**Applied Program: Mechanical Engineering**

I was born into a family of intellectuals. Under the influence of my father who graduated from the Department of Physics of xxxxx University, I developed an early, yet strong, interest in science. My father often recalled the hardships that he endured during his university life. It was precisely those hardships that shaped the personal qualities of perseverance and diligence in my father, qualities that strongly supported him during his 40-year scientific research. For his achievements, my father received many honors and awards, including the First-Class State Award for Scientific and Technological Progress, and was designated as State-Level Expert with Great Contributions. The success of my father has served as a constant example for me, giving me inspirations and cultivating in me the determination to become the kind of individual that my father is, that is, an individual who is capable of serving and contributing to the society at large and whose hard-working spirit would never allow for easy relinquishment. I will persevere as long as there is even the slightest hope.

I selected the engine specialty of xxxxx University - which is famed as "cradle of talents of China's automobile and agricultural machinery industry" - as the first arena for realizing my ideal. The specialty is characterized with internal combustion engine engineering and the thermal power engineering. The sectors involved are in very important and fundamental position in our country's economic growth and are among the top priorities for development. During my 4-year systematic studies, I witnessed the emergence of endless new concepts and technologies, and a bright prospect for their application, which made me all the more interested in deepening my research. In particular, when I undertook technological internship at the engine production line of xxxxx Auto Plant, I deeply understood how the textbook knowledge was applied to the technical process when I drew the flow chart of processing technology starting with the rough casting of the piston and ending up in the finished product. In 19--, as representative of the university's excellent students, I took part in the design team for the performance test of the air compressor, test experimental machine, the lubrication system and gas survey system. I highly treasured this opportunity in that it enabled me to cultivate my independent research ability through practice. I accomplished the design of two parts, the lubrication system of the test experimental machine and the gas system. In the electronic calculation project, I programmed the data processing system with C Language for the performance test of the double fuel engine, i.e. diesel engine and compressed natural gas engine, and the data processing system of three harmful gases (CO, HC, NOX). With due debugging, the systems operated smoothly. Experts gave very positive comments to my designing.

Upon graduation, I chose to work at xxxxxx, which I considered to be the second arena for me to directly apply my knowledge to practice. Within the shortest possible time, I completed my role change from a university student to a technical engineer, assuming more important responsibilities. However, as state-owned enterprise, xxxxxxx shares many common problems existing in the majority of such enterprises. The mode of production and management was still under the lingering influence of the centralized planned economy. The technological level remained relatively low. With full support from the top management, we introduced bold reforms into the backward mode of production. Our measures included: establishing real-time monitoring and control system with regard to the production process in order to improve the efficiency of production; setting up trial-production workshops to separate trial production from mass production; creating the mode of production in which production is determined by the sales volume of products to allow "zero stocking". Those experiences made it possible for me to achieve a deeper understanding as well as considerable progress in my processing techniques and quality-control awareness. In solving those "major" problems, I also exploiting the full advantages of my undergraduate training in coping with specific problems in various projects. I headed the designing of four under-frames for the chassis in low-floored bus, one of which was adopted as an optimum plan on the basis of experimentation and verification. In addition, I participated in designing the overall layout of the chassis of a passenger bus, including the installation of its water-cooling system, the selection and installation of the electrical fan and the model of the fuel tank. In addition, I helped to improve the intake system, which enhanced the quality of the intake and extended the life of engines. As my practical experiences become abundant, my ideas of designing have become increasingly mature. With the improvement in my technical competence, I have also become more skillful in technical details.

During the two years that I worked at the Plant, I became increasingly aware that China's automobile industry lags far behind that of the developed countries. When the technologically backward and heavily polluting carburetter vehicles (which are banned only recently in major Chinese cities like Beijing and shanghai) are still being used most of China, automobile industry in foreign countries is on the point of completing the transition from conventional technology to products that integrate high technologies. In this transformation, new energy technology (mixing power, fuel cell, electrical car), new materials technology, electronic and computer technology are playing a vital role and have make breakthrough progress such as virtual vehicle development technology. In the entire process of an automobile, CAD is widely applied in all procedures ranging from automobile body design, calculation, experimentation to mould making, pressing, bolding, and final assembly. The development and manufacturing of an automobile are completed in strict statistical environment created by the application of computer technology, which helps to reduce development cost and shorten the development cycle. As a result, major manufacturers in the world are all actively adopting virtual development technology and the first vehicle developed completely by means of computer simulation technology has been produced. For another example, in the interdisciplinary field of electromechanical design, the micro-machinery which represents cutting-edge technology has been generally utilized in foreign vehicles, which has given rise to small-sized accelerometers (capable of detecting the impact that are encountered, directing the activation of the airbag), the pressure sensors of tyres, water and oil. Compared with conventional machinery, micro-machinery possess more powerful functions and lower costs and is thus easier to form a complete whole with the entire vehicle. Some luxury car models have already been installed with dozens of micro-machinery devices. By contrast, even for those relatively ordinary electromechanical components such as ABS, airbag, and direct fuel injection, China still has no capability for independent development. It has to depend on import, which holds true for other mechanical industries. Therefore, advanced mechanical design and processing technology, the electronic and mechanical combination, and the electromechanical integration become the direction for the future development of China's automobile technology. Those are the areas in which China's mechanical industry should double its efforts in order to catch up with and surpass the advanced international level.

For my prospective degree program in the United States, I plan to delve deeper into courses in machinery and electronics and acquire advanced foreign technological expertise so that I can construct a solid foundation for research on advanced mechanical design and processing technology and on electromechanical integration. I would like to focus on mechanical designing in connection with electronics so as to combine mechanical and electronic control into a whole to create possibilities for breakthroughs.

The vigorous development of Western science and technology has been the example for China to emulate for more than a century. By exposing myself to the American society and to Western culture (including its education), I will acquire precious international backgrounds that will constitute my major strengths in my future career in the field of mechanic manufacturing.