

Why caterpillar

We chose Caterpillar STEM as our company because they are strong in robotics engineering and provide great role models for young engineers like us. For example Caterpillar stem has a Student Stem Trainee program that teaches high school students engineering skills that will benefit them in their future career.

How do professionals apply the engineering design process?

Engineers at Caterpillar apply the steps of the engineering design process to develop innovative solutions and improve on existing processes and products. The design process uses a repeating action approach to solve problems and consists of the following:

- Identify the Problem/Opportunity
 - Identifying a problem or an opportunity for improvement. These can be related to new functions/features, processes, or products/systems.
- Define and Research the Problem
 - Conducting research to collect information regarding the problem. Analyzing existing data, experiments, and collaboration are keys to the process.
 - In addition, this helps define the scope and any constraints/obstacles of the problem.
- Brainstorming
 - Provides potential solutions. Gives the problem different perspectives to be considered.
- Concept
 - A direct effect of the brainstorming, gives the Engineers potential solutions. May contain sketches, models, or any prototypes for visual thoughts.
- Prototype and Testing
 - Selecting concepts are considered. Testing occurs to pinpoint any major flaws with the design. Testing will be considered ongoing from this process.
- Refinement
 - Based on the analysis of the testing, additional improvements will be made to the design. This repetitive process should include multiple rounds of prototyping and testing and the solution passes optimization.
- Final Design and Documentation
 - When a satisfactory solution is reached, Engineers finalize their design. This will include detailed documentation and drawing for implementation.
- Implementation
 - The final action stage of the design process. Collaboration with other teams, customers, or systems occurs now.
- Monitoring and Maintenance
 - Upon completion of Implementation, Engineers should monitor the performance of the solution and make any necessary adjustments as needed. This can be identified by performance tests and end user feedback.
- Repeat and Improve
 - The Engineering design process is often in cycles. Feedback is critical after implementation and will assist in further actions and improvements to the process/product.

During the entire process, effective collaboration and communication must occur to have a successful outcome. Just like in Vex, all of these aspects are important to building, programming, and driving a successful robot at a competition.

What's the process?

The Caterpillar website had loads of information about jobs and careers at Caterpillar. The website shows different positions in the company and explains what each position does. This company utilizes the engineering design process when it comes to large construction equipment and lots of other things like large diesel motors or generators. They start by defining the need of what it is they require. Then they design whatever it is that they need or want to be built. They then perform a design review in order to decide if they want this design or not. The next step is to build the design and install it into the intended situation. This is the process that Caterpillar does and what most other companies do as well.

Professional vs. 214A

The engineering method (also known as engineering design) is a standardized approach used to reach the desired solution to a problem. There are six steps (or phases): idea, concept, planning, design, development, and put in place from a problem definition to desired result

Engineers work in every area of our company. As a product development engineer, you might research new emerging technologies, designing new machines and engines, creating software solutions, or testing and validating product designs. In fact, you might do all of that during your Caterpillar career.

In our robotics we don't create new softwares or engines, but we do design new machines to win the game for the competition. We have to compare and contrast, solve problems, and think differently than you would if you were doing an everyday task. We have to research what to do and if we need to change something. Sometimes we realize that most of our problems have solutions, but not all problems have solutions.

Has vex prepared us?

Aydan cox:

I feel vex has prepared me for the real world and my future career in the fact being it prepares us to solve real world problems. If you try to solve problems in the future and they don't work out, VEX can teach you that disappointment builds character.

Collyn Miller:

Yes, because Vex has shown me the engineering process. It has also shown me valuable teamwork skills. Vex has taught me how to build well designed robots and other things. Vex will be one of the many reasons I will succeed later in life.

Wyndham Jung:

Vex has prepared me for the future because it has shown me how to make plans. Vex has made me think about what to build and how to do it. It has made me a good programmer and coder for our robot. Vex has helped me make friends with people who I would have never expected to meet. Vex has been a great experience and if I could do it for longer I would.

Camden Millikan:

Vex has helped me out because it has taught me how to build and drive things. I have learned how to build a well scoring robot and drive. It has taught me how to make friends with other drivers. I have fun sharing time with my teammates.