STATEMENT OF PURPOSE

I opted for undergraduate program in mechanical engineering because I was interested in mechanisms of machines and processes involved in an industry. This statement of purpose is intended to give a brief idea of my learning in the field of mechanical engineering.

I completed three projects under the guidance of college professors in my undergraduate program. The first was on Development of a Universal Greenness Index for Buildings through Multi-Criteria Decision Making of their Life-Cycle Parameters. Analytical hierarchy process was used to obtain the rating system for the buildings. I used MATLAB as a computational tool to develop a program that could rate the greenness of buildings. I got to learn the basic approach used to solve problems with research and also the functionality of MATLAB during this project.

The second project involved determination of Optimum Residence Time of Slabs in a Reheat Furnace. In this project I used FLUENT as a tool for the combustion and heat transfer analysis. The focus was on radiation heat transfer. We worked on a model which could reduce the computational cost of obtaining the Residence Time.

One of my Professors was approached by Walmsleys India Pvt Ltd. They needed a CFD analysis for deciding the parameters of screw turbines. He then chose and guided me in completion of this task. The performance of screw turbines was analysed based on various flow parameters. I again used FLUENT but for flow analysis.  We were able to derive an empirical relationship between RPM and power produced by the turbine. I had an opportunity to present this work in a national conference.

I interned in an industrial organisation in the last semester. Here I successfully completed a project based on data analysis. As a part of this, neural networks were used to predict the energy consumption in cement manufacturing process. My knowledge of MATLAB from the first project helped me in the computations. We used global optimisation to get the optimum parameters. Sensitivity analysis was done for energy consumption with respect to all the operating parameters. I came up with a desktop application that uses the feasible extreme values of all the parameters as input to give the optimum parameters.

In my seventh semester I had an opportunity to be the ‘Teaching Assistant’ for the fluid mechanics course. As part of this I got the chance to assist the instructor of the course. In this I learnt about the challenges in the field of academia.

I am interested to do research in the branches HVAC, Refrigeration and Heat Transfer. After going through several works of the professors, I found Prof. James E. Braun’s work on building energy system optimisation exciting. The authors discuss the implementation of distributed optimisation algorithms in multi-agent framework for controllers. I also found the work by Prof. Suresh Garimella on thermocline thermal energy storage to be interesting. Here the effective storage and delivery of heat by thermocline tanks is explained.

The professors I mentioned above and many others have been doing research in the direction of optimisation of energy consumption. Moreover as I have mentioned above most of the topics I am passionate about and worked on, align in the same direction. Hence I think that I am a suitable candidate for the program.