

#### Project Title

**Design and Implementation of  
Static Var Compensator  
(6.6kV/±1MVar)**

**Third Winner**

**Applied Research**

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#### Abstract

There are many industrial loads in distribution networks that consume large amount of active and reactive power capriciously. This results in decreasing power quality indexes, the effect of which is a lot of damage to electrical appliances or lack of power supply due to protection system performance. In order to compensate for destructive impacts of such loads so that voltage flicker is removed, and along with that power factor is corrected, voltage amplitude is reinstated and load is balanced in three phases, the best solution is SVC installation.

The constructed system is a TCR type SVC the capacity of which is ±1MVar and it is connected to 20kV feeder through a step-up transformer. The SVC working voltage is 6.6kV. The voltage and power are chosen so that it is useful for installation in 20kV/5MVA passage substations and also for compensating the destructive effects of industrial factories with a power of 5MVA on voltage (both in 20kV and in 6.6kV bus).

This scheme was fulfilled for the first time in Iran with more than 95% domestic components.

The expense of overseas purchase of a similar SVC is much more than that of domestic accomplishment of this project (about twice this price) plus the expenses of transportation and installation.

In the first stage, three prototypes of SVC (TCR, TSC, and ASVC) were designed and implemented. In the next stage an industrial SVC with high power and voltage were designed and constructed. The SVC is installed in a passage substation of Tehran distribution network.