Commissioning of the Third RF Acceleration Unit for the ESRF Storage Ring, C. DAVID, J. JACOB, A. PANZARELLA, J.-P. PERRINE, J.-L. REVOL, ESRF - After only two years of design, construction and commissioning, a new 1.3 MW transmitter feeding a third pair of cavities is now in operation on the ESRF storage ring (SR). It allows to run each klystron and cavity feed-through at moderate power even for high intensity operation at 200 mA whilst still gaining in total accelerating voltage, from 8 to 12 MV. The third pair of cavities can also be used to modulate the RF voltage at the revolution frequency, thereby producing additional Landau damping of longitudinal multibunch oscillations, even for uniform filling of the SR. Finally, the additional RF unit provides the necessary redundancy to guarantee the operation of the ESRF at full performance in the event of a major intervention on one transmitter. For the new RF unit, a new control system, fully compatible with ESRF standards, was developed and will later be implemented to replace the obsolete version on the old transmitters. The planning and commissioning constraints imposed by the installation of this equipment on a running machine was one of the challenging issues.