



**Kaizen presentation on  
“ Equipment related design changes ”  
Presented by J.Sriram & B.Ramji**

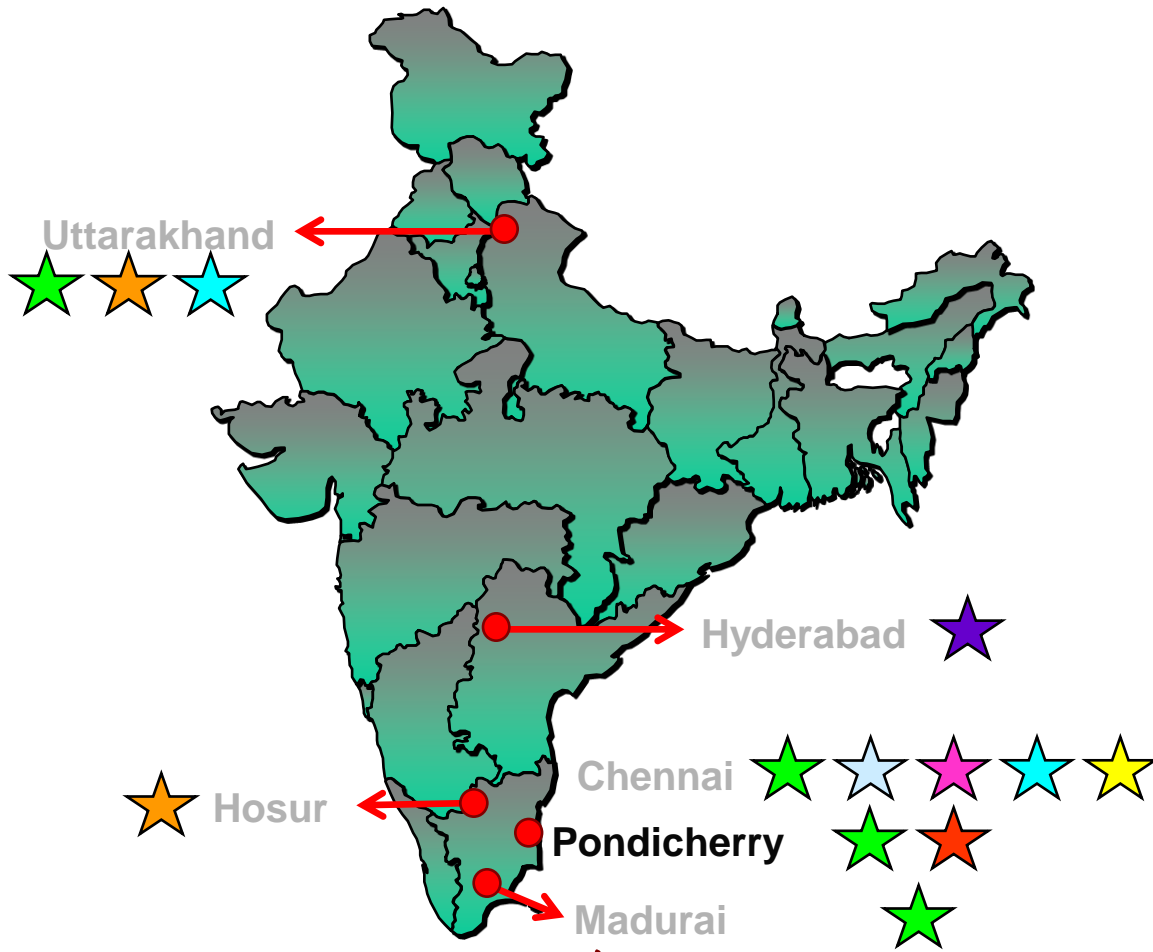
# Sundram Fasteners Limited

- **Established in 1966**
- **Sales: Rs.23.85 billion (US \$ 524 million)**
- **Diversified product range**
- **Global manufacturing presence:**
  - **India**
  - **China**
  - **UK**
  - **Germany**
- **Worldwide customers**



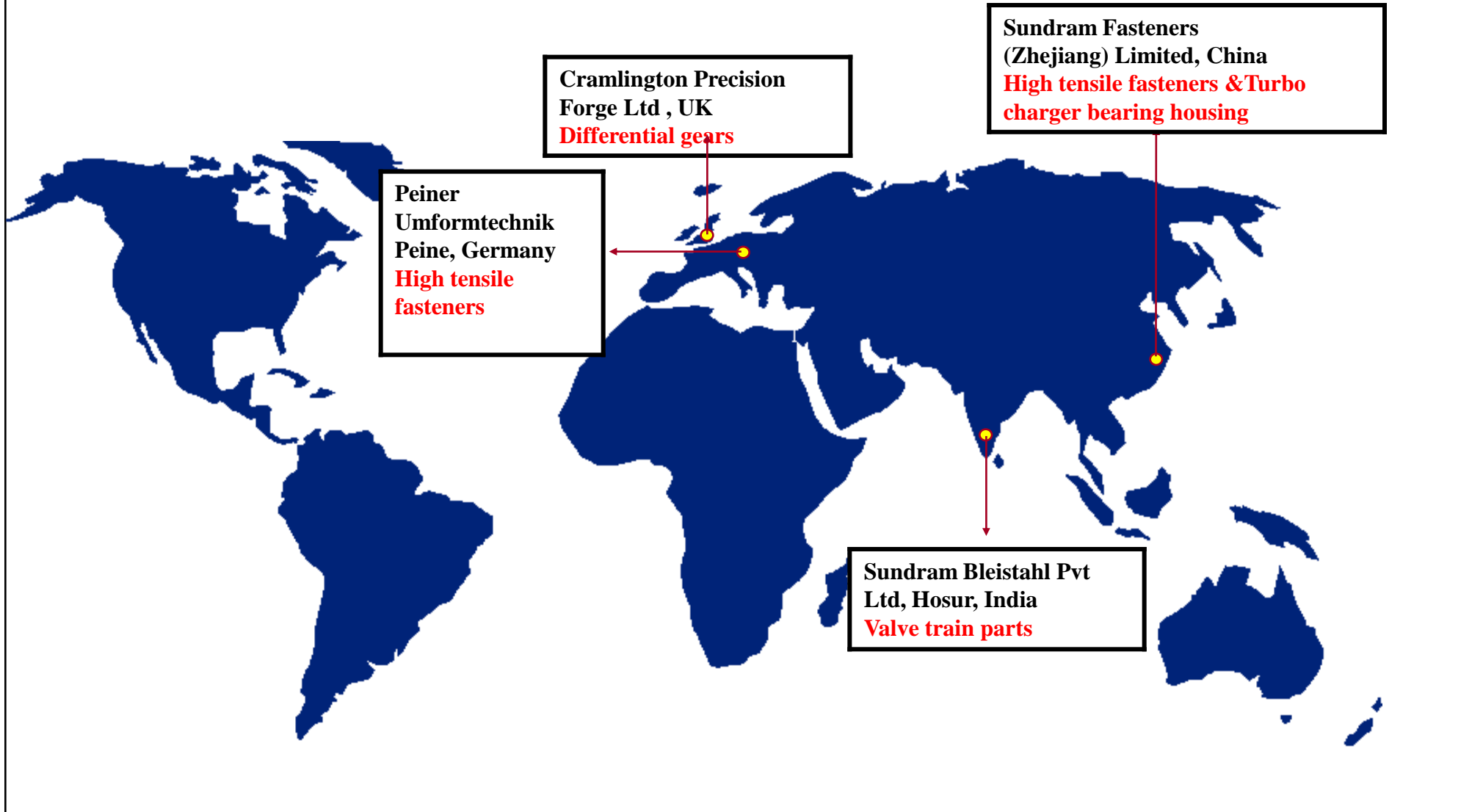
# Manufacturing Locations

## Product Groups



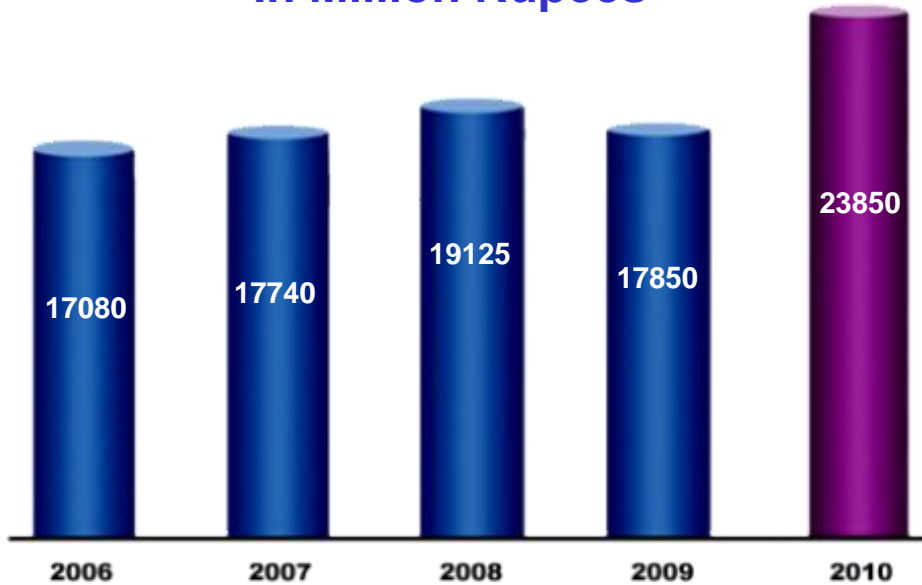
- ★ High tensile fasteners
- ★ Powder Metal & Cold extruded parts
- ★ Iron powder
- ★ Radiator caps
- ★ Gear shifters
- ★ Hot forged parts
- ★ Pumps and Assemblies
- ★ Hubs and Shafts

# Subsidiary Companies



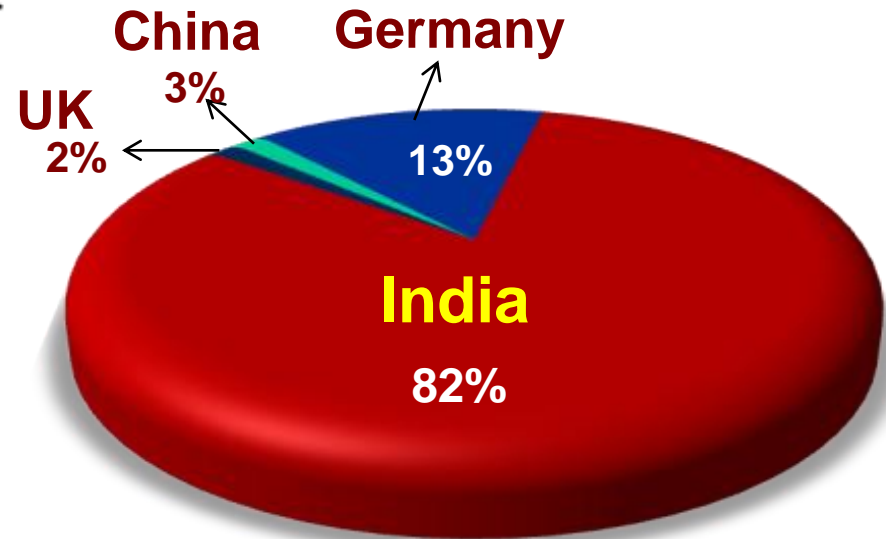
# SFL Sales

In Million Rupees



## SFL 2010 - Sales Country-wise Breakup

Rs. 23850 million  
(US\$ 524 million)

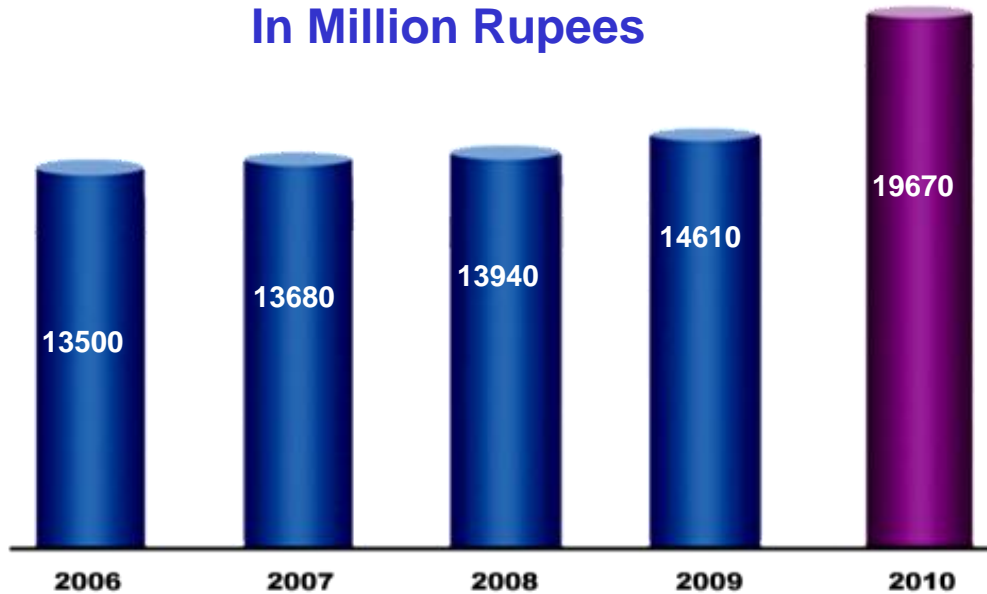


## **Indian Operations**

- **Product range: High tensile fasteners, Radiator caps, Cold extruded parts, Powder metal parts, Iron powder, Gear shifters, Hot forged parts, Automotive pumps and assemblies**
- **First Indian company to get ISO 9000**
- **All divisions are ISO/TS 16949 and ISO 14001 certified**
- **Fasteners, Aerospace Division certified for AS 9100 also**
- **Winner of TPM Excellence /TPM Consistency/TPM Special award**
- **Unique IR record: not a single working day lost since inception**

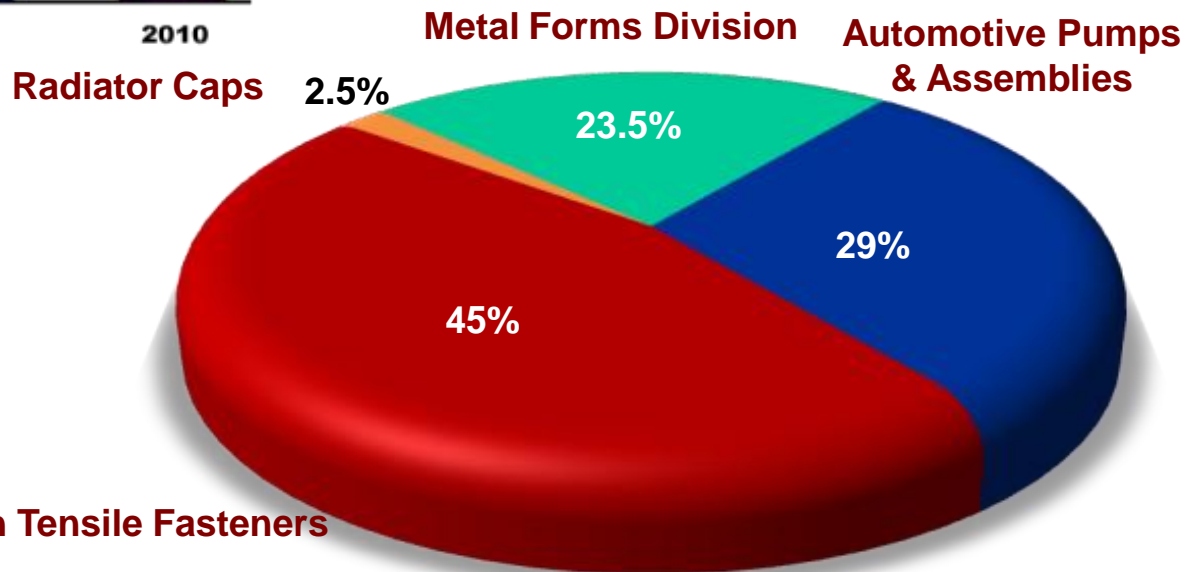
# SFL India Sales

In Million Rupees



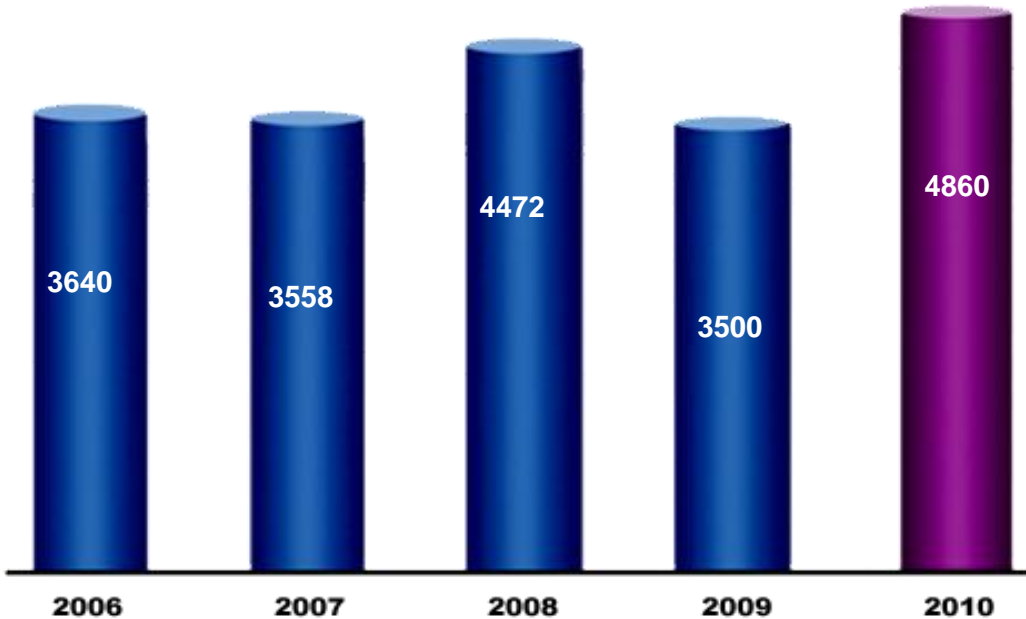
## SFL India – 2010 Sales Breakup

Rs. 19670 million  
(US\$ 432 million)



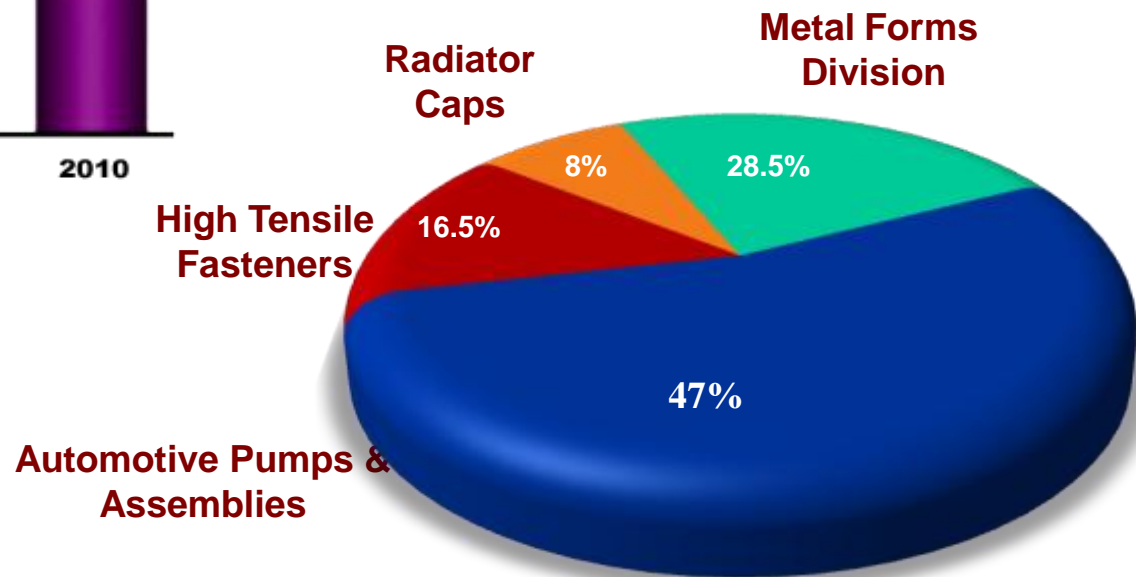
# SFL India – Exports

In Million Rupees



## SFL India – 2010 Exports Breakup

**Rs. 4860 million**  
**(US\$ 107 million)**



## **High Tensile Fasteners**

- **India's no. 1 fastener company**
- **Full range of specials and standards**
- **Four world-class manufacturing facilities**

**Installed capacity: 70000 Metric Tons**

- **Over 6000 part numbers**
- **OEM focus - 65% of business**
- **Global customer base**
- **Integrated manufacturing; Operator quality assurance**
- **NVLAP accredited laboratory to meet FQA**

# High Tensile Fasteners Product Range



Standard Fasteners



Wheel Fasteners



Special Fasteners



Construction Equipment Fasteners

# High Tensile Fasteners Manufacturing Locations



<b>Facility</b>	<b>Total Area (Sq.mtrs)</b>	<b>Built up Area (Sq.mtrs)</b>
<b>Padi</b>	<b>137300</b>	<b>32100</b>
<b>Krishnapuram</b>	<b>470000</b>	<b>29650</b>
<b>Pondicherry</b>	<b>212500</b>	<b>7500</b>
<b>Uttarakhand</b>	<b>22000</b>	<b>5200</b>

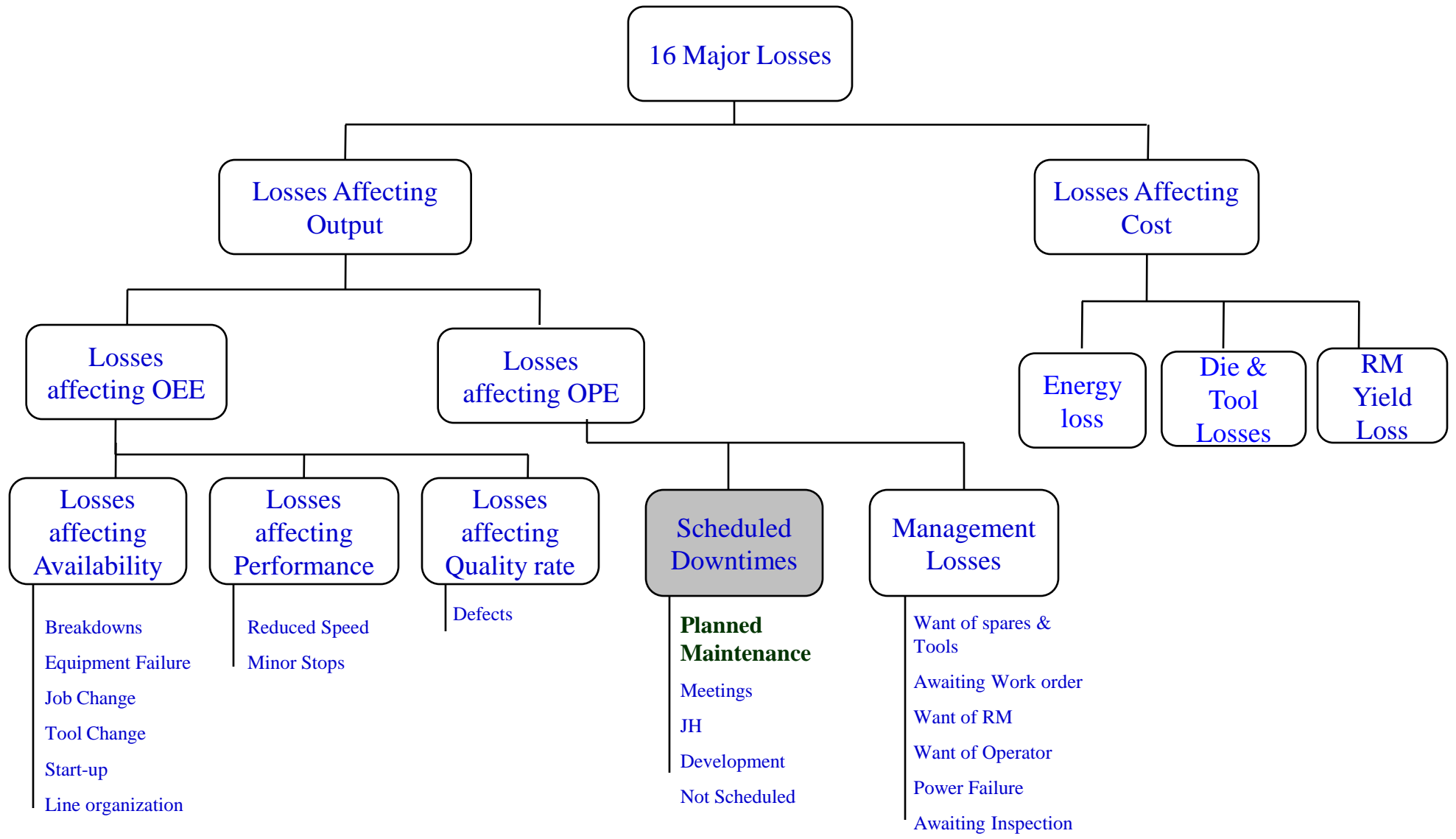
# **Kaizen Theme**

**“Equipment related design changes”**

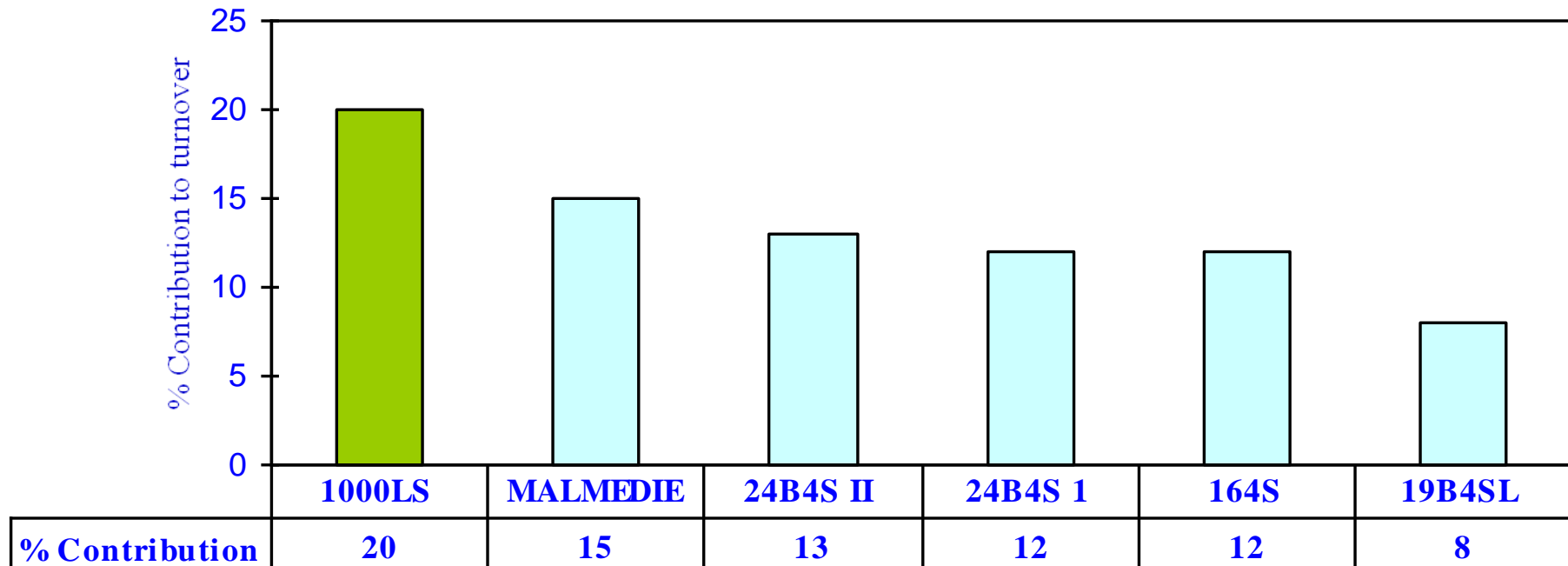
## **Why this Kaizen?**

- **Earlier, our focus was on restoring and maintaining the basic condition of our machines.**
- **However, now our focus has shifted to improving the condition of the machines through equipment related design changes.**
- **This will reduce / eliminate certain losses not addressed earlier.**

# Loss Structure



## 'A' Rank forging machines - % Contribution to Turnover

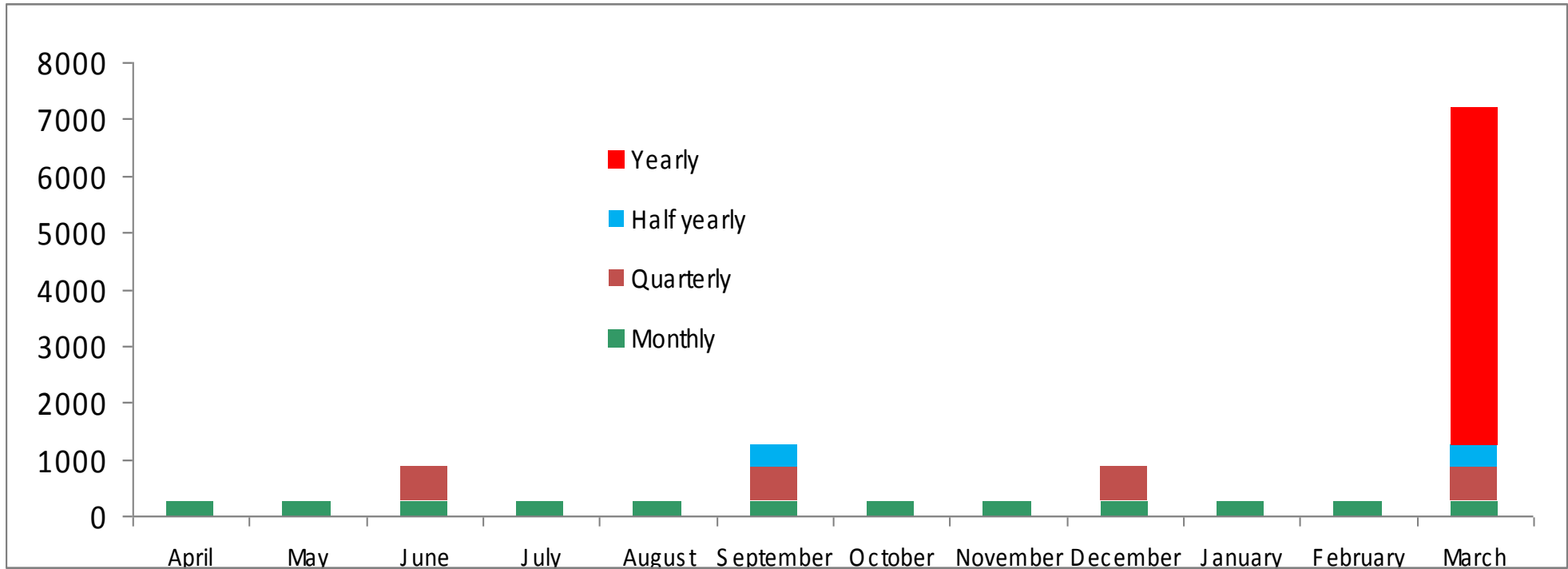


20% of the total turnover is achieved from 1000LS machine

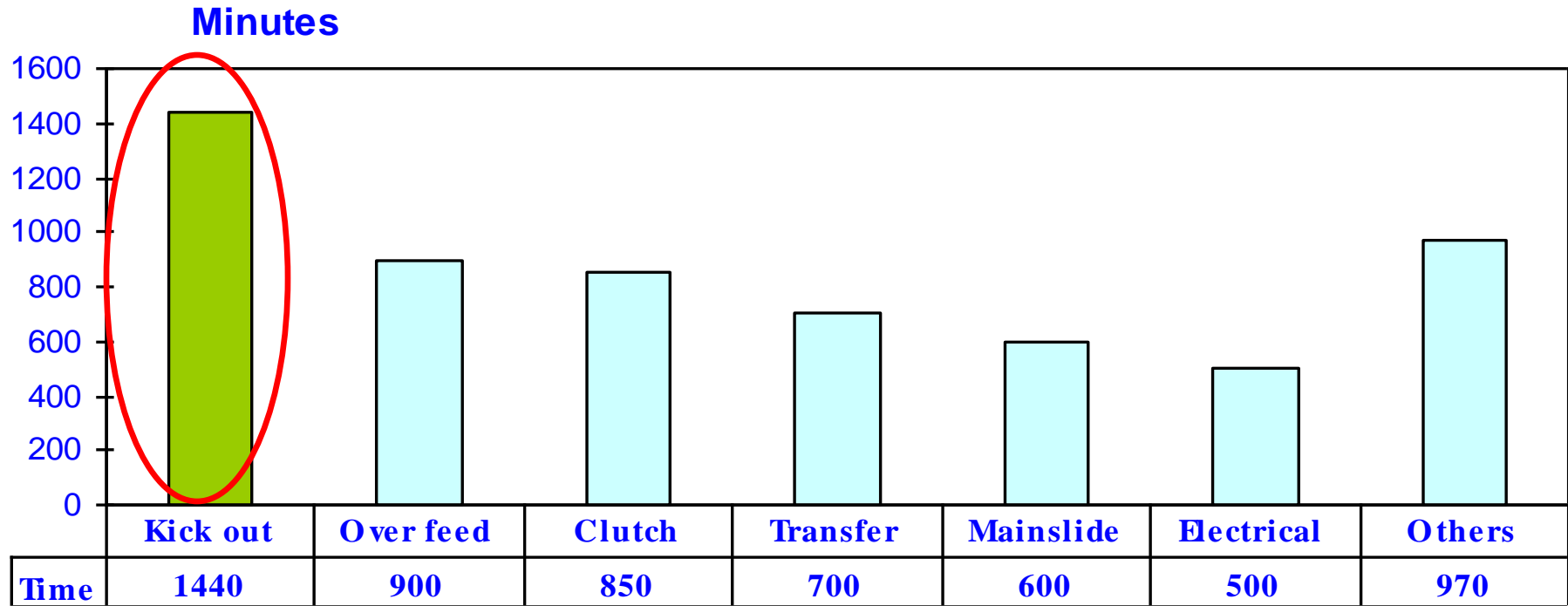
## 1000LS Cold forging Machine



## Planned Maintenance time in 1000LS



Interval	Month											
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Monthly	240	240	240	240	240	240	240	240	240	240	240	240
Quarterly			630			630			630			630
Half yearly						370						370
Yearly												5960

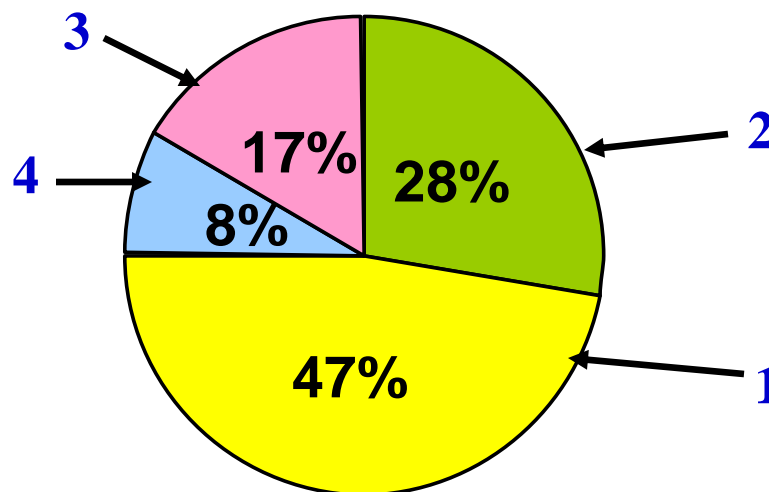
**Break up of yearly PM activity**

**PM - Elemental activities of KO area maintenance**

**PROBLEM**

**Planned maintenance time of  
K.O area is high at  
1440 mins.**

## PM - Elemental activities of KO area maintenance



### Activities carried out in Kick Out area during Planned Maintenance

S. No	Activity	Duration in Minutes	Contribution %
1	Dismantling & Assembling of K.O pad	600	47
2	Dismantling & Assembling of K.O shaft	480	28
3	Dismantling & Assembling of Trim Cam Holder	120	8
4	Reconditioning of body thread	240	17
Total time		1440	100

## **Why –Why analysis**

**Planned Maintenance time is more in K.O area**



**Dismantling and assembling of K.O pad & K.O shaft required**



**To recondition the body thread of trim cam holder**

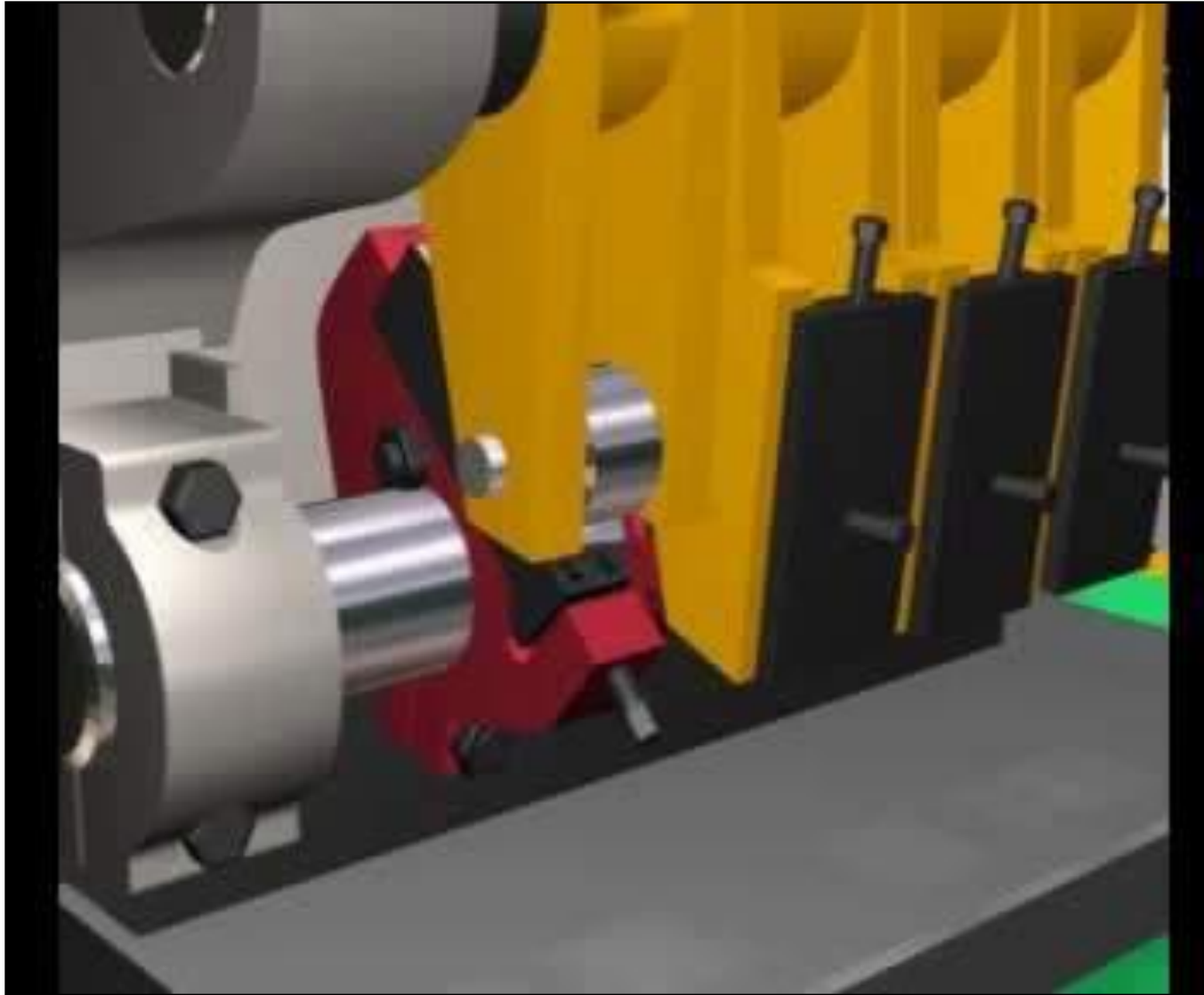


**Body thread of trim cam holder wears out fast.**

## **Root cause**

**Body thread of trim cam holder wears out fast.**

## Why body thread of trim cam holder wears out fast?



# **Kaizen Idea**

**Eliminate body thread wear of trim cam holder**

# How kaizen idea is implemented

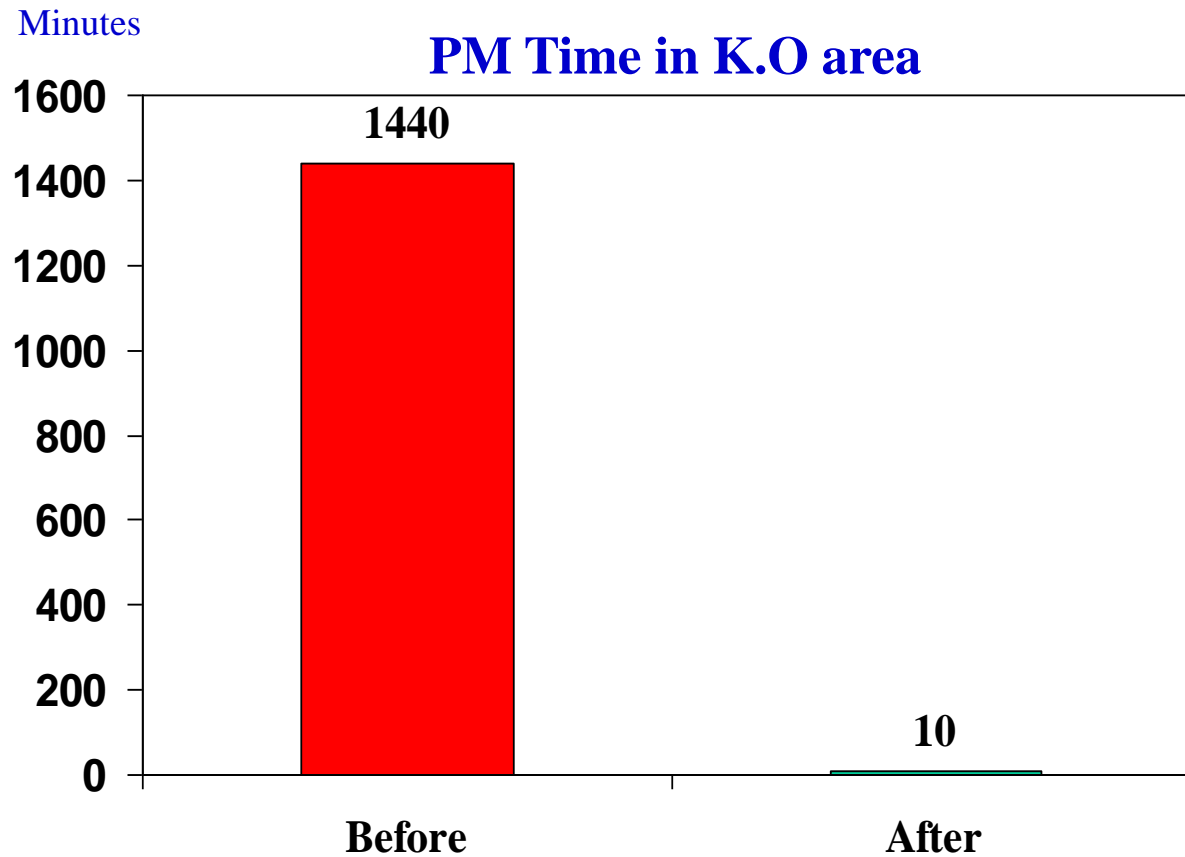


**KAIZEN**

## **How kaizen idea is implemented**

- **Eliminated threads in the trim cam holder body**
- **By providing a replaceable threaded insert in the body**
- **Threaded insert can be replaced without dismantling KO assemblies**
- **Reconditioning of trim cam holder totally avoided**
- **Total PM time of KO area is now 10 minutes**

# Result



## Benefits

- Machine efficiency improved by 2%
- Output increased by 89500 pieces / year
- Reduction of Rs. 150000/year in maintenance cost



**Total Cost Benefit to sales**

**Rs. 30 Lakhs/ Year**

# Horizontal Deployment through MP sheet.

MP INFORMATION SHEET				
Division : Hex		Date of completion : 20.06.10		
Unit : Pondicherry		Completed by : R.Kondappan		
Improvement Theme : Equipment design change				
Problem : MTTPM in 1000LS is High		Registration Code : 120		
		Name of facility : 1000LS		
		Control No : 4		
Cause : More dismantling & assembling time of KO area		* Target of improvement 1. Reliability 2. Maintainability 3. Autonomous Maintainability 4. Operability 5. Energy saving 6. Safety		Previous actual value: 1440 mts.  Target value: 10 Mts.
Before Improvement		After improvement		
<p>Labels: Lock screw, Insert piece, Trim cam, Trim cam holder, Worn out body thread</p>		<p>Labels: Lock screw, Insert piece, Trim cam, Trim cam holder, Replaceable Threaded Pin</p>		
Effect : (Cost estimation : Possible or not possible)		Standardisation for maintenance work:		
Total Amount :Rs 18 Lakhs		* Change :		
Effective Amount reported :Rs		* Other :		
		* Horizontal deployment :Other Plants		
A. Necessity	B. Classification	C. Cause	D. Target	E. Standardisation
1. Feedback must be	1. Change mechanism and construction / structure	1. Less process capability	1. Improvement in reliability	1. Engg. Std Document
2. Necessary, if possible	2. Change in operation (Func.)	2. Design failure	2. Improvement in maintainability	2. Manufacturing Drawing
3	3. Change in control circuit	3. Manufacturing defect	3. Improvement in autonomous maintainability	3. Spec. Document
4	4. Change in raw material	4. Spec. defect	4. Improvement in operability	4
5	5. Change parts	5. Assembling defect	5. Improvement in energy saving	5
6	6. Others	6	6. improvement in Safety	6
Opinion				

## Concept Horizontally Deployed in

1) 24B4S I

2) 24B4S II

3) 164S

**THANK YOU**