Finding an Idea for Your Engineering Project

You know that you want to do an engineering design project, but how do you come up with an idea or find a problem to solve? How do you uncover a new problem that no one has tried to solve yet? Or how do you pick and choose, from all of the products, systems, and environments already out there, one that you might want to improve? This process of uncovering a problem, or identifying the need for change or improvement to an existing solution, is called need finding.

One really great way to start the need-finding process is to make a "bug list." Think about all of the things that bug you or bug other people around you. Write them down. They may seem like small and silly problems, but they can spark ideas for a project or lead to larger problems that you may not have noticed otherwise.

Here are some examples of things you might find on someone's bug list:

* Uncomfortable airplane seats
* When one light on a string of Christmas lights goes out
* How quickly chewing gum loses flavor
* Moving (packing boxes, cleaning, unpacking, etc.)
* Public restrooms without toilet paper
* Long lines at amusement parks
* When food gets stuck in vending machines
* Dog or cat hair that gets stuck on clothing
* Sharing armrests with strangers at the movies
* Wasting water in the shower
* Losing one earring
* Draining tuna fish cans

Challenge yourself to come up with as many bugs as you can. They don't all have to be things that bother you; think about other people and the problems that they face as well. You will be surprised at the number of bugs you can identify in the world around you. Start this list in your design notebook, and spend a few days recording your ideas.

Notice that there are two different types of potential project ideas that you have come up with on your bug list. First, there are the unsolved problems that don't currently have a solution. Second, there are poorly solved problems that have solutions, but the solutions are not entirely successful.

Unsolved Problems

One problem identified in the bug list is the issue of food getting stuck in a vending machine. There is currently no solution for this problem. If you put your money in the machine, select the food that you want, and then, the food gets stuck before it can drop to where you can reach it—you are out of luck. You might try shaking or kicking the machine, but those are not designed solutions to the problem. In cases of unsolved problems, your engineering project would be to attempt to solve the problem. For this example, possible project ideas might be to design a product that can be used to remove stuck foods from vending machines or a new vending machine that makes it impossible for food to get stuck.

Poorly Solved Problems

An example of a poorly solved problem from the bug list is the issue of cat or dog hair getting stuck on clothing. There is currently a solution to this problem—the lint brush. However, many people still complain about annoying pet hair on their clothes. Clearly, the lint brush is not the perfect solution. In cases of poorly solved problems, your engineering project would be to improve the existing solution or to replace the existing solution with something more successful. For the pet hair example, possible project ideas might be to make the lint brush more effective at removing hair from clothing or to design something better than the lint brush for the same purpose.

Whether you want to choose an unsolved problem or a poorly solved problem for your engineering project, there are plenty of problems out there! Keep in mind that the problems already exist; you just need to identify them and their users. Also, doing an engineering design project doesn't always mean inventing something brand new—it often involves bettering the projects of those before you.