

SIAM

Society of Indian Automobile Manufacturers

AUTOMOTIVE SOURCING CONCLAVE

THEME : Towards Building a Resilient Supply Chain



Localization Opportunities for Vendor

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For More Information please contact:

Mr. Amit Kr Sharma

Mob: 9971 23 9516

amit@siam.in

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Localization Opportunities for Vendor

Digital Cluster

- Category: Electronic
- Technology / Specification:
 - TFT 8' Display (Digital Cluster)
 - Freely Programmable Kombi (FPK)





Localization Opportunities for Vendor

Sensors

- **Category:** Electronics
- **Technology / Specification:**
- PDC Sensor – Works on Ultrasound technology
- Sun Load Sensor – Photo diode system (which helps to detect the sunlight intensity)
- Rain Light Sensor – Optical IR light system
- Speed Sensor, etc.
- Pressure Sensor of CNG Regulator-Piezoresistive Sensor
- Refrigerant Pressure Sensor of AC-Piezoresistive Sensor
- Oil Pressure Sensor of AMT Kit-Capacitive Pressure Sensor





Localization Opportunities for Vendor

Pressure Sensor of CNG Regulator



Category: Electronics

Function

Converts pressure inside CNG Cylinder to an electrical analogue signal

Working Principle

Piezoresistive Sensor



Localization Opportunities for Vendor

Refrigerant Pressure Sensor of AC



Category: Electronics

Function

Switch off the compressor when refrigerant pressure goes out of normal working range

Working Principle

Piezoresistive Sensor



Localization Opportunities for Vendor Oil Pressure Sensor of AMT Kit



Category: Electronics

Function

Measures oil pressure & transmits signal to Transmission Control Unit for regulating Hydraulic Oil Pressure

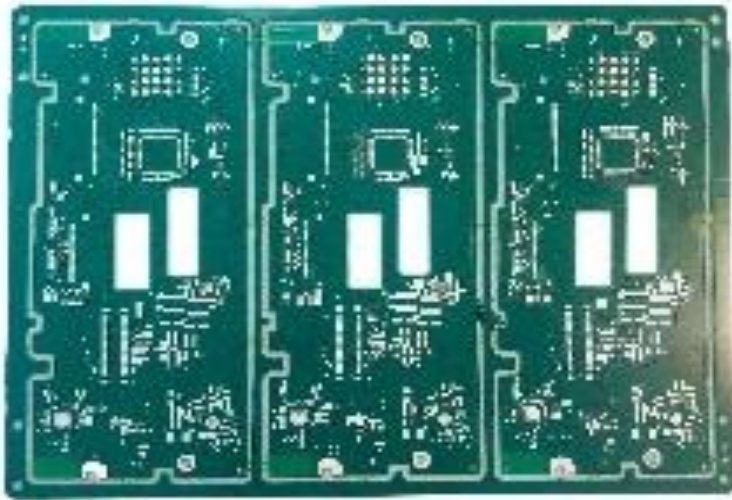
Working Principle

Capacitive Pressure Sensor



Localization Opportunities for Vendor

6 Layer Printed Circuit Board of Smart Display Audio



Category: Electronics

Function

To support & electrically connect electronic components while being safely insulated

Specification

Surface Area	Laminate	Surface Finish
206 x 120 mm	FR4	Immersion Silver

* *FR – Flame Retardant*



Localization Opportunities for Vendor

6 Layer Printed Circuit Board of Body Control Module



Category: Electronics

Function

To support & electrically connect electronic components while being safely insulated

Specification

Surface Area	Laminate	Surface Finish
105 x 90 mm	FR4	HASL/Immersion Silver

* *FR – Flame Retardant*

HASL – Hot Air Solder Level

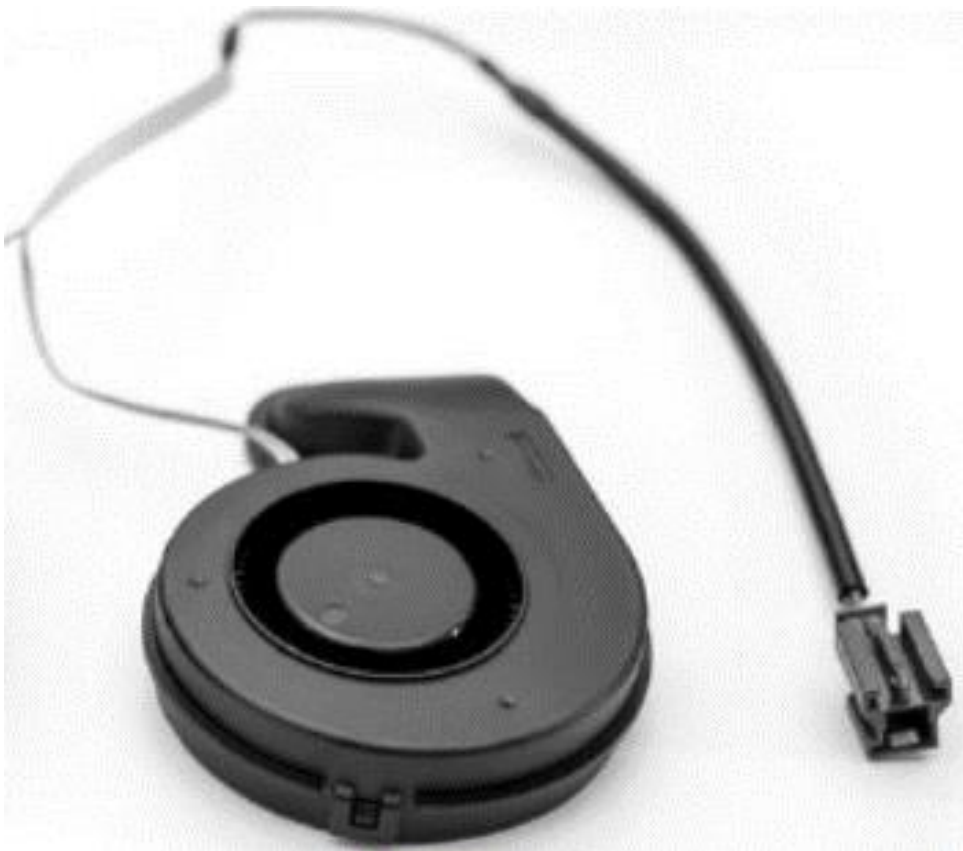


Localization Opportunities for Vendor

Seat Ventilator

- Category: Mechanical / Electronic
- Technology / Specification:

PCB + Blower Motor

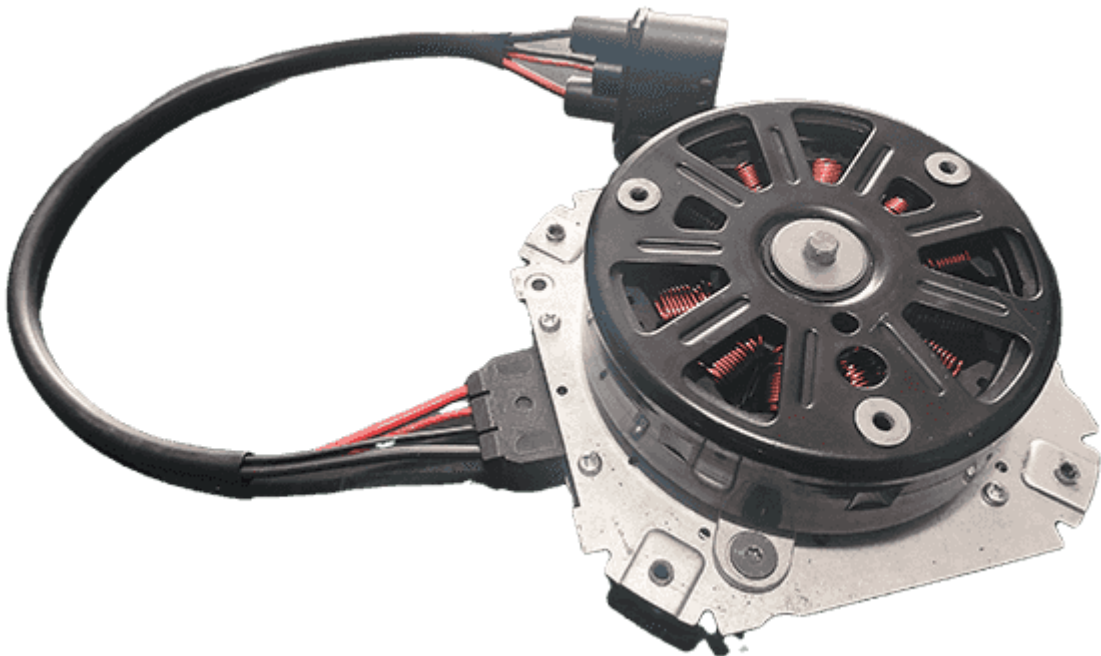




Localization Opportunities for Vendor

Motor for EC Fan

- Category: Mechanical / Electronic
- Technology / Specification:
Brushless direct current motor (BLDC)





Localization Opportunities for Vendor

Automatic Transmission

- Category: Mechanical & Electronic
- Technology: Torque Converter





Localization Opportunities for Vendor

Coolant Heater

- Category: Electrical (EV)
- Function: It helps to heat the cabin in colder climate & also warms up the battery pack to an optimal temperature for better performance & efficiency..
- Working Principle: The coolant heater operates by using an electric heating element integrated into battery pack cooling system





Localization Opportunities for Vendor

Electric Vacuum Pump

- Category: Electrical (EV)
- Function: Create vacuum in braking system for reduced brake effort.
- Working Principle: The Pump contains an electric motor drives a vacuum generating mechanism. When activated motor creates suction which generate vacuum needed for brake system or other vacuum dependent components.

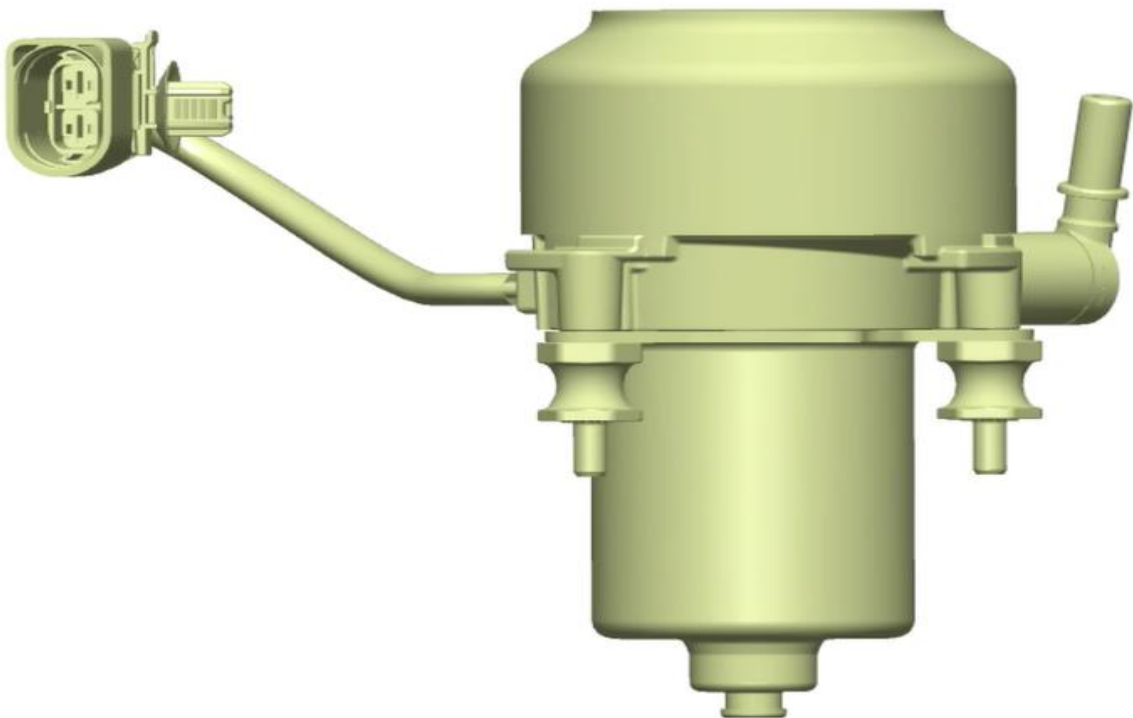




Localization Opportunities for Vendor

Vacuum Pump

- Category: Electrical
- Technology / Specification:
Electric vacuum pump





Localization Opportunities for Vendor

Coolant Pump

- Category: Electrical
- Technology / Specification:
 - Electric Coolant Pump

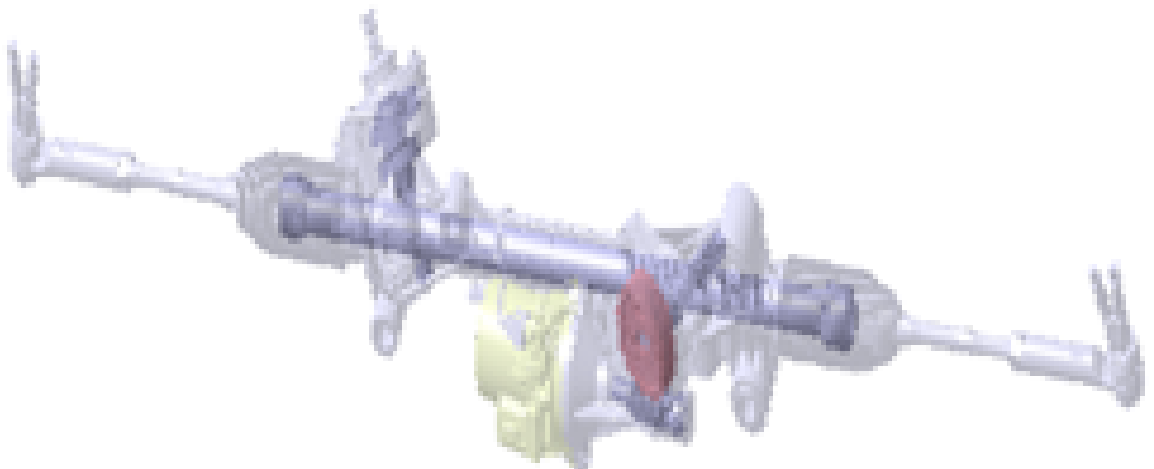




Localization Opportunities for Vendor

Dual Pinion Electric Power Steering Systems

- Category: Electrical
- Function: It helps in steering a vehicle with two separate pinions which provides more precise & responsive steering..
- Working Principle: It combines the principle of dual pinion steering with electric power assistance. In this system, the two pinions are coupled with an electric motor that assists in steering.





Localization Opportunities for Vendor

Micromotor of Outer Rear-View Mirror Powerfold



Category: Electrical

Function

*Brush type DC motor to control folding/
unfolding of Side-View Mirror*

Specification

Current	Torque	RPM	Outer Dia
1~3 A (Max)	18~26 N-mm	8000~11000	18 mm



Localization Opportunities for Vendor

DC Motor of Electronic Throttle Body



Category: Electrical

Function

Brush type DC motor to open throttle valve based on the input from accelerator pedal

Specification

Current	RPM	Outer Dia
0.3 A (No Load)/10.3 A (Lock)	6200 (Max)	28 mm



Localization Opportunities for Vendor Connectors of Wiring Harness

Category: Electrical

Function

To make electric connection with device

Application

Wheel Speed Sensor, Engine ECU, CNG Controller etc.

Child Part

Specification



Housing

Series	No. of Poles	RM Grade
025	2	PBT

**025 - Width of terminals : 0.025 inches
PBT - Polybutylene Terephthalate*



Terminal

RM Grade
025



Seal

RM Grade	Dia
EPDM	0.050 inches



Localization Opportunities for Vendor

Ferrite Magnet



Category: Electrical

Function

Generates magnetic field that drives armature to rotate

Application

Wiper Motor, Radiator Motor, HVAC Blower Motor, Power Window Motor, Speakers

Manufacturing Process

Powder Mixing -> Calcination -> Crushing -> Curing -> Sintering -> Grinding

Material

Iron Oxide+ Strontium Carbonate



Localization Opportunities for Vendor

Rare Earth Magnet



Category: Electrical

Function

Generates magnetic field to produce mechanical vibrations/electromagnetic induction

Application

Steering Motor, Ignition Coil, Tweeter

Manufacturing Process

Powder Mixing -> Calcination -> Crushing ->
Curing -> Sintering -> Grinding

Material

Iron Oxide+ Neodymium/Strontium Carbonate/
Samarium cobalt



Localization Opportunities for Vendor

Electro valve of AMT Kit



Category: Electromechanical

Function

Controls Oil flow rate & pressure inside AMT Kit based on input from Transmission Control Unit

Working Principle

Valve based on Electro Magnetic Induction & Pulse Width Modulation principle



Localization Opportunities for Vendor

Normally Open/Normally Closed Valve of ESP



Category: Electromechanical

Function

Mechanical Valve to flow brake fluid to wheel brakes based on ECU command

Manufacturing Process

Requires multi operations like precise caulking, cold forging & machining



Localization Opportunities for Vendor

Magnetic Yoke of Steering Column



Category: Mechanical

Function

Generates magnetic flux to sense torque

Manufacturing Process

Requires heat treatment & Raw Material -
Permalloy with 47% Nickel



Localization Opportunities for Vendor

Miniature Bearing of Motors



Category: Mechanical

Function

Ball Bearing (dia ≤ 8 mm) to locate the shaft at high speed with low noise

Application

Motors Radiator, HVAC, Wiper, Steering etc.

Manufacturing Process

Forging , Machining , Grinding & Heat Treatment

Specification

Inner Dia	Outer Dia	Height
8mm	21.5~22 mm	6~7 mm



Localization Opportunities for Vendor

Oil Cooler

- Category: Mechanical
- Technology / Specification:
Flux less Vacuum brazing technology





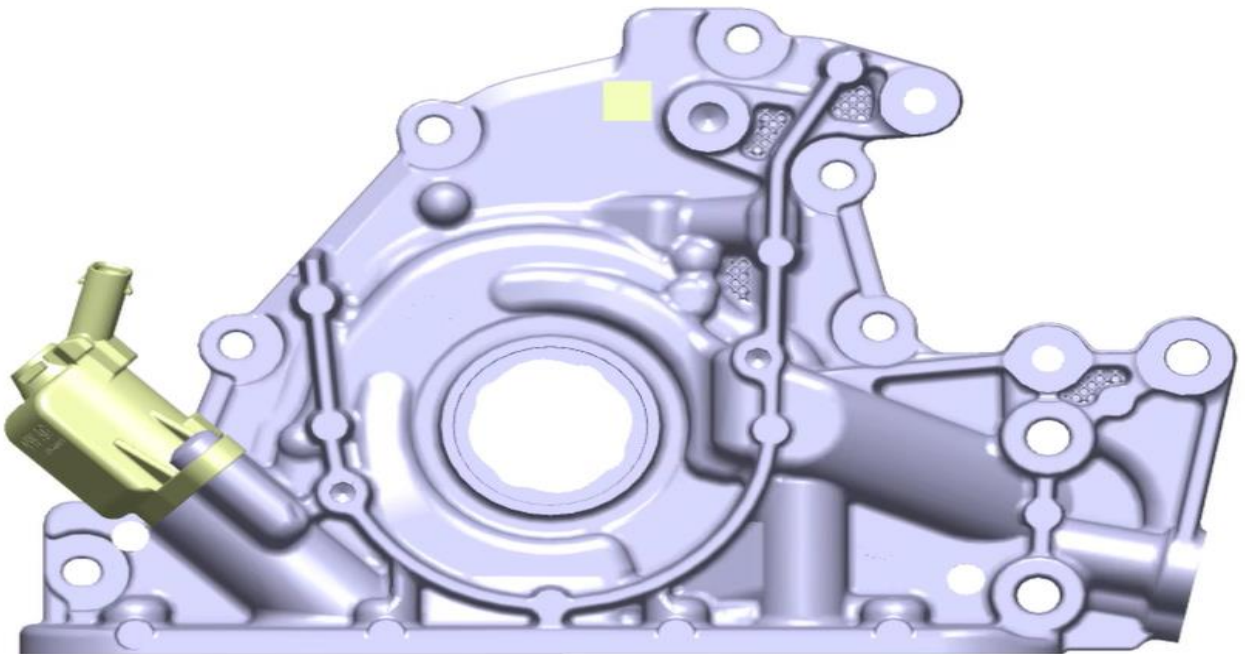
Localization Opportunities for Vendor

Oil Pump

- Category: Mechanical

- Technology / Specification:

Variable oil pump with Crankshaft Mounting





Localization Opportunities for Vendor

Fuel Rail

- Category: Mechanical

- Technology / Specification:

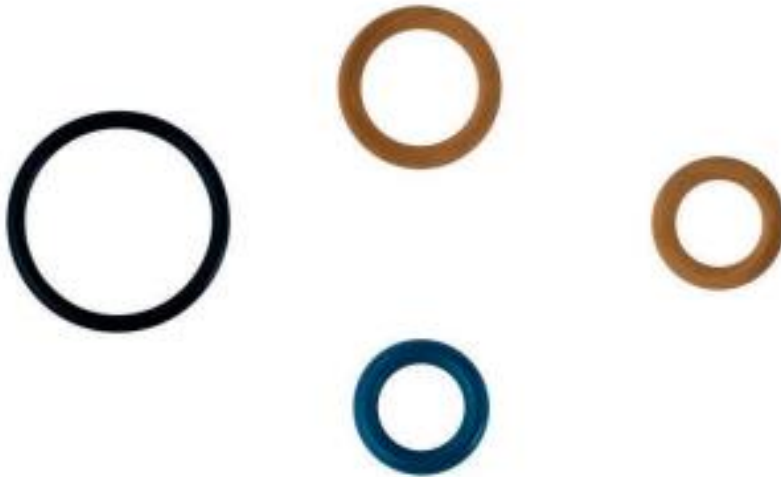
With special SS forging + machining technology to meet requirement of 350 Bar pressure





Localization Opportunities for Vendor

High Pressure O-Rings of CNG



Category: Mechanical

Function

Prevents leakage in CNG system at high pressure ~ 200 bar

Application

CNG Receptacle, Cylinder valve, Pressure Regulator

Manufacturing Process

Precision rubber molded part of **FKM** material