

# **PROJECT PROFILE**

ON

CLUTCH PLATES

Month & Year  
December 2009

**PREPARED BY  
TANSTIA-FNF SERVICE CENTRE  
B-22, INDUSTRIAL ESTATE  
CHENNAI-600032**

Supported by

Friedrich Naumann  
STIFTUNG **FÜR DIE FREIHEIT**

# CLUTCH PLATES

## A. INTRODUCTION

Clutch is a mechanism which enables the rotary motion of one shaft to be transmitted, when desired, to a second shaft the axis of which is coincident with that of the first. A clutch plate is a main component in the clutch mechanism of the automobile vehicle. The usage is increased due to replacement of worn out clutches frequently.

## B. PRODUCT USES AND SPECIFICATIONS

The clutch plate consists of a steel plate with a splined central hub. Annular friction facings are attached to the steel plate by rivets. Special resins are being used to bind the friction facings. High tensile grey iron is the most commonly used material for pressure plate which must be sufficiently rigid so as not to distort under the pressure of the clutch springs. Adequate rigidity is also required to provide uniform pressure to clutch plate. The pressure plate should also have sufficient mass and thermal conductivity to absorb and conduct away the heat generated during engagement.

## C. MARKET POTENTIAL

Car and motorcycle sales are rising in India, as drivers replace old vehicles with new passenger cars, multi-utility vehicles, as well as two- and three-wheelers. Consequently, demand for automotive components will remain strong. The

replacement market for clutch plates, which are essential parts of the transmission system, is projected to see substantial gains. As drivers put more new vehicles on the road, traffic congestion will necessitate frequent gear changes, diminishing the life of a clutch plate and boosting the need for replacement parts.

The Govt. of India has proposed legislation to ban the use of vehicles that are older than 15 years. The goal is to reduce air pollution caused by old vehicles, primarily in metropolitan areas. If enacted, the law will be applied to cities first. However, banned vehicles will not disappear; they will likely be reintroduced in areas where the legislation is not strictly enforced. As a result, the replacement market for clutch plates will diminish within urban centers and grow in less populated areas, where vehicle owners will choose parts based on price instead of quality. The manufacturers of components have a distinct advantage over the producers of commercial vehicles and other automobiles as their sales in the replacement market are much larger than those effected as original equipment and this has been the reason why the recession the automobile industry did not affect seriously the efficient producers of components.. With practically all segments of the domestic automotive sector set to grow, the component units have a bright future.

There are two types of demand for Clutch Plates 1.O.E.Demand and 2.Replacement demand. The O.E Demand will increase with the production of

original vehicles. The replacement demand is dependent on the wear and tear and replacement of the vehicle owners as this is a critical equipment and replacement is essential to run the vehicle, the replacement demand is bound to increase.

The Production and Sales trends for the past 7 years is given below:

Automobile Production Trends			(Number of Vehicles)				
Category	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Passenger Vehicles	723330	989560	1209876	1309300	1545223	1777583	1838697
Commercial Vehicles	203697	275040	353703	391083	519982	549006	417126
Three Wheelers	276719	356223	374445	434423	556126	500660	501030
Two Wheelers	5076221	5622741	6529829	7608697	8466666	8026681	8418626
Grand Total	6279967	7243564	8467853	9743503	11087997	10853930	11175479

Source: Society of Indian Automobile Manufacturers

Automobile Domestic Sales Trends			(Number of Vehicles)				
Category	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Passenger Vehicles	707198	902096	1061572	1143076	1379979	1549882	1551880
Commercial Vehicles	190682	260114	318430	351041	467765	490494	384122
Three	231529	284078	307862	359920	403910	364781	349719

Wheelers							
Two Wheelers	4812126	5364249	6209765	7052391	7872334	7249278	7437670
Grand Total	5941535	6810537	7897629	8906428	10123988	9654435	9723391

## Domestic Sales

The cumulative growth of the Passenger Vehicles segment during April 2007 - March 2008 was 12.17 percent. Passenger Cars grew by 11.79 percent, Utility Vehicles by 10.57 percent and Multi Purpose Vehicles by 21.39 percent in this period.

The Commercial Vehicles segment grew marginally at 4.07 percent. While Medium & Heavy Commercial Vehicles declined by 1.66 percent, Light Commercial Vehicles recorded a growth of 12.29 percent.

Three Wheelers sales fell by 9.71 percent with sales of Goods Carriers declining drastically by 20.49 percent and Passenger Carriers declined by 2.13 percent during April- March 2008 compared to the last year.

Two Wheelers registered a negative growth rate of 7.92 percent during this period, with motorcycles and electric two wheelers segments declining by 11.90 percent and 44.93 percent respectively. However, Scooters and Mopeds segment grew by 11.64 percent and 16.63 percent respectively.

Despite the slow down in production of automobiles the demand for the automobiles is expected to grow in coming years.

## D. TECHNICAL ASPECTS

### 1. Installed Capacity

The installed capacity of the proposed unit is manufacturing of 180 000 Nos of Auto Clutch Plates per annum. This is based on 600 Nos of Clutch plates per day of 8 hours working for 300 days in a year.

### 2. Plant and Machinery

The following machineries are required for production.

Machine name	Quantity (Nos)	Value (Rs.lakhs)
Power Press 100 Tonnes for punching	1	6.50
Heat Treatment/Glue Hardening Furnace	1	2.70
Jigs Fixtures and cutting Tools		0.80
<b>Total</b>		<b>10.00</b>

### 3. Manufacturing Process

The manufacturing of Automobile Clutch Plates involves the following sequence of operations.

Purchase of Clutch Plate Castings



Drilling the holes and punching



Purchase of resins / Glues



Fixing Glues



Hardening in Hardening Furnace



Inspection and Despatch

#### 4. Raw Material

The raw materials required for manufacturing Automobile Clutch Plates are Cast Iron Plates. These can be made available from iron casting units. The other materials such as glues can be made available from the dealers.

#### 5. Land & Building

A rented place with 1000 sqft. area is required. The monthly rent is estimated at Rs.100 00 and also an advance of Rs.100 000.

#### 6. Utilities

##### Power:

The total power requirement of the unit will be 30 HP

##### Water:

Water is required only for human consumption.

##### Man power.

Category	Nos	Monthly salary	Total Salary
Supervisors	1	8000	8000
Operators	1	6000	6000
Unskilled	2	4000	8000
Assistants	1	5000	5000
Security	1	4000	4000
	Total		31000

Add 10%benefits	6200
Total	37200
Annually → Rs.4.46 lakhs	

## 7. Implementation Schedule

If financing arrangement is made available the project can be implemented within three months period.

## 8. ASSUMPTIONS

Installed capacity per annum	Auto Clutch Plates 180 000 nos
Capacity utilization–Year –1	60%
Year–2	70%
Year–3	80%
Selling price per unit	Auto Clutch Plates Rs.30.00 per piece

Material cost at 100%	Rate/per piece (Rs.)	Value (Rs.lakhs)
Castings/sheets Including Resins	Rs.15.00	27.00

Consumables and Packing p.a. at 100% (Rs.lakhs)	Rs.2.40 lakhs
Power and Fuel–100%–Rs lakhs	Rs.3.27 lakhs
Wages & salaries–100%	Rs.4.46 lakhs
Repairs & Maintenance per month	Rs.5000/-
Depreciation	WDV method – 15%
General & administration Expenses per month	Rs.10000/-
Selling expenses	3% on Sales
Interest on term loan and Working capital finance	13% p.a



Income tax provision	34% on profit
----------------------	---------------

## **LIST OF MACHINERY SUPPLIERS**

### **Machine Tools**

1. Quality Machine Tools  
New No.238, Linghi Chetty Strret  
Chennai 600 001
2. Gujrat Machine Tools  
New No.279, Linghi Chetty Street  
Chennai 600 001
3. Premier Machine Tools  
New No.103, Armenian Street  
Chennai 600 001
4. Machine Centre  
New No.214 linghi chetty Street  
Chennai 600 001

### **Hardening/Heat Treatment Furnaces**

1. Pyrotherm Engineers  
245/2B Vanagaram Road  
Athipet  
Chennai-600 058
2. Pyromasters Furnaces Pvt Ltd  
A-13 SIDCO Industrial Estate  
Villivakkam  
Chennai-600 049
3. KSM Laboratory Glass Works  
40 NP.Thiru-vi-ka Industrial Estate  
Chennai-600 032

4. Thermal Systems  
TS-33 TVK Street  
Guindy  
Chennai\_600 032

## LIST OF RAW MATERIAL SUPPLIERS

1. Sai Steel Centre  
28-A, Mooker Nallamuthu Street  
Chennai-600 001
2. Mahavir Industrial Corporation  
New No.273, Linghi Chetty Street  
Chennai-600 001
3. Bhagawandas Metals Ltd  
No.54, Sembudoss street  
Chennai-600 001
4. Southern Iron and Steel company Ltd  
No.7, Wallace garden Second Street  
Chennai-600 006
5. P.K.Vaduvammal  
97, Rasappa Chetty Street  
Chennai-600 003
6. Upper India steels ltd  
211.Vandana Towers  
Haddows Road  
Nugambakkam  
Chennai-600 034

## CLUTCH PLATES

<b>1. COST OF PROJECT</b>	[Rs.lakhs]
Land & Building (Advance)	1.00
Plant & Machinery	10.00
Other Misc. assets	0.50
Pre-Operative expenses	1.00
Margin for WC	1.06
	<u>13.56</u>
<b>2. MEANS OF FINANCE</b>	
Capital	5.56
Term Loan	8.00
	<u>13.56</u>

## 3. COST OF PRODUCTION & PROFITABILITY STATEMENTS

Years	1	2	3
Installed Capacity (No.)	180000	180000	180000
Utilisation	60%	70%	80%
Production/Sales (No.)	108000	126000	144000
Selling Price/piece (in Rupee)	30 per piece		
Sales Value	32.40	37.80	43.20
Raw Materials	16.20	18.90	21.60
Consumables	1.44	1.68	1.92
Power	1.96	2.29	2.62
Wages & Salaries	4.46	4.68	4.91
Repairs & Maintenance	0.60	0.63	0.66
Depreciation	1.50	1.28	1.08
Cost of Production	<u>26.16</u>	<u>29.46</u>	<u>32.79</u>
Admin, & General expenses	1.20	1.26	1.32
Selling expenses	0.97	1.13	1.30
Interest on Term Loan	1.04	0.91	0.65

Interest on Working Capital	0.32	0.32	0.32
Total	29.69	33.08	36.38
Profit Before Tax	2.71	4.73	6.82
Provision for tax	0.92	1.61	2.32
Profit After Tax	1.79	3.12	4.50
Add: Depreciation	1.50	1.28	1.08
Cash Accruals	3.29	4.39	5.58

#### 4. WORKING CAPITAL:

	Months	Values	%	Margin	Bank
	Consumption			Amount	Finance
Raw Materials	0.75	1.01	25%	0.25	0.76
Consumables	1.00	0.12	25%	0.03	0.09
Finished goods	0.25	0.55	25%	0.14	0.41
Debtors	0.50	1.35	10%	0.14	1.21
Expenses	1.00	0.50	100%	0.50	0.00
		<u>3.53</u>		<u>1.06</u>	<u>2.47</u>

#### 5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

<u>Profit after Tax</u>	<u>4.50</u>	
Sales	43.20	10%

<u>Profit before Interest and Tax</u>	<u>7.79</u>	
Total Investment	16.03	49%

<u>Profit after Tax</u>	<u>4.50</u>	
Promoters' Capital	5.56	81%

#### 6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs.lakhs]
Wages & Salaries	4.91
Repairs & Maintenance	0.66
Depreciation	1.08
Admin. & General expenses	1.32
Interest on TL	0.65
	<hr/>
	8.62

Profit Before Tax (P) 6.82

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{8.62}{15.44} \times \frac{80}{100} \times 100$$

45% of installed capacity