





1. ID: 95	Title of measure	Sector: Tyre Industry
2. Survey Year: 2007	Hot water fill pump optimization with variable frequency drives	Technology: Variable Frequency Drives
3. Name of the Company	: MRF Tyres Limited, Vadavathoor, P.O,Kottayam, Kerala ,INDIA	
4. Agency that executed the project	: In-house	
5. Year of Implementation	: 2006-07	
6.	<p>Unit Profile: MRF is one of India's most trusted tyre manufacturing company having plants at Tamil Nadu, Andhra Pradesh, Goa, Puducherry and Kerala. MRF crossed US\$ 1.2 billion turn over during 2006-07.</p> <p>MRF has the widest product range among the domestic tyre companies as it makes tyres for all class of vehicles from trucks to two-wheelers and go-karts. MRF Kottayam unit started during 1969 having more than 1600 direct work force.</p>	
7.	<p>Description of Energy Conservation Measure:-</p> <p>In the plant 2 of the unit, one 60HP hot water fill pump is being used in tyre curing trench to avoid pressure drop during Hot water fill cycle. Although the application of pump is only for few minutes in one curing cycle, the pump was kept running continuously to avoid pressure drop and resultant tyre scrap. VFD is provided and also interlocked with all curing press operations through PLC. Now pump will be switched on just before the required step and would switch off after use. After this modification, now the pump is running maximum for 20 minutes during a curing cycle of 90 minutes.</p>	
8.	<p>Picture Before Modification</p> 	<p>Picture After Modification</p> 
9.	Total investment :	7,250 US\$
10.	First year energy cost savings :	13,575 US\$
11.	First year additional savings beyond energy (i.e. water, raw materials etc.):	Nil
12.	Annual electricity consumption before, MWh	346
13.	Annual electricity consumption after, MWh	195
14.	First year electricity savings, MWh	151
15.	First year tons of CO ₂ mitigated	151
16.	Assumed sustainability, years	10
17.	Expected tons of CO₂ mitigated throughout life cycle	1,510

1	ID: 96	Title of measure	Sector: Tyre Industry
2	Survey Year: 2007	Optimization of Energy Consumption in Cooling towers	Technology: Cooling Towers
3	Name of the Company	: M/s J.K. Tyre & Industry Limited, Jaykaypuram, Kankroli, Rajasthan, INDIA	
4	Agency that executed the project	: In-house	
5	Year of Implementation	: 2006-07	
6	Unit Profile:	JK Tyre & Industry Limited (formerly known as JK Industries Limited), is the flagship company under the umbrella of JK Organization. JK Tyre manufactures entire range of tyres for all four-wheeler vehicles being manufactured in India. JK tyres have pioneered Radial tyre technology in India in 1977 and still has largest market share. JK Tyre has largest share of business with Maruti and Tata Motors, the largest vehicle manufacturers in India. JK Tyre also provides complete range of technical services for tyre care. The annual turnover of the unit for the year 2006-07 is US\$ 0.25 billion.	
7	Description of Energy Conservation Measure:-	This is an innovative idea of the in-house team to optimize the plants energy consumption. In tyre plants Cooling Tower (CT) are used to remove process heat. In the original system, the unit's two different plants sections in the same premises, were having separate cooling towers for catering to the process cooling demand. Both these CT's were under-utilized. The process heat was required to be removed at particular pressure & flow. In this regard, pressure of one of cooling tower water was measured near another plant. Based upon study, one inline pump was incorporated to increase the water pressure, so that the same cooling tower could also cater another plant. This measure resulted in elimination of one cooling tower.	
8	Picture Before Modification	Picture After Modification	
9	Total investment :	2,500 US\$	
10	First year energy cost savings :	3,232 US\$	
11	First year additional savings beyond energy (i.e. water, raw materials etc.):	Nil	
12	Annual electricity consumption before, MWh	135	
13	Annual electricity consumption after, MWh	105	
14	First year electricity savings, MWh	30	
15	First year tons of CO ₂ mitigated	30	
16	Assumed sustainability, years	10	
17	Expected tons of CO₂ mitigated throughout life cycle	300	

1. ID: 97	Title of measure	Sector: Tyre Industry
2. Survey Year: 2007	Replacement of high watt fans with low watt fans for man cooler	Technology: Energy Efficient Fans
3. Name of the Company	: MRF Tyres Limited, Vadavathoor, P.O,Kottayam, Kerala, INDIA	
4. Agency that executed the project	: In-house	
5. Year of Implementation	: 2006-07	
6.	<p>Unit Profile: MRF is one of India's most trusted tyre manufacturing company having plants at Tamil Nadu, Andhra Pradesh, Goa, Puducherry and Kerala. MRF crossed US\$ 1.2 billion turn over during 2006-07.</p> <p>MRF has the widest product range among the domestic tyre companies as it makes tyres for all class of vehicles from trucks to two-wheelers and go-karts.MRF Kottayam unit started during 1969 having more than 1600 direct work force.</p>	
7.	<p>Description of Energy Conservation Measure:-</p> <p>Previously 550 watts, three phase fans were widely being used through out the plant for man cooler applications. The in house team conducted the survey and recommended that 180 watts single phase air circulators with same sweep can replace the existing fans at many locations. The unit took the initiative to replace 17 nos 550 watts with 180 watts capacity fans.</p>	
8.	<p>Picture Before Modification</p> 	<p>Picture After Modification</p> 
9.	Total investment :	2,250 US\$
10.	First year energy cost savings :	3,950 US\$
11.	First year additional savings beyond energy (i.e. water, raw materials etc.):	Nil
12.	Annual electricity consumption before, MWh	65
13.	Annual electricity consumption after, MWh	21
14.	First year electricity savings, MWh	44
15.	First year tons of CO ₂ mitigated	44
16.	Assumed sustainability, years	10
17.	Expected tons of CO₂ mitigated throughout life cycle	440

1	ID: 98	Title of measure	Sector: Tyre Industry
2	Survey Year: 2007	Energy Conservation By separating Low / High Pressure Lines	Technology: Pipeline Modification
3	Name of the Company : M/s J K Tyre & Industry Limited, Jaykaypuram, Kankroli, Rajasthan, INDIA		
4	Agency that executed the project : In-house		
5	Year of Implementation : 2006-07		
6	<p>Unit Profile: JK Tyre & Industry Limited (Formerly known as JK Industries Limited), is the flagship company under the umbrella of JK Organization. JK Tyre manufactures entire range of tyres for all four-wheeler vehicles being manufactured in India. JK Tyres have pioneered Radial tyre technology in India in 1977 and still has largest market share. JK Tyre has largest share of business with Maruti and Tata Motors, the largest vehicle manufacturers in India. JK Tyre also provides complete range of technical services for tyre care. The annual turnover of the unit for the year 2006-07 is US\$ 0.25 billion.</p>		
7	<p>Description of Energy Conservation Measure:- In the Kankroli unit, the plant air compressors were installed to cater to plant pneumatic equipments. Air house was equipped with reciprocating compressors which were running at pressure of 7 bar. Plant sections pressure requirement was adjusted by PRV(Pressure reducing valve) at plant's different locations. In order to stop this wastage of power, the in-house team incorporated a new system in the air house and separated air compressors for catering different pressure demands. This helped in avoiding losses due to generation of air at high pressure and then localized reduction at plant's different sections.</p>		
8	<p>Picture Before Modification</p>	<p>Picture After Modification</p>	
9	Total investment :		2,500 US\$
10	First year energy cost savings :		22,627 US\$
11	First year additional savings beyond energy (i.e. water, raw materials etc.):		Nil
12	Annual electricity consumption before,	MWh	-
13	Annual electricity consumption after,	MWh	-
14	First year electricity savings,	MWh	210
15	First year tons of CO ₂ mitigated		210
16	Assumed sustainability, years		10
17	Expected tons of CO₂ mitigated throughout life cycle		2,100

1.	ID: 99	Title of measure	Sector: Tyre Industry
2	Survey Year: 2007	Use of energy efficient freezer for tube curing line	Technology: Energy Efficient Mini Freezers
3	Name of the Company : MRF Tyres Limited, Vadavathoor, PO, Kottayam, Kerala, INDIA		
4	Agency that executed the project : In-house		
5	Year of Implementation : 2006-07		
6	<p>Unit Profile: MRF is one of India's most trusted tyre manufacturing company having plants at Tamil Nadu, Andhra Pradesh, Goa, Puducherry and Kerala. MRF crossed US\$ 1.2 billion turn over during 2006-07.</p> <p>MRF has the widest product range among the domestic tyre companies as it makes tyres for all class of vehicles from trucks to two-wheelers and go-karts. MRF Kottayam unit started during 1969 having more than 1600 direct work force.</p>		
7	<p>Description of Energy Conservation Measure:-</p> <p>In the unit, a 5.5HP freezer (compressor and cooling fan) with Freon 12 refrigerant is used for green tube splice area cooling. 10 nos. freezers were being used for this purpose. The in-house team took the initiative to study the possibility of energy conservation and recommended to replace all 10 nos. freezers with 32 nos. 200 watts Mini freezers with R143 refrigerant for energy reduction. In addition to this, cooling line size was also reduced and only top most portions were kept open for ice formation. All other pipelines were insulated to avoid wastage.</p>		
8	<p>MRF Tyres</p> 	<p>Picture After Modification</p> 	
9	Total investment :		17,525 US\$
10	First year energy cost savings :		20,825 US\$
11	First year additional savings beyond energy (i.e. water, raw materials etc.):		Nil
12	Annual electricity consumption before,	MWh	285
13	Annual electricity consumption after,	MWh	54
14	First year electricity savings,	MWh	231
15	First year tons of CO ₂ mitigated		231
16	Assumed sustainability, years		10
17	Expected tons of CO₂ mitigated throughout life cycle		2,310

1. ID: 100	Title of measure	Sector: Tyre Industry
2. Survey Year: 2007	Energy Saving by replacing motorized Lubrication system	Technology: Lubrication System
3. Name of the Company	: M/s J K Tyre & Industry Limited ,Jaykaypuram, Kankroli, Rajasthan, INDIA	
4. Agency that executed the project	: In-house	
5. Year of Implementation	: 2006-07	
6. Unit Profile:	<p>JK Tyre & Industry Limited (Formerly known as JK Industries Limited), is the flagship company under the umbrella of JK Organization. JK Tyre manufactures entire range of tyres for all four-wheeler vehicles being manufactured in India. JK Tyres have pioneered Radial tyre technology in India in 1977 and still has largest market share. JK Tyre has largest share of business with Maruti and Tata Motors, the largest vehicle manufacturers in India.</p> <p>JK Tyre also provides complete range of technical services for tyre care. The annual turnover of the unit for the year 2006-07 is US\$ 0.25 billion.</p>	
7. Description of Energy Conservation Measure:-	<p>Earlier motorized lubrication system was in operation which was running continuously. New pneumatic type lubrication units have been installed by the in-house team which run only for 1 min in every one hrs for providing suitable lubrication to mill points.</p>	
8.	<p>JK Tyres, Kankroli Plant</p> 	<p>Picture After Modification</p> 
9. Total investment :		375 US\$
10. First year energy cost savings :		501 US\$
11. First year additional savings beyond energy (i.e. water, raw materials etc.):		Nil
12. Annual electricity consumption before, MWh		8
13. Annual electricity consumption after, MWh		2
14. First year electricity savings, MWh		6
15. First year tons of CO ₂ mitigated		6
16. Assumed sustainability, years		10
17. Expected tons of CO₂ mitigated throughout life cycle		60