

Hello,

My name is Mihir Jayprakash Shirke. I am enrolled in Ph.D. Mechanical Engineering program. I am an international student from India. India has made great strides in terms of its technical progress over the past several decades, yet there is still considerable room for advancement in its energy sector. This motivates me to enhance my knowledge in terms of energy requirements, its generation around the world, and the crises this human generation would face if we continued to use the traditional ways of generating energy i.e., non-renewable sources of energy.

We all need energy for our daily uses, now we humans have reached a point that we cannot think of living our lives without energy and if we continue to generate energy in the same old ways, we as a society will soon face major crises in terms of satisfying our energy needs and will be affected by climate change. Energy generated by using these traditional ways is damaging our ecosystem, and the greenhouse gases released by these traditional processes of generating energy are the main causes of the environmental degradation we see these days.

My previous studies were in the “Sustainable Energy Engineering and Policy” Master’s program at Carleton University. As a graduate student at Carleton University, I have studied varied courses like Wind Engineering, Solar-Thermal Systems, Energy Efficiency, Turbomachinery, Energy Evaluation and Assessment Tools, Failure Prevention, and Additive Manufacturing. In these courses, I worked on various analyses, research papers, briefing notes, and writing projects that broadened my knowledge and helped me understand how these different energy systems, evaluation methods, and tools work. Additionally, in my last year of the graduate program, I worked on a research project that identified barriers to renewable development in the Canadian north and provided recommendations to overcome those barriers. This research project helped me to understand the problems renewable energy systems face in different geographical locations and how solutions differ for every location based on the barriers.

In my undergraduate program, I studied Production Engineering. This undergraduate program cleared my basic knowledge and skillset required to manage and operate a production firm. I completed my undergraduate degree with distinction and received a scholarship from Borealis Foundation for my master’s studies. I have also worked as an in-plant trainee in two nationally renowned organizations of my home country i.e., 1) Larsen & Toubro Ltd. and 2) Air India Engineering Services. That exposure helped me understand how manufacturing processes are related to each other in an organization and how all the departments work together to satisfy customer needs in terms of safety, experience, comfort, quality, etc.

The challenges we face in this field are high cost and lack of awareness in the global market. Clean energy ideas and products are available to a certain privileged group of individuals, my contribution is to make these products available and affordable to the masses. After completing the program, I am confident that I will be armed with the tools I need to achieve considerable success in this field to make a lasting impact.

Topic: Urban Air Mobility Propulsion (Air Taxis)

Abstract :

Reducing carbon emissions from the aviation sector has been a great challenge for our generation. Many international organizations like Uber and Hyundai are investing in a new market that might change the way we travel locally within cities and reduce carbon emissions from the aviation sector. This new market will provide shared transportation within cities with help of Air taxis. This will, in turn, reduce the traffic on the road, carbon emissions from vehicles, and the traditional aviation sector. Plus it will also provide faster means of inter-city transportation.

To make this possible there's a need to design a new propulsion system. This new air propulsion system should have high efficiency, and low noise as these air taxis will fly at low altitudes. A parametric study is needed to understand the behavior of the new propulsion system under different working conditions so that maximum efficiency is achieved with the optimized design of the new propulsion system. Various parameters like noise, vibrations, temperature, and pressure are studied to minimize losses.

This project is still in its initial phase, but the ultimate goal of this project is reduce carbon emissions and to improve public transportation for a better experience.

Thank you for your time and consideration.

Sincerely,

Mihir Jayprakash Shirke.