

# Part I

## Overview

The UHV power transmission system refers to the transmission system at voltage level of AC 1000 kV, DC  $\pm 750$  kV and above. The fast growth of electrical load and the urgent needs in high-capacity and long-distance power transmission directly promote the rapid planning and construction of the UHV power transmission projects in China. Up to August 2017, six 1000 kV UHVAC power transmission lines and nine  $\pm 800$  kV UHVDC power transmission lines have been built and put into operation. There are still another 1000 kV UHVAC power transmission line and the other four  $\pm 800$  kV UHVDC power transmission lines will be put into operation at the end of 2017. Moreover, one  $\pm 1100$  kV UHVDC power transmission line is being built and will be put into operation in 2018. The UHV power transmission technology will greatly promote the sustainable development of China's power industry and energy industry, and have a positive and profound impact on the construction of power technology innovation, energy guarantee system and global energy internet in the world. This section first discusses the selection of voltage levels of the UHVAC and UHVDC power grid and the development of UHV power transmission technology around the world, and then introduces the UHV planning and development in China, and finally conducts discussion on the characteristics and economy of UHV system.