



Company Information

Company Name	<i>Daimler Truck NA – Mt Holly</i>	Date Submitted	<i>05/11/2023</i>
Project Title	<i>Design of Improvements for an Engine Coolant Assembly (DAIMLER_COOL)</i>	Planned Starting Semester	<i>Fall 2023</i>

Senior Design Project Description

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills.

Discipline	Number	Discipline	Number
Mechanical	4	Electrical	
Computer		Systems	1

Company and Project Overview:

Daimler Trucks & Buses is one of the world’s largest commercial vehicle manufacturers, with more than 35 primary locations around the world and around 100,000 employees. The company brings seven vehicle brands under one roof:

[Mercedes-Benz](#) (light, medium and heavy trucks as well as city, intercity and touring coaches) and [Setra](#) (intercity, long-distance and premium coaches) are our traditional European brands; our U.S. brands [Freightliner Trucks](#) (trucks in weight classes 5 to 8 for a wide range of commercial vehicle applications), [Western Star](#) (heavy trucks for specialized and long-haul transports) and [Thomas Built Buses](#) (light- to medium-duty buses); and our Asian brands Bharat Benz, based in Chennai, India (trucks in the weight classes 9 to 55 t and medium- and heavy-duty buses) and [FUSO](#), headquartered in Japan (trucks and buses for Asia, Middle East, Africa, Europe and Latin America).

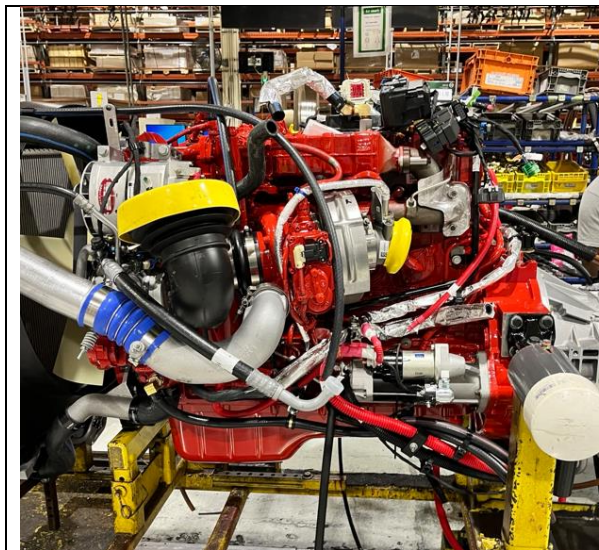
The Mount Holly Truck Manufacturing plant produces the full line of Freightliner medium-duty

Business Class® M2 / SD models. The scope of this project is to design an improved process for a sub-assembly on a diesel engine.

Project Requirements:

The Mt. Holly facility is a high-volume facility producing almost 100 trucks per day. Every truck is made to order with a combination of engine types and options. To meet that demanding and complex production schedule, it is critical to have minimal defects. Any defect discovered at the end of the production line must go to a rework area for troubleshooting and repair. These rework areas are small as the goal is to have no defects. If an issue arises that increases the defect level, the rework areas can be overwhelmed and production capacity reduced.

In one engine model, there is a particular coolant subassembly that has a higher than acceptable leak rate and the cause is unknown.



Engine



Coolant Sub Assembly location

The purpose of this project is to solve this problem. In particular, the student team will:

- Find root cause for coolant leaks on engine fittings.
- Propose corrective and countermeasure actions, including both short term and long-term fixes. A short-term fix would be a way to mitigate the problem with the current design and a long-term fix is a modified design that provides the required functionality while eliminating the risk of leaks.
- Prototype and test the designs that correct the problem.

Expected Deliverables/Results:



- Process, tools, parts, systems, and people assessment (holistic assessment of the issue)
- Root cause analysis – find the problem.
- Options to fix the issue. (Short and long term)
- Implement with stakeholders and validate.
- Provide final report.

Disposition of Deliverables at the End of the Project:

Students are graded based on their display and presentation of their team’s work product. It is mandatory that they exhibit at the Expo, so if the work product was tested at the supporter’s location, it must be returned to campus for the Expo. After the expo, the team and supporter should arrange the handover of the work product to the industry supporter. This handover must be concluded within 7 days of the Expo.

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- Travel to DTNA Mt. Holly site is required.