**Project Recap**

The Shanghai Electric Company (SEC) has proposed the idea of redesigning the rotor tooth and slot wedge, a vital component in the water-double cooled 180 MW Generators which are responsible for power generation. Members from The Pennsylvania State University (PSU) and Shanghai Jiao Tong University (SJTU) have a goal to produce a new design that will improve the manufacturability and functional requirements of the rotor tooth and slot wedge.

The main goal of the team is to design a new slot wedge that maintains the functional requirements while reducing the manufacturing price. After patents searches and research, the team generated some six possible concepts have single it down to one concept that preforms the best under operating conditions. The result was achieved through a series of engineering steps. One of these fundamental steps is searching for existing designs and analyzing the advantages and disadvantages of each. The rotor teeth and slot wedges undergo a series of mechanical and electrical forces during operation. However, the most detrimental effect on the slot wedges are the mechanical stresses and magnetic flux generated during the startup and shutdown of the generator. The cross sectional design of the rotor tooth and slot wedge is becoming more significant as the generators becomes larger, any minor change in the rotor tooth and slot wedge would considerably affect the manufacturing cost. Therefore, the main objective is to reduce the manufacturing cost as much as possible and maintained the functional requirement.

These were all accomplished by designing a new slot wedge which in turn changes the geometry of the rotor tooth. The final design for the slot wedge is a hexagonal shape with the presence of a hole. The stress concentrations were drastically reduced while the manufacturability of the part became easier and less expensive.