The DELTA Vacuum System, B. HIPPERT and N. MARQUARDT, Univ. Dortmund, 44221 Dortmund, Germany - DELTA, the Dortmund Electron Test Accelerator, is a 3rd-generation 1.5 GeV synchrotron light source dedicated to Free-Electron-Laser and accelerator-physics research. The storage ring is characterized by a flexible triplet-focusing optics and a beam of high brilliance and stability, optimized to obtain large FEL gain. Its ultra-high vacuum system is designed with very low impedance and for lifetimes far in excess of 10 hours, applying non-standard techniques. Electron-beam welded, uniform beam chambers with keyhole cross section all along the 115 m ring circumference have been manufactured for the first time from 316LN stainless steel. Other novelties are the sealing technique with keyhole-formed gaskets and the use of integrated pumps, both NEG and ion-sputter pumps, mounted side by side in the antechamber. An overview and first operational experience with this vacuum system is presented.