

FACULTY OF ENGINEERING

DEPARTMENT OF MECHANICAL AND AUTOMOBILE ENGINEERING

REPORT ON TEAR DOWN ACTION OF LOW DUTY TRUCK AT CU-MBRDI DAIMLER TRUCK TEAR DOWN FACILITY

This facility was inaugurated on 20th November 2017 by Mr. Manu Saale, CEO and MD, MBRDI, Bengaluru at Christ University, Kengeri Campus. This facility is for the tear down of Daimler trucks starting with a Low Duty Truck (LDT) followed by Heavy and Medium Duty Trucks which involves the dismantling of trucks in sequence starting from cabin and Steering system, Engine Periphery, Transmission System, Electrical System and Suspension and Braking Systems.

Each part of truck will be dismantled and a deep study will be made on the design and manufacturing aspect of the particular part and further improvements will be suggested by the team dismantling the particular abovementioned system of the truck. This exercise helps in creating a bench mark of particular part of the truck and in turn it will help in creating a better design in future trucks.

This facility is equipped with advanced special tools like digital height gauge, Heavy Duty Universal Extractor (600 mm), Digital Torque Wrench (100 Nm, 400 Nm, 1000 Nm) etc. which were imported from Germany and the same are used the dismantling the parts and to inspect and make a detailed report of the dismantled parts.

The dismantled parts will be assembled again to build the truck and the exercise continues.

Phase 1 : 19th to 22nd December 2017

Domain System : CAB Body

The tear down action kick started with the dismantling of the cabin (where the driver and co-driver will be seated and operating the vehicle) parts. The parts dismantled from the



cabin are basically the control systems of the vehicles such as steering system, braking system, Acceleration, Clutch and Braking pedals, Air Conditioning system ducts, dashboard, cooling system lines, driver ergonomics etc.



Removal of Front Bumper from the Fuso Canter Truck



Removal of cabin parts

Phase 2: 10th to 12th Jan 2018

Domain System : Engine Periphery (Exhaust, Air Intake, Adblue, Fuel).

This tear down includes removal of parts which are surrounding the engines like radiator, Air conditioning system, cooling system, air intake system, air cooling system, exhaust system, urea tank (Used in Euro VI engines), engine lubrication system.



Phase 3 : 23rd to 25th Jan 2018

Domain Systems : Power Train/Transmission/Propeller shaft

This tear down action includes removal of power train components such as engine, transmission system, transmission shaft, gear box, propeller shaft, universal joint, gear actuation system link, gear shifter, hand brake lock, hand brake links, diesel tank, differential, engine accessories, gear box accessories, propeller accessories and the intermediate shafts.

Phase 4 : 7th to 9th Feb 2018

Domain Systems : Axles, Suspensions, Steering and Brakes

This tear down action includes removal of the following systems

- a. Axles.
- b. Suspension System.
- c. Steering system.
- d. Braking system.

Axles:

The following are the parts such as front knuckle, rear knuckle, front and rear wheel hub, wheels and tyres, wheels nuts and bolts (both front and Rear), front dead axle and rear axles.

Suspension System:

The suspension system includes the following parts such as front pneumatic shocks and its mounts, rear shocks and its mounts, leaf springs, mountings of leaf springs, chocks, springs and its mounts.

Steering System:

The steering system includes the following parts such as the steering wheel, Steering column, Steering hub, rack and pinion, tie rods, power steering booster, hydraulic system for power steering, hydraulic lines and the air bag system.

Braking System:

The braking system includes the following parts such as the brake pedal, brake booster motor, Tandem Master Cylinder with oil reservoir, brake lines, ABS Control system, Brake rotor, Brake Calipers and its attachments. The speciality of this braking system is the vehicle stops at a minimum distance.

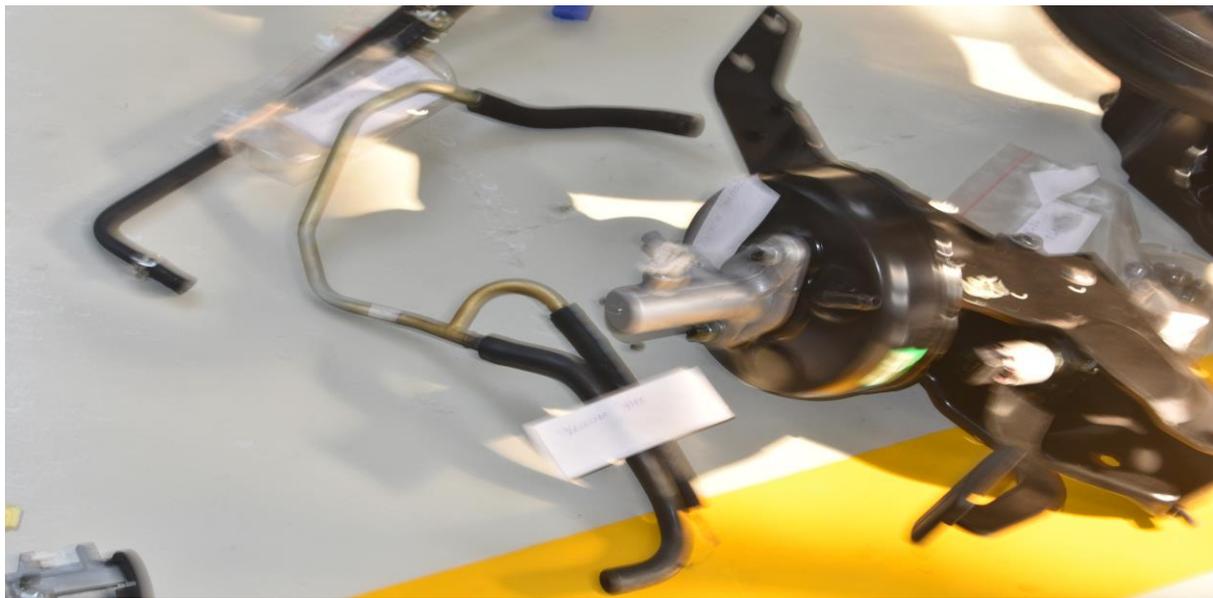


Phase 5 : 15th and 16th February 2018

Domain Systems: Frames and attachments

This includes the removal of the frames of the chassis where the specific systems are mounted to the vehicle. The battery compartment is also removed with the batteries which has the separate Battery Management System (BMS). The BMS regulates the current to be given to the starter motor and the other accessories.

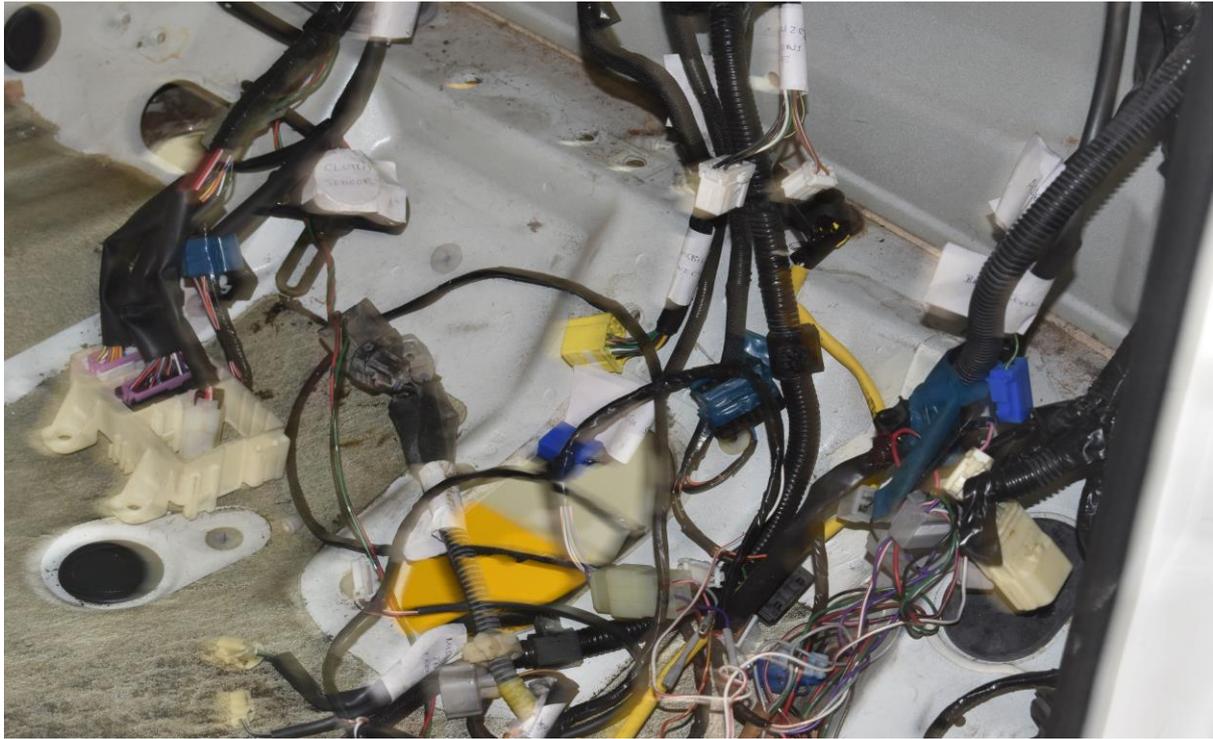
The various parts removed from the vehicle were mounted to particular system mounts. The wiring harness was removed from the respective areas and were fixed on a perforated board.



Brake Line Booster



Chassis without Cabin



Wiring Harness



Chassis with Power Train and Subassemblies