Congestive heart failure, the final common pathway of all forms of heart disease is unfortunately on the rise, both in the United States and worldwide. In recent years great advances have been made in the pharmacologic, electrophysiologic and surgical therapy of CHF, which have resulted in reductions of morbidity and mortality. Despite these advances many patients unfortunately continue to decline and advance in both their stage and functional class of heart failure. Mechanical circulatory support (MCS) has emerged as an effective means of acutely supporting the failing heart failure patient awaiting transplantation as well as offering the potential for a long-term therapeutic alternative to transplantation. Over the years since introduction MCS systems have continued to evolve and improve. New generation rotary blood pumps emerged as possible alternatives to the large pulsatile devices that eliminated the noise, the need for the external venting and prosthetic valves required for implantable pulsatile pumps. The early clinical investigations showed that these pumps have been able to improve the hemodynamics, end-organ function, quality of life and functional capacity of patients requiring MCS. This work is going to discuss in detail the most recent results of clinical trials conducted for the following systems: HeartMateII, DuraHeart HeartWare as well as my own experience in HZ-NRW in Germany and Penn state HMC in United Sates.