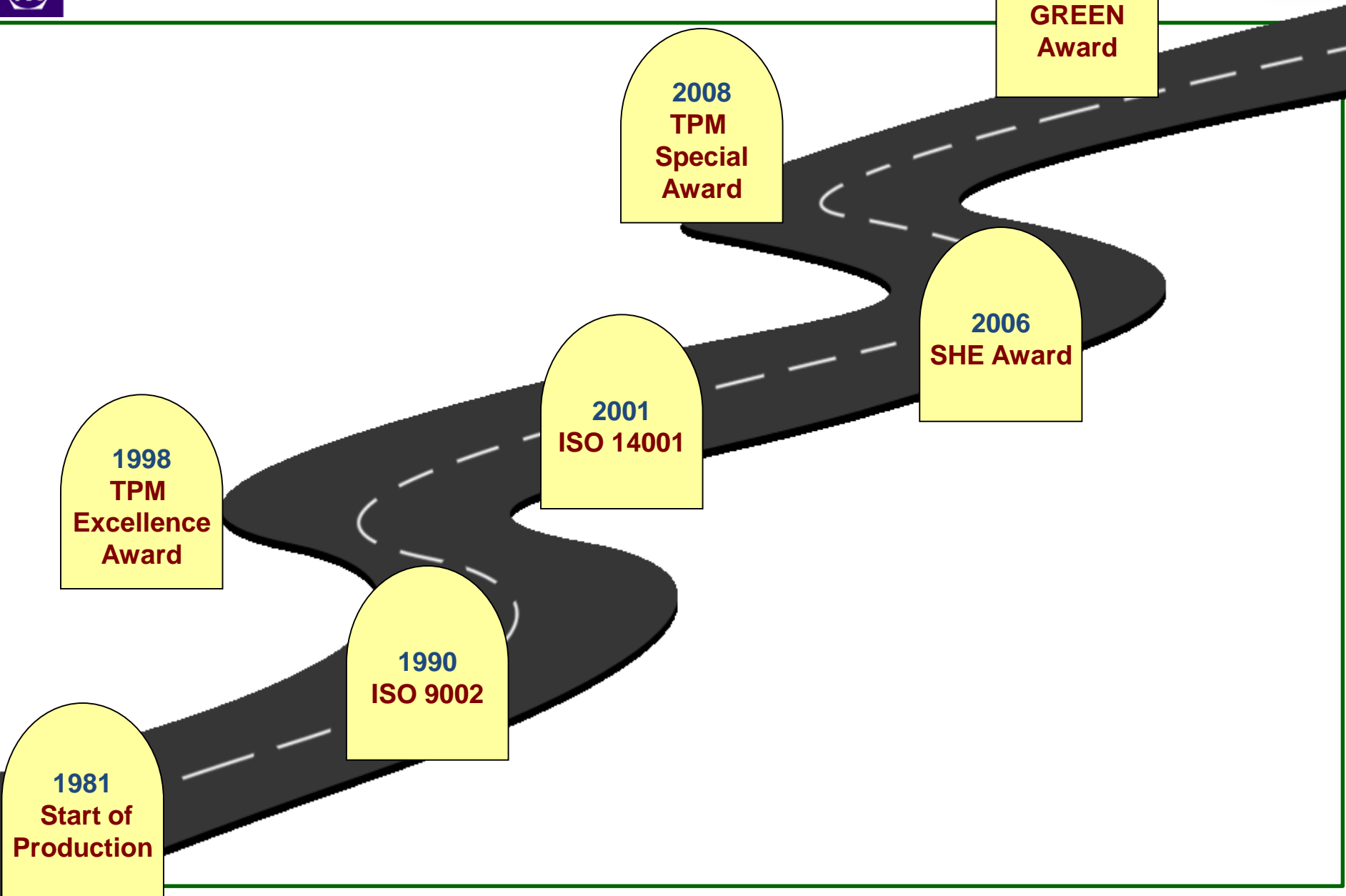






Milestones of KPM





- **Registration with CII and Training – Nov'12**
- **Formation of CFT's - Dec'12**
- **Awareness and Training programmes - Jan'13 to Mar'13**
- **Handholding visits by CII -Feb'13**
- **Celebrating Green Co Month - Jun'13**
- **Document Submission – Oct'13**
- **Final assessment – Nov'13**

- Awareness and Training to employees, stakeholders
- Cross functional approach
- Employee involvement
- Plan and Execution of improvement actions
- Periodic review by Top Management
- Constant feedback from CII

Parameters (Weightage Points)

S. No	Parameters	Weightage (Points)
1	Energy Efficiency	150
2	Water Conservation	100
3	Renewable Energy	100
4	GHG Emission Reduction	100
5	Material Conservation, Recycling & Recyclables	100
6	Waste Management	100
7	Green Supply Chain	100
8	Product Stewardship	75
9	Life Cycle Assessment	75
10	Others (Ventilation, Site Selection & Innovation)	100
Total		1000

Level	Points	Rating
Level 1	350 – 449	Certified
Level 2	450 – 549	Bronze
Level 3	550 – 649	Silver
Level 4	650 – 749	Gold
Level 5	> 750	Platinum

- **Energy**
- **Renewable Energy**
- **Water Conservation**
- **Waste Management**
- **Material Conservation/ Recycling / Recyclability**

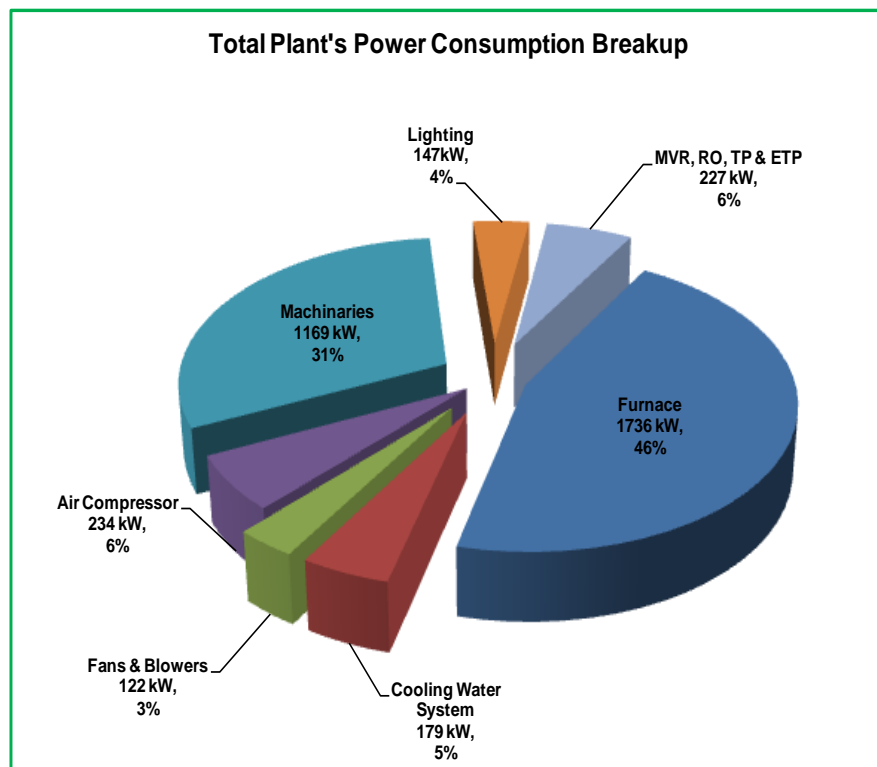
- **Green House Gas Emission**
- **Green Supply Chain**
- **Life Cycle Assessment**
- **Product Stewardship**
- **Others**

Energy Efficiency

Energy Efficiency (EE)

Energy Monitoring

EE Credit 3: Energy consumption Break up



Section	Power Consumption, kW	%
Furnaces	1736	46%
Machineries	1106	29%
Air Compressor	234	6%
Lighting	210	6%
MVR, RO, IETP	227	6%
Cooling Water System	179	5%
Fans & Blowers	122	3%
Total	3814	100%

Reduction in SEC

EE Credit 4: Projects Implemented in Last 3 years

Complementary drives for conveyors & burr separator



Burr separator



Product conveyor



Coolant Pump

Energy saved
21000 Units / month

EE Credit 5.3: Steps taken to have Energy Intensive Equipments at its best



New additional
loading

Existing loading

Before:
691 Units / MT

Loading Pattern Improvement:
Double the output in FTPL 300 furnace

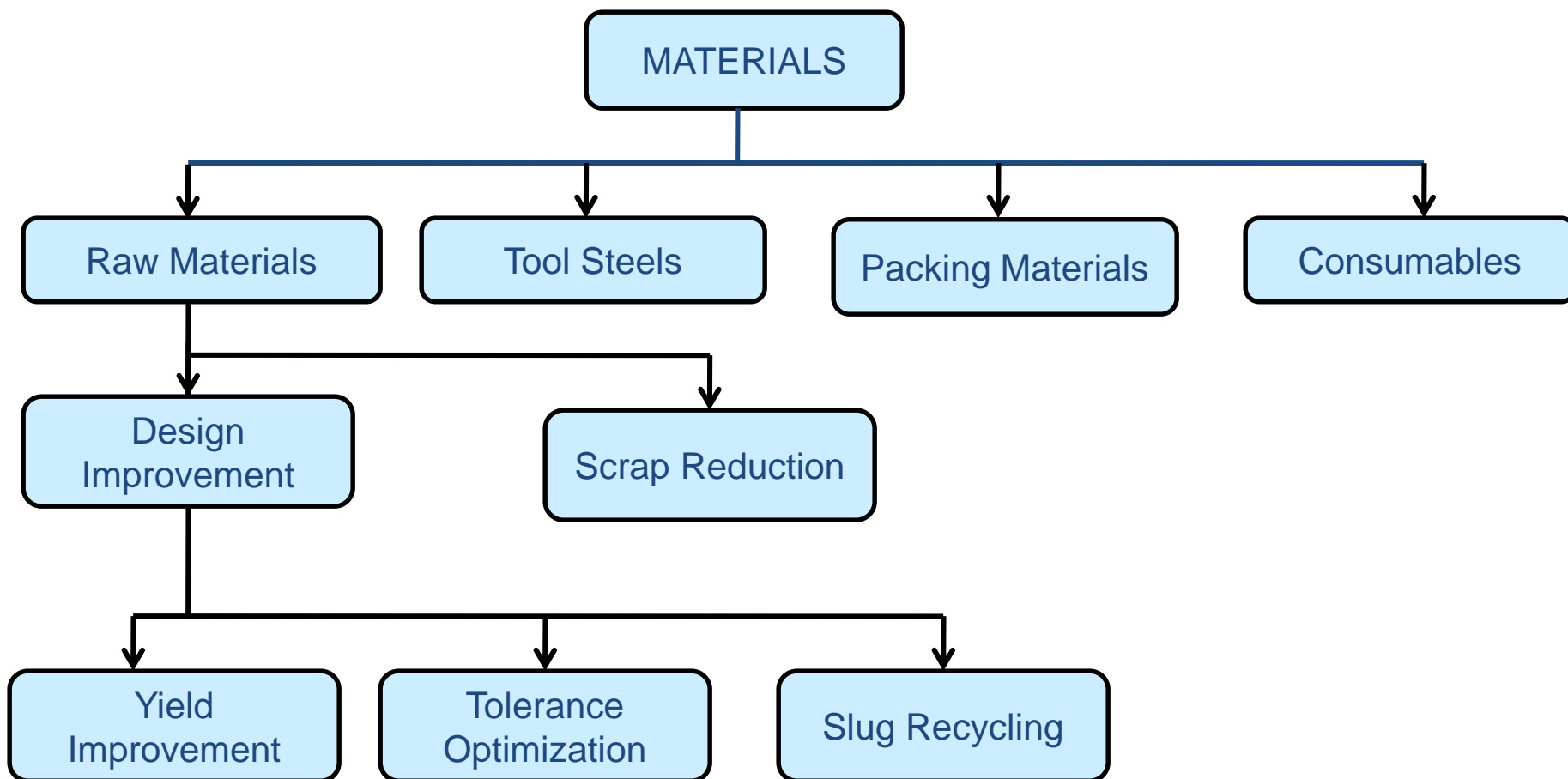
After:
550 Units / MT

- **14 % Reduction in energy consumed in last 3 years through 17 major projects**
- **Specific Energy consumption in heat treatment furnaces reduced by 10%**

Material Conservation & Recycling and Recyclability (MCR)

MCR Credit 3.0 - Systems

MCR Credit 3.1 Frame work for Material Conservation and Management:





MCR Credit 3.1 Framework for Material Conservation and Management



- RM consumption reduction is emphasized using a two fold approach
 - Design Improvement
 - Scrap Reduction
- Design Improvement focuses on projects like Yield Improvement, Tolerance Optimization and Slug Recycling

Yield improvement :-

- Yield can never be 100% in any manufacturing process, as there are some losses
- Optimization of the process by reducing the losses leads to an improved yield %
- Yield Improvement - Use fewer resources, less energy, processing facility and obtain higher revenue for the same input



MCR Credit 3.1 Frame work for Material Conservation and Management - Design Improvement

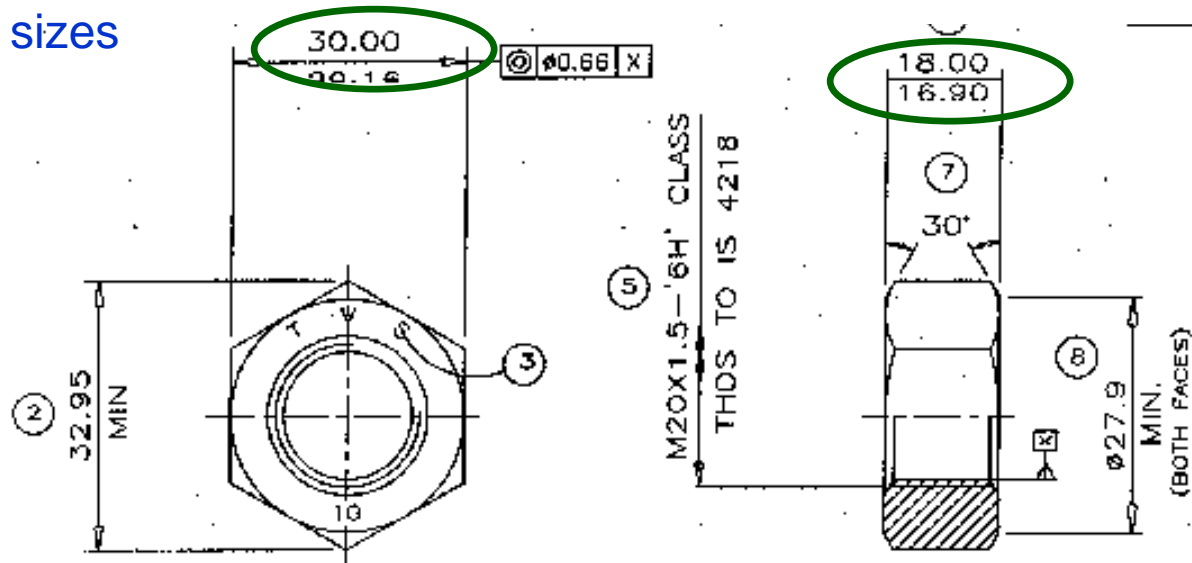


SI No	Themes		Plan Value (Rs. Lacs)	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan'14	Total
1	Formed Version for Flange bolts and Screws	M8 & M10 Series	Plan	1.9	2.8	3	3	3	3.2	3.2	3.3	3.3	3.3	37
			Actual	1.8	2.5	2.8	2.8	2.8	3.0	3.2				18.9
		M12 , M14 & M16 Series	Plan	-	-	0.5	1.2	1.3	2	2.6	3	3	3.5	24.1
			Actual	-	-	0	0.8	0.8	1.4	1.7				4.7
2	Machining Stock Reduction	Shoulder bolt – Trap Extrusion	Plan	0.1	0.2	0.2	0.3	0.5	0.5	0.5	0.5	0.5	0.5	5.6
			Actual	0.09	0.2	0.2	0.2	0.2	0.4	0.4				1.69
		M/C, Grinding Elimination/ Stock Reduction	Plan	-	-	0.3	1	1.2	2	2.3	2.8	3.7	4.2	28.9
			Actual	-	-	0.2	0.8	0.8	1.4	2.1				5.3
Total			Plan	2	3	4	5.5	6	7.7	8.6	9.6	10.5	11.5	95.6
			Actual	1.9	2.7	3.2	4.4	4.6	6.2	7.4				30.4

Tolerance Optimization

- RM consumption can also be reduced by optimizing the tolerance range
- Tolerance optimization can result in Net RM saving of about 0.8 – 2.2 g depending on the sizes

Example,



S.No	Parameter	Before Optimization		After Optimization	
		Min	Max	Min	Max
1	Thickness	16.9 mm	18.0 mm	17.15 mm	17.65 mm
2	Across Flat	29.16 mm	30.0 mm	29.20 mm	29.45 mm

- Tooling materials receive maximum attention for conservation and recycling as
 - They are very expensive
 - They are difficult to manufacture due to intricate design
- The tooling materials could be either carbides or tool steels
- Both tool steel and carbides are reworked and used multiple times till all avenues are exhausted for any further usage

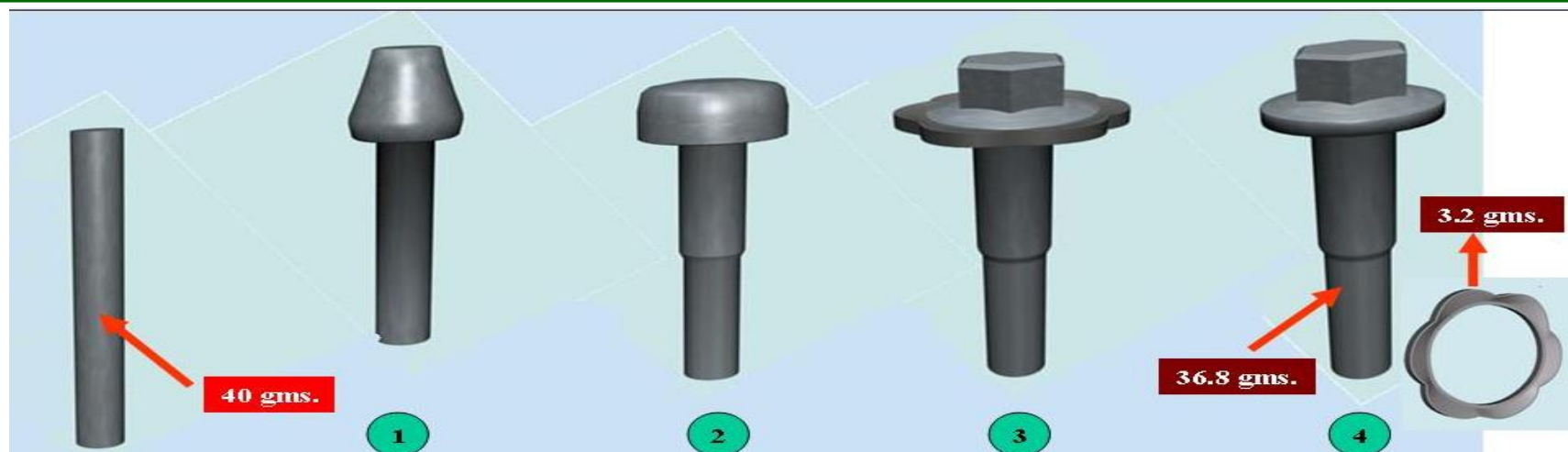
MCR Credit 4 :- RM Conservation

- ❖ Internal operations are focused in reducing RM consumption by
 - ❖ Design Improvement (Yield Improvement)
 - ❖ Scrap Reduction

Design Improvement Projects:-

S.NO	ACTIVITIES	IMPROVEMENTS
1	Elimination of Collar trimming	Process changed from Collar trimming to Forming
2	Elimination of Pointing and Spigot Machining	Pointing & Spigot Extrusion in Forging
3	Elimination of TRD machining in Shoulder Screws	Forged with TRD through Trap Extrusion
4	Weight reduction in Fasteners	To provide Head Recess
5	Slot Milling Elimination	Slot Forming

Collar Trimming

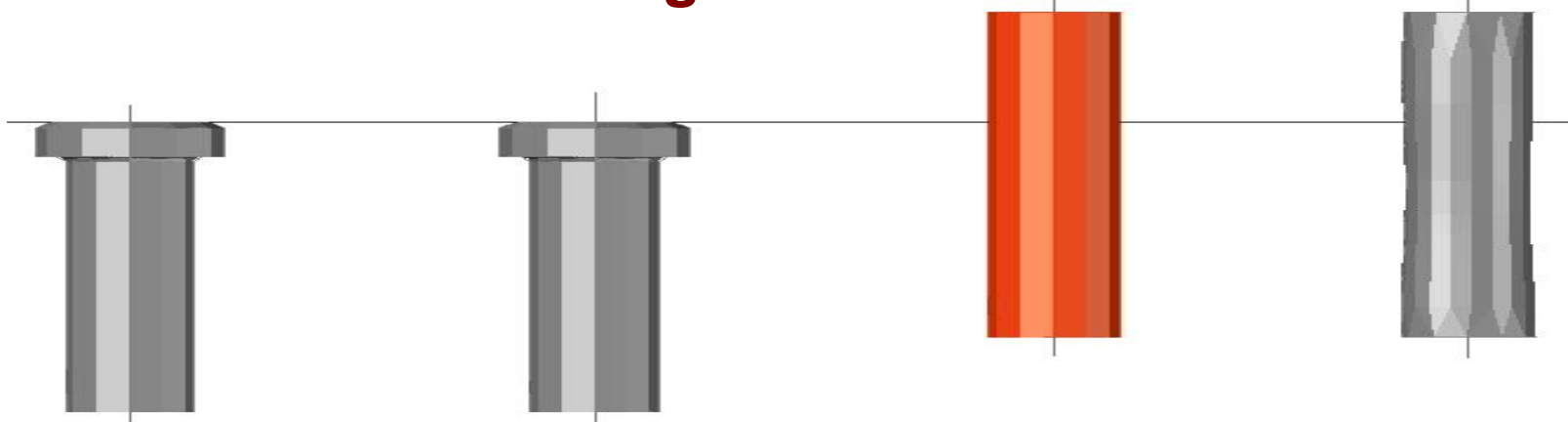


Collar Forming

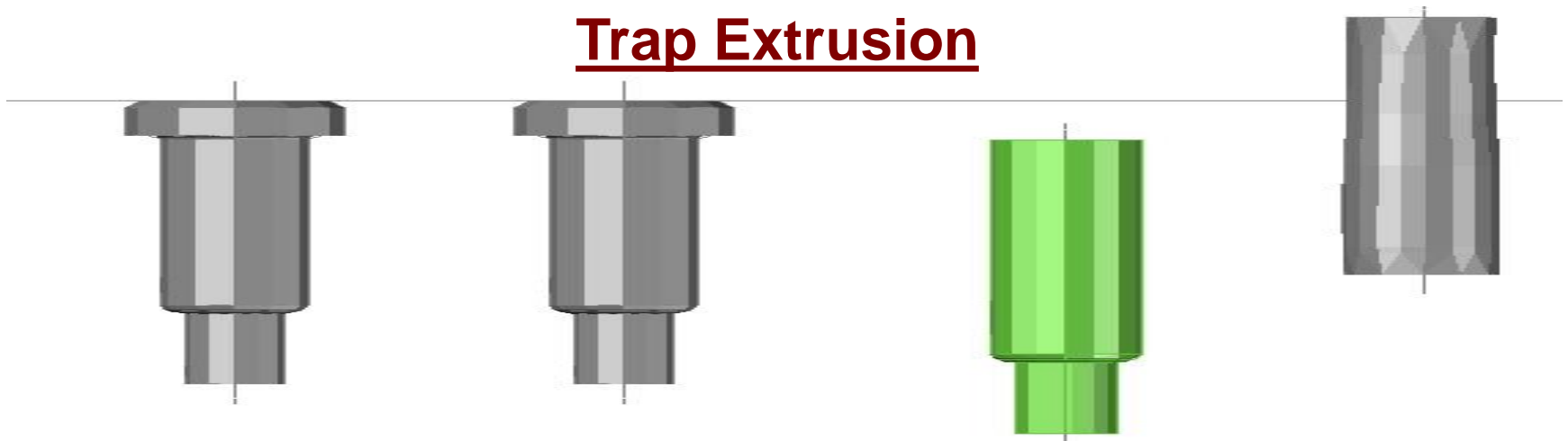


RM SAVING = 2 – 6 g/product

Through Extrusion



Trap Extrusion



RM SAVING = 5 – 12 g/product

BEFORE



AFTER



RECESS TO A DEPTH
OF 3.0 MM

RM SAVING = 1 - 3 g/product

SL No	THEMES	COUNTERMEASURE
1	Consumption of carbide tools reduction	Reclamation of carbides from lower size to higher size products
2	Consumption of Tool steel items reduction	Recycling of trim dies
3		Rethreading the used CTR dies to other sizes
4		Recycling of edge damaged FTR dies
5		Annealing the used punches, piercing pin and die inserts and conversion to other sizes
6		Recycling of Secondary tools like Taps, coupler shanks, steel cutters



Material Conservation, Recycling & Recyclability

- 210 MT Raw material (Steel saved/ year) due to conservation projects
- 50% of tools reused/ recycled
- 80% of the Packing material is of recycled category

Waste Management

Journey Towards 100% Recycling



Effluent Treatment
Plant



Ultra Filtration



Reverse Osmosis

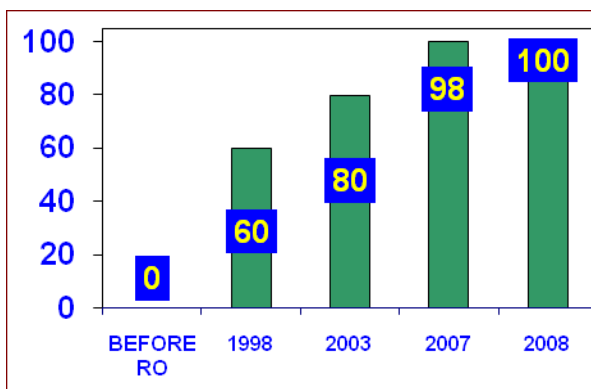


Mechanical Vapour
Recompressor



Crystallizer

Zero discharge plant since 2008 with
100% recovery of both Industrial
effluent and Sewage effluent



- 12 % reduction in water consumed in last 3 years through various projects – Industrial use
- 20 % reduction in water consumed in last 3 years in domestic use
- Rain water harvesting improved water table and quality



- Share of renewable energy increased to 70% in 2013-14 from 12% in 2011-12
- On-site projects like solar water plant and bio-gas plant helped in increasing renewable energy share

Renewable energy calculation

Year	Total consumption		Wind energy		Green energy		Total Renewable Energy	
	Units lakhs	%	Units lakhs	%	Units lakhs	%	Units lakhs	%
2010-11	268.10	100	16.06	5.99	0.00	0.00	61.87	5.9
2011-12	282.99	100	23.28	8.23	9.79	3.46	33.07	11.69
2012-13	250.23	100	39.97	15.97	126.43	50.53	166.4	66.50
2013-14 (upto Oct'13)	146.08	100	68.12	46.63	32.15	22.01	100.27	68.64



View of our own Wind mills, Solar panels and Bio gas plants

CO₂ Emissions reduced by 57%
 (from 1230 kg/ MT in 2010-11 to 528 kg/MT in 2012-13)

year	scope 1 (MT)	scope 2 (MT)	total emissions (MT)	annual production (MT)	Specific Intensity (kg of CO2/MT of product)
2010-11	5,175	22,936	28,110	22,848	1230.32
2011-12	3,804	23,693	27,497	24,161	1138.08
2012-13	4,933	5,855	10,788	20,400	528.84

- **Shop in shop concept practiced which has eliminated material movement to vendors**
- **Milk Run model introduced to reduce material movement**
- **Integration of operations at vendors done**
- **Raw material supply centralized with daily supplies by having supplier stock yard nearby**
- **Top 5 vendors started practicing Green Co concepts**

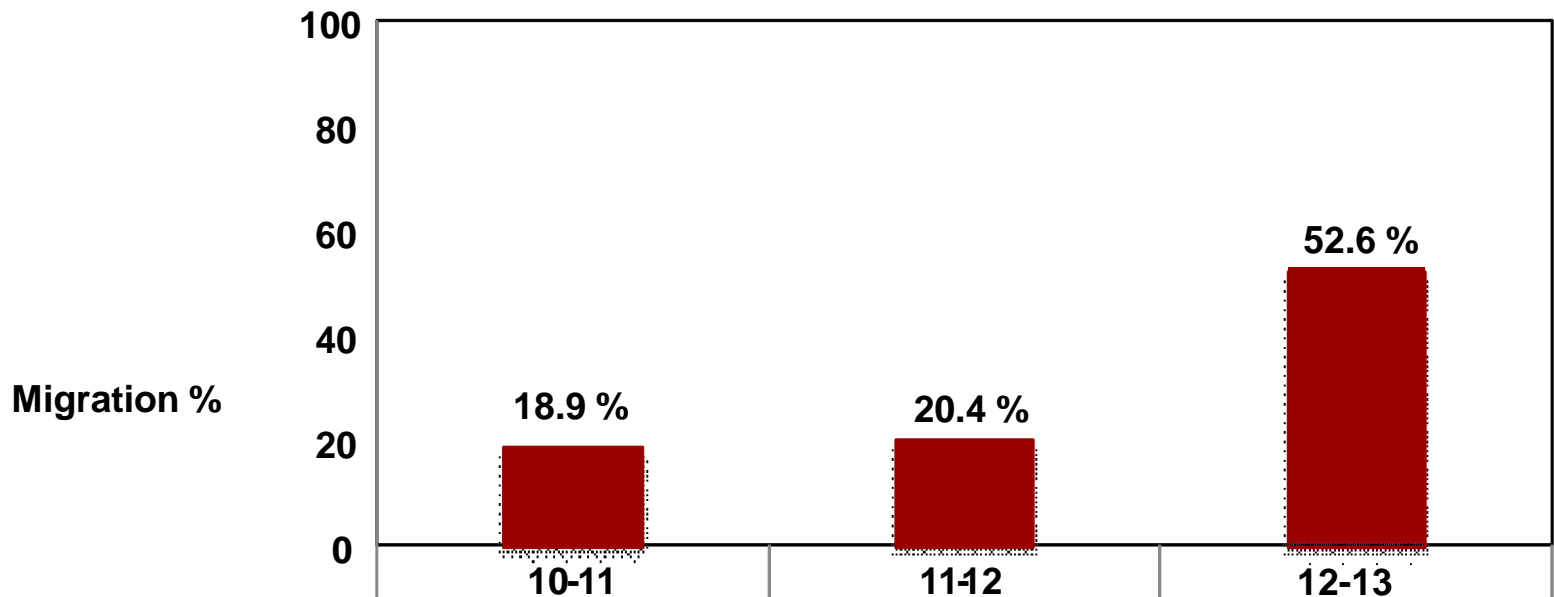


Product Stewardship

- **Migration to Trivalent chrome passivation from hazardous hexavalent chrome for 25% of the products**
- **Migration to chrome free Zinc flake coatings for 10% of the products**
- **Educating customers during product design stage itself to adopt hazard free coatings**

Product Stewardship

PS Credit 4 Reduction in Toxic or Hazardous substances in products



	10-11	11-12	12-13
Hexavalent to Zinc Flake Coating Migration (MT/Month)	10.5	41	70
Hexavalent to Trivalent Plating Migration (MT/Month)	350	370	372
Total Migration (MT/Month)	360.5	411	442
■ Total Migration in %	18.9	20.4	52.6
Total Despatch (MT/Month)	1904.0	2013.4	839.3

LANDSCAPING

OS Credit 4

Though the site is in rain starved region, green landscaping and bio-diversity is one of the focus points for the unit



TREE SPECIES DETAILS (IN SIDE FACTORY PREMISES)

Grown up neem	9521
Small neem trees	4520
Peltophorum	410
Mangium	86
Delonix	342
Tabubia	31
Angsaana	70
Badam	15
Naval	120
Drumstick	110
Plumeria	1
Ptero spermum	3
Ficus Sp	6
Mango	5
Bauhinia	4
Cordia	1
Spathodia	1
Sapota	4
Cassia fistula	2
Coconut	15
Tamarind	15
Leucaena	10997
Casuarina	4342
	30621

Factory area : 360000 Sq.m.

Built up area : 23178 Sq.m.

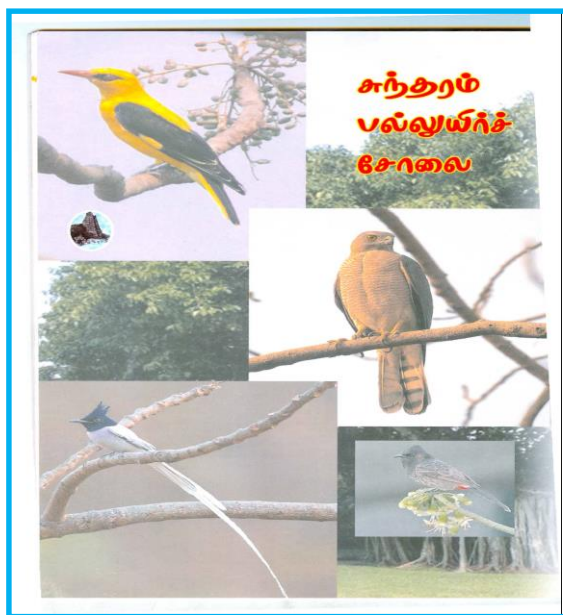
No of trees : 30621

Lawn area: 38850 Sq.m.

LANDSCAPING

OS Credit 4.3

Efforts have been put to create and maintain biodiversity by preserving native and adoptive species



Space for birds
sanctuary

“Sundram
nature club” to
conserve nature



LANDSCAPING

OS Credit 4.4

Recreational and inspirational spaces

With factory having sprawling lawns and well grown trees, recreational spaces are created for employees

TPM meetings are held in this innovative setting

Employees rest during their break time in the space allotted for such purpose



Way Forward.....

- Continue learning the Green Co Rating process
- All Units of SFL to be Green Co rated
- Continuously look for Green technologies and implement ahead of industry
- Expand the concept to other vendors, suppliers and stakeholders.
- Network with CII Green Co rated companies - learn best practices & replicate good projects implemented for accelerated improvements in SEC & SWC
- Cost Competitive in the market to continue to be a Leader
- **Become Platinum Rated in 2015 -16**



Thank You