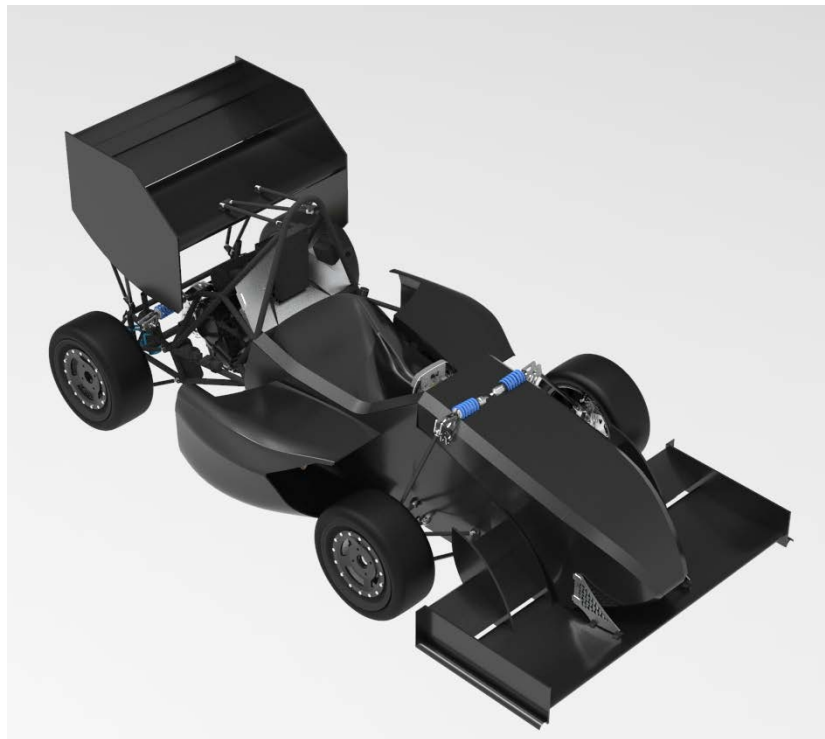


PRAVEGA RACING

Cost Explanation Document

FORMULA STUDENT GERMANY 2019

CAR #254, VIT VELLORE



DECLARATION

Car # 254 - Pravega Racing

VIT, Vellore, India

This is to declare that the Cost Report for Pravega Racing's Formula SAE vehicle (PRV-19) for Formula Student Germany has been made, keeping in mind all the rules specified in the FSG Rulebook - 2019 and the formats given for the report under formulastudent.de

We have tried to adhere to all the requirements and regulations for the Cost Report - 2019 and regret if any discrepancy is present in the report.

Akash Porwal

(Team Captain)

COST METHOD - ACTIVITY BASED COST ACCOUNTING METHOD

- The method of Activity Based Cost accounting calculates the overhead costs of each process/activity individually and assigns it to the total cost of that process/activity.
- The cost of all processes/activities then combined gives us an accurate cost of the final product.

REASONS FOR CHOOSING ACTIVITY BASED COSTING:

- The number of cost drivers is not limited to 1.
- The number and skill of labour appointed per machine specific to each activity is taken into consideration.
- ABC eliminates cross-subsidy by using volume unrelated cost drivers, such as the number of setups, to trace the cost of **volume-unrelated activities** to the product.
- It helps in identifying which activities require more overhead costs.

MODEL ASSUMPTIONS:

- The manufacturing processes are assumed to be carried out throughout the year
- A 5-year equipment life is considered and equipment costs are calculated with constant rates.
- Defect rates associated to the different processes consider the added value of the intermediate products manufactured. Thus, when a specific part is scraped, all costs which until that stage have been incurred, are accounted for. All rejected parts are considered waste and are not reworked on.
- A PFD allowance of 15% is included while calculating labour hours and machine hours to incorporate delays due to workers' personal needs, fatigue or other unavoidable circumstances.
- A constant conversion rate of INR to Euro is used for all calculations.

WORKING HOURS:

Number of working hours per shift = 8

Number of shifts per day = 2

Average number of working days per month = 22

Total working hours per year = 4128 hours

CONVERSION RATES:

1 USD	68.56 INR
1 EUR	77.36 INR
1 USD	0.89 EUR

LIST OF COST DRIVERS:

Activity Pool	Cost Driver
Raw Material Procurement	Mass
Machining Setup	Number of machine setups
Machining	Machine hours
Maintenance	Direct Cost
Labour Cost	Machine Hours

EQUIPMENT COST:

1. Laser Cut

Manufacturer	AMADA
Model no.	LC-3015 F1 NT + Shuttle Table
Power rating	21kW
Cost (INR)	26,80,000/-
Cost (Euro)	34,643.23

2. Conventional Lathe

Manufacturer	HMT
Model no.	LB 17
Power rating	11kW
Cost (INR)	95,000/-
Cost (Euro)	1228.02

3. Vertical Drilling Machine

Manufacturer	Maxnovo
Model no.	MM-SSB50F Super
Power rating	3kW
Cost (INR)	1,25,000/-
Cost (Euro)	1615.82

4. Vertical Machining Centre

Manufacturer	HAAS Industries
Model no.	HAAS VM-3
Power rating	21kW
Cost (INR)	24,32,000/-
Cost (Euro)	31437.44

5. Welding

Manufacturer	SAI AC/DC TIG welding machine
Model no.	CUT 40
Power rating	10kW
Cost (INR)	102,840/-
Cost (Euro)	1329.36

6. Gear Hobbing Machine

Manufacturer	Barber Colman
Model no.	1616
Power rating	7.5kW
Cost (INR)	8,00,000/-
Cost (Euro)	10,341.26

7. Conventional Milling machine

Manufacturer	Vendaxo
Model no.	EUM-03
Power rating	2.24kW
Cost (INR)	2,05,000/-
Cost (Euro)	2,649.95

8. Miter Saw

Manufacturer	Bosch
Model no.	GCM 800 CS
Power rating	1.4kW
Cost (INR)	25,900/-
Cost (Euro)	334.80

9. Sheet Metal Bending

Manufacturer	Sunshine Hydraulics Pvt. Ltd.
Model no.	HVR 330
Power rating	11.7kW
Cost (INR)	4,82,500/-
Cost (Euro)	6,237.07

10. CNC Tube Bending Machine

Manufacturer	S. N. Enterprises
Model no.	50CNC
Power rating	3 kW
Cost (INR)	13,75,000/-
Cost (Euro)	17,774.04

11. Multi Jet Fusion 3D printing

Manufacturer	Hewlett Packard
Model no.	4200 Series
Power rating	13.6 kW
Cost (INR)	69,00,000/-
Cost (Euro)	89,193.38

12. Induction hardening

Manufacturer	Hardline
Model no.	HH 600
Power rating	200 kW
Cost (INR)	6,84,375/-
Cost (Euro)	8,846.62

13. Anodizing plant

Manufacturer	Ecosys Engineers Pvt. Ltd.
Model no.	ABE - 200
Power rating	25kW
Cost (INR)	82,000/-
Cost (Euro)	1,059.97

14. Press fit machine

Manufacturer	Railteco
Model no.	WYJ2
Power rating	1.5kW
Cost (INR)	45,000/-
Cost (Euro)	581.70

15. Vertical Broaching Machine

Manufacturer	Prada Nargesa
Model no.	BM25
Power rating	2.2 kW
Cost (INR)	6,57,560/-
Cost (Euro)	8,500/-

DEPRECIATION COST:

Depreciation costs are calculated by considering depreciation compounded annually at the rate of 12% p.a. over a period of 5 years after gathering information from various industries.

INTEREST COST:

Interest is calculated on the investment made on the machines at the rate of 9% p.a. compounded annually.

POWER CONSUMPTION COST:

Cost of Energy consumed per unit was obtained from the website of Special Economic Zones, Ministry of Commerce and Industry-Department of Commerce, Government of India.

Cost of energy per unit = 6.50 INR

RAW MATERIAL COST:

Raw Material	Cost in INR	Cost in Euro	Unit
AISI 1020 Sheet	55	0.71	kg
AISI 1020 Tube	100	1.29	kg
Aluminium 7075-T6	600	7.75	kg
Aluminium 6061-T6	260	3.36	kg
Aluminium 5052	250	3.23	kg
Aluminium Tube	225	2.9	kg
Nylon PA 12	7020	90.70	kg
EN 19 Rod	100	1.29	kg
Neoprene	380	4.91	kg

LABOUR COST:

According to the norms of the Government of India, Ministry of Labour and Employment, daily wages of labour working in the manufacturing sector is

	Per Month (Rupees)	Per Hour (Rupees)	Per Month (Euro)	Per Hour (Euro)
Skilled	12,232	69.50	158.12	0.90
Semi-Skilled	11,220	63.75	145.03	0.82
Unskilled	10,956	62.25	141.62	0.80

MAINTENANCE COST:

Maintenance Cost annually for a machine with replaceable parts = 5% of initial cost of machine

Maintenance Cost annually for a machine with non-replaceable parts = 3% of initial cost of machine

CONSUMABLES' COST:

Consumables include lubricants, coolants, gases, filler material, etc that are specific to individual processes and are consumed as the machine runs.

Thus, cost of consumables was calculated based on the rate at which these consumables need to be supplied for smooth processing.

COST OF ACCESSORIES:

Accessories are tools, drill bits, etc that are required to carry out different processes.

The cost of accessories depends on the tool life of various tools, the speeds and loads at which the machine runs, etc.

FASTENERS' COST:

Bolt	Length	Cost (Euro)
M3 allen bolt	1 inch	0.08
M4 allen bolt	1 inch	0.08
M5 allen bolt	1 inch	0.071
M5 allen bolt	2 inch	0.09
M6 allen bolt	1 inch	0.07
M6 allen bolt	2 inch	0.09
M6 allen bolt	3 inch	0.42
M6 allen bolt	Engine bolts	0.14
M6 hex bolt	¼ inch	0.011
M8 allen bolt	1 inch	0.16
M12 hex bolt	5 inch	0.23
M12 hex bolt	380 mm	0.65

Nut	Cost (Euro)	Nut	Cost (Euro)
M3 lock nut	0.1	M6 metal lock nut	0.26
M4 nylon lock nut	0.1	M8 nylon lock nut	0.14
M5 nylon lock nut	0.13	M8 exhaust nut	0.09
M5 metal lock nut	0.24	M12 metal lock nut	0.52
M6 nylon lock nut	0.13		

Washers	Cost (Euro)	Hoses	Cost (Euro)
M3	0.01	Hose Clamp Chamfered 15 ID	0.4
M4	0.02	Worm gear OD 36	0.52
M5	0.02	Steel hose 60 ID	0.78
M6	0.03	V band type quick release	1.94
M8	0.03		

Machine Hour Rating Calculation

PARAMETERS/ MACHINES	Conventional Milling	Gear Hobbing	Heat Treatment	Multi jet fusion	TIG Welding
Cost of Machines	205000.00	800000.00	684375.00	6900000.00	102840.00
Number of Machines	1.00	1.00	1.00	1.00	2.00
Total cost of Machines	205000.00	800000.00	684375.00	6900000.00	205680.00
Depreciation Cost (For 5 Years)	96814.96	377814.47	323208.47	3258649.77	48568.05
Interest (@9%)	110417.91	430899.16	368620.77	3716505.29	55392.09
Connected Load (KW)	2.24	7.50	200.00	13.60	10.00
Total Load	2.24	7.50	200.00	13.60	20.00
Power Cost (Per Unit)	6.50	6.50	6.50	6.50	6.50
Load Factor	0.60	0.68	0.70	0.75	0.68
TOTAL	708096.87	2288419.51	39023257.81	9407923.06	2076901.31
MHR	34.31	110.87	1890.66	455.81	100.63

PARAMETERS/ MACHINES	Laser Cut	Conventional Lathe	Press Fit	Anodizing plant	Sheet Metal Bending
Cost of Machines	2680000.00	95000.00	45000.00	82000.00	482500.00
Number of Machines	1.00	2.00	1.00	1.00	1.00
Total cost of Machines	2680000.00	190000.00	45000.00	82000.00	482500.00
Depreciation Cost (For 5 Years)	1265678.46	44865.47	21252.06	38725.98	227869.35
Interest (@9%)	1443512.20	51169.28	24238.08	44167.16	259886.06
Connected Load (KW)	21.00	5.00	1.49	25.00	11.70
Total Load	21.00	10.00	1.49	25.00	11.70
Power Cost (Per Unit)	6.50	6.50	6.50	6.50	6.50
Load Factor	0.60	0.75	0.75	0.70	0.70
TOTAL	7404790.66	990434.74	312021.34	4874321.72	2730143.98
MHR	358.76	47.99	15.12	236.16	132.27

PARAMETERS/ MACHINES	Vertical Machining Centre	Miter Saw	Tube Bending Machine	Vertical Broaching Machine	Vertical Drilling Machine
Cost of Machines	2432000.00	25900.00	1375000.00	657560.00	125000.00
Number of Machines	1.00	1.00	1.00	1.00	1.00
Total cost of Machines	2432000.00	25900.00	1375000.00	657560.00	125000.00
Depreciation Cost (For 5 Years)	1148555.98	12231.74	649368.61	310544.60	59033.51
Interest (@9%)	1309933.46	13950.36	740607.94	354177.57	67327.99
Connected Load (KW)	22.40	1.40	3.00	2.20	3.00
Total Load	22.40	1.40	3.00	2.20	3.00
Power Cost (Per Unit)	6.50	6.50	6.50	6.50	6.50
Load Factor	0.60	0.60	0.70	0.75	0.75
TOTAL	7467129.44	339222.10	1964947.98	1058258.17	663001.50
MHR	361.78	16.44	95.20	51.27	32.12

MACHINES/PARAMETERS	No. of Hours a Day	No. of Days a Year	No. of Years
Convention Milling	16.00	258.00	5.00
Gear Hobbing	16.00	258.00	5.00
Heat Treatment	16.00	258.00	5.00
Multi jet fusion	16.00	258.00	5.00
TIG Welding	16.00	258.00	5.00
Laser Cut	16.00	258.00	5.00
Lathe Operation	16.00	258.00	5.00
Press fit	16.00	258.00	5.00
Anodizing Plant	16.00	258.00	5.00
Sheet Metal Bending	16.00	258.00	5.00
Vertical Machining Centre	16.00	258.00	5.00
Miter Saw	16.00	258.00	5.00
Hydraulic tube bender	16.00	258.00	5.00

Part Name	Half Shaft Left
Part Number	254-EN-00002

Total	3492.44	45.15
	(INR)	(EURO)

Raw Material	Dimension	Mass	Cost
AISI 4140	466mm x 27mm	2.09	209.40
		Sub Total	209.40

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Heat Treatment (25HRC)	162.09	75.40	2.87	0.38	92.14	724.75	816.89
Heat Treatment (53HRC)	162.09	75.40	2.87	0.86	207.31	1630.70	1838.01
Lathe - Turning	0.00	2.39	4.08	0.86	5.58	41.39	46.97
Lathe - Facing	0.00	2.39	4.08	0.03	0.22	1.66	1.88
Gear Hobbing	27.50	19.23	16.17	0.24	15.19	26.78	41.97
Lathe - Groove Making	0.00	2.39	1.59	0.01	0.05	0.55	0.60
Lathe - Drilling	427.60	2.39	1.48	0.13	54.58	6.07	60.65
						Sub Total	2806.96

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Heat Treatment	1	0.38	25.28	4	101.14
Lathe - Turning and Facing	1	0.18	12.26	4	49.04
Gear Hobbing	1	0.19	12.77	4	51.08
Lathe - Groove Making	1	0.18	12.26	4	49.04
Lathe - Drilling	1	0.24	15.99	2	31.98
				Sub Total	282.27

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Induction Hardening	Semi-Skilled	2	1.73	114.93
Turning	Semi-Skilled	1	0.86	57.46
Facing	Semi-Skilled	1	0.01	0.67
Gear Hobbing	Semi-Skilled	1	0.24	16.09
Groove Making	Semi-Skilled	1	0.01	0.67
Drilling	Semi-Skilled	1	0.06	4.00
			Sub Total	193.81

Part Name	Half Shaft Right
Part Number	254-EN-00003

Total	3474.77	44.92
	(INR)	(EURO)

Material	Dimensions	Mass (kg)	Cost
EN19	441 mm x 27 mm	1.98	198.20
		Sub Total	198.20

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Heat Treatment (25HRC)	162.09	75.40	2.87	0.38	92.14	724.75	816.89
Heat Treatment (53HRC)	162.09	75.40	2.87	0.86	207.31	1630.70	1838.01
Lathe - Turning	0.00	2.39	4.08	0.82	5.28	39.18	44.46
Lathe - Facing	0.00	2.39	4.08	0.03	0.22	1.66	1.88
Gear Hobbing	27.50	19.23	16.17	0.24	15.19	26.78	41.97
Lathe - Groove Making	0.00	2.39	1.59	0.01	0.05	0.55	0.60
Lathe - Drilling	427.60	2.39	1.33	0.12	49.60	5.52	55.12
						Sub Total	2798.92

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Heat Treatment	1.00	0.38	25.28	4.00	101.14
Lathe - Turning and Facing	1.00	0.18	12.26	4.00	49.04
Gear Hobbing	1.00	0.19	12.77	4.00	51.08
Lathe - Groove Making	1.00	0.18	12.26	4.00	49.04
Lathe - Drilling	1.00	0.24	15.99	2.00	31.98
				Sub Total	282.27

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Induction Hardening	Semi-Skilled	2.00	1.73	114.93
Turning and Facing	Semi-Skilled	1.00	0.82	54.40
Gear Hobbing	Semi-Skilled	1.00	0.03	2.30
Groove Making	Semi-Skilled	1.00	0.24	16.09
Drilling	Semi-Skilled	1.00	0.12	7.66
			Sub Total	195.38

Part Name	Radiator Inlet
Part Number	254-EN-00006

Total	1899.19	24.55
	(INR)	(EURO)

Material	Dimension(LxODxT)	Mass(kg)	Cost
Aluminium Tube	1220 x 25 x 2.5mm	0.59	132.30
Aluminium Tube	25 x 25 x 1.5mm	0.01	1.68
Aluminium Tube	97 x 15 x 1.5mm	0.02	3.75
Aluminium Tube	22 x 43 x 6.5 mm	0.04	9.96
Sub Total			147.68

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Drilling(M17)	427.60	2.39	1.39	0.03	11.26	1.25	12.51
Drilling(M8)	427.60	2.39	1.33	0.03	11.00	1.22	12.22
Tube Bending	0.00	16.65	32.67	0.01	0.47	0.91	1.39
Weld	638.81	1.25	2.00	0.09	60.77	9.52	70.30
Weld	638.81	1.25	2.00	0.05	30.39	4.76	35.15
VMC	2227.50	58.46	362.50	0.48	1269.05	173.35	1442.41
Weld	638.81	1.25	2.00	0.09	60.77	9.52	70.30
Sub Total							1644.26

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Setups	Total Cos of Setups
Drilling	1	0.046	3.06	2	6.1295
Tube Bending	1	0.29	19.98	2	39.96
Weld	1	0.24	16.45	1.00	16.45
Weld	1	0.12	8.22	1.00	8.22
VMC	1	0.12	8.30	2	16.60
Weld	1	0.24	16.45	1.00	16.45
Sub Total					103.81

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Drilling(M17)	Semi-Skilled	1	0.03	1.74
Drilling(M8)	Semi-Skilled	1	0.03	1.70
Tube Bending	Skilled	1	0.01	0.67
Weld	Skilled	1	0.09	6.58
Weld	Skilled	1	0.05	3.29
VMC	Semi-Skilled	1	0.48	31.92
Weld	Skilled	1	0.09	6.58
Sub Total				3.44

Part Name	Radiator Outlet
Part Number	254-EN-00007

Total	162.12	2.095684865
	(INR)	(EURO)

Material	Dimension(LxODxT)	Mass(kg)	Cost
Aluminium Tubes	320 x 25 x 1.5mm	0.10	21.51
		Sub Total	21.51

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Cutting(Manual)	0.00	0.31	3.31	0.01	0.04	0.19	0.23
Weld	638.81	1.25	2.00	0.17	109.28	17.13	126.41
						Sub Total	126.64

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Cutting(Manual)	1.00	0.01	0.72	2	1.43
Weld	1.00	0.43	29.57	1	29.57
				Sub Total	1.43

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Cutting	Unskilled	1.00	0.01	0.72
Weld	Skilled	1.00	0.17	11.83
			Sub Total	12.54

Part Name	Water Pump Connector
Part Number	254-EN-00008

Total	203.23	2.62710499
	(INR)	(EURO)

Material	Dimension(LxODxT)	Mass(kg)	Cost
Aluminium Tubes	100 x 45 x 5mm	0.17	38.03
Aluminium Tubes	40 x 35 x 1.5mm	0.01	2.84
Sub Total			40.86

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Cutting(Manual)	0.00	0.31	3.31	0.01	0.03	0.16	0.19
Weld	638.81	1.25	2.00	0.17	109.28	17.13	126.41
Sub Total							126.60

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Cutting(Manual)	1.00	0.01	0.72	2	1.43
Weld	1.00	0.43	29.57	1	29.57
Sub Total					30.29

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Cutting	Unskilled	1.00	0.01	0.62
Weld	Skilled	1.00	0.07	4.87
Sub Total				5.49

Part Name	Water Pump Outlet
Part Number	254-EN-00009

Total	254.95	3.295656831
	(INR)	(EURO)

Material	Dimension(LxODxT)	Mass(kg)	Cost
Aluminium Tubes	35 x 30 x 2mm	0.01	1.38
Aluminium Tubes	35 x 35 x 2mm	0.01	1.63
		Sub Total	3.02

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Weld	638.81	1.25	2	0.26	164.07	25.71	189.78
						Sub Total	189.78

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Weld	1	0.64	44.40	1.00	44.40
				Sub Total	44.40

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Weld	Skilled	1	0.26	17.76
			Sub Total	17.76

Part Name	Inlet T Connector
Part Number	254-EN-00010

Total	216.80	2.802449758
	(INR)	(EURO)

Material	Dimension(LxODxT)	Mass(kg)	Cost
Aluminium Tubes	115 x 25 x 1.5mm	0.01	2.70
		Sub Total	2.70

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Cutting(Manual)	0.00	0.31	3.31	0.02	0.06	0.28	30.88
Lathe - Drilling	427.60	2.39	16.60	0.07	30.81	3.31	85.45
Weld	638.81	1.25	2.00	0.09	54.64	8.56	54.64
						Sub Total	170.97

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Cutting(Manual)	1	0.01	0.72	2	1.43
Lathe - Drilling	1	0.12	7.66	2	15.32
Weld	1	0.21	14.79	1	14.79
				Sub Total	31.54

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Drilling	Semi-Skilled	1	0.07	4.60
Cutting	Unskilled	1	0.02	1.07
Weld	Skilled	1	0.09	5.91
			Sub Total	11.59

Part Name	T Connector CTS
Part Number	254-EN-00011

Total	190.81	2.466537261
	(INR)	(EURO)

Material	Dimension(LxODxT)	Mass(kg)	Cost
Aluminium Tubes	70 x 25 x 1.5mm	0.01	1.74
Aluminium Tubes	25 x 18x 1.5mm	0.01	2.25
		Sub Total	3.99

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Lathe - Drilling	427.60	2.39	1.39	0.07	29.77	24.75	54.52
Threading	21.39	2.39	3.60	0.01	0.24	0.41	0.65
Weld	638.81	1.25	2.00	0.09	54.64	8.56	63.20
						Sub Total	118.37

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Lathe - Drilling	1	0.12	15.32375	2	30.65
Threading	1	0.046	6.39	2	12.79
Weld	1	0.21	14.17	1	14.17
				Sub Total	57.61

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Drilling	Semi-Skilled	1	0.07	4.60
Threading	Semi-Skilled	1	0.01	0.57
Weld	Semi-Skilled	1	0.09	5.67
			Sub Total	10.84

Part Name	Coolant Line Connector
Part Number	254-EN-00012

Total	106.73	1.379700357
	(INR)	(EURO)

Material	Dimension(LxODxT)	Mass(kg)	Cost
Aluminium Tubes	300 x 25 x 1.5mm	0.09	20.48
		Sub Total	20.48

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Tube Bending	0.00	16.65	32.67	0.01	0.32	0.61	0.92
Weld	638.81	1.25	2.00	0.05	30.35	4.76	35.10
						Sub Total	36.03

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Tube Bending	1	0.29	19.15	2	38.31
Weld	1	0.12	8.21	1	8.21
				Sub Total	46.52

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Tube Bending	Semi-Skilled	1	0.01	0.43
Weld	Skilled	1	0.05	3.28
			Sub Total	3.71

Part Name	Tripod Housing
Part Number	254-EN-00020

Total	4524.95	58.49208579
	(INR)	(EURO)

Material	Dimensions	Mass (kg)	Cost
Al 7075-T6	70mm x 161mm	1.7410	1044.60
		Sub Total	1044.60

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Induction Hardening	162.09	75.40	2.87	0.38	92.14	724.75	816.89
Lathe - Turning	0.00	2.28	9.88	0.08	0.98	3.86	4.84
Lathe - Drilling	427.60	2.28	1.37	0.17	74.39	8.28	82.67
VMC	2227.50	58.46	362.50	0.61	1623.37	221.75	1845.13
Gear Hobbing	27.50	19.23	4.31	0.24	12.33	26.78	39.10
Anodising	38.23	1.18	0.00	0.58	22.66	135.79	158.45
						Sub Total	2947.09

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Induction Hardening	1	0.38	25.54	2	51.08
Lathe - Turning	1	0.13	8.94	2	17.88
Lathe - Drilling	1	0.24	15.99	2	31.98
VMC	1	0.12	8.30	2	16.60
Gear Hobbing	1	0.29	19.15	2	38.31
Anodising	1	0.23	15.43	2	30.86
				Sub Total	186.71

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Induction Hardening	Semi-Skilled	2	0.77	102.16
Turning	Semi-Skilled	1	0.08	5.36
Drilling	Semi-Skilled	1	0.17	11.49
VMC	Skilled	1	0.25	17.38
	Semi-Skilled	1	0.61	40.84
Gear Hobbing	Semi-Skilled	1	0.24	16.09
Anodising	Semi-Skilled	2	1.15	153.24
			Sub Total	346.55

Part Name	Differential Mount Left
Part Number	254-EN-00027

Total Cost	3539.01	45.7473
	(INR)	(EURO)

Material	Dimension	Mass(kg)	Cost
Al 7075 T6	312 x 367 x 8mm	2.57	1544.40
		Sub Total	1544.40

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Cost
Laser Cut	3463.60	19.25	37.89	0.49	1738.98	177.20	1916.18
						Sub Total	1916.18

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setu	Number of Setups	Total Cost of Setup
Laser Cut	1	0.19	12.77	2	25.54
				Sub Total	25.54

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1	0.29	19.98
	Semi-Skilled	1	0.49	32.91
			Sub Total	52.89

Part Name	Differential Mount Right
Part Number	254-EN-00028

Total Cost	3139.49	40.58
	(INR)	(EURO)

Material	Dimensions	Mass(kg)	Cost
Al 7075 T6	350 x 281 x 7mm	1.93	1160.73
		Sub Total	1160.73

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Laser Cut	3174.96	19.48	37.89	0.40	1288.00	142.96	1430.96
Conventional Milling	1215.00	2.48	251.03	0.29	422.20	9.86	432.06
						Sub Total	1863.02

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Setups	Total Cost of Setup
Laser Cut	1	0.19	12.77	2	25.54
Conventional Milling	1	0.18	12.26	2	24.52
				Sub Total	50.06

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1	0.29	19.98
	Semi-Skilled	1	0.40	26.55
Milling	Semi-Skilled	1	0.29	19.15
			Sub Total	65.68

Part Name	Eccentric Left
Part Number	254-EN-00029

Total	2476.63	32.01
	(INR)	(EURO)

Raw Material	Dimension	Mass(kg)	Cost
Al 7075-T6	29mmx186mm	1.38	828.13
		Sub Total	828.13

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Conventional Milling (Face)	1215.00	2.48	364.2	0.79	1255.07	27.22	1282.29
Conventional Milling (End)	607.50	2.48	112.50	0.29	207.71	9.86	217.58
						Sub Total	1499.87

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Milling Setup (face)	1.00	0.19	19.15	2.00	38.31
Milling Setup (end)	1.00	0.19	19.15	2.00	38.31
				Sub Total	76.62

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Milling (face)	Semi-Skilled	1.00	0.79	52.87
Milling (end)	Semi-Skilled	1.00	0.29	19.15
			Sub Total	72.02

a

Part Name	Eccentric Right
Part Number	254-EN-00030

Total	2139.97	27.66
	(INR)	(EURO)

Raw Material	Dimension	Mass(kg)	Cost
Al 7075-T6	19mmx156mm	1.02	612.00
		Sub Total	612.00

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Conventional Milling (Face)	1215.00	2.48	364.20	0.72	1144.11	24.82	1168.93
Conventional Milling(End)	607.50	2.48	112.50	0.29	207.71	9.86	217.58
						Sub Total	1386.50

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Milling Setup (face)	1.00	0.19	19.15	2.00	38.31
Milling Setup (end)	1.00	0.19	19.15	2.00	38.31
				Sub Total	76.62

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Milling (face)	Semi-Skilled	1.00	0.72	48.19
Milling (end)	Semi-Skilled	1.00	0.25	16.66
			Sub Total	64.85

a

Part Name	Engine Mounts
Part Number	254-EN-00035

Total	212.06	2.7411811
	(INR)	(EURO)

Material	Dimension(LxOD)	Mass(kg)	Cost
AISI 1020 Tube	375 x 24.5 mm	1.39	138.7
		Sub Total	138.70

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Lathe - Turning	0.00	2.39	4.07	0.09	0.59	4.41	5.01
Lathe - Facing	0.00	2.39	4.07	0.03	0.22	1.66	1.88
Lathe - Drilling	427.60	2.39	1.37	0.01	4.96	0.55	5.51
Lathe - Parting	0.00	2.39	1.59	0.02	0.09	1.10	1.20
						Sub Total	13.60

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Lathe - Turning and Facing	1	0.14	9.19	2	18.39
Lathe - Drilling	1	0.12	7.66	2	15.32
Lathe - Parting	1	0.12	7.66	2	15.32
				Sub Total	49.04

a

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Turning	Semi-Skilled	1	0.09	6.13
Facing	Semi-Skilled	1	0.03	2.30
Drilling	Semi-Skilled	1	0.01	0.77
Parting	Semi-Skilled	1	0.02	1.53
			Sub Total	10.73

Part Name	Port Tube
Part Number	254-EN-00037

Total	30.96	0.400229908
	(INR)	(EURO)

Material	Dimension (L x OD x T)	Mass(kg)	Cost
AISI 1020	13 x 45 x 7 mm	0.09	8.50
		Sub Total	8.50

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Cost
Lathe - Turning	0.00	2.39	1.01	0.01	0.04	0.55	0.59
Lathe - Facing	0.00	2.39	1.01	0.02	0.08	1.10	1.18
						Sub Total	1.77

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Setups	Total Cost of Setup
Lathe - Turning and Facing	1	0.14	9.19	2	18.39
				Sub Total	18.39

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Turning and Facing	Semi-Skilled	1	0.03	2.30
			Sub Total	2.30

a

Part Name	Exhaust Tube
Part Number	254-EN-00038

Total	327.93	4.24
	(INR)	(EURO)

Material	Dimension(L x OD x T)	Mass(kg)	Cost
AISI 1020 Tube	1120 x 31 x 1.5mm	1.22	122.10
AISI 1020 Tube	575 x 41 x 1.5mm	0.84	83.90
Sub Total			206.00

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total MachiningCost
Cutting(Manual)	0.00	0.31	1.65	0.01	0.01	0.11	0.13
Tube Bending	0.00	16.65	32.67	0.38	18.91	36.49	55.40
Vertical Drilling	128.28	1.51	16.60	0.02	2.69	0.59	3.28
Sub Total							58.81

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Setups	Cost of Setup
Cutting(Manual)	1	0.02	1.43	4	5.73
Tube Bending	1	0.02	5.11	4	20.43
Drilling	1	0.12	7.66	2	15.32
Sub Total					41.48

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Cutting	Unskilled	1	0.01	0.43
Tube Bending	Skilled	1	0.29	19.98
Drilling	Semi-Skilled	1	0.02	1.23
Sub Total				21.64

a

Part Name	Exhaust Flange
Part Number	254-EN-00039

Total	79.77	1.0311314
	(INR)	(EURO)

Material	Dimension(LxBxT)	Mass(kg)	Cost
AISI 1020 Sheet	77mm x 63mm x 5.5mm	0.21	11.50
		Sub Total	11.50

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Laser Cut	1851.12	32.46	37.89	0.01	13.63	2.54	16.17
						Sub Total	16.17

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of machining setups	Total Cost of Setup
Laser Cut	1	0.29	19.15	2	38.31
				Sub Total	38.31

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1	0.19	13.32
	Semi-Skilled	1	0.01	0.47
			Sub Total	13.79

a

Part Name	Supporting Strips
Part Number	254-EN-00040

Total	4.13	0.053328758
	(INR)	(EURO)

Material	Dimension	Mass (kg)	Cost
AISI 1020	180mm x 20mm x 2mm	0.06	3.11
		Sub Total	3.11

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Cutting(Manual)	0	0.31	3.31	0.02	0.06	0.25	0.31
						Sub Total	0.31

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of machining setups	Total Cost of Setup
Cutting(Manual)	1	0.02	1.43	2	2.86
				Sub Total	2.86

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Cutting	Unskilled	1	0.02	0.95
			Sub Total	0.95

a

Part Name	Lambda Sensor Sleeve
Part Number	254-EN-00041

Total	58.10	0.750992256
	(INR)	(EURO)

Material	Dimension (L x OD)	Mass(kg)	Cost
AISI 1020	20 x 30 mm	0.11	11
		Sub Total	11

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Cost
Lathe - Turning	0	2.39	1.01	0.02	0.08	1.10	1.18
Lathe - Facing	0	2.39	1.01	0.01	0.04	0.55	0.59
Lathe - Drilling	427.6	2.39	1.39	0.02	9.92	1.10	11.03
Threading	21.39	2.39	3.60	0.02	0.56	0.97	1.53
						Sub Total	14.33

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of machining setups	Total Cost of Setup
Lathe - Turning and Facing	1	0.14	9.19	1	9.19425
Lathe - Drilling	1	0.05	6.13	2	12.259
Threading	1	0.05	3.06	2	6.1295
				Sub Total	27.58275

a

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Turning and Facing	Semi-Skilled	1	0.03	2.30
Drilling	Semi-Skilled	1	0.02	1.53
Internal Threading	Semi-Skilled	1	0.02	1.35
			Sub Total	5.18

Part Name	Fuel Tank
Part Number	254-EN-00054

Total	3085.58	39.88603605
	(INR)	(EURO)

Material	Dimension	Mass(kg)	Cost
Al 6061-T6	1200mm x 800mm x 3mm	8.09	2103.92
Al tube	370mm x 40mm x 2mm	0.24	54.23
Al tube	200mm x 13mm x 2mm	0.04	8.33
Sub Total			2166.47

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Laser Cut	2597.7	32.46	37.89	0.46	32.51	165.79	198.30
Cutting (manual)	0.00	0.31	3.31	0.10	0.36	1.64	2.01
Welding	638.81	1.25	2	0.75	481.55	75.47	557.01
Sub Total							757.31

Machining Setup	Number of Labour	Labour Hours	Number of Setups	Cost / Machining Setup
Laser cut	1	0.19	2.00	25.54
Cutting (manual)	1	0.02	6.00	7.16
Sub Total				32.70

a

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1	0.58	39.96
	Semi-Skilled	1	0.46	30.79
Cutting (manual)	Unskilled	1	0.10	6.23
Welding	Skilled	1	0.75	52.13
Sub Total				129.10

Part Name	Neck Attachment
Part Number	254-EN-00057

Total	37.93	0.49
	(INR)	(EURO)

Raw Material	Dimensions (L xOD x T)	Mass	Cost
Aluminium tube	60mm x 37mm x 4mm	0.07	15.28
		Sub Total	15.28

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Lathe - External Threading	21.39	2.39	9.88	0.03	0.97	1.38	2.35
						Sub Total	2.35

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Lathe - External Threading	1	0.14	9.19	2	18.39
				Sub Total	18.39

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
External Threading	Semi-Skilled	1	0.03	1.92
			Sub Total	1.92

Part Name	Fuel Filler Neck Cap
Part Number	254-EN-00058

Total	1042.58	13.48
	(INR)	(EURO)

Material	Dimensions	Mass (kg)	Cost
Al 6061-T6	54 x 24 mm	0.15	38.82
		Sub Total	38.82

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Cost
Conventional Milling	2432.00	2.48	304.20	0.35	969.10	12.14	981.24
Internal Threading	21.39	2.39	3.60	0.04	1.18	2.06	3.24
						Sub Total	984.47

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of machining setups	Total Cost of Setup
Milling	1	0.19	6.38	4	25.54
Internal threading	1	0.05	3.06	2	6.13
				Sub Total	31.67

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Milling	Semi-Skilled	1	0.35	23.58
Internal threading	Semi-Skilled	1.00	0.04	2.86
			Sub Total	26.44

a

Part Name	Fuel Tank Mounting Bushing
Part Number	254-EN-00059

Total	13.75	0.177802829
	(INR)	(EURO)

Material	Dimension(L x OD)	Mass(kg)	Cost
Rubber	65 x 15mm	0.02	5.75
		Sub Total	5.75

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Vertical Drilling	0.00	1.51	1.37	0.01	0.02	0.23	0.25
						Sub Total	0.25

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Vertical Drilling Setup	1	0.05	3.06	2	6.13
				Sub Total	6.13

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Vertical Drilling	Semi-Skilled	1	0.01	0.44
Brush Apply	Unskilled	1	0.02	1.19
			Sub Total	1.63

a

Part Name	Muffler Outer Housing
Part Number	254-EN-00063

Total	505.13	6.53
	(INR)	(EURO)

Material	Dimensions (LxBxT)	Mass (kg)	Cost
AISI 1020 Sheet	380 x 380 x 2 mm	2.27	124.69
		Sub Total	124.69

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Sheet Metal Bending	210.38	11.69	0.00	0.08	17.88	132.27	150.15
Welding	638.81	1.25	2.00	0.19	121.54	19.05	140.58
						Sub Total	290.73

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Sheet Metal Bending	1.00	0.58	19.15	2.00	38.31
Welding	1.00	0.47	32.89	1.00	32.89
				Sub Total	71.20

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Sheet Metal Bending	Semi-Skilled	1.00	0.08	5.36
Welding	Skilled	1.00	0.19	13.16
			Sub Total	18.52

a

Part Name	Muffler Housing Cover Inlet
Part Number	254-EN-00064

Total	80.61	1.04203675
	(INR)	(EURO)

Material	Dimensions (LxBxT)	Mass (kg)	Cost
AISI 1020	130 x130 x 2 mm	0.26	14.51
		Sub Total	14.51

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Laser Cut	1851.12	32.46	37.89	0.01	22.10	4.13	26.22
						Sub Total	26.22

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Laser Cut	1	0.29	19.15	2	38.31
				Sub Total	38.31

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1.00	0.01	0.80
	Semi-Skilled	1.00	0.01	0.77
			Sub Total	1.57

a

Part Name	Muffler Housing Cover Outlet
Part Number	254-EN-00065

Total	81.70	1.056044408
	(INR)	(EURO)

Material	Dimensions (LxBxT)	Mass (kg)	Cost
AISI 1020	130 x 130 x 2 mm	0.2653	14.59
AISI 1020	380 x 20 x 2 mm	0.12	6.56
		Sub Total	21.16

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Laser Cut	1851.12	32.46	37.89	0.01	17.68	3.30	20.98
						Sub Total	20.98

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Laser Cut	1	0.29	19.15	2	38.31
				Sub Total	38.31

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1.00	0.01	0.64
	Semi-Skilled	1.00	0.01	0.61
			Sub Total	1.25

a

Part Name	Perforated Tube
Part Number	254-EN-00066

Total	395.59	5.113566396
	(INR)	(EURO)

Material	Dimensions (LxBxT)	Mass (kg)	Cost
AISI 1020	150 x 150 x 2 mm	0.35	19.43
Sub Total			19.43

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Laser Cut	1851.12	32.46	37.89	0.01	12.50	2.33	14.83
Sheet Bending	210.38	11.69	0.00	0.15	33.16	132.27	165.43
Welding	638.81	1.25	2.00	0.09	60.77	9.52	70.30
Sub Total							250.56

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Laser Cut	1	0.29	19.15	2	38.31
Sheet Bending	1	0.86	14.36	4	57.44
Welding	1.00	0.24	16.45	1	16.45
Sub Total					95.75

a

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1	0.19	13.32
	Semi-Skilled	1	0.15	9.95
Sheet Metal Bending	Semi-Skilled	1	0.15	9.95
Welding	Skilled	1	0.09	6.58
Sub Total				29.85

Part Name	Muffler Inlet
Part Number	254-EN-00067

Total	23.39	0.302410889
	(INR)	(EURO)

Material	Dimensions (LxODxT)	Mass (kg)	Cost
AISI 1020 Tube	90 x 47 x 2 mm	0.20	19.90
		Sub Total	19.90

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Cutting	0.00	0.31	3.31	0.01	0.03	0.13	0.15
						Sub Total	0.15

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Cutting	1	0.02	1.43	2	2.86
				Sub Total	2.86

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Cutting	Unskilled	1	0.01	0.48
			Sub Total	0.48

a

Part Name	Tail Pipe
Part Number	254-EN-00068

Total	49.82	0.64
	(INR)	(EURO)

Material	Dimensions (LxODxT)	Mass (kg)	Cost
AISI 1020	25 x 34 x 2 mm	0.04	3.90
		Sub Total	3.90

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Tube Bending	0.00	16.65	32.67	0.01	0.57	1.09	1.66
Cutting	0.00	0.31	3.31	0.01	0.03	0.13	0.15
						Sub Total	1.82

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Tube Bending	1.00	0.29	19.98	2.00	39.96
Cutting	1.00	0.02	1.43	2.00	2.86
				Sub Total	42.83

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Tube Bending	Skilled	1.00	0.01	0.80
Cutting	Unskilled	1.00	0.01	0.48
			Sub Total	1.28

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Part Name	Muffler Clamp
Part Number	254-EN-00070

Total	185.51	2.40
	(INR)	(EURO)

Material	Dimensions(LxBxT)	Mass (kg)	Cost
Al-5052	500 x 20 x 1mm	0.03	6.83
		Sub Total	6.83

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Sheet Metal Bending	210.38	11.69	0.00	0.01	2.55	132.27	134.83
Drilling	427.60	2.39	1.37	0.01	3.25	0.36	3.61
						Sub Total	138.44

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Sheet Metal Bending	1.00	0.06	11.49	2.00	22.99
Drilling	1.00	0.12	7.99	2.00	15.99
				Sub Total	38.97

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Sheet Metal Bending	Semi-Skilled	1.00	0.01	0.77
Drilling	Semi-Skilled	1.00	0.01	0.50
			Sub Total	1.27

Part Name	Sump Pan
Part Number	254-EN-00086

Total Cost	9504.83	122.86
	(INR)	(EURO)

Material	Dimensions	Mass (kg)	Cost
Al 6061-T6	276 x 221 x 77mm	12.77	3319.06
		Sub Total	3319.06

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Cost
Milling - 3 Axis VMC (End)	2227.50	58.91	280.92	1.23	3159.11	445.17	3604.28
Milling - 3 Axis VMC (Face)	3037.50	58.91	390.78	1.46	5078.13	526.83	5604.96
						Sub Total	9209.24

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Setups	Cost of Setup
VMC milling setup (end)	1	0.29	19.15	2	38.31
VMC milling setup (face)	1	0.29	19.15	2	38.31
				Sub Total	76.62

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
VMC End Milling	Skilled	1	0.58	39.96
	Semi-Skilled	1	1.23	81.98
VMC Face Milling	Semi-Skilled	1	1.46	97.02
			Sub Total	218.97

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Part Name	Reservoir Tank
Part Number	254-EN-00087

Total	1215.93	15.71783975
	(INR)	(EURO)

Material	Dimension(LxBxT)	Mass(kg)	Cost
Al 6061-T6	520 x 445 x 2	1.25	324.74
		Sub Total	324.74

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Laser Cut	2597.70	32.46	37.89	0.19	515.47	69.31	584.78
Sheet Metal Bending	210.38	11.69	0.00	0.08	17.03	27.50	44.53
Cutting	0.00	0.31	3.31	0.01	0.02	0.09	0.12
Welding	638.81	1.25	2.00	0.19	121.54	19.05	140.58
						Sub Total	770.01

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Laser cut setup	1	0.19	12.77	2	25.54
Sheet metal bending	1	0.01	1.44	2	2.88
Cutting setup	1	0.01	0.72	3	2.15
Welding	1	0.47	32.85	1	32.85
				Sub Total	63.42

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Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1	0.38	26.64
	Semi-Skilled	1	0.19	12.87
Sheet Metal Bending	Semi-Skilled	1	0.08	5.11
Cutting	Unskilled	1	0.01	0.36
Welding	Skilled	1	0.18	12.79
			Sub Total	57.77

Part Name	Weld In Extension
Part Number	254-EN-00090

Total	21.94	0.283645946
	(INR)	(EURO)

Material	Dimension(L x OD x T)	Mass(kg)	Cost
Aluminium Tube	70 x 19 x 2.5mm	0.02	5.60
Aluminium Tube	10 x 21 x 2mm	0.003	0.68
Sub Total			6.28

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Cutting (Manual)	0.00	0.31	3.31	0.11	0.38	1.73	2.11
Cutting (Manual)	0.00	0.31	3.31	0.02	0.06	0.25	0.31
Sub Total						2.42	

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Cutting (Manual)	1	0.02	1.43	2	2.86
Cutting (Manual)	1	0.02	1.43	2	2.86
Sub Total					5.73

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Cutting	Unskilled	1	0.11	6.56
Cutting	Unskilled	1	0.02	0.95
Sub Total				7.52

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Part Name	Shifter Lever
Part Number	254-EN-00119

Total	46.46	0.600555648
	(INR)	(EURO)

Raw Material	Dimensions	Mass	Cost
AISI 1020 Rod	50 x13mm	0.05	2.86
AISI 1020 Sheet	120 x 25 x 2.5mm	0.06	3.23
Sub Total			6.09

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Laser Cut	1851.12	32.46	37.89	0.01	22.10	4.13	26.22
Welding	638.81	1.25	2.00	0.01	4.43	0.69	5.12
Sub Total							31.35

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Setups	Total Cost of Setup
Laser cut	1	0.04	2.55	2	5.11
Sub Total					5.11

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1	0.04	2.66
	Semi-Skilled	1	0.01	0.77
Welding	Skilled	1	0.01	0.48
Sub Total				3.91

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Part Name	Intake Manifold
Part Number	254-EN-00060, 254-EN-00061, 254-EN-00126

	Total	#VALUE!
	(INR)	(EURO)

Raw Material	Mass(kg)	Cost
Nylon PA-12	1.10	7743.06
	Sub Total	7743.06

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Multi Jet Fusion(Restrictor)	0.00	167.15	0.00	3.96	661.92	1805.01	2466.93
Multi Jet Fusion(diffuser)	0.00	167.15	0.00	12.55	2096.91	5718.14	7815.05
Multi Jet Fusion(Plenum)	0.00	167.15	0.00	44.73	7476.17	20387.02	27863.19
						Sub Total	38145.17

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setup	Total Cost of Machining Setup
Multi Jet Fusion	1	0.19	13.32	3	39.96
				Sub Total	39.96

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Multi Jet Fusion	Skilled	1	23.00	1598.50
			Sub Total	1598.50

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Part Name	Scatter Shield
Part Number	254-EN-00127

Total	978.04	12.64
	(INR)	(EURO)

Material	Dimensions(LxBxH)	Mass (kg)	Cost
AISI 1020	530 x 86 x 2.4 mm	0.86	47.23
		Sub Total	47.23

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Cost
Laser Cut	1851.12	32.46	37.89	0.33	640.81	119.65	760.46
Sheet metal bending	210.38	5.84	0.00	0.10	21.14	12.93	34.07
Weld	638.81	1.25	2.00	0.09	60.77	9.52	70.29
						Sub Total	864.81

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of machining setups	Total Cost of Setup
Laser Cut	1	0.20	13.03	2	26.05
Sheet metal bending	1	0.03	1.84	2	3.68
				Sub Total	29.73

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Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1	0.19	23.18
	Semi-Skilled	1	0.33	22.22
Sheet metal bending	Semi-Skilled	1	0.10	6.51
Weld	Skilled	1	0.09	6.58
			Sub Total	36.27

Part Name	Sprocket
Part Number	254-EN-00128

Total Cost	946.49	12.23
	(INR)	(EURO)

Material	Dimensions	Mass (kg)	Cost
Al 7075-T6	240 x 240 x 6.4 mm	0.37	219.456
		Sub Total	219.46

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Laser Cut	3174.96	32.46	37.89	0.18	597.14	66.01	663.15
						Sub Total	663.15

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Setups	Cost of Setup
Laser Cut	1	0.29	19.15	2	38.31
				Sub Total	38.31

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Laser Cut	Skilled	1	0.19	13.32
	Semi-Skilled	1	0.18	12.26
			Sub Total	25.58

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Part Name	Sprocket Adaptor
Part Number	254-EN-00129

Total	3120.06	40.33166478
	(INR)	(EURO)

Material	Dimension	Mass (kg)	Cost
Al 7075 T6	118 x 32mm	0.92	552.00
		Sub Total	552.00

Machining Process	Consumables	Maintenance	Cost of Accesories	Machine Hours	Variable Cost	Fixed Cost	Total Machining Cost
Conventional Milling	2432.00	2.48	364.2	0.67	1866.72	22.88	1889.60
Broaching	162.92	7.96	1542.6	0.33	558.31	16.71	575.02
						Sub Total	2464.62

Machining Setup	Number of Labour	Labour Hours	Cost / Machining Setup	Number of Machining Setups	Total Cost of Machining Setup
Conventional Milling	1	0.18	12.26	2	24.52
Broaching	1	0.10	6.38	2	12.77
				Sub Total	37.29

Process	Labour Type	Number of Labour	Labour Hours	Labour Cost
Milling	Semi-Skilled	1	0.67	44.44
Broaching	Semi-Skilled	1	0.33	21.71
			Sub Total	66.15

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