



Company profile

About TVS group

Sundaram Auto Components Limited (SACL) has their roots in one of India's most reputed business houses: the US \$ 2.20 billion TVS group. Started in 1911 by Shri T.V.Sundaram Iyengar, the **TVS group** played a pioneering role in the intergeneration of India's automobile industry; and is today by far the largest manufacturer and distributor of auto components in the country, a multi million, multi business conglomerate consisting of over 25 blue-chip companies.

About SACL – Rubber division (SACL – RD)

Established in 1981, Rubber division has expanded its presence and has established itself as a preferred supplier to a host of domestic and international OEMs. Engaged in the manufacture of precision molded components and air brake hoses. SACL – RD has a track record that is commensurate with the TVS Group's high standards of excellence.



This division offers solutions, which include compound development, tool development, component and sub-assemblies manufacturing. The company is certified for **ISO 14001 and ISO/TS 16949** and is working towards **OHSAS 18001**



Critical rubber components of a vehicle braking system are required to be highly trustworthy and this is where, Rubber division has established its presence globally.



Few of our product families include

- Brake Chamber Diaphragms ranging from Type 3 to Type 36
- Special purpose diaphragms which include deep wall, roto-chamber and pump diaphragms
- Reinforced air brake hoses
- Inlet and outlet ducts for air filters
- Vibration Absorbers
- Bellows
- Rubber to metal bonded components and
- Hose assemblies



Manufacturing facility

SACL-Rubber division has equipped itself with complete manufacturing facility established under one roof which include

- Compounding set-up supported by comprehensive testing facilities
- Injection molding
- Vacuum Compression molding and
- Extrusion set-up

Our philosophy

To bring the vision of our founder to reality, we practice **Total Quality Management (TQM)** at all levels supported by the five pillars of TQM. Total Employee Involvement and cross-functional problem solving approach contribute to a steady stream of continuous improvements. As a part of **TVS**





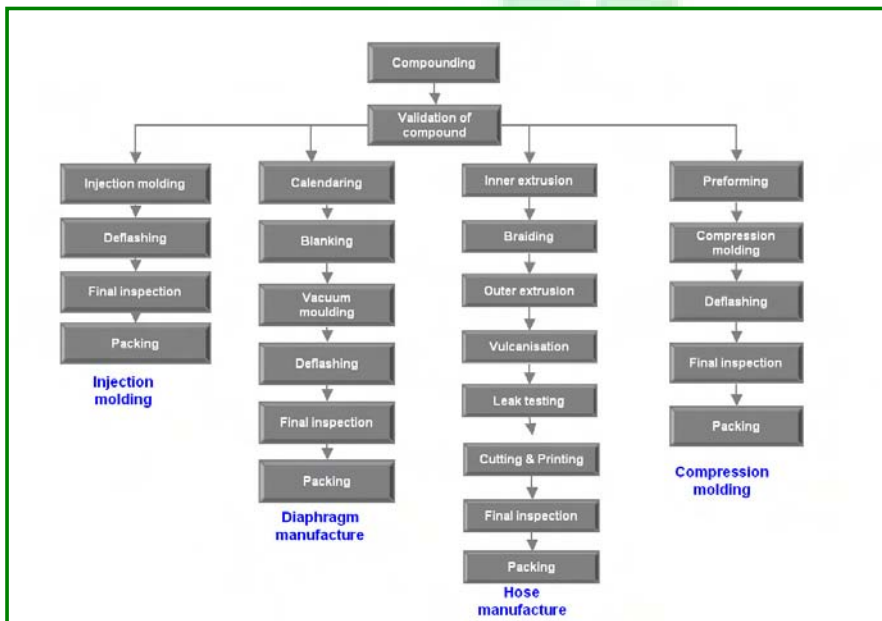
group philosophy, we nurture the talents of the employees and bring the best out of them by providing excellent work environment, career development, and personal care.

Care for the environment gains new momentum through recycling of resources and extensive tree planting and land reclamation projects. Keeping Customer satisfaction, Quality, Continuous improvements as the goal, Rubber division is poised to take on the opportunities and challenges of the future.



Process flow

The process flow of SACL – RD is as given below:





Energy Consumption

Implementation of various energy conservation initiatives has resulted in a significant decline in energy consumption at SACL – RD in the last 3 years which is evident from the below table:

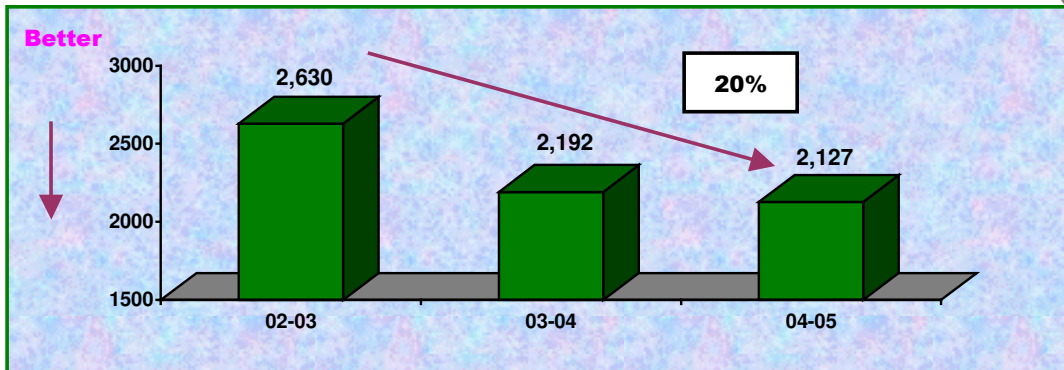
Description	Units	2002-03	2003-04	2004-05
Annual production (Quantity of Rubber processed)	Tonnes	1,050	1,415	1,554
Total energy consumption/annum	Lakhs KWh	27.62	31.01	33.05
Specific energy consumption – Electrical	KWh / Tonne of Rubber processed	2,630	2,192	2,127
Total thermal energy consumption / annum	Million KCal	2,063	491	407
Specific energy consumption – Thermal	Million KCal / Tonne of Rubber processed	1.97	0.35	0.26
Energy cost	Rs Lakhs	164	153	173
Energy cost as % of total Percentage manufacturing cost	Percentage	8.70	7.10	6.80

Reduction in specific energy consumption (SEC) per Tonne of rubber processed in last 3 years

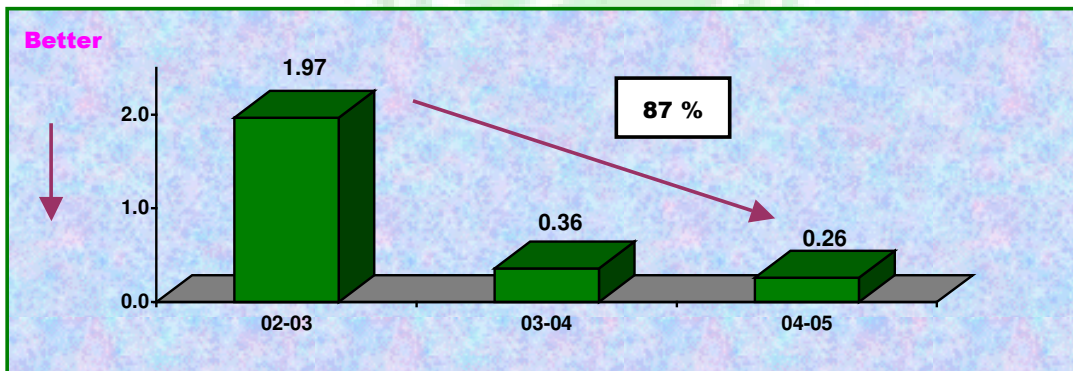
Year	Electricity Consumption (KWh / Tonne of rubber processed)	% of reduction over 2002-03	Thermal Consumption (Million KCal / Tonne of rubber processed)	% of reduction over 2002-03
2002-03	2,630	-	1.97	-
2003-04	2,192	17 %	0.36	82 %
2004-05	2,127	20 %	0.26	87 %



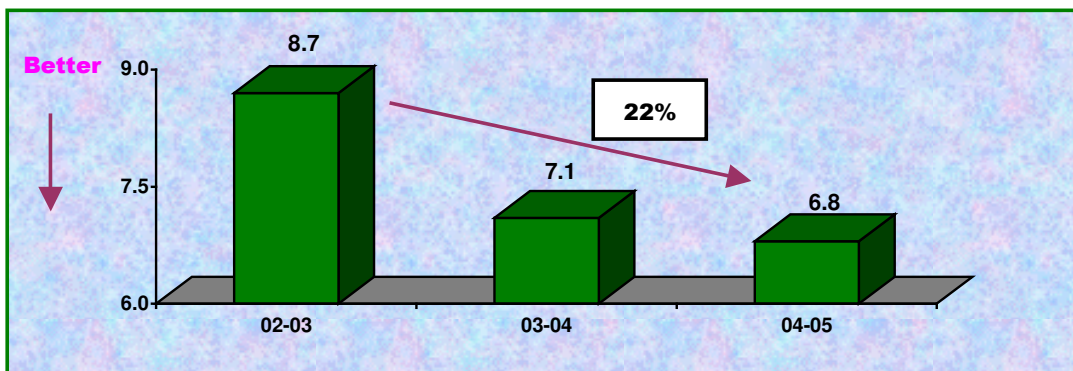
Electrical consumption (Kwh / Tonne of rubber processed)



Thermal consumption (Million Kcal / Tonne of rubber processed)



Power cost (Percentage over sales)





ENCON (Energy Conservation) Commitment, Policy and Set up

SACL – RD strongly believes in integrating the environment with every sphere of business activity through establishing a clear policy to ensure well-being of the employees and society at large. Energy conservation is nurtured as a culture at SACL – RD and forms part of actions initiated towards this commitment.

Energy policy

Energy policy

We at SACL – RD are committed to continuously improve our energy performance by

- Implementing energy efficient processes,
- Mold design and
- Waste elimination projects.

This will be achieved through total employee involvement

Energy **Policy**



**Significant Energy
Conservation Efforts
2004-05**



Project title :
Energy saving through modification in cooling system

Background of the project

High power consumption in cooling water circulation system.

2,58,336 Units/Annum

Observation

Five 10 hp pumps were used for water circulation.

Before



After



Technical Analysis

Individual pumps flow rate is less, 7 LPS / pump which consumes more power. Existing Pumps can be replaced with a single high flow rate pump (Open well pump).

Financial Analysis

Project Cost: Rs.0.40 Lakhs

Savings: Rs.6.40 Lakhs/Annum

Payback: 23 days

Action taken:

Provided one 15 hp open well pump with 40 LPS delivery and one 15 hp CT blower motor for water circulation



Impact of implementation:

Energy saving $(2,58,336 - 1,23,552) = 1,34,784$ units / annum (52%)



Project title:
Energy saving through reduction in mold changeover time

<p>Background of the project</p> <p>High energy consumption in compression molding due to mold change over.</p> <p>56,160 Units/Annum</p>	<p>Observation</p> <p>High loading/unloading time. Heating of molds takes place in the press. No dedicated stacker available.</p>
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<p align="center">Before</p> 	<p align="center">After</p> 
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<p>Technical Analysis</p> <p>Online activities to be converted to offline through IOL analysis. Provision to be made for easy loading/unloading.</p>	<p>Financial Analysis</p> <p>Project Cost: Rs.0.40 Lakhs</p> <p>Savings: Rs.1.87 Lakhs/Annum</p> <p>Payback: 3 months</p>
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Action taken:
Provided mold preheating oven, T slots in machines, T bolts, dedicated stacker and awareness to employees

Impact of implementation:
Energy saving (56, 160 - 16, 848) = 39, 312 units / annum (70%)

Project title:
Energy saving through reconditioning of Hypro machines

<p>Background of the project</p> <p>Very old machine.No parallelism between platens.High oil leakage.</p> <p>84, 240 Units/Annum</p>	<p>Observation</p> <p>Worn out bushes. Damages on platen surfaces. Utilised more than its life.</p>
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<p align="center"><i>Before</i></p> 	<p align="center"><i>After</i></p> 
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<p>Technical Analysis</p> <p>Low output due to slow speed of press up & down movemnet which leads to more power consumption. High rejection of components due to lack of parallelism.</p>	<p>Financial Analysis</p> <p>Project Cost: Rs.3.00 Lakhs</p> <p>Savings: Rs. 2.00 Lakhs / Annum</p> <p>Payback: 18 months</p>
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Action taken:
Reconditioned the machine with PLC controlled common power pack

Impact of implementation:
Energy saving (84,240 - 42, 120) = 42,420 units / annum (50%) and Rs 12.00 lakhs saving on new machine investment.



Project title:
Energy saving through Line balancing of Ultrasonic machine

Background of the project

High loss of energy in metal preparation due to low productivity

28,080 Units/Annum(50 components/unit)

Observation

Imbalanced line. Less lot size. Presence of bottleneck operation.

Before



After



Technical Analysis

High immersion time in phosphating tank.
High cycle time for drying the components.

Financial Analysis

Project Cost: Rs 0.10 lakhs
Savings: Rs 1.25 Lakhs/Annum
Payback: 28 days

Action Taken:

Internal blower converted to external blower of same rating. Bottleneck operation eliminated by providing additional bath.

Impact Of Implementation:

Output increased from 50 to 350 numbers per unit of energy consumed

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Significant Energy Conservation Efforts 2003-04

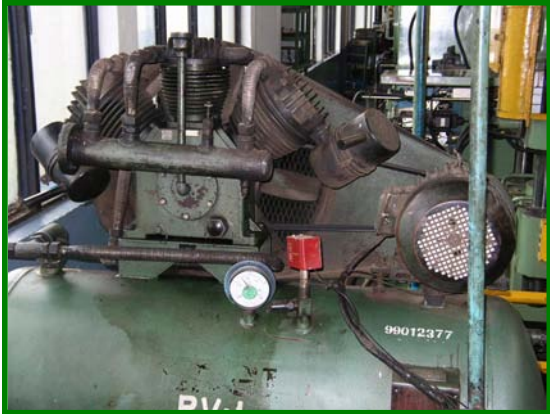



1. Energy saving through Productivity improvement

Before	After
	
Accelerator addition done in mixing mill & cycle time was 15 minutes.	Accelerator addition done in Intermix & cycle time is 6 minutes.
Project cost: Rs.9.10 Lakhs	
Savings: Rs.11.04 Lakhs/Annum	
Payback: 10 months	





2. Energy saving through installation of energy efficient equipment

Before	After
	
Reciprocating compressors used	Energy efficient screw compressor installed
Project cost: Rs.2.64 Lakhs	
Savings: Rs.1.57 Lakhs/Annum	
Payback: 20 months	



3. Energy saving by optimizing the equipment

Before	After
	
<p>Preheating of preformer dies consumes more power due to bigger oven with high energy consumption</p>	<p>New smaller oven provided to match the sizes of the preforming dies with lower power rating</p>
<p>Project cost: Rs.3000/-</p>	
<p>Savings: Rs. 1.38 Lakhs / Annum</p>	
<p>Payback: One month</p>	



4. Energy saving through combined drive systems

Before	After
	
<p>Individual Gearbox with motor was there for main roller & stock blender in the mixing mill</p>	<p>Chain drive with safety guard has been attached with main roller and separate motor for stock blender has been eliminated</p>
<p>Project cost: Rs.5,000/-</p>	
<p>Savings: Rs. 27,000 / Annum</p>	
<p>Payback: 2.2 months</p>	

5. Energy saving through Variable Frequency drives



Before	After
	
<p>Hydraulic motor running continuously during curing operation with same speed resulting in power loss</p>	<p>Variable frequency drive reduces the motor speed during the curing time resulted in power saving</p>
<p>Project cost: Rs 35,000/-</p>	
<p>Savings: Rs 25,000 / Annum</p>	
<p>Payback: 17 months</p>	



Significant Energy Conservation Efforts 2002-03





1. Energy conservation through technology upgradation

Before	After
	
<p>Cycle time was 10 mins per product. Investment required to meet the demand for 2002-03 was Rs.100, 00,000 Lakhs</p>	<p>Cycle time is 1.5 mins per product. Investment required to meet the demand for 2002-03 was Rs.40, 00,000 Lakhs</p>
<p>Project cost: Rs.40.00 Lakhs</p>	
<p>Savings: Rs. 37.88 Lakhs / Annum</p>	
<p>Payback: 13 months</p>	



2. Energy saving through innovation in hydraulic motor

Before	After
	
Hydraulic motor running throughout the curing operation when it is not required	PLC program modified to switch off the hydraulic motor during curing operation
Project cost: Rs.10, 000/-	
Savings: Rs. 3.80 Lakhs / Annum	
Payback: 10 days	





3. Energy saving in Calendaring by set-up time reduction

Before	After
	
<p>Two short rolls were joined together by stitching results in down time of the calendaring machine and one more new set-up required for the roll, till such time the calendar machine was running to avoid compound scorch</p>	<p>Standardized the incoming fabric roll length to 500 m. Calendar speed increased to 5-6 m/min from 2-3 m/min. Set-up time per calendar roll reduced from 60 min to 30 min</p>
<p>Project cost: NIL</p>	
<p>Savings: Rs. 1.50 Lakhs / Annum</p>	
<p>Payback: Intangible benefits</p>	





4. Conservation of water by regeneration

Before	After
	
12,000 litres/day of fresh water used for lawn maintenance	12,000 litres/day of recycled water used for lawn maintenance
Project cost: Rs 35 lakhs	
Savings: 12,000 litres / day	
Payback: Intangible benefits	



5. Energy saving through waste heat recovery in boiler

Before	After
	
<p>Coil cooling water was delivered to ETP after boiler blow down, which is of good quality soft water</p>	<p>Coil cooling water is collected in a separate tank and reused again for steam producing, because of which the power consumption on regeneration of soft water reduced(2 times a shift to one time a shift)</p>
<p>Project cost: NIL (Existing tank used)</p>	
<p>Savings: Rs. 5,000 / Annum</p>	
<p>Payback: Intangible benefits</p>	



Energy conservation measures planned for future

Energy conservation measures planned	Anticipated savings in energy (Units)	Anticipated savings in energy (Rs Lakhs)	Approximate investment (Rs Lakhs)	Project commencement and completion year
Implement on-line mold cleaning system	42,100	2.00	0.50	2005-06
Variable frequency drive for molding machines	21,050	1.00	1.50	2005-06
Optimum utilization of compressed air	12,600	0.60	0.20	2005-06
Energy saving lamps for factory lighting	69,470	3.30	2.90	2006-07
Energy efficient high speed braider	136,800	6.50	25.00	2007-08

Environment and safety

Clean and safe work environment

Initiatives for clean and safe work environment are listed as below:

ISO 14001	TPM	OHSAS 18001
Steps followed <ul style="list-style-type: none"> - Setting of environment policy - Initial environment review / survey - Finding the scope for improvement - Setting improvement projects and action plan - Implementation and continual improvements 	Safety pillars focused on <ul style="list-style-type: none"> - Major accident zero - Sustaining zero accident level - Near miss accident zero - Unsafe condition zero - Improve illumination - Reduce air pollution - Reduce water pollution - Reduce noise pollution 	Occupational health and safety <ul style="list-style-type: none"> - Setting EHS policy - Hazard identification and risk assessment - Set objectives and targets - Implementation and continual improvements - Sustaining zero accident level

EMS initiatives are focused continuously. So far, 15 major projects have been completed and 5 projects are under progress.

Safety and Health

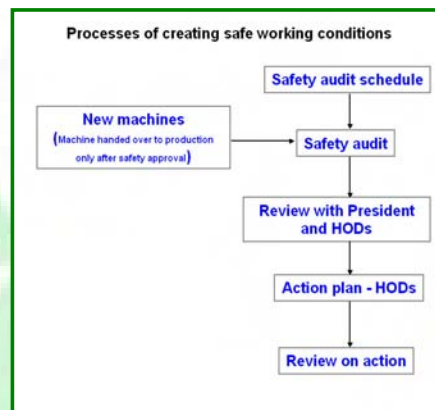
Safety and Health are given utmost importance throughout the organization at levels of employees. Safety committee comprising of executives from key manufacturing functions guided by Safety Officer conducts audit every month. Performance of each year is monitored through safety boards displayed at Genba.






This committee will raise NCRs (Non conformity reports) in the areas of electrical, fire, use of PPE (Personal protective equipment), equipment, material handling system and house keeping. President reviews progress of corrective actions every month.

Some of safety and health initiatives

Training	<ul style="list-style-type: none"> • Safety training for all employees • Employees are trained in First Aid
Facilities	<ul style="list-style-type: none"> • Helmet for two wheeler owning employees • Personal protective equipments for safe working • Safety Committee for Safety improvements • Fire fighting equipment at vantage points
Appreciation	<ul style="list-style-type: none"> • Rolling trophy for best safety zones • Safety awareness month celebrated every March



Some of safety and health improvements carried out based on Safety audit

Provision of safety guard	Elimination of manual handling	Exhaust system in molding
Before		
		
After		
