profile

AVTEC Limited, one of the largest independent manufacturers of 'Power trains & Precision Engineered Products' in India, is a part of C. K. Birla Group – a leading global business house, with over 20,000 employees and a combined turnover of USD 1.6 billion. AVTEC, Hosur is India's leading supplier of Transmission Aggregates and spares to the Off Highway market with an estimated share of 16%. Supplies complete Hauling and Cycling Transmission Aggregates & spares. Serves a broad array of end-markets: mining, construction, material handling, railways and equipment: Dump trucks, forklifts, Railway OHE cars, cranes, loaders. Major Customers include leading OEMs like BEML, Caterpillar, Eaton, Telcon, L&T Komatsu and Godrej

Hosur plant assembles transmissions to Ford Motor company plants in India. We also supply transmission to Nissan Ashok Leyland JV for one of their vehicles. The component business unit caters discrete component need for marquis customers like Caterpillar, Allison and Daimler to name a few.

### Expectations from TPM

- ZERO Rejections (Customer & In-plant)
- ZERO Safety, Health and Environmental Issues
- High Productivity
- Delivery Performance - 100%
- Increase in Employee Ownership
- Reduce the losses by 30 %

### Achievement Areas - Tangible Benefits

Category	KMI /KPI's	UoM	Off highway-SBU		Component-SBU		Automotive-SBU	
			BM 2011-12	Achieved 2015-16	BM 2011-12	Achieved 2015-16	BM 2011-12	Achieved 2015-16
P	OEE	%	46	77	46	66	68	82.5
	Breakdown Occurrences (Monthly)	Nos	182	50	0	7	10	5
	Breakdown Hrs (Annually)	Hrs	417	189	0	52	19	6
	MOST (Employee Contact Time)	Mins	181	224	N/A	N/A	289	305
Q	Customer PPM	PPM	2243	205	231	167	124	10
	In-house PPM	PPM	2270	749	839	638	180	44
	Supplier PPM	PPM	43386	2396	4026	1146	34	8
	Warranty Cost	Lacs	105.63	38	N/A	N/A	0	0
C	Cost of Goods Manufactured	%	76	77	101	95.06	85	95.66
D	Delivery Performance	%	94	100	95	100	95	100
S	SHE (Accident, Hygiene & Environment) Issues	Nos	2	0	0	0	0	0
M	Kaizens	Nos	32	1176	27	250	10	210
	Skill index	Index	1.5	4.6	2	2.5	3.4	4.2

## SPECIAL AWARD FOR TPM ACHIEVEMENT

Company	: Mahindra & Mahindra Ltd.
Division	: Farm Division
Product	: Tractor
TPM Kick off	: 11 November, 2006
Award for TPM Excellence	: 2010
Award for Excellence in Consistent TPM Commitment	: 2012
Award for TPM Excellence in Special Category	: 2015



**Mr. K G Shenoy**  
Sr VP - Mfg,  
Supply Chain  
& Mfg Engg  
Farm Division



**Mr. R S Chatterjee**  
Sr GM & Head  
Business Excellence  
– Automotive  
& Farm Sector

### Company Profile

Mahindra & Mahindra Group - A USD 16.9 billion Indian multinational group which employs more than 2,20,000 people in over 100 countries. Mahindra operates in the key industries that drive economic growth, enjoying a leadership position in tractors, utility vehicles, information technology, financial services and vacation ownership.

### Organization – Farm Division

Mahindra & Mahindra is the only Indian company among the top tractor brands in the world & is leading Indian Tractor market for last 32 years. FD has a presence in around 25 countries across six continents with more than 1000 dealers world-wide. Manufacturing Locations are at Mumbai, Nagpur, Rudrapur, Jaipur and Zaheerabad.

FD has applied for TPM Special Award for Integrated award for organization, where in Mumbai, Nagpur and Rudrapur were assessed. During this Phase of TPM Implementation, FD moved ahead in its journey by expanding the TPM Implementation from Manufacturing to all the areas of Supply Chain i.e. Design, Suppliers and Dealers. Thus striving to achieve Supply Chain Excellence. Three new Pillars were added to conventional TPM Pillars - New Product Development, Supply Chain Management and Sustainability. By Implementation of Breakthrough and Innovative TPM Activities. The organization has observed multifold benefits in PQCDSM and has helped in overcoming the challenges of Business.

### Expectations from TPM

- Improving supply chain efficiency
- Reducing Product Cost
- Address Customer needs by developing First Time Right New Products
- Improve Customer Satisfaction by ensuring Quality of Tractors at each node of supply chain
- Reduce end to end Lead time to ensure delivery of Tractors as per Customer requirements
- Progress towards Lean Supply Chain activates through systems & documentations.

### Tangible Business Results

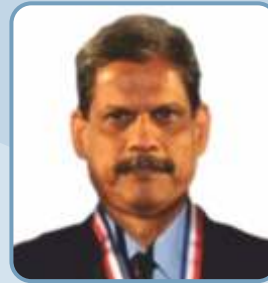
- 32 % Reduction in Logistic Cost
- 22 % Reduction Manufacturing Conversion Cost
- 90 % Availability of Tractors at Dealership
- 45 % Reduction Supplier to Stock Yard Lead Time
- First Time Right Product Launch
- 79% Improvement in Customer Quality
- 90% Improvement in In-house Quality
- Zero Reportable accident plant

TPM as an initiative has built in a culture of 'ZERO' Thinking across the organization and plants are now much closer to achieve Zero Breakdowns, Zero Defects and many more zeroes which demonstrates world class operational efficiencies across plants and functions.

## SPECIAL AWARD FOR TPM ACHIEVEMENT

Company : Mahindra & Mahindra Ltd.  
 Plant : Mumbai  
 Product : Components of Tractor  
 TPM Kick off : 11 November, 2006

Award for TPM Excellence : 2010  
 Award for Excellence in Consistent TPM Commitment : 2012  
 Special Award for TPM Achievement : 2015



**Mr. D V Khobrekar**  
 Sr GM & Plant Head  
 Mumbai Plant

### Farm Division - Mumbai Plant

This is a component manufacturing plant which produces Engine & Transmission Components. Mumbai Plant established in 1965, as an independent company called International Tractor Company of India Ltd. This is the oldest plant in farm division. Mumbai Plant is the largest component manufacturing plant in Farm Division (FD). Components produced in Mumbai are supplied to Tractor manufacturing plants in a synchronized way. It manufactures major components like Trans case, Crankcase, Cylinder Head & also components like Gears, camshafts, crankshafts etc. Mumbai Plant is having 57% of machines having age more than 15 years, therefore it focuses on improving reliability of machines.

### Expectations from TPM

- Reducing Manufacturing Cost for Machining
- Supply the Components to other plants in a Synchronised Way
- Improve Reliability of Machines for sustaining ZERO Breakdown
- Reduce Manufacturing Lead Time
- Improve Capability of Operators for Machining Operations

### Tangible Business Results

- 32 % Reduction in Logistic Cost
- 20 % Reduction Manufacturing Conversion Cost
- Zero Breakdown for A Category Machines
- 97% Reduction in Total Breakdown Incidences
- 90% Improvement in In-house Quality
- Zero Reportable accident plant
- 3 Times increase in Kaizen Rate
- 89 % Ergonomically Green Stations
- 24% Reduction in Inventory

## AWARD FOR TPM EXCELLENCE, CATEGORY B

Company : AVTEC Limited - C K Birla Group  
 Factory : AVTEC Limited, Chennai  
 Product : Power train & Precision Engineered Products  
 TPM Kick off : May 2012

Award for TPM Excellence, Category B : 2015



**Mr. S Girish**  
 Vice President

### Company Profile

AVTEC Limited, one of the largest independent manufacturers of 'Power trains & Precision Engineered Products' in India, is a part of C. K. Birla Group – a leading global business house, with over 20,000 employees and a combined turnover of USD 1.6 billion. The AVTEC Limited, Chennai was commissioned with a specific aim of satisfying the huge Global demand for AVTEC's Transmission & Precision Engineered Components. Its Strategic location has helped the company significantly shorten the response time.

The First transmission was exported from the Plant in August 2006 & the number has continued to rise impressively ever since. It deals with primarily components business segments. Spread over 3985 m2 of land area, AVTEC manufactures & exports Precision machined components including Housing Pistons, Housing Convertors, Rear Cover, Converter Housing, Main Housing, Control valve body, Retailer Housings & Retarder Housings of Gear Box for Off – Highway Transmissions.

AVTEC Chennai caters esteemed customers such as Allison Transmissions. AVTEC manufacturing units are certified with TS 16949 for quality management systems.

### Expectations from TPM

- ZERO Rejections (Customer & In-plant)
- ZERO Safety, Health and Environmental Issues
- High Productivity
- Delivery Performance - 100%
- Increase in Employee Ownership
- Reduce the losses by 30 %

### Achievement Areas - Tangible Benefits

Category	Index	Unit	Benchmark (FY 11-12)	Current Status
P	OEE	%	62	80
	Number of Breakdowns	Numbers / yr	232	120
Q	Customer Complaint	Numbers / yr	7	0
C	COGM (Cost of Goods Manufactured)	% of sales	76.8	64.8
D	Delivery Performance	%	95	100
S	Major Accidents	Annual Cases	0	0
	Minor Accidents	Annual Cases	0	0
M	Employee Suggestions	Numbers / yr	81	300

## AWARD FOR TPM EXCELLENCE, CATEGORY A

Company : Tractors and Farm Equipment Limited  
 Factory : Madurai Operations  
 Product : Tractors from 25 HP to 100 HP  
 TPM Kick off : October 2012

Award for TPM Excellence – First Category : 2015



**Mr. V. Srinivasan**  
 Senior AVP - Operations  
 Madurai & Turkey Plants

### Company Profile

TAFE is a part of the Amalgamations group, which is one of India's largest light engineering groups and has equally varied business interests that range from diesel engines, batteries, automobile components, engineering tools, tea gardens, book selling and publishing, vehicle and auto parts distribution among others. TAFE's tractor range currently spans the 25 to 100 HP segment with product offerings in both air cooled and water cooled platforms to meet every customer need in India and overseas and for use at both on farm and off farm applications, under the Eicher, Massey Ferguson and TAFE brands. This range is continuously being expanded to meet the requirements of overseas customers. TAFE's export footprint currently covers 80 countries including South Asia, Eastern Europe, Africa and in the North American markets.

In June 2005, TAFE acquired Eicher's tractor business from Bhopal along with its Engines plant at Alwar (Rajasthan) and its transmissions plant at Parwanoo (HP) through a wholly owned subsidiary, TAFE Motors and Tractors Limited (TMTL). In keeping with its vision of increasing its presence in the global markets and to jointly leverage business opportunities with its collaborator AGCO Corporation, USA (who own the MF Brand), TAFE has established a plant at Manisa, Turkey to manufacture tractors for European Market.

### Plant Profile:

TAFE Madurai Operations was inaugurated by our chairman in the year 1998. Its spread over 66.49 acres, built up area is 8.06 and rest covered with green belt. In this plant we are producing tractors in both MF and TAFE brand. 100% of Global requirements are produced from this plant & exporting tractors to more than 80 countries

### Expectation from TPM

TPM journey was started in TAFE Madurai during 2011 in a humble way with manager model machines at 5 different locations under the guidance of Yoichi Kido san from JMAC, Japan. After successful completion, during 2012 it was kicked off across the plant in presence of all workmen, senior management and key suppliers. The expectations out of TPM implementation were like improving productivity, reduce Mfg. Cost/ Tractor, enhance product Quality, create safe working culture and increase employee competency level.

### Achievement Areas - Tangible Benefits

Category	Result Index	Unit	Bench Mark 2011-12	Actual 2015-16	Status
S	No. of work related accidents requiring days off work	Cases / Annum	32	0	↓
	No. of work related accidents Not requiring days off work	Cases / Annum	432	97	↓
P	Employee productivity Index	Eq. Tr / Employee / Day	0.69	0.87	↑
	Overall Line Efficiency	%	78.5	84	↑
	No. of Break downs	Breakdowns / Annum	401	25	↓
Q	ZERO Customer Compliant (RFT) Loss	In %	82%	38%	↓
C	Mfg. Cost / Tractor	Cost / Eq. Tr	5097	4766	↓
D	Delivery of Trs to all Markets	In%	86.2	96%	↓
M	Employee Improvement / Year	Suggestions / Year	19.62	21.8	↑

## SPECIAL AWARD FOR TPM ACHIEVEMENT

Company : Mahindra & Mahindra Ltd.  
 Plant : Nagpur  
 Product : Tractors & Engines  
 TPM Kick off : 11 November, 2006

Award for TPM Excellence : 2010  
 Award for Excellence in Consistent TPM Commitment : 2012  
 Special Award for TPM Achievement : 2015



**Mr. Ashutosh Tripathi**  
 Sr GM & Plant Head  
 Nagpur Plant

### Farm Division - Nagpur Plant

Nagpur Plant is one of the major manufacturing plants located in Central India. The Plant was established in August 1970 to manufacture Agricultural Implements. In 1996, the plant was transformed into tractor plant and today it is the Integrated Tractor Plant which produces all types of Tractors and Aggregates, i.e. Engine, Tractor, Transmission & Hydraulics. Operations carried out are Assembly of Tractors, Engines, Transmission & Hydraulics, Sheet metal painting & machining. The Plant works in synchronized way with all its customers for tractor & aggregates. Lean Manufacturing techniques were aggressively used to work in synchronization which helped to become flexible to meet the Customer requirements. TPM has helped in Productionisation of New Products, Reduction in Manufacturing Cost inspite of addition of activities year on year.

### Expectations from TPM

- Nullifying the impact of Manufacturing cost increase.
- Utilizing the capacities.
- Productionisation of New products.
- Productionisation of aggregates for new customers.
- Synchronization of Production between aggregates and Tractor Line
- Reduce lead time to ensure delivery of tractors as per the pull from the customer

### Tangible Business Results

- Nullified the Impact of Manufacturing Cost Increase
- 100% Pull based Production Schedule Adherence
- 45 % Reduction in Supplier to Stock Yard Lead Time
- Sustained Zero Breakdown for A Category Machines
- 97% Reduction in Total Breakdown Incidences
- 11 % Improvement in Manpower Productivity
- 92% First Time Right Tractor Roll Out
- Zero Reportable accident plant
- 3 Times increase in Kaizen Rate
- 95 % Ergonomically Green Stations
- 32% reduction in Inventory

## SPECIAL AWARD FOR TPM ACHIEVEMENT

Company : Mahindra & Mahindra Ltd.  
 Plant : Rudrapur  
 Product : Tractor  
 TPM Kick off : 11 November, 2006

Award for TPM Excellence : 2010  
 Award for Excellence in Consistent TPM Commitment : 2012  
 Special Award for TPM Achievement : 2015



**Mr. S K Dubey**  
 Sr GM & Plant Head  
 Rudrapur Plant

### Farm Division - Rudrapur Plant

The Rudrapur Plant came into existence in 2000 as a satellite plant with an objective of promoting and establishing "Mahindra" brand in northern market. The plant has been identified as a strategic location in terms of low cost manufacturing location and expected increase in market demand. TPM is used as a strategy to improve plant productivity & cost reduction. Highest Manpower Productivity has become one of the feature of this Plant. By implementing theme based high impact Kaizens, variable cost & personal cost has reduced which helped plant to absorb increased impact of end of Tax Benefit by 60% & sustain the status of low cost tractor manufacture plant of FD.

### Expectations from TPM

- Nullifying the impact of end of Tax Benefit.
- Reduce Manufacturing Cost
- Sustain Zero Breakdown of Machines
- Synchronization of Production between aggregates and Tractor Line
- Reduce lead time to ensure delivery of tractors as per the pull from the customer

### Tangible Business Results

- Nullified the Impact of End of Tax Benefit
- 100% Pull based Production Schedule Adherence
- 33 % Reduction in Supplier to Stock Yard Lead Time
- Sustained Zero Breakdown for A Category Machines
- 98% Reduction in Total Breakdown Incidences
- 9 % Improvement in Manpower Productivity
- 90% First Time Right Tractor Roll Out
- Zero Reportable accident plant
- 3 Times increase in Kaizen Rate
- 92 % Ergonomically Green Stations
- 10% reduction in Inventory

## AWARD FOR TPM EXCELLENCE, CATEGORY A

Company : Tractors and Farm Equipment Limited  
 Factory : Tractor Division , Doddaballapur  
 Product : Tractor  
 TPM Kick off : 5 September, 2012

Award for TPM Excellence "A" First Category : 2015



**Mr. Palaniappan T**  
 General Manager  
 (Operations)

### Company Profile

Tractors and Farm Equipment Limited (TAFE), a US \$1.6 billion tractor major incorporated in 1960 at Chennai, India, is the second largest in India and Third largest tractor manufacturer in the world , with a 25% market share of the Indian tractor industry and a sale of approximately 170,000 tractors (domestic and international) annually. TAFE has four manufacturing plants three in India and one in Turkey. TAFE belongs to the Amalgamations group, leading biggest light engineering conglomerate in India, born in the year 1940

### Plant Profile:

Tractors and Farm Equipment Limited, Doddaballapur Plant, is a Tractor assembly plant, located in KIADB industrial area, Doddaballapur near the garden city of Bengaluru.

TAFE Doddaballapur plant, established in the year 1988 with a production capacity of 10 tractors per day, which has grown to a current capacity of 240 tractors per day. It is spread over 74986.0 Sq. meters with a constructed area of close to 50% and 35% greenery cover and 15% road and parking space. This plant is capable of producing Tractors in the range of 30 to 75 HP, with seven models and 140 variants.

### Expectation from TPM

- Increase OLE
- To upgrade overall skill level of the employees
- Reduce cost with low cost manufacturing.
- To create eye for identify the loss and abnormality
- Improve 5S to make visible shop floor

### Achievements

	KPI	UOM	Target (Bench Mark)	Target / Actual	2012-13	2013-14	2014-15
P	MTBF	↑ Hours/Month	95	Target	27	24	22
				Actual	95	295	376
	MTTR	↓ Minutes/Month	45	Target	50	40	33
				Actual	45	37	25
	Productivity	↑ Trs/Man/Day	0.49	Target	0.50	0.55	0.58
				Actual	0.49	0.52	0.57
Q	Right First Time (Internal)	↑ %	88	Target	90	90	95
				Actual	88	93	88 (New Method of Measurement)
C	Inventory Turn	↑ Turns	43	Target	40	60	60
				Actual	43	51	59
D	Delivery of Tractors	↑ %	87%	Target	100	100	100
				Actual	87	83	90
S	No of accidents	↓ Numbers/Year	9	Target	0	0	0
				Actual	9	10	4
M	Suggestion per Employee	↑ Numbers/Year	20	Target	25	25	30
				Actual	20	25	30



## AWARD FOR TPM EXCELLENCE, CATEGORY A

Company : Toyota Kirloskar Auto Parts Pvt Ltd.  
 Factory : Transmission, Axles & Engines Lines  
 Product : Transmission, Axles & Gasoline Engines  
 TPM Kick off : March 2010

Award for TPM Excellence –Category A : 2015



Mr. Sadashiva Baligar  
VP - TKAP

### Company Profile

Toyota Kirloskar Auto Parts Pvt. Ltd is situated in Bidadi industrial area about 35 Kms from Bangalore in Karnataka state. It is a Joint Venture amongst Kirloskar System Limited, Toyota Motor Corporation (TMC) & Toyota Industries Corporation (TICO) Japan established in the year of 2002.

With the support and technical expertise from TMC in world renowned Toyota Production system (TPS), TKAP today demonstrates Global Quality levels in the processes and products. TKAP is an established manufacturer of automotive drive train parts like Axles, Propeller Shaft, Transmissions and Gasoline Engines with an installed production capacity of 640K units/Year. TKAP customers are currently Toyota vehicle plants in India, South East Asia and South America.

### Expectations from TPM

- Safe and Lively workplace through Each Employees Contribution (Total Employee Involvement)
- Global Quality Product at Locally Competitive cost to enhance Customer satisfaction
- Become Plant of Choice for Global Toyota
- Human Resource Development to Maximize performance (Mutual Trust & Respect)

### Achievement Area – Tangible Benefits

Category	Parameter	UOM	Before (FY 2010)	Present (FY 2015)
Safety	No of Accidents	First Aid Cases	44	9
		Lost working days	4	0
Quality	In Process Defect	%	0.11	0.04
	Factory Claim/Year	No of Concerns	6	3
Productivity	OEE - Machining line	%	79%	90%
	OEE - Assembly line	%	97%	99%
	Production Man-hour	Man-hour/Unit	2.6	2.1
	MTBF (Mean Time Between Failure)	Hours	301	580
	MTTR (Mean Time to Repair )	Minutes	64	48
Delivery	Delivery Performance on time	%	100%	100%
Cost	In House Cost Reduction	Reduction % Per Year	100%	100%
Morale	Training	Man days / Month	3.50	5.51
	Suggestion/Month	Per Person / Month	0.34	1.1

## AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT

Company : AQUA Group of Companies, Coimbatore, India.  
 Factory : Aquapump Industries, Aquasub Engineering Unit I, II,III,IV  
 Product : Pumps (Domestic, Agricultural, Sewage, Dewatering & Building Services)  
 TPM Kick-Off : 26 December, 2005

Award for TPM Excellence - Category A : 2009

Award for Excellence in Consistent TPM Commitment - Category A : 2015



Mr. R. Kumaravelu  
Managing Director

### Company Profile

AQUA GROUP of Companies, located in Coimbatore, Tamilnadu, India, is one of the largest pump manufacturing company since 1976 with 5 Business Units, 3 Captive Units and two Service Units. The Group manufactures more than 5860 models (Includes Variants) and caters to Domestic, Agricultural, Industrial, Building Services, Sewage and Dewatering applications with production capacity of 3000 pumps a day & sells over 900,000 pumps a year through a network of 20 Branches, 1 Distributor and over 1256 Dealers.

Aqua Group manufactures Bore well Submersible pumps, Domestic pumps & Jet pumps in the brand name "TEXMO" and Agricultural Monoblocs, Openwell Submersibles & Electric Motors in the brand name "AQUATEX". These products are exported to 29 countries in the brand name "atx". Aqua Group bagged "Exports Excellence Award" for 10 years from Engineering Exports Promotion Council (EEPC) , India for exporting Cast Iron pumps, Stainless Steel Sheet Metal pumps & Pump parts, Non-ferrous castings & Machined parts to various countries in the world.

Aqua Group bagged "National Energy Conservation Award" consecutively for 3 years issued by Bureau of Energy Efficiency, India for the year 2013, 2014 & 2015 for producing highest number of energy saving agricultural pump sets.

### Expectations from TPM

- Increased ownership of equipments and other resources
- Productivity improvement through enhancement of OEE
- Zero Accidents, Zero Breakdown, Zero Defects
- Zero Customer Complaints
- Involvement of employees in Continuous Improvement
- Cost reduction through loss elimination
- Delivery adherence of products, spares and service
- Lead time reduction of production and development
- Enhancement of knowledge and skill
- Hygiene and Conducive environment

### Tangible Benefits

Result Area	Objective Measures	UOM	Excellence Award		Consistency Award		
			2006 (BM1)	2009-10 (BM2)	2014-15	2015-16 Upto Dec	2015 - 16 Target
Productivity & Equipment management	Overall Equipment Effectiveness ( OEE )	%	61	85	87	88	90
	Number of Break downs	Nos	2153	1498	836	534	0
	Break down (Average / month)	Hours	3290	1429	838	475	0
Quality	Customer Complaints (Average / Month)	Nos	50	22	2	3	0
	Final product rework (Monoblocs)	DPMO	1207	1076	686	484	330
	Final product rework (Submersibles)	DPMO	583	431	307	137	170
	Inprocess machining rejections (Monoblocs)	PPM	11268	4375	2434	1410	1180
	Inprocess machining rejections (Submersibles)	PPM	3762	1419	851	700	500
Cost	Inventory Carrying Cost	% of STO	1.26	0.94	0.57	0.62	0.60
	Tooling Cost	% of STO	0.89	0.5	0.32	0.29	0.25
Delivery	Delivery	%	95	98	99.5	97.78	100
	Lead Time for Delivery	Days	45	15	7	4	4
Safety	Major Accidents	Nos / year	2	0	0	0	0
	Minor Accidents	Nos / year	166	45	18	7	0
Morale	Suggestions	Nos / Labour	2.56	8.8	13.6	8.54	15

## AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT

Company : Bajaj Auto Limited  
 Factory : Pantnagar Plant, Uttarakhand  
 Product : Two Wheeler - Motorcycle  
 TPM Kick off : 9 April 2008

Award for TPM Excellence - First Category : 2011  
 Award for Excellence in Consistent TPM Commitment : 2015



Mr. Ashok R Pilankar  
GM (Pantnagar)

### Company Profile

The Bajaj group was founded in 1926 by Shri Jamnalal Bajaj. The Group is amongst the top 10 business houses in India. Bajaj Auto Ltd. (BAL), is a Flagship company of Bajaj group and is amongst the **FIVE Most Innovative Indian Companies** and the **only automotive company** featuring in the coveted list of **Forbes World's Top 100 Most Innovative Companies** of the year 2014. Bajaj Auto is India's **5th Most Valuable Brand** with a value of \$3 billion, according to the **first ever BrandZ TM Top 50 Most Valuable Indian Brands ranking**. Bajaj Auto has a global footprint, with presence in 60 countries and market leadership positions in more than 10 countries. **Bajaj Auto is India's No. 1 exporter in terms of the share of total production that is being sold abroad.** BAL's all 3 Manufacturing Plants in India – Waluj (Aurangabad), Chakan (Pune) & Pantnagar (Uttarakhand) are ISO14001 & OHSAS18001 certified.

**BAL Pantnagar plant**, the youngest plant of BAL, started its operations in 2007 with manufacturing of Platina-100 motorcycles. At present Pantnagar plant manufactures motorcycles viz. Platina, Discover, CT & Pulsar for domestic market of India. It is a unique plant of Bajaj auto Ltd. due to its **Simple Structure & Extended Factory Concept**. With the Extended factory concept, we have achieved **Lowest Inventory, Lowest Transportation cost, Lowest Lead time** and some other significant advantages as compared to other plants of BAL.

### Expectations from TPM

By adopting TPM, Our aim is:

- To improve the Operating Profit by reducing various cost elements like Variable Conversion Cost, Fixed Conversion Cost, Fixed Cost, Material Cost etc.
- To enhance Capacity by improving OLE, Production /hr improvement & Output / Man improvement.
- To establish a Quality Maintenance System to produce high quality products through defect free manufacturing and design.
- To create and preserve a cleaner, healthier and safer work environment with Yutori at workplace.
- To achieve high level of excellence in our work along with our cluster vendors.

TPM provides a holistic, structured and quantifiable methodology for **Deeper** and **Wider** continuous improvement in an integrated way.

After successfully challenging TPM Excellence Award, we continued to adopt TPM methodology by establishing linkage between Company Vision & Mission, TPM Policy with Plant Vision & Mission and KMI, KEI, KPI & KAI. We continued our TPM journey, working **“Widely”** in areas (widened scope) which were not covered during the initial phase and **“Deeply”** for further improvement in already worked areas. We also started working on **‘Interface Loss’** elimination with involvement of Interface Functions like R&D, Machine Tool Division, Materials etc.

### Achievement area - Tangible Benefits

#### PRODUCTIVITY:

- OLE increased from 84% to 94.2%
- Production per hour Improved by 83%
- Output Per man Improved by 53%

#### QUALITY:

- Warranty claim reduced by 76%
- In-process defect reduced by 98%

#### COST

- Manufacturing cost reduced by 36%

#### DELIVERY:

- Customer delivery adherence achieved 100%
- Lead time reduced by 47%

#### SAFETY, HEALTH & ENVIRONMENT:

- No major accident since inception of plant

#### MORALE:

- 6.1 Kaizens / man / year

## AWARD FOR TPM EXCELLENCE, CATEGORY A

Company : Tata Hitachi Construction Machinery Co. Pvt. Ltd.  
 Factory : Kharagpur  
 Product : Construction & Mining Machinery  
 TPM Kick off : 12 January, 2012

Award for TPM Excellence - Category A : 2015



Mr. Sandeep Singh  
Managing Director

### Company Profile

TATA HIATCHI CONSTRUCTION MACHINERY CO. PVT. LTD. (THCM), the leader in Construction Equipment (CE) industry in India with more than 33% market share in Hydraulic Excavator Segment, is a joint venture between Hitachi Construction Machinery Co. Ltd., Japan (HCM) and Tata Motors Ltd. (TML). THCM is in the business of designing, manufacturing, marketing, selling and servicing construction equipment's like Hydraulic Excavators, Excavator Loaders (BHL), Wheel Loaders (WL), Cranes, Motor Grader, Dumper, Transit Mixers and Compactors.

THCM has its Corporate Office at Bangalore and manufacturing facilities at Jamshedpur, Dharwad, & Kharagpur. Spread over an expanse of 250 acres, the manufacturing facility in Kharagpur - West Bengal, is the newest manufacturing facility of THCM family operating since 2009, it has a UNIQUE MIX facility of both Mass Production (Excavator) and Batch Production (Wheel Loaders, Dumpers, Compactors & Motor Graders). The plant has a fully automated conveyor system, which is designed to cater to 5 Ton to 47 Ton Hydraulic Excavator, Integrated Shot Blasting and Painting shops for frames & Attachments, The entire production facility is supported by fully functioning Fabrication shop with Welding Robots and Heavy Machine Shop for machining of components and World Class R&D Facilities. It is the biggest plant among all HCM group Worldwide. The plant is strategically located in proximity to Mining customers of Eastern Region and Infrastructure Development customers of North Eastern and Northern Part of India.

### Expectations from TPM

When THCM started operations in 1999 the biggest challenge faced was to create a niche for itself in the growing Indian CE industry which was characterized with high customer expectations, increasing competitive intensity and buoyant market conditions.

In 2009 THCM Kharagpur started its operation and in 2012, TPM was formally kicked off at Kharagpur plants. It aimed at ZERO Accidents, ZERO Defects and ZERO Breakdowns and Delivering World Class Services & Products of highest value to its customers.

### Achievement area - Tangible Benefits

Category	Index	Better	Unit	Kick off/TPM 2011-12	Actual Status Till Dec'15	Result Achieved
S	Non Reportable Accidents	↓	Nos.	0	0	Zero Accident
S	Carbon Emission	↓	T CO2/Per Eq. M/c.	3.14	2.23	29% Reduction
Q	0-50 hrs (Excavators)	↓	Defects /Machine	0.2	0.03	85% Reduction
Q	0-50 hrs (Wheel)	↓	Defects /Machine	0.9	0.05	94% Reduction
P	OEE	↑	%	56	78	39% Improvement
P	Number of breakdowns	↓	Nos/Month	55	7.4	87% Reduction
C	Conversion Cost	↓	Rs.(million) /Machine	0.092	0.083	10% Reduction
D	Adherence to Production Plan	↑	%	88	97	10% Improvement
M	Numbers of Idea generated	↑	"Ideas per Person (Annually)"	2.5	5	100% Improvement

With Increased Market Shares, Improved Productivity, Reduced Breakdowns, Improved Quality, Reduced Manufacturing Cost, Enhanced Customer Satisfaction, improved Health & Environmental Conditions and 100% Employee Involvement in Improvement Initiatives, thus TPM serving as a Major Catalyst.

## AWARD FOR TPM EXCELLENCE, CATEGORY A

Company : Jindal Steel & Power Limited (jspl)  
 Factory : Pellet Plant, Barbil (Odisha)  
 Product : Iron Ore Pellets  
 TPM Kick off : 19 January, 2012  
 Award for TPM Excellence - First Category : 2015



**Mr. T. S. Shanbhogue**  
Executive Vice President  
& Unit Head

### Company Profile

As a part of the OP Jindal Group & led by Mr. Naveen Jindal, JSPL is a US \$3.14 billion business conglomerate with a dominant presence in steel, power, mining and infrastructure sectors. JSPL produces economical and efficient steel and power through backward and forward integration. From the widest flat products to a whole range of long products, JSPL today supports a product portfolio that caters to markets across the steel value chain. The company produces the world's longest single piece rails of 121 meter length and it is the first in the country to manufacture large size parallel flange beams. JSPL-Pellet Plant is located in Barbil and has two plant of capacity 4.5 Million Metric Ton (MMT) capacity each, thus totalling to 9.0 MMT. Both these plant operate on principle of dry & wet palletisation process and hence catering wide spectrum of customer requirement. JSPL-Barbil is ISO 9001, ISO 14001, OHSAS 18001 & ISO 50001 certified plant and holds the distinction of being the first pellet plant in the world to receive the prestigious JIPM TPM Excellence – Category 'A' award with the recent declaration of 2012 JIPM TPM assessment results.

### Expectations from TPM

By moving forward in TPM journey, our aim is to:

- Achieve the increased production with minimum manpower and bare minimum investment
- Ensure Safe, hygienic and environment friendly plant
- Improve reliability of the equipment and machines and ensure supply of quality products to the customers
- Proactively eliminate & prevent losses and reduction cost in New equipment
- Increase employee productivity and develop High Performance Process Team and Expert Group to support the new initiative of "Process Based Organization"
- Decrease the logistic costs, the level of parts inventory and raw material

### Achievement area - Tangible Benefits: Please specify with respect to P, Q, C, D, S & M

Key Performance Indicators (KPIs)	Unit of Measurement	Good	FY (12) Bench Mark	FY -13	FY -14	FY -15*	FY 16** (Apr-Dec)
P Production (Pellets)	Million Metric Ton	↑	3.7	4.04	4.14	0.905	1.08
Overall Plant Efficiency (OPE)	%	↑	74.36	84.65	97.93	66.74	76.11
A Class & B Class Equipment Breakdown	Nos.	↓	315	169	123	21	6
Mean Time Between Failure of a Class Equipment	Hours	↑	26	43.3	67	133	202.06
Manpower Productivity	MT/Man/Year	↑	9946	12023	12105	3829	7198
Q Customer Complaints	No./Year	↓	8	4	2	0	0
In house Fe (Iron) % Quality Defects (Total No. of Samples = 330)	No. of Samples with Fe% < 63.5	↓	50	42	12	0	0
Production Cost	₹/MT	↓	3672	4144	3855	5576	4752
Energy Consumption	kWh/MT	↓	58.48	57.88	57.91	79.3	73
D Purchase Requisition to Purchase Order cycle	Days	↓	60	50	45	35	21
Processing of Payment	Days	↓	15	11	7	6	6
S Major Accidents	No.	↓	0	0	0	0	0
Reportable Accidents	No.	↓	0	0	0	1	0
Minor Accidents	No.	↓	0	2	0	1	1
Kaizens/man/year	No.	↑	1.8	2.32	3.77	4.36	4
M One Point Lessons	No.	↑	112	130	317	714	1500
Man-days Training	Man days/Employee	↑	1.97	4.5	6.19	10.88	11

## AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT

Company : Exide Industries Limited  
 Factory : SF Division, Taloja Plant  
 Product : Lead Acid Batteries for Automotive and Inverter application  
 TPM Kick-Off : 13 December, 2004  
 Award for TPM Excellence - Category A : 2011  
 Award for Excellence in Consistent TPM Commitment - Category A : 2015



**Mr. Ajit Tamhane**  
Chief Operating Manager  
(General Manager - Auto Division)

### Company Profile

Exide Industries Ltd. is India's largest manufacturer of lead acid storage batteries and power storage solution provider. With nine international standard factories spread across the nation, the company offers one of the widest ranges of batteries i.e. 2.5 Ah to 20,400 Ah capacity for every conceivable application in Automotive as well as Industrial segments. TALOJA PLANT is located 45 KMs from Mumbai, established in the year 1996, which has floor space of 43902 Sq. meter area out of 82845 Sq. meter total plant area for manufacturing of Automotive and Inverter batteries ranging from 25 Ah to 200 Ah with total plant capacity of manufacturing 2.5 million units per annum. Exide-Taloja plant is supplier to most of the Original equipment manufacturers including new generation vehicles like Jaguar Land Rover, Volkswagen, Mercedes Benz, General Motors and Skoda in India. Exide-Taloja is accredited with ISO/QS 9000, TS-16949, ISO 14001 and OHSAS 18001 Certifications.

### Expectations from TPM

In today's competitive world, TPM is one of the best manufacturing practice followed by many successful companies to achieve manufacturing excellence.

- Maximize plant capacity utilization by reducing all losses.
- Achieve and sustain zero breakdowns, zero accidents, zero defects in all areas of the factory.
- Improve equipment reliability for getting consistent good quality products and reduce manufacturing cost.
- Totally satisfied customers. 100 % delivery performance and reduction in lead time.
- Create safe and environmental friendly workplaces.
- Upgrade skill and knowledge and empowerment of employees and multi skilling of them.
- Bring Systematic approach in problem solving among all and foster team work.
- Change mindset of employees, develop owner ship among operators, technicians about their machine and process.
- Total employees involvement in achieving manufacturing excellence.
- Good house keeping and 5S in all areas.

### Achievement Area - Tangible Benefits

Parameter	Improvement with Respect to Benchmark	
P	Increase in Output per man shift	1.90 Times
	Increase in Production	2.50 Times
	Improvement in OEE (Total factory)	1.37 Times
	Reduction in Breakdowns (Minutes)	92%
	Reduction in Breakdowns (Nos.)	87%
Q	Reduction in Warranty	80%
	Reduction in Customer complaints	95%
	Reduction in Line rejection	89%
C	Reduction in Conversion Cost	12%
	Improvement in Metal yield	67%
	Reduction in Power consumption	34%
D	Delayed Delivery to Customers	Reduced to Zero
S	No. of accidents	Reduced to Zero
	No. of man days lost due to Accidents	Reduced to Zero
M	No. of Kaizens	Increase by 11.2 Times
	Training hours	Increased by 6.1 Times

## AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT

Company : Hero MotoCorp Ltd  
 Factory : Hero MotoCorp Ltd, Haridwar Plant  
 Product : Two Wheelers  
 TPM Kick off : 13 April, 2009

Award for TPM Excellence - First Category : 2012  
 Award for Excellence in Consistent TPM Commitment : 2015



Mr. Mukesh Goyal  
Plant Head

### Company Profile

Hero MotoCorp Ltd was incorporated on 19th Jan 1984 as Hero Honda Motors Ltd. Hero, the largest Indian bicycle producer in the world with Honda, Japan joined hands and created Hero Honda. The successful association of Hero and Honda for 27 years created the world's largest two wheeler manufacturing company. In 2001, the company achieved the coveted position of being the largest two-wheeler manufacturing company in the World in terms of unit volume sales in a calendar year. During 2010-11, both the partners decided to part ways and evolve beyond this partnership. Under the new agreement, Hero Honda embarked on a brand journey under new name Hero MotoCorp Ltd. Hero MotoCorp has 4 manufacturing facilities at prime locations in India (Dharuhera, Gurgaon, Haridwar & Neemrana) and the company is planning to setup its 5th & 6th manufacturing facility in near future in Gujarat & Andhra Pradesh. Recently, Company has also started its first overseas manufacturing facility at Columbia.

The foundation stone of Haridwar plant was laid on 19th Oct 2006 by the then Prime Minister of India- Dr. Manmohan Singh. The plant was inaugurated by our founder chairman Dr. Brijmohan Lall Munjal on 08th April 2008 as "Shrine of Technology". Today, it is the largest Two-wheeler manufacturing plant in the world. Installed capacity of the plant as on today is 9500 motorcycles per day and over 15.0 million have been produced till date.

### Expectations from TPM

Haridwar Plant has used TPM methodology to meet its vision of "Future Ready Plant".

Key drivers of this vision are :

- Customer Delight
- Operational Excellence
- Happy Workplace
- Supplier Upgradation
- Environment Friendly Plant

### Achievement Area - Tangible Benefits

Category	Parameter	UOM	Improvement w.r.t. Benchmark (FY 2008-09)
P	Vehicle Production	Avg. Nos. / day	Improved by 138%
P	Plant Productivity	Vehicle / man / day	Improved by 27%
Q	Customer Complaints (1-90 Days)	PPM	Reduced by 56%
Q	Vehicle Straight Pass	%	Improved by 10.3%
C	Manufacturing Variable Cost	Rs. / Vehicle	Improved by 15%
D	Production Schedule Adherence	%	Maintained 100%
S	Safety Incidents (Loss Time Accidents)	Nos.	Maintained 'Zero Accident'
S	NLTA (Injury) Rate	Injury per 1000 Mandays worked	Reduced by 80%
M	Kaizen	Nos./ Man / Year (19 times approx)	Increased by 1868%

## AWARD FOR TPM EXCELLENCE, CATEGORY A

Company : Hindustan Coca Cola Beverages Private Limited  
 Factory : Raninagar, Jalpaiguri, West Bengal, India  
 Product : Coca Cola, Thums up, Limca, Sprite, Fanta, Kinley Soda.  
 TPM Kick off : 6 June, 2011

Award for TPM Excellence - Category A : 2015



Mr. Biplab Ghosh  
Factory Manager

### Company Profile

Hindustan Coca-Cola Beverages Pvt. Ltd. (HCCBPL) has 25 bottling plants at strategic locations in various states spread across India. Hindustan Coca-Cola Beverages Pvt. Ltd. – Raninagar plant started its operation in 1999. It is spread over 11.35 acres of land with 4.5 acres of Green Field and with a Capacity of approx. 100k physical cases per day.

### Expectations from TPM

- Service to sales by ensuring high asset utilization and best in class OEE.
- Zero Accidents, Defects and Consumer Complaints.
- Deliver the goods to the customer at the best Cost, on time in full.
- Highly engaged and motivated employees , willing to contribute and ready to take on any new challenge.
- Develop capabilities of suppliers and employees to stay competitive.
- Sustain all improvements.

### Achievement Area – Tangible Benefits

Category	TPM Slogan/Objectives	Index (Calculation Formula)	"TPM IN --- WE WIN"			
			unit	Kick off/ TPM STARTED	Actual status 2015	Target 2016
S	Number of work-related accidents requiring days off work		Number	5	0	0
S	Number of work-related accidents not requiring days off work		Number	2	0	0
P	Productivity for main product		Cases/workman day ( CPWD )	47	100	150
P	OEE (Overall Plant Efficiency)		%	56	61	80
P	Number of tags raised		Number	435	6855	10000
P	Number of breakdowns		Breakdowns/ annually	696	96	0
Q	Number of customer complaints		Number	89	9	0
Q	In-line defect rate   Scrap		%	0.33	0.04	0.02
C	Cost index		Cost/unit	101 % to Net Revenue	104 % to Net Revenue	95.1 % to Net Revenue
D	Lead time in days		Days	7 days	4 days	3 days
D	Delivery performance		%	76	77	100
S	Safety index		Accidents per 100000 operator hours	0.82	0.02	0
M	Number of Employee Suggestions		Number	62	930	1500

## AWARD FOR TPM EXCELLENCE, CATEGORY A

Company : Hindustan Coca Cola Beverages Private Limited  
 Factory : Goblej , Ahmedabad Plant  
 Product : Coca Cola , Thums up , Limca , Sprite , Fanta , Kinley Soda ,  
 Coke Zero , Diet Coke , Maaza , Minute Maid , Nimbu Fresh  
 TPM Kick off : 27 February, 2011  
 Award for TPM Excellence – First Category : 2015



Mr. Somen Adhikari  
Factory Manager

### Company Profile

Hindustan Coca-Cola Beverages Pvt. Ltd. (HCCBPL) - As part of the Bottling Investments Group (BIG) of The Coca-Cola Company, HCCBPL has 25 bottling plants at strategic locations in various states spread across India.

Hindustan Coca-Cola Beverages Pvt. Lt. – Goblej Unit belongs to Gujarat, Rajasthan, and Bhopal Zone. This is the first plant Greenfield Plant set up in 1998 over approx. 52 acres of land with Capacity of approx. 200k physical cases per day.

### Expectations from TPM

- Service to Sales by Ensuring high assert utilization and best in class OEE
- ZERO Accidents , Defects , and Consumer Complaints
- Deliver the goods to the customer at best Cost on time
- Highly Engaged and motivated Employees , willing to contribute and ready to take on any new challenge.
- Develop Capabilities of Suppliers and employees to stay competitive.
- Sustain all Improvements.

TPM Slogan/Objectives		“TPM IN --- WE WIN”			
Category	Index(Calculation Formula)	unit	Kick off/ TPM STARTED (2011)	Actual status (2015)	Target 2016
S	Number of work-related accidents requiring days off work	Number	0	0	0
S	Number of work-related accidents not requiring days off work	Number	352	7	0
P	Productivity for main product	Cases/workman day ( CPWD )	352	7	0
P	OEE (Overall Plant Efficiency)	%	68	76	81
P	Number of tags raised	Number	234	25066	135000
P	Number of breakdowns	Number	A Rank - 360	0	0
			B Rank - 504	72	0
			C Rank - 162	54	0
Q	Number of Customer Complaints	Number	155	302	0
C	Cost index	Cost/unit Case	12	14.7	14
D	Lead time in days	days	7 Days	2 Days	2 Days
D	Delivery performance	%	90	95	100
S	Safety index	Accidents per 100000 operator hours	0.49	0.22	0
M	Number of Employee Suggestions	Number	10	5300	10000

## AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT

Company : JK Tyre & Industries Ltd  
 Factory : Vikrant Tyre Plant, Mysuru  
 Product : Mfg of Truck, Bus, Light Truck, Tractor & OTR Tyre  
 TPM Kick-Off : 9 June, 2006  
 Award for TPM Excellence - Category A : 2010  
 Award for Excellence in Consistent TPM Commitment - Category A : 2015



Mr. Umesh Krishna Shenoy  
Vice President  
Works

### Company Profile

J.K. Organization (JKO) owes its name to its visionary founders Lala Juggilal Singhania and his illustrious son Lala Kamlapat Singhania who pioneered to set up an Indian enterprise, inspired by Swadeshi movement called by of Father of our Nation-Mahatma Gandhi over a century ago. JKO played an important role in rapid industrialisation in India, post independence.

JK Tyre & Industries Limited - Is the flag ship of JK Orgn set up in later 1970s in Kankroli, Rajasthan. Over the last 4 decades, JK Tyre has grown multi-fold (organically and inorganically) in 4 states of India and overseas and has 9 manufacturing plants: 6 plants in India and 3 plants in Mexico.

JK Tyre enjoys market leadership in several products being acknowledged as pioneers of radialisation with its in-house R&D, Technological edge, consistently high quality of products with manufacturing excellence driven by its highly competent and motivated people.

It exports to over 100 countries across 6 continents and enjoys patronage of loyal customers

JK Tyre Vikrant Tyre Plant (VTP) has 3 manufacturing facilities at Mysuru location, Bias plant , Radial Plant & OTR (Off the Road) Tyre plant with wide range of products for Truck, Bus, LTR & OTR tyre. JK Tyre is the largest manufacturing organisation in Mysuru, providing employment (direct and indirect) to over 10,000 families in the society apart from performing its important role in growth of industry

### Expectations from TPM

To Achieve World Class Business Excellence in all spheres of our activity to achieve & sustain Zero Accident, Zero Pollution, Zero Defect, Zero Breakdown, Zero Loss & Ultimately become most preferred & profitable tyre brand across the world

### Achievement Area - Tangible Benefits

Area	Performance Indicator	UOM	B.M - 0	B.M - 1	Actual
S	Accidents (Major)	Numbers	5	0	0
P	OEE	%	75.13	82.33	87.97
	Total Breakdowns	Nos/Month	11,560	2,312	279
Q	Overall process scrap	%	1.89	1.173	0.705
	Customer complaints (OEMs)	Nos/Year	7	2	0
D	Delivery to Customer (OEM'S)	% adherence	93	100	100
M	Suggestion / Man	Numbers	0	0.62	1.62
E	Treated Water Reuse	%	65	90	100

During last 10 years, TPM implementation at Vikrant Tyre Plant not only helped in improving our business results but in organisational transformation in its culture seen in the steep increase in employee involvement in teams, high level of commitments and high morale among motivated employees

## AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT

Company : Lumax DK Auto Industries Limited  
 Factory : Pantnagar, Uttarakhand, India  
 Product : Automotive Lighting Products  
 TPM Kick off : 9 April, 2008

Award for TPM Excellence - First Category : 2012  
 Award for Excellence in Consistent TPM Commitment : 2015



Mr. Anmol Jain  
Managing Director

### Company Profile

Lumax DK Auto Industries Limited: The Plant situated at Pantnagar industrial Area of Uttarakhand, belongs to DK Jain Group. Lumax has grown from success since its foundation in the year 1945. The company went Public in the year 1984 and thus in the same year embarked on its highly successful joint venture with STANLEY, Japan. Lumax have 30 years of highly rewarding partnership with STANLEY, Japan one of the oldest live JV in India.

Lumax has a vision with an experienced and customer focused management team. This is clearly evident from our financial growth which has been a steady upward trend right since our inspection.

Under the umbrella of "DK Jain Group" there are 8 (Eight) Companies named as Lumax Industries Ltd., Lumax Auto Technologies Ltd., Lumax Gill-Austem, Lumax DK Auto Industries Ltd., Lumax Mannoh, Lumax Cornaglia Auto Tech Ltd., Lumax ancillaries Ltd., and Lumax Tour & Travel. Total Group sales turnover is \$400 million.

### Expectations from TPM

- Yield Improvement in All Process
- Zero Machine ( Accident, Break down & Defect-Zero) Concept implemented
- Material movement online in all process
- Visual Management of Manufacturing Machines
- Create safe and participation working environment
- Develop skills, capacities, Flexibility and reliability
- Higher employee moral, greater organization profitability

### Achievement Area - Tangible Benefits

Category	Index (Calculation Formula)	Unit	Kick off / TPM Started	Actual Status 2015 (Dec)	Target 2015
S	Number of work-related accidents requiring days off work	Cases / Annually	0	0	0
S	Number of work-related accidents not requiring days off work	Cases / Annually	459	39	0
P	Productivity for main products	Parts/Operator hours	120	190	200
P	OEE (or Overall Plan Efficiency)	%	51	95	95
P	Number of tags raised	Number	643	18349	18500
P	Number of breakdowns	Breakdowns / Annually	105	0	0
Q	Number of customer complaints	Number	5	0	0
C	Cost index	% to sale	6.1	6.3	6.0
D	Lead time in days	Days	45	4	2
D	Delivery performance	%	100	100	100
S	Safety index	Accidents per 100,000 operator hours	0	0	0
M	Number of Employee Suggestions	Number	0	9530	9500

## AWARD FOR TPM EXCELLENCE, CATEGORY A

Company : Harsha Engineers Limited  
 Factory : Changodar & Moraiya Plant  
 Product : Bearing Cage Manufacturing  
 TPM Kick off : 17<sup>th</sup> September, 2011

Award for TPM Excellence – First Category : 2015



Mr. Harish Rangwala  
Managing Director

### Company Profile

Harsha Engineers Limited is a global solution provider of Bearing Cages of all types and all material as well as special purpose Stamped Components. Since its inception in 1972, Harsha has leveraged continuous customer engagement and aspired to be the world class in manufacturing practices. Today, Harsha has become a preferred supplier of different types of Roller and Ball Bearing Cages and Cages for Bearing with special applications with various manufacturing technologies such as stamping, machining & injection molding. Harsha developed around 300 new products in a year.

In Harsha, the manufacturing excellence is driven by the philosophy of new technology and innovative practices to design, manufacturing and deliver products with a competitive advantage of customer responsiveness, speed, flexibility, reliability and sustainability and with an aim to be Global Leader and Preferred Supplier of Bearing Cages and Precision Components.

### Expectation from TPM

- Improve Overall Equipment Efficiency
- Zero Customer Complaint
- Zero Breakdown
- Zero Accident
- Cost Competitiveness
- Faster Product Development
- Achieve On time Delivery
- Improve employee satisfaction score
- Benchmarking for Manufacturing Excellence

### TPM Tangible Benefits

Key Performance Indicators		UOM	B.M 2010-11	Year 2015-16
P	Productivity	Nos./Man/Hour	799.96	1113.37
P	Overall Equipment Efficiency	%	54.9	69.72
P	Number of Tags raised (Cumulative from BM)	Number	0	162167
P	Machine Breakdown	Occurrence / Month	907	55
Q	Number of Customer Complaint	Nos./ Month	8	4
Q	In process Rejection	PPM / Month	42590	10648
C	Conversion Cost	Rs./Cage	50.78	35.99
D	On time Delivery	%	86	98.26
D	New Product Developed	Days	154	77
S	Accidents	Nos./ Annually	28	4
M	Number of Employees Suggestion	Number	0	542

## Photo Gallery

### AWARD FOR TPM EXCELLENCE, CATEGORY A



Tractors and Farm Equipment Limited, Dodballapur



Tractors and Farm Equipment Limited Madurai



Toyota Kirloskar Auto Parts Pvt Ltd.



Tata Hitachi Construction Machinery Company Pvt. Ltd Kharagpur

### AWARD FOR TPM EXCELLENCE, CATEGORY B



AVTEC, Chennai



AVTEC, Hosur



AVTEC, Pithampur



HIL, Kondapally

## AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT

Company : Mahindra & Mahindra, FES- Swaraj Division  
 Factory : Swaraj Division-Plant-1, Mohali  
 Product : Tractors  
 TPM Kick off : 18 June, 2008

Award for TPM Excellence, Category A : 2012  
 Award for Excellence in Consistent TPM Commitment : 2015



Mr. Jitender Gujral  
 Vice President  
 Manufacturing

### Company Profile

- Mahindra embarked on its journey in 1945 by assembling the Willy's Jeep in India and is now a US \$16.9 billion Indian multinational. Mahindra employs more than 2,00,000 people in over 100 countries. Mahindra operates in the key industries that drive economic growth, enjoying a leadership position in tractors, utility vehicles, information technology and vacation ownership. In addition, Mahindra enjoys a strong presence in the agribusiness, aerospace, components, consulting services, defense, energy, financial services, industrial equipment, logistics, real estate, retail, steel, commercial vehicles and two wheeler industries.
- In 2013, the Mahindra Group received the Financial Times 'Boldness in Business' Award in the 'Emerging Markets' category.
- M&M Board of Directors ranked as one of "India's Best Boards" in the Economic Times-Hay Group survey 2014
- In 2015, Mahindra & Mahindra was recognized as the Best Company for CSR in India in a study by the Economic Times
- The Business of AFS has three business verticals - Automotive Division (AS), Farm Division (FD) & Swaraj Division (SD). The Farm Division & Swaraj Division forms the part of Farm Equipment Sector(FES).
- Swaraj Division, erstwhile Punjab Tractors Limited (PTL) was promoted by Government of Punjab, through Punjab State Industrial Development Corporation Ltd. In February 2009, Punjab Tractors Limited was merged with Mahindra & Mahindra Ltd. as Swaraj Division. Swaraj won Deming prize in 2012.

### Plant Profile - Mahindra and Mahindra Ltd., Swaraj Division, Plant 1

Plant-1 of Swaraj Division was established in 1974 at Industrial area in Mohali (Punjab) near Chandigarh. At present, the plant is manufacturing 8 tractor models, ranging from 20.0 H.P to 42 H.P, having more than 40 variants. Plant is established in 97000 sq. meters area and having the flexibility of producing all models of Swaraj product mix. There are a total of 230 machines & equipment's in the plant with an average age of 22-25 years. Plant is certified for ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007.

### Expectations from TPM

- In today's competitive world, TPM is one of the best manufacturing practice followed by many successful companies to achieve business excellence.
- To maximize plant capacity utilization by reducing all losses.
  - To achieve and sustain zero breakdowns, zero accidents, zero defects in all areas of the factory
  - Totally satisfied customers and reduce manufacturing cost
  - To create safe and friendly workplaces
  - To upgrade skill and knowledge and empowerment of employees
  - To bring systematic approach in problem solving among all employees
  - Total employees involvement in achieving manufacturing excellence

### Achievement area - Tangible Benefits

#### PRODUCTIVITY:

- Increased by 48.1 %
- Breakdown incidences/month reduced by 91%

#### QUALITY:

- Machine Shop Scrap & rework reduced by 43%

#### COST

- Manufacturing Cost reduced by 53%.

#### DELIVERY:

- 100% schedule adherence
- Equipment development lead time reduced by 30%

#### SAFETY:

- First Aid incidents Reduced by 90%

#### MORALE:

- Kaizens/Employee/Year increased by 4.7 times.

## AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT

Company : Mahindra & Mahindra, FES- Swaraj Division  
 Factory : Swaraj Division Plant-2, Chappercheri  
 Product : Tractors  
 TPM Kick off : 18 June, 2008

Award for TPM Excellence, Category A : 2012  
 Award for Excellence in Consistent TPM Commitment : 2015



Mr. Yatinder Nath  
Plant Head

### Company Profile

- The Mahindra Group focuses on enabling people to rise through solutions that power mobility, drive rural prosperity, enhance urban lifestyles and increase business efficiency.
- A USD 16.9 billion multinational group based in Mumbai, India, Mahindra employs more than 2,00,000 people in over 100 countries. Mahindra operates in the key industries that drive economic growth, enjoying a leadership position in tractors, utility vehicles, information technology and vacation ownership. In addition, Mahindra enjoys a strong presence in the agribusiness, aerospace, components, consulting services, defense, energy, financial services, industrial equipment, logistics, real estate, retail, steel and two wheeler industries.
- The Business of AFS has three business verticals - Automotive Division (AS), Farm Division (FD) & Swaraj Division (SD). The Farm Division & Swaraj Division forms the part of Farm Equipment Sector (FES). Swaraj Division, erstwhile Punjab Tractors Limited (PTL) was promoted by Government of Punjab, through Punjab State Industrial Development Corporation Ltd. In February 2009, Punjab Tractors Limited was merged with Mahindra & Mahindra Ltd. as Swaraj Division. Swaraj won Deming prize in 2012.

### Plant Profile

Plant 2 was set up in 1980 in village Chappercheri, Mohali (Punjab) .In 1995 the Tractor setup was set in Plant-2 with an annual capacity of 12000 Tractors per year. Over the years the capacity was enhanced to meet customer demand. The total plant area is 156000 sq. meters and has the flexibility to producing various model mix of tractor. Plant is certified for ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007.

### Expectations from TPM

- In today's competitive world, TPM is one of the best manufacturing practice followed by many successful companies to achieve business excellence.
- To maximize plant capacity utilization by reducing all losses.
  - To achieve and sustain zero breakdowns, zero accidents, zero defects in all areas of the factory
  - Totally satisfied customers and reduce manufacturing cost
  - To create safe and friendly workplaces
  - To upgrade skill and knowledge and empowerment of employees
  - To bring systematic approach in problem solving among all employees
  - Total employees involvement in achieving manufacturing excellence
  - Good house keeping and 5S in all areas

### Achievement area - Tangible Benefits

- PRODUCTIVITY:**
- Increased by 50 %
  - Breakdown incidences/month reduced by 97%
- QUALITY:**
- Machine Shop Scrap & rework reduced by 79%
- COST**
- Manufacturing Cost reduced by 18%.
- DELIVERY:**
- 100% schedule adherence
- SAFETY:**
- First Aid incidents reduced by 94%
- MORALE:**
- Kaizens / Employee / Year increased by 5.6 times.

## Photo Gallery

### AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT



Hero MotoCorp Ltd, Haridwar



JK Tyre & Industries Ltd Vikrant Tyre Plant, Mysuru



Lumax DK Auto Industries Limited



Mahindra & Mahindra Ltd. Farm Equipment Sector, Swaraj Division Plant 1



Mahindra & Mahindra Ltd. Farm Equipment Sector, Swaraj Division Plant 2



Tractors and Farm Equipment Limited Engineering Plastics and Tool Room Division - Maraimalai Nagar

### AWARD FOR TPM EXCELLENCE, CATEGORY A



Harsha Engineers Limited Changodar and Moraiya



Hindustan Coca Cola Beverages Pvt. Ltd. - Raninagar



Hindustan Coca Cola Beverages Pvt. Ltd. - Goblej



Jindal Steel and power Limited- Barbil Pellet



## Photo Gallery

### SPECIAL AWARD FOR TPM ACHIEVEMENT



Bajaj Auto Ltd. Chakan Plant, Pune



Bajaj Auto Ltd. Motorcycle Division (MCD), Waluj Plant



Mahindra & Mahindra Ltd. Farm Division - India  
Mumbai, Nagpur & Rudrapur Plant

### AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT



AQUA Group Aquapump Industries



Bajaj Auto Ltd. Pantnagar



Exide Industries Limited, Haldia



Exide Industries Limited Sf Division, Taloja

### AWARD FOR EXCELLENCE IN CONSISTENT TPM COMMITMENT

Company : Tractors and Farm Equipment Limited  
Engineering Plastics & Tool Room Division

Factory : MARAIMALAI NAGAR

Product : Injection Molded Plastic Parts

TPM Kick off : 23 May, 2009

Award for TPM Excellence, Category B : 2012

Award for Excellence in Consistent TPM Commitment : 2015



Mr. S Lakshminarayanan  
General Manager  
- Operations

#### Company Profile

The Engineering Plastics Division of TAFE (TAFE-EPD) manufactures high precision moulds and custom moulded engineering plastics at its state-of-the-art facility in Bangalore, Karnataka, and Maraimalai Nagar near Chennai, Tamil Nadu. The imperatives of growth in the engineering plastics and tool making industries demands continuous innovations in technology and business practices. We meet this challenge by combining the most sophisticated technology with a skilled workforce, aggressive quality control systems and an unwavering dedication to customer service. Engineering Plastics Division has a primary focus on manufacturability in injection moulded engineering plastics.

This centre of Engineering Plastic and Tool Room Division having established a name in the Industry and in line with our vision and mission established its second manufacturing plant at Maraimalainagar Chennai in the year 2002. The growth of this unit has been exponential since it started commercial production. From a sale of Rupees 6 Crores in the year 2003, it has registered a phenomenal growth, given the time frame since it commenced commercial production. It also added to its customer base auto majors such as Ford India Private Ltd, Renault Nissan India Private Ltd. Ford accorded Q1 status within one year and appreciated the efforts taken to receive Q1, subsequent to start of production for India specific program. This is a record of sorts even amongst FORD supplier community.

#### Expectations from TPM

- Year on year - Enhanced level of Overall Equipment Efficiency – Raise the bar of Performance
- Safety Conscious and Self Directed Teams
- Self Regulated Work Groups
- Zero Accident to Zero Risk
- Understand, Appreciate prevailing work practice and make work Simple and Easy
- Embrace new ideas – Draw parallel from various Applications [Industries] and evaluate feasibility to apply the principles to improve work practices
- Enjoy work and spread Peace and Happiness
- Great Company to work with

Category	Index (Calculation Formula)	Unit	Kick off / TPM Started	Actual Status 2015 (Dec)	Target 2015
S	Number of work-related accidents requiring days off work	Cases/ annually	0	1	0
S	Number of work-related accidents / injuries not requiring days off work	Cases/ annually	48	4	0
P	Productivity for main products	Parts/Operator hours	55	65	70
P	OEE (or Overall Plant Efficiency)	%	66	83	85
P	Number of tags raised	Number	366	6538	7000
P	Number of breakdowns	Breakdowns/ annually	67	16	14
Q	Number of customer complaints	Number	24	16	14
Q	In-line defect rate	Scrap	1.39 1.49	1.14 1.24	1 1.05
		Scrap and rework	%		
C	Cost index	Cost/Unit Cost/Kilogram	5.53 12.78	8.1 9.15	NA 9.0
D	Lead time in days	Days	NA	NA	NA
D	Delivery performance	%	92	98	100
S	Safety index	Accidents per 100,000 operator hours	37	3	0
M	Number of Employee Suggestions		242	343	375

Other <Specify achievements not expressible in numerical terms>

- Do you have a program where all employees can participate in TPM? YES
- Do you have a program allowing employees to be recognized their achievements? YES
- Are top management involved in the audit/verification of completion of TPM pillar steps? YES
- Are all pillar activity boards displayed and reviewed by top management? YES

# Photo Gallery

