The New LNL Injector PIAVE, based on a Superconducting RFQ, V. ANDREEV, G. BASSATO, A. BATTISTELLA, G. BEZZON, G. BISOFFI, S. CANELLA, F. CERVELLERA, F. CHIURLOTTO, M. COMUNIAN, E. CORRADIN, A. FACCO, P. FAVARON, G. FORTUNA, I. KULIK, A. LOMBARDI, M.F. MOISIO, V. PALMIERI, A. PISENT, M. POGGI, A.M. PORCELLATO, E. TOVO, R. TOVO, L. ZIOMI, INFN-LNL; T. SHIRAI, Kyoto University - The new positive ion injector PIAVE for the ALPI Complex upgrading is under construction. The aim of the injector is to accelerate ions with masses up to 240 and mass over charge ratio up to 8.5 from 0.04 to 1 MeV/u. The chosen structures are two superconducting RFQ's operating at 80 MHz, followed by 8 QWR's at the same frequency. The paper will discuss the main design choices and technological challenges. At this moment many components have already been built and the first generation prototypes of the cavities are under test.