REXEBIS - a Charge Breeder for the REX-ISOLDE Post Accelerator - B. JONSON, G. NYMAN, F. WENANDER, CHALMERS; J. AXELSSON, M. BJÖRKHAGE, P. CARLÉ, L. LILJEBY, R. RAO*, K-G. RENSFELT; Manne Siegbahn Laboratory - The REXEBIS is an electron-beam ion source developed especially to trap and further ionise the sometimes rare and short-lived isotopes that are produced in the ISOLDE separator for the Radioactive EXperiment at ISOLDE (REX-ISOLDE). A 0.5 A electron beam is produced in an immersed gun at a magnetic field of 0.2 T, and compressed to a current density of 250 A/cm^2 in the 2 T warm-bore superconducting solenoid. The EBIS is switched between 60 kV (at injection) and 22.5 kV (at extraction). The EBIS design has focused on a high injection and extraction efficiency, therefore a complete injection, breeding and extraction cycle has been simulated to certify this. Vacuum considerations for residual gas in the warm-bore magnet chamber, and the back flow of Ar cooling gas from the Penning trap of the REX-ISOLDE system has also been addressed due to the risk of outnumbering the few radioactive ions. Here is given a status report of the project, focusing on the design and performance of the different elements of the EBIS, and on the simulations of ion injection and extraction performed in order to interface the EBIS to the surrounding Penning trap and RFQ in the REX-ISOLDE post accelerator.

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