

**INSTITUTE
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Confederation of Indian Industry



PROGRESS @ TPM

Newsletter from CII TPM Club India



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September 2017

SPECIAL EDITION

2016 TPM Excellence Awards Winners

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From the Chairman's Desk

Dear TPM Club India Member,

It give me great pleasure in brining you this Special Edition of Progress@TPM sharing the success stories of the winners of this year's internationally recognized JIPM TPM Award.

The TPM movement is growing in India, the foundation for which was laid down by a number of Japanese TPM gurus along with CII Institute of Quality (TPM Club India). This year's grand gala 2017 award function ceremony, showcasing international progress in TPM, was organized by JIPM on 11th March 2017 at Kyoto, Japan.

India has till date has the highest number of JIPM (Japan Institute of Plant Maintenance) TPM Excellence Award winners outside Japan! This year too, Indian Industry reaped an excellent number of 16 Awards. The announcement of the results of the TPM Awards by Japan Institute of Plant Maintenance (JIPM), after a detailed assessment of applicant companies for the year 2016, was announced. Till date, 224 Indian companies have won 324 JIPM-TPM Awards, with some of them going for higher level of awards in their TPM journey. TPM Club India of the CII Institute of Quality, through its consulting and hand-holding support, has till date supported 103 award winning companies and has helped them get 134 Awards! We wish all the winners further success and urge them not only to take TPM to the next level in their companies, but also support other companies in their industry vertical in their journey of TPM. Congratulations once again to all the winners.

Our CII TPM Counsellors have built a very high level of technical capability to guide all types of manufacturing companies with rigorous trainings, consulting, handholding support, guidance & helping companies in mock audits in their journey of winning the prestigious TPM JIPM awards. 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
R Mukundan,
Chairman, CII Institute of Quality &
Managing Director, Tata Chemicals Ltd

Award for Excellence in Consistent TPM Commitment

Company : Badve Engineering Ltd
Factory : Polymer Division (Unit-V), Waluj, Aurangabad.
Product : Plastic Components for Two, Three and Four Wheeler

TPM Kick OFF date : 15 November, 2008
Award for TPM Excellence – Category A : 2013
Award for Excellence in Consistent TPM Commitment : 2016



Mr. Shrikant Badve
Managing Director

Company Profile

The Badve Group of Industries is a diversified business house in India established as one of the top suppliers of Automotive Components and Aggregates. In retrospect, Badve group started as a small enterprise manufacturing sheet metal parts. With responsible risk taking and ever eagerness to grab opportunities with our values of excellence & innovation, we grew today, to a real enviable position. At present the company has a pan India presence with 23 manufacturing facilities catering a wide spectrum of customer requirements.

Badve group is divided into two main verticals – Fabrication and Polymer. Each plant is an individual profit center with support from corporate functions. All our plants are accredited with ISO / TS 16949, ISO 14001 and OHSAS 18000 certifications. Badve Group has become a preferred supplier of Exhaust Systems, Chassis / Frame assembly and Plastic injection molded parts for Motorcycles and Three / Four wheelers.

In 2004, Badve group entered a new business sector of polymer with inception of its Polymer plant (Unit-V). This state-of-art facility was set up at Waluj for supply of Plastic injection molded and painted Motorcycle parts to Bajaj Auto. At present we are supplying components for 14 models of Motorcycles in various colors, Three wheeler and Four wheeler components to Bajaj Auto and Fiat.

Expectations from TPM

By moving forward in our TPM journey, we aim to achieve:

- Flexible Manufacturing system to meet quick change model demand of customer.
- High level of Equipment Reliability and Process Capability.
- Sense of Belongingness and Ownership among our employees.
- Customer delight through Customer centric approach
- Retain leadership in business by offering Cost Effective Products.
- Green Business by promoting green practices in all processes & products.

Achievement area - Tangible Benefits

PRODUCTIVITY:

- Addition of new supplier Honeywell USA for Global supplies
- Plant OEE increased from 58% to 94.75%
- Output per man increased by 2.6 times

QUALITY:

- Warranty claims achieved zero
- Customer complaints reduced by 99%
- Inprocess defects reduced by 77%

COST

- Variable conversion cost reduced by 28%

DELIVERY:

- Customer delivery adherence sustained 100%
- Product lead time reduced by 64%

SAFETY, HEALTH & ENVIRONMENT:

- No major and minor accident since inception of plant
- Health and Environment parameters well within Legal norms

MORALE:

- 3 Kaizen / man / year

Award for Excellence in Consistent TPM Commitment

Company : Endurance Technologies Limited
 Factory : K-226/2, Braking Division , MIDC ,Waluj, Aurangabad-431136
 Product : Hydraulic Disc Brake for 2W, Hydraulic Drum Brake or 3W, Tandem Master Cylinder, Brake Disc TPM
 Kick OFF date: 07 April 2006

JIPM TPM Excellence Category "A" Award : 2013
 Award for Excellence in Consistent TPM Commitment : 2016



Mr. Ramana Murthy Neti
 Vice President
 Braking Division

Company Profile

ENDURANCE was established in 1985 as Anurang Engineering Pvt. Ltd to manufacture Aluminum Die casting products at Aurangabad, Maharashtra (India). The Endurance Group is a global force in Casting, Suspension, Transmission and Braking products with annual sales of INR 4956 corers for the year 2014-2015. More than 4,207 employees work in 17 plants at 6 locations in India and about 600 employees in 2 overseas plants. ENDURANCE comprises of two main business divisions i.e. the Die Casting Division and the Proprietary Component Division. Under the Die Casting Division the main areas of operations are Casting, Painting & Machining which are supported by well-equipped Tool Room facilities. Under the Proprietary Component division, the main areas are Suspension, Transmission and Braking.

Endurance Technologies Limited, Braking Division is leading company of the Endurance group which manufactures Hydraulic Disc Brake , Hydraulic Drum Brake, Tandem Master Cylinder, Brake Disc for 2, 3 & 4- wheeler automobile companies. Our major customer base is BajajAuto, Yamaha India, Royal Enfield, UM Motors etc.

Expectation from TPM

To meet the aspirations mentioned in Vision, mission & long term goals, a drastic change in employees' Mindset and production process needed. TPM aims were hence set as follows:-

Manufacturing Processes	:	Flexible to meet changing demands quickly
Equipment	:	High Process capability and high efficiency
People	:	Capability of leading and mindset of ownership
Quality	:	Strengthen in house defect prevention.
Cost	:	To improve cost effectiveness.

Tangible benefits from TPM:

Category	Index (Calculation Formula)	Unit	Kick off TPM Started BM (2001-07)	TPM Excellence Dec'13	TPM Consistent Jan'17	Target Mar'17
P	Output/Hr	Nos.	98	202	215	220
	OEE	%	62	86	91	92
	Number of breakdowns	Occ	208	4	1	0
Q	Warranty	PPM	1254	43	0	0
	Number of customer complaints	PPM	480	0	0	0
	In-House Rejection	PPM	4080	242	118	0
C	Cost index	Cost/Unit	99	90	83	78
D	Delivery performance	%	80%	100%	100%	100%
	Inventory turns	Ratio	25	35	35	40
	Number of Accidents	Nos.	4	0	0	0
M	Number of Kaizens / Man	No.	01	1.6	1.85	2

Award for Excellence in Consistent TPM Commitment

Company : Endurance Technologies Limited
 Factory : B2 [Casting Division], MIDC Industrial Area, Waluj, Aurangabad - 431136
 Product : High Pressure Aluminum Die Casting

TPM Kick OFF date : 27 October 2007
 Award for TPM Excellence – First Category : December 2013
 Award for Excellence in Consistent TPM Commitment – First Category : December 2017



Mr. U. R. Ingale
 Cluster Business Head
 Casting Division

Company Profile

ENDURANCE was established in 1985 as Anurang Engineering Pvt. Ltd to manufacture Aluminum Die casting products at Aurangabad, Maharashtra (India). The Endurance Group is a global force in Casting, Suspension, Transmission and Braking products with annual sales of INR4956 corers for the year 2014-2015. More than 4,207 employees work in 17 plants at 6 locations in India and about 600 employees in 2 overseas plants. ENDURANCE comprises of two main business divisions i.e. the Die Casting Division and the Proprietary Component Division. Under the Die Casting Division the main areas of operations are Casting, Painting & Machining which are supported by well-equipped Tool Room facilities. Under the Proprietary Component division, the main areas are Suspension, Transmission and Braking.

ETL-B2 Casting Division Waluj, founded in the month of February 1985. Casting Production activity was started in November'1985. We are leading company of the Endurance group which manufactures High Pressure Die Casting for all Major 2 , 3 & 4 - wheeler OEM companies. Our major Customer base is Bajaj Auto, Piaggio , Nissan, Concentric Pumps. Our plant is certified with ISO/TS-16949, EMS OHSAS . We are having processes like High Pressure Die Casting , Melting , Band saw gate cutting.

Expectation from TPM

At the time of B.M. 2007 , there were more Machine breakdown occurrences , production loss ,more customer complaints, high manufacturing cost, tough competition with competitors & less employee participation. To come out from these problems, ETL- adopted TPM tool in the Year 2007 to achieve company Vision with goal of changing it's mind-set & to establish itself in the Customer's mind as maker's of World class Aluminum High Pressure Die Casting Products.

The key initiatives in our journey to manufacturing excellence are

- Continual Improvement on P,Q,C,D,S,M by reducing & eliminating all types of losses.
- Up keeping the momentum of all our employees by maintaining the positive culture.
- To change company culture by eliminating old ineffective habits in all areas.
- Meeting Customer requirements & expectations.
- Globally competitive.

Tangible benefits from TPM:

Performance Indicator	Particulars	UOM	B.M 2008-09	Excellence 2013-14	Current Status	
P	OEE	%	60.71	85.97	89.81	1.42 Times
	Production /Machine / Shift	Numbers	230	329	369	1.42 Times
	Break Down	Hours/Month	421	46	56	89%
Q	Warranty Claim	PPM	1445	0	0	Sustained
	Customer Complaint	PPM	24788	1008	513	89%
	In house Rejection	PPM	115219	20694	14787	82%
C	Power Cost	Unit/Kg	1.3	0.76	0.65	41.5 %
	Conversion Cost	Rs/Kg	15	10.69	8.70	28.7%
D	Delivery Adherence	%	100	100	100	Sustained
	Inventory-Casting	Days	5	2.53	2.61	50%
S	Major Accident	Nos.	0	0	0	Sustained
	Minor Accident	Nos.	7	0	0	Sustained
M	Kaizen/Man/Year	Nos.	0.48	2.97	4.89	6.2 Times

Award for Excellence in Consistent TPM Commitment

Company : Endurance Technologies Limited
 Factory : E92/93,Suspension Division, MIDC ,
 Waluj, Aurangabad - 431136
 Product : 2-3 Wheeler shock absorber TPM Kick OFF date: 15 March 2007
 Award for TPM Excellence – First Category : December 2011
 Award for Excellence in Consistent
 TPM Commitment– First Category : December '2016



Mr K Srinivasan
 Cluster Business Head
 Shocker Division

Company Profile

ENDURANCE was established in 1985 as Anurang Engineering Pvt. Ltd to manufacture Aluminum Die casting products at Aurangabad, Maharashtra (India). The Endurance Group is a global force in Casting, Suspension, Transmission and Braking products with annual sales of INR 4956 corers for the year 2014-2015. More than 4,207 employees work in 17 plants at 6 locations in India and about 600 employees in 2 overseas plants. ENDURANCE comprises of two main business divisions i.e. the Die Casting Division and the Proprietary Component Division. Under the Die Casting Division the main areas of operations are Casting, Painting & Machining which are supported by well-equipped Tool Room facilities. Under the Proprietary Component division, the main areas are Suspension, Transmission and Braking.

Endurance Technologies Suspension Limited is leading company of the Endurance group which manufactures shock absorbers for 2, 3 & 4- wheeler automobile companies. Our major customer base is Bajaj Auto, Yamaha India, Royal Enfield, Suzuki Motors , Mahindra -2W, Harley Davidson , W P Austria & Piaggio Ltd. Endurance Suspension Division started its production in 1996.

Endurance has made first gas field shocker as well as invented inverted type front fork first time in India.

Expectation from TPM

To meet the aspirations mentioned in Vision, mission & long term goals, a drastic change in employees' Mindset and production process needed. TPM aims were hence set as follows:-

Manufacturing Processes : Flexible to meet changing demands quickly
 Equipment : High Process capability and high efficiency
 People : Capability of leading and mindset of ownership
 Quality : Strengthen in house defect prevention.
 Cost : To improve cost effectiveness.

Tangible benefit from TPM:

Category	Index (Calculation Formula)	UOM	B.M 06-07	TPM Excellence Award	Status Dec -16	Target March- 17
P	OEE	%	79.79	84.40	91.82	92.00
	Output/Man/Day	Nos.	32.00	42.00	64.90	65.00
	Breakdown Occurrence per year	Nos.	75	25	07	0
Q	In house rejection	PPM	4200	1020	524	500
	Customer Complaint	NOS	7	0	0	0
	Cost of poor quality	% of Sale	0.72	0.50	0.16	0.15
C	Manufacturing Cost	Rs/Piece	4.6X	4.1X	3.0X	2.8X
	Inventory Turnover Ratio	No of Days	18.00	22.50	26.08	27.00
D	Delivery Adherence	%	80	100	100	100
	Finish Good Inventory	Days	2.0	1.17	0.21	0.20
	Raw Material Inventory	Days	4.25	2.02	3.37	2.00
	Lead Time	Days	1.5	0.5	0.07	0.06
S	Major Accident	Nos.	4	0	0	0
	Minor Accident	Nos.	10	0	0	0
M	Kaizen/Man/Month	Nos.	1.0	1.50	2.45	3

Award for TPM Excellence, Category A

Company : A.G. Industries Pvt. Ltd.
 Factory : Haridwar Plant
 Product : Plastic Molded & Polyurethane Painted Auto Components
 TPM Kick OFF date : 21 Oct. 2011
 Award for TPM Excellence : Category A : 2016



Mr. Susheel Raina
 Vice President &
 Plant Head Haridwar Plant

Company Profile

- Founded in 1993 due to the entrepreneurial vision of our Chairperson Mrs. Geeta Anand this plant has grown successfully and on date it is the flagship of the AGI Group of companies. AG Industries Pvt. Ltd. Haridwar (AGIH) is located at Integrated Industrial Estate, SIDCUL, Haridwar in the state of Uttarakhand 250 km. from Delhi.
- AGIH has an experienced & customer focused team capable of translating into reality the Vision of its promoters.
- AGI Group is amongst the leading TS 16949 manufacturing companies of Injection Moulded and Painted Plastic Auto Components in India. AGI Group has fully equipped state-of-the-art manufacturing facilities at Gurgaon, IMT Manesar, Haridwar, Dharuhera, Chennai, Halol and two units at Bawal covering North, West and South of India.
- All AGI units boast of low power consumption machines and automatic material handling systems to meet International Standards. It's expertise lies in Plastic Moulded, Painted, Decorated Safety & Functional Parts and Sub-assemblies.
- As an initiative towards upward integration, the company has diversified its existing product line to meet the growing demands of its esteemed customers. AGI has also set up a world class commercial tool manufacturing facility at Bawal by the name of G-Max Auto Ltd. resulting in an expanding customer base in the Four-wheeler segment.
- AGI has a centralised Design & Development center at Gurgaon which offers its services both for Product and Tool Development within the group as also offering comprehensive solution to esteemed customers.
- AGI has setup a JV with Novo Plastics, Canada for manufacture of under bonnet engine parts in 2016.

Expectation from TPM

- To optimize yield in all processes.
- To achieve targeted Zero Customer Complaint, Zero Breakdown and Zero Internal Rejection.
- Develop Skills, promote Multi-skilling, enhance Capacity and retain Flexibility.
- Build Employee Morale, promote Team working and enhance Organization Profitability.
- To sustain Zero Warranty Failure which already achieved.

Achievement Area: Tangible Benefits

Category	Index	Unit Mark2010-11	Bench Status 2016-17	Actual 2017-18	Target	Status	
S	Number of work-related accidents not requiring days off work	Cases /Annually	2	0	0	↓	
P	Productivity for main products	Parts /Operator hour	25	51	65	↑	
P	OEE	%	78	92	92.5	↑	
P	Number of breakdowns	Breakdowns/ annually	150	6	0	↓	
Q	Number of customer complaints	Number	23	2	0	↓	
Q	In-line defect rate	Scrap	%	1.54	0.23	0	↓
		Rework	%	15.2	2.1	0	↓
C	Cost index	Cost / Unit	100	65	64	↓	
D	Delivery performance	%	100	100	100	↑	
S	Safety index	Accidents/1lakh Operator hours	2	0	0	↓	
M	Number of Employee Suggestions	Number	500	5435	7000	↑	

Award for TPM Excellence, Category A

Company : Aurangabad Electricals Limited
 Factory : Pantnagar Plant – N1
 Product : Aluminum Products

TPM Kick OFF date : 9 Apr-2008
 Award for TPM Excellence – First Category : Jan 2017



Mr. Anil Kumar Dwivedi
 General Manager
 (Business Unit Head)

Company Profile

Aurangabad Electricals Limited Pantnagar Plant is situated at SIDCUL Industrial Area in Udham Singh Nagar District of Uttarakhand India Belongs to BAGLA group. A mega corporate entity that is emblematic of excellence, diversification and pioneering new technologies.

The Group owes its name to Late Sri Raj Narayan Bagla and his Son Mr. Rishi Kumar Bagla known as the BAGLA Group. Late Sri Raj Narayan Bagla laid the foundation of the industrial edifice in Aurangabad (INDIA) by setting up first industry in 1985.

Today Bagla Group is one of the top Die casting Business group in India. Aurangabad Electricals Limited Pantnagar Known as N1 Plant because plant situated in North. N1 plant Started Production in March 2006 it is spread over 10 acre has approx. 4.5 acres Constructed and 5.5 acre of the Area is covered with Greenery and Plants. We are Tier 1 Supplier for BAJAJ Auto Limited.

We have Pressure Die Casting, Machining, and Painting & Plating process

Our Product range is in Casting Magneto Cover, Clutch Cover, Drum, Panels & other 39 products, in Steel Component we are producing 9 Products.

Expectation from TPM

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

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

Category	Index (Calculation Formula)	Unit	Bench Mark Apr-2008	Achieved	Status	Target 17-18
P	Productivity for main products	Part/ope. Hrs.	87	125	↑	143
	OEE	%	69	92.5	↑	96
Q	Number of customer complaints	Number	92	0	↑	0
C	Manufacturing Cost	Rs. / set	193	135	↓	120
	Maintenance Cost		60	42	↓	35
	Energy Cost		84	57	↓	50
	Tool Cost & Consumable		49	35	↓	30
D	Delivery	%	100	100	→	100
S	Accident Major	Nos.	0	0	→	0
M	Over all Training	Man-days/ Month	0.5	3.5	↑	4

TPM Slogan

Together Towards World Class Through TPM

Award for TPM Excellence, Category A

Company : BG LI-IN Electricals Limited
 Factory : M-137,MIDC Waluj, Aurangabad – 431 136
 Product : Relays , Flashers, CSS & BSS

TPM Kick OFF date : 18th September 2010
 Award for TPM Excellence – First Category : Category A ,Year 2016
 Award for Excellence in Consistent TPM Commitment– First Category : ___ Year___
 Award for TPM Excellence in Special Category : ___ Year___



Mr. G. S. Phirke
 COO

Company Profile

Please be very brief

BG LI-IN Electricals Limited is a part of Bagla Group of Industries. Bagla Group established in 1985. It is one of the leading auto component manufacturing in India. It has 10 manufacturing facilities across western and northern India. BG LI-IN established in 2000 and catering to domestic and overseas customers in the 2W, 3W, 4W, LCV & DG Set. BG LI-IN have developed in house R&D centre which is recognised by Dept. of Scientific & Industrial Research, Central Govt. of India to develop new products. Plant certified for ISO/TS 16949, ISO 14001 & OHSAS 18001. Proud to share that BG LI-IN team not only developed quality product within customer cost target but also successfully ramping up to cater the increasing customer requirement in all product categories

Expectation from TPM

Text Material : please be specific

- Zero Defect.
- Zero Injury, Health and Environmental Issues.
- Increase Productivity
- Sustain 100% Delivery adherence.
- Involvement of all Employees.
- Reduce Manufacturing Cost.

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

Text Material : please be specific

PRODUCTIVITY

- OLE Increased by 24.5%.
- Output per Man Increased by 1.3 times.
- QUALITY
- Warranty claim reduced by 95.8%.
- In-process Defect reduced by 93.25%.

COST

- Manufacturing Cost reduced by 21.5%.

DELIVERY

- Delivery adherence -100%.

SAFETY

- Zero Major or Minor accidents since inception of plant.
- Zero impact on Occupational Health and Environment.

MORALE

- Kaizen / Man / Year improved by 2.4 times.

Award for TPM Excellence, Category A

Company : Carborundum Universal Limited
 Factory : Thiruvottiyur Plant
 Product : Bonded and Coated Abrasives
 TPM Kick off Date : 14th December 2011
 Award for TPM Excellence – Category A



Mr N. Ananthaseshan
 President - Abrasives

Company Profile

Carborundum Universal Limited (CUMI), one of the leading companies of the Murugappa Group was founded in 1954. CUMI is under the engineering vertical and business group is Abrasives. The purpose of CUMI is to “**Making Materials work for Man**”. CUMI pioneered the manufacture of Bonded and Coated abrasives in India. In sync with the global vision, CUMI is expanding its product spread. The Company makes over 20,000 varieties of products manufactured at 25 locations.

The strength of Thiruvottiyur manufacturing facility is its ability to make entire range of bonded abrasive products, Flexibility to make small orders and wide variety, Infrastructure support and Proximity, Sound product and process knowledge base and Capability to handle new generation products.

CUMI is equipped with a state-of-the-art Research and Development Centre called Surface Technology Centre at Thiruvottiyur that works aggressively on product development and efficiency enhancement towards providing total grinding solutions for customers surface engineering needs.

Intangible Effects

- Complete transformation of a factory of 60 years old in terms of work place organization and shop floor work culture
- Operators have understood the importance of maintaining the equipment to its basic conditions by themselves
- Operators are trained and able to carry out minor repairs in machines after getting knowledge & skill on equipment's parts function and mechanisms during the implementation of JH Step – 4
- All employees have sense of pride and ownership

Achievement area - Tangible Benefits

Category	Index (Calculation Formula)	Unit	Kick off / TPM Started	Actual Status Dec 2016	Target 2016
P	OEE	Module - R	%	46.4	96
		Module - V		44	96
		Module - Res		39.8	96
		Module - NW		17	85
P	Maintenance Cost	Number	552	2	0
Q	In –Line defect	Scrap	%	3.76	0
		Rework	%	2.6	0
C	Cost saving through variable cost reduction	Rupees in Million	0	236	200
C	Maintenance Cost Reduction	Rupees in Million	5.4	2.9	3.0
D	Single Piece Order Execution	Export	% of Order	9	30
		Domestic	% of Order	11	35
S	MAJOR	Cases / Annually	0	0	0
	MEDIUM	Cases / Annually	24	0	0
M	Number of Employee suggestions	Number	268	4473	4250

Award for TPM Excellence, Category A

Company : Godrej & Boyce Mfg. Co. Ltd.
 Factory : Appliance Division, Shirwal
 Product : Refrigerator, Washing Machine , Air Conditioner
 TPM Kick OFF date : 16th July 2012
 Award for TPM Excellence Category – A : 2016



Mr. Sunil Beloshe
 Sr. General Manager
 & Location Head

Company Profile

Godrej & Boyce Mfg. Co. Ltd. (G&B) was founded in 1897 by Mr. Ardeshir Godrej, a young visionary business leader. G & B has 3 vertical business lines, named as “Consumer product group, Industrial product group and Services”. G&B has 25 Manufacturing Plants, across 8 locations widely spread in India.

Godrej Appliance Division (GAD) is one of the flagship business from “Consumer product group”. This business started in 1958 by setting up manufacturing facility in Mumbai. It is the first company to manufacture refrigerators in India. In order to cater the increased market demand and also to optimise the operational cost, it expanded its manufacturing facility at Shirwal, Maharashtra and at Mohali, Punjab.

Shirwal is a green field project of Appliance Division commissioned in April 1996. It has manufacturing lines of refrigerators, washing machines, Air conditioners. Plant is accredited with ISO 9001- 2008, ISO 14000 and OSHAS 18000 certifications. We believe in gender equality, hence we have Women employees working on shop floor. The plant is honored as first “Platinum Rated Green Company” in India. This rating is awarded by CII- Green Business Centre, India.

Expectation from TPM

- Excel in Lean & Green operations
- Improve asset turnover ratio
- Reduce manufacturing cost
- Achieve Zero breakdown, defect, accident
- Achieve Zero Environmental effect
- Build people competencies through education & training
- Improve ownership of the equipment & workplace by operator
- Improve multi skilling ability of operators
- Create a worry free, stress free, & fear free working environment for all employees.

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

Category	Result area	UOM	Benchmark (2011-12)	Present (2016-17 Q3)
S	Number of accident	Cases/Year	2	0
	Departmental Safety Score	Index	100	107
P	Asset Turn Over Ratio	Index	100	277
	Overall Equipment Effectiveness	%	58	83.7
	Equipment breakdowns (All Machines)	Occurrences Month	527	49
Q	Customer complaints - Direct Cool	Index	100	4.8
	First Pass Yield - Direct Cool	Index	100	112
	First Pass Yield - Frost Free	Index	100	115
	Value add per cost of employee	Index	100	178
C	Conversion cost	Index	100	81
	Warranty cost	Index	100	63
	Rejection cost	Index	100	77
	Production schedule compliance Refrigerator	%	99.4	100
D	Production schedule compliance Washing Machine	%	99.36	100
	Inventory Turn Ratio	Index	100	140
	Delivery compliance	%	99.7	100
	M	Kaizens	Nos. per month	254
Kaizens per employee		Nos. per employee/ month	0.52	1.3
E	Specific Energy consumption	Kwh/Appliance	9.18	7.0
	Specific Water consumption	Litrs./Appliance	119	65
	Specific GHG Emission	Kgs./Appliance	11.79	7.0

Award for TPM Excellence, Category A

Company	: Mahindra Intertrade Limited.
Factory	: Mahindra Steel Service Centre Ltd.
Product	: Stators & Die cast rotors, Auto Blanks, Transformer Laminations and DT Cores.
TPM Kick-off	: December 2012
TPM Health Check	: January 2016
JIPM Stage 1 assessment	: July 2016
JIPM Stage 2 assessment	: January 2017



Mr. Vijay Arora
Vice President –
Strategy, Operations and
Business Development



Mr. Laxman Mahale
Chief - Kanhe Plant, and,
Chief – Business Excellence
(Service Centres)

Company Profile

Mahindra Intertrade is a part of US \$17.8 billion multinational group based in Mumbai, India, with a presence in more than 100 countries and employing over 200,000 people. Its operations span consists of 20 key industries that form the foundation of every modern economy. Mahindra Intertrade (MIL) provides solutions for processing of flat steels. Intertrade is a wholly owned subsidiary of Mahindra & Mahindra Limited which operation includes steel service centres across Automotive, Power and Home Appliance verticals.

Plant Profile:

Mahindra Steel Service Centre Limited's (MSSCL) facility at Kanhe (near Pune) processes Cold Rolled, Hot Rolled and Cold Rolled Grain Oriented steel for automotive applications and transformers. MSSCL's Plant - I was the first steel service centre in the organized sector in India to be set up as an integrated facility catering to the automotive, home appliance and power sectors. MSSCL's Plant - II is state-of-the-art electrical stampings facility which processes Cold Rolled Non Grain Oriented Steel (CRNO), and semi processed CR steel, to cater to home appliance and electric motor industries. Strategically located in the industrial belt of Pune, the plant is ideally situated to cater to the processed steel requirements of auto OEMs, major transformer manufacturers & home appliance manufacturers located in western and southern India.

Expectations from TPM

- Achieving business excellence through the twin pillars of customer's delight and happy enthused employees.
- Establish ourselves as a supplier of choice by consistently offering products and services.
- Reinforce the culture of continuous improvement through Total Employee Involvement (TEI), and training.
- Provide a safe and healthy working atmosphere.
- Improvement in the business performance drastically so that we are ahead of competition
- Cultural change
- Agile organization, ready for future challenges.

Area	Performance Indicator	UOM	Percentage improvement over Bench Mark
P	Productivity/ Man/ Shift	ton	Increased up to 182 %
P	OEE	%	Increased up to 164 %
Q	In-house rejection	%	Reduced by 94 %
C	Cost Index	Rs/ ton	Reduced by 29 %
D	Delivery compliance	%	Improved by 7 %
S	Safety Index	Accidents per 100,000 operator hours	0
M	Kaizen/Man/Month	Nos	Increased by 12 times

Achievement area - Intangible Benefits:

- Sense of ownership
- Attitude for accepting change

Award for TPM Excellence, Category A

Company	: Raychem RPG Pvt. Ltd.
Factory	: Gas Meter Plant Chakan, Pune
Product	: Gas Meter
TPM Kick Off	: April 2013
Award for TPM Excellence, Category A	: 2016



Mr. Ramani Kasi
President

Company Profile

Raychem RPG is a 50:50 Joint Venture company between RPG Enterprises and TE Connectivity. RPG Enterprises, established in 1979, is one of India's fastest growing business groups with turnover of US\$ 3 Billion. The group has more than 15 companies managing diverse business interests in the areas of Tyres, Infrastructure, IT & Specialty with 60,000+ employees and 4,00,000+ shareholders.

Raychem RPG serves the Infra-structure Sector in Energy, Gas and Power Utilities customer verticals. Raychem RPG has three manufacturing plants across India, two in the State of Maharashtra and one in Gujarat. The company has its corporate office in the Metropolis of Mumbai city and various operations are supported by pan India offices. The company has a human capital of 835+ employees supported by channel partners of around 80 dealers/distributors.

Raychem RPG Gas Meter:

Its only plant in India who manufactures Gas meters, having a wide range in product like – Pre-paid Gas meter, Automatic Meter Reading Gas meter, RPD, Turbine& Regulators.

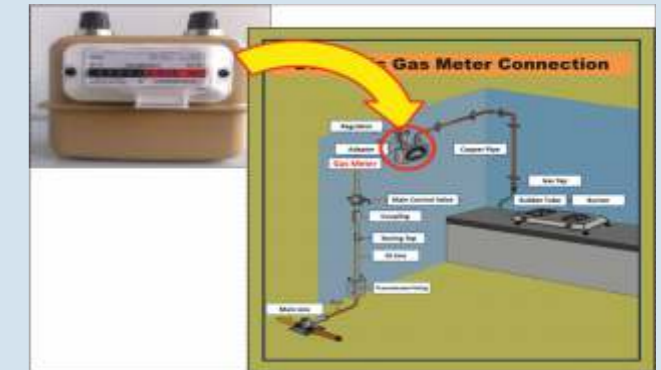
Expectations from TPM:

Raychem RPG had challenges to overcome as follows:

- Reduction in lead time
- Cost reduction

Achievement area - Tangible Benefits:

TPM Implementation at Raychem RPG Gas Meter helped us to be a sustain market leader by continuous reduction in product cost and competitive by consciously introducing new products in product platform change and breakthrough category.



Category	Index (Calculation Formula)	Unit	Kick off/TPM Started	Actual Status Dec 2016
S	Number of work-related accidents requiring days off work	Cases/ annually	0	0
P	Plant labor Productivity	Nos of Gasmeter/person/shift	17	30
P	Number of tags raised	Number	0	7521
Q	Number of customer complaints	Number	13	0
C	Space Productivity	Nos / Sq.ft / Month	24	139
D	Production Lead time in days	Days	31.5	1.2
D	Delivery performance	%	62	87
M	Number of Kaizen	Nos	14	600

Award for TPM Excellence, Category A

Company : Raychem RPG Pvt. Ltd.
 Factory : Transformer Plant Chakan, Pune
 Product : Transformers
 TPM Kick Off : April 2013
 Award for TPM Excellence, Category A : 2016



Mr. Sirish Bhargava
 Head Corporate Operation & Business Excellence

Company Profile

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Raychem RPG Transformer:

The Company is capable of manufacturing transformers over a very wide spectrum of standards upto 25 MVA 32 KVA Weighing from 0.5 tons to 61 Tons as per customers / consultants requirement. Products are Oil Type Transformer, Dry Type Transformer Vacuum Impregnated and Dry Type Transformer Resin Cast. Transformer business is Engineered To Order type where every transformer is unique.

Expectations from TPM:

Raychem RPG had challenges to overcome as follows:

- Establishing Raychem as a Transformer company w.r.t. very strange and age old competition.
- Non availability of pre-qualification for tenders of different government utility.

Transformer Manufacturing Process:



- High Lead time,
- high Quality defects,
- High level of inventory/obsolete inventory, resulting poor yield,
- Low machine availability.

Achievement area - Tangible Benefits:

TPM Implementation at Raychem RPG Transformer helped in improving business results in terms of 3 times increase in top line without any major investments by loss reduction. It has also brought drastic change in organization culture.

This is demonstrated by the results tabulated below:

Category	Parameter	UOM	Benchmark (2013)	Target (2016)	Actual (2016)
S	Number of work-related accidents requiring days off work	Cases/ Annum	0	0	0
	Number of work-related accidents not requiring days off work	Cases/ Annum	10	0	0
P	Plant Labor Productivity	Eq. Mva / Person / Shift	0.5	0.8	0.8
	Set Up & Adjustment Loss	Minutes Per Occurrence	221	9	6
	Number of tags raised	Number	139	20000	20441
	Number of breakdowns	Breakdowns/ Month	108	0	4
Q	Number of customer complaints	Number	101	0	2
	In-Process defect	Number	683	0	4
C	Yield Loss (Cast Resin)	Kg / Eq MVA	75	8	8
D	Lead time in days (Order to Dispatch)	Nos of Days	148	91	81
	Production Lead Time in Days (Oil Type Transformer)	Nos of Days	28	16	14
	Delivery performance	%	58	100	80
M	Training Man-days	Days / Employee / Annum	0.15	4	3.8

Award for TPM Excellence, Category A

Company : SONA KOYO STEERING SYSTEMS LIMITED
 Factory : Dharuhera-1
 Product : Power steering system
 TPM Kick OFF date : 4th Nov.2011
 Award for TPM Excellence – First Category : Jan Year 2017
 Award for Excellence in Consistent TPM Commitment– First Category : ___Year___
 Award for TPM Excellence in Special Category : ___Year___



Mr. Akhil Jain
 Plant Head

Company Profile

Sona Koyo Steering Systems Ltd. Dharuhera-1 plant overview:

Sona Koyo was founded in 1985 with technical collaboration agreement with then Koyo Seiko Company Ltd. (Renamed JTEKT since Jan-2006) of Japan to manufacture components for the automotive industry. Dharuhera -1 plant started in July 2007 mainly producing Power steering systems (Both Hydraulic and Column Electric) for Indian OEM's and Exporting EPAM for Off road vehicle with IPR (Intellectual Property Rights) for this product.

The plant have technical collaboration with JTEKT Corporation Japan for state of the art manufacturing facilities and product validation/verification infrastructure. Total 26 lines including Assembly and child parts machining.

“Safety First ;Quality Must and Kaizen Forever” with this motto plant was having issues and challenges related to equipment deterioration; Skill enhancement; Mistake proofing requirements; stringent safety requirements ; employee motivation etc.” TPM was found one of the solution for above issues. After achieving encouraging results during Model machine activity formal TPM Kick off was held on 4th Nov. 2011. Special consideration was given to sensitizing the operators about equipment abnormalities; use of analytical tools e.g. Why-Why Analysis; PM Analysis; FTA; Makigami Analysis etc.

Plant successfully challenged the TPM Excellence award 2016 and award ceremony Was held on 23 March 2017 at Kyoto Japan.

Team is further committed to rotate the wheel for further challenging the Consistency In TPM Excellence award in year 2019.

Expectations from TPM:

- Shop floor will become shiny and Associates feel good to work.
- Knowledge about the machine to be enhance.
- Sharing of responsibilities for healthy equipment.
- Extensive use of problem solving tools.



- Employees should have sense of pride & ownership.
- Optimum utilization of resources.
- Visual display and Visual Controls on machines to be improve across the plant.

Achievement area :

- Sustain zero accident.
- EBITDA (Earnings Before Interest Tax Depreciation & Amortization) increased by 41%.
- OEE increased by 21.12%.
- Plant availability increased by 11.77%.
- In-house defects reduced by 91%.

- Supplier rejection reduced by 79.90%.
- Manufacturing cost reduced by 17.54%.
- Tooling cost reduced by 27.26%.
- Kaizens/Suggestions per employee increased by more than 3 times.

Award for TPM Excellence, Category A

Company : Swaraj Engines Limited
 Factory : Mohali, Punjab
 Product : Engines
 TPM Kick OFF date : Dec-12
 Award for TPM Excellence A First Category : 2016



Mr. Subhash Mago
CEO- SEL

Company Profile

Swaraj Engines Limited (SEL) is a flagship company of Mahindra and Mahindra Group Company

- SEL was promoted by Punjab Tractors Limited and Kirloskar Oil Engines in 1985
- Company is into business of manufacturing deisel Engines in the range of 22 H.P. to 54 H.P. and manufactures 100% engines for M&M Swaraj Tractor Division.
- In 2007, Mahindra acquired 33.2% equity stake in Swaraj Engines Limited, Kirloskar having 17.4%.
- Swaraj Engines Limited Head office is located in the premises of the manufacturing location at Mohali.
- SEL represents fruition of the technology with latest HI teach machines and material handling system.
- SWARAJ ENGINES LIMITED rolled out first engine in 1989 and is currently having a capacity of 105000 Engines per annum (350 engines per day)

Expectations from TPM:

- Develop Zero harm culture
- Reduction in Manufacturing Cost
- Achieve Zero Customer complaints
- Zero breakdown – Improve reliability of machine
- Achieve manufacturing excellence
- Enhance employee involvement and capability
- Improve profitability

Tangible Business Results:

- 20.8% Productivity improvement
- 19% reduction in conversion cost
- 95% reduction in breakdown incidences
- 37% Setup time reduction
- 34% Tool cost reduction
- 20% Tool cost reduction
- 99% schedule adherence
- 100% legal compliance
- 60% reduction in defects reported from field
- KAIZEN/team has improved from 12 to 20.



SEL Team Mr. Avtar Singh, Mr. Rajendra Belsare (BE), Mr. Tarsem Kumar & Mr. Dinesh Jaiswal receiving TPM Excellence Award in a grand ceremony held in Kyoto, Japan

Award for TPM Excellence, Category A

Company : Tirth Agro Technology Pvt.Ltd (SHAKTIMAN)
 Factory : Tirth Agro Technology Pvt.Ltd (SHAKTIMAN)
 Product : Rotary Tillers
 TPM Kick OFF date : 19th July 2012
 Award for TPM Excellence – First Category A : 2016



Mr. Hasumukh Gohil
Managing Director

Company Profile

Tirth Agro Technology Pvt. Ltd. established in 1997 is the world's largest manufacturer of Rotary Tillers from 2011. It is also the leading manufacturer of agricultural equipment and parts under the brand name of "Shaktiman". With the vast experience of agricultural technology, Shaktiman has state of the art manufacturing facilities in 27 acres at Bhunava near Rajkot India.

The manufacturing processes equipped with latest machinery ensures superior quality & durability.

Shaktiman is an ISO 9001:2008 Certified company, is exporting world class Products to more than 71 countries. The network in India comprises of 42 distributors and 685 dealers.

Product range: The product portfolio covers most of the crop cycles machineries that includes Rotary Tillers, Side Shift Rotary Tiller, Mobile Shredder, Rotary Mulcher, Power Harrow, Round Baler, Post hole digger, Fertilizer Broadcaster, Roto Seed Drill, Hay Rake, Rotary Slasher. Also includes newly launched products like Self-propelled tree maintenance Platform, Compost Spreader, Square Baler, Sugarcane Harvester, Tractor mounted & High clearance boom sprayer.

Process technology:

27 acres of state-of-the art manufacturing facility equipped with VMC, CNC, and HMC etc.

1. Laser and plasma cutting for precision and consistent quality
2. Robotic plant to ensure superior quality in blade manufacturing
3. In house heat treatment facility
4. Powder coating as well as Liquid Paint shop
5. Government of India recognized R&D facility

Expectations from TPM:

1. To adopt word class manufacturing.
2. Up gradation of employee skills.
3. Sustenance of improvement .
4. Deployment of best practices throughout the organization .
5. Achieve Zero Accident ,Zero Breakdown, Zero Defect .
- 6.Zero Customer Complaints.

Benefits Achieved: By practicing TPM activities in plant, we got following benefits with respect to PQCDSM.

	Parameter	UOM	Good to be	Pillar	BM 12-13	Actual (Q-3)16-17
Productivity	Productivity	Nos./ Man/Hr.(Avg.)	↑	KK	6.5	10.4
	Overall Equipment Effectiveness	% / Month(Avg.)	↑	KK/JH/PM	62.5	83.3
	Plant Wide Break Down Occurrences	Occ./Month(Avg.)	↓	PM/JH	534	157
Quality	Warranty Cost	Rs./month(Avg.)	↓	QM	2.67	1.37
	Customer Complaint(Domestic)	Occ./Month(Avg.)	↓	QM	16	1.9
	In-process Rejection	PPM/Month(Avg.)	↓	QM	6912	1221
	Supplier Rejection	PPM/Month(Avg.)	↓	QM	2024	754
Cost	Manufacturing Cost/unit	Rs./Unit(Avg.)	↓	KK	63278	49043
Delivery	Delivery Rating	%/Month(Avg.)	↑	KK	80	94
Safety	Reportable Incident	Nos./Year	↓	JH/PM	3	0
	Non Reportable Incident	Nos.	↓	JH/PM	23	5
Moral	Cumulative Kaizen	Nos.	↑	KK	40	4591

Award for TPM Excellence, Category B

Company : LUMAX Auto Technologies Ltd.
Factory : LUMAX Auto Technologies Ltd. Chakan, Pune
Product : Automotive Lighting Parts
TPM Kick OFF date : 28 June 2013
Award for TPM Excellence – Category - B : 2016



Mr. Anmol Jain
Managing Director

Company Profile

Lumax Auto Technologies Limited is located at Chakan in industrial area of Pune. It belongs to DK Jain Group. LATL, Chakan plant was established in 1995, with fabrication parts like Silencers, Chassis for Two wheelers, Forks etc. In 2011, the plant was totally transformed from Sheet Metal to Lighting Entity.

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 strives for continual improvement of manufacturing processes with emphasis on consistent quality and cost effectiveness. Lumax signifies LUMINOSITY MAXIMA.

Under the umbrella of “DK Jain group” there are twelve companies which are divided into 27 manufacturing plants spread in 8 states of India along with 4 R&D Centres.

Expectation from TPM

- Achieving excellence in quality.
- ZERO Rejections (Customer & In-House)
- Create safe and participative working environment.
- Elimination of losses
- Improve Capability of Operators for Machining Operations
- Sustain Zero Breakdown of Machines
- To minimize pollution & conserve natural resources to protect the Environment.

Achievement area - Tangible Benefits:

Performance Indicators		Unit	Dec-12	Achievement through TPM	
KMI			(Bench Mark)	Dec-16	% of Improvement
P	Production	Num/Hour	556	1035	86
	Increase in OEE	%	84	96	14
Q	Customer Complaint	Numbers	4	0	100
	Warranty Complaint	Phenomena	5	2	60
	In house rejection	PPM	18976	3618	81
C	Conversion Cost	% WRT Sale	8.32%	7.48	10
D	Delivery Adherence	%	100	100	Sustain
S	Incident (Major & Minor)	Nos.	0	0	Sustain
	First Aid	Nos.	8	0	100
M	Kaizens	Nos./Empl/Month	0.2	1.8	8 Times

SPECIAL AWARD FOR TPM ACHIEVEMENT

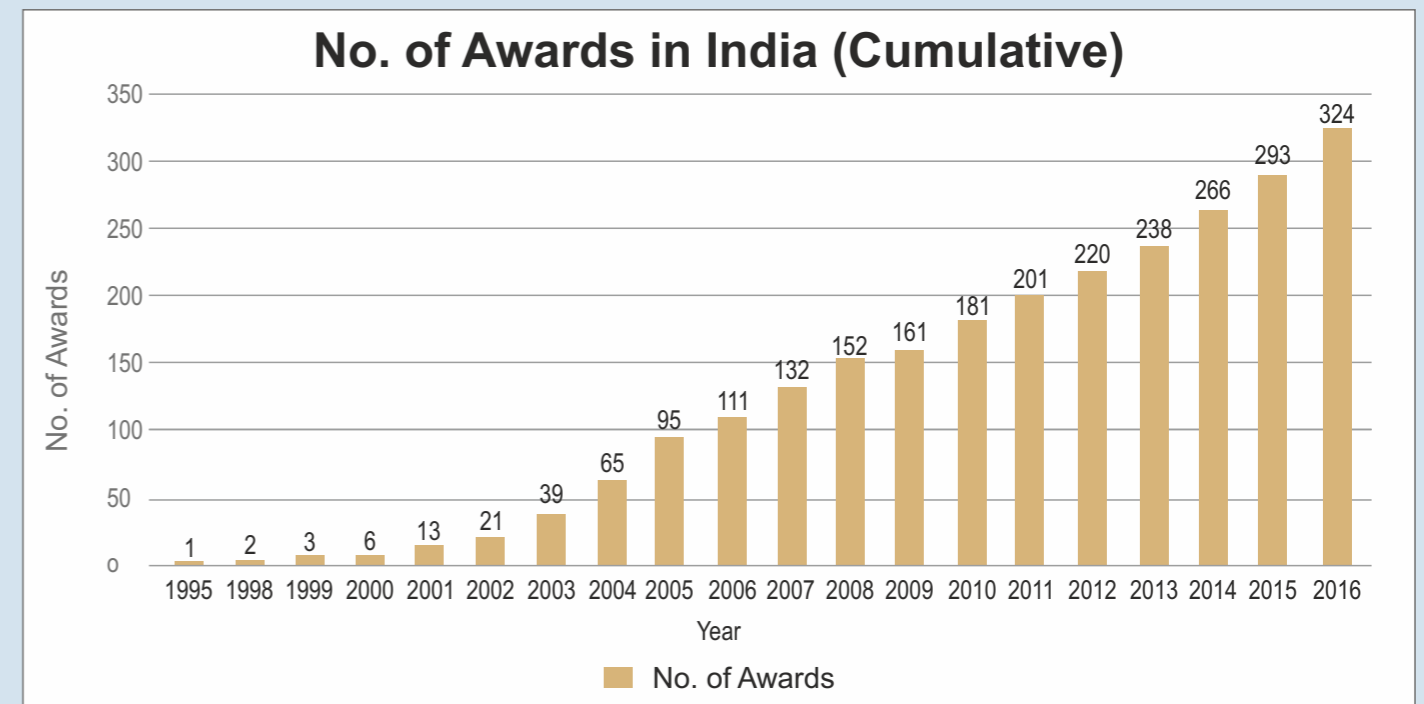
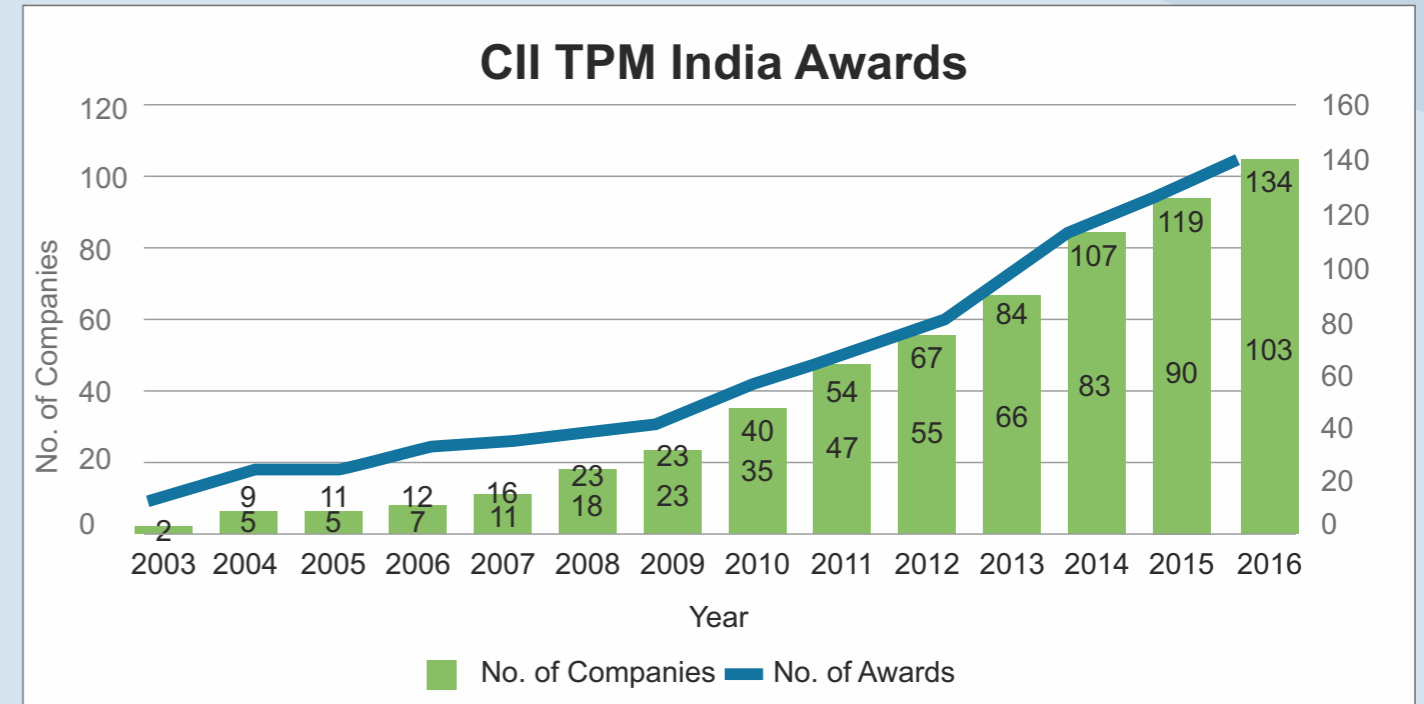


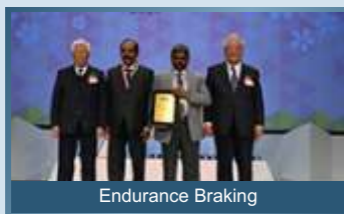
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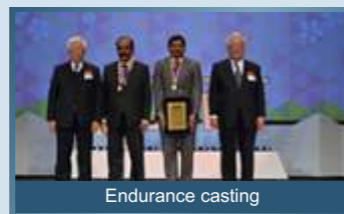
Award for Excellence in Consistent TPM Commitment



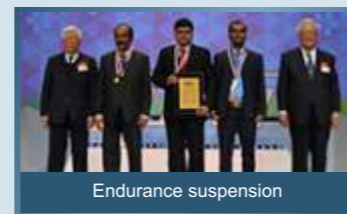
Badve Engineering Ltd.



Endurance Braking



Endurance casting

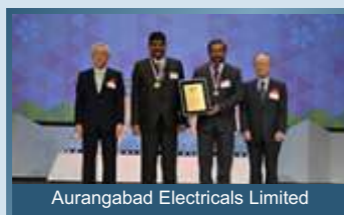


Endurance suspension

Award for TPM Excellence, Category A



A.G. Industries Pvt. Ltd.



Aurangabad Electricals Limited



BG LI-IN Electricals Limited



Carborundum Universal Limited



Badve Engineering Ltd.



EIMCO



Godrej & Boyce Mfg. Co. Ltd.



Godrej & Boyce Mfg. Co. Ltd.

Award for TPM Excellence, Category A



Mahindra Steel Service Centre Ltd.



Raychem RPG Pvt. Ltd.



Raychem RPG Pvt. Ltd.



SONA KOYO STEERING SYSTEMS LIMITED



Swaraj Engines Limited

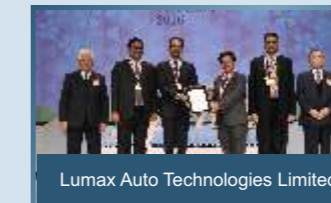


Tirth Agro Technology Pvt. Ltd (SHAKTIMAN)



A.G. Industries Pvt. Ltd.

Award for TPM Excellence, Category B



Lumax Auto Technologies Limited



Confederation of Indian Industry