Ref. 048 "HIGH-VOLTAGE PULSER FOR PLASMA ION IMMERSION IMPLANTATION APPLICATIONS", V.Spassov[1,2]; J.J.Barroso[1] and M. Ueda[1]; [1]National Institute for Space Research (INPE), Associated Plasma Laboratory (LAP), São José dos Campos - SP; [2]Visiting Scientist Sofia University, Faculty of Physics, 5 J.Bourchier, Sofia, Bulgária

The design and construction of high-voltage pulser for application in treatment of metal and polymer materials by Plasma Ion Immersion Implantation (LAP/INPE PIII Project) are described. The pulser was built on a circuit category of Pulse Forming Network (PFN), consisting of nine LC sections with L = 270μH, C = 2.5 nF and air core high-voltage pulse transformer with ratio 1:15. The instrumet was designed to ptoduce a tuneable falt 70kV, several Amps pulse in 15μs pulse lenght with Pulse Repetion Frequency (PRF) of 50 to 500Hz. The generator is fed with sine-wave, constant high current source, and a 10kW, 2^A switching power supply.

Ref. 049 "THE GLOW DISCHARGE SYSTEM FOR THE SPHERICAL TOKAMAK ETE - INPE/LAP", Luiz Angelo Berni, Edson Del Bosco, Mário Ueda, LAP/INPE, São José dos Campos - SP

A glow discharge system is been developed to be used for discharge cleaning of the vessel of the spherical tokamak ETE (A=R/a=1.5) that is under construction at INPE/LAP. A DC power supply of 200V to 600V will be used to maintain the main discharge with current densities of 10 to 100μA/cm^2. To start this glow discharge, a high voltage pulse generator of 10 to 20kV has been constructed. Because of the strong dependence of Z_{eff} on the charge of the ions species in the tokamak plasmas, hydrogen gas is typically chosen for discharge cleaning of fusion devices, operating with hydrogen gas pressures varyng from $5x10^{-4}$ to $1x10^{-2}$ Torr. In this work we will present the glow discharge system for ETE and the first results obtained in a test chamber.

Ref. 050 "A THERMAL PROBLE FOR MEASURING AIR VELOCITY AND CONVECTIVE HEAT TRANSFER COEFFICIENT CLOSE TO SURFACES OF COMPLEX GEOMETRY", Heitor Patire Jr., Joaquim J. Barroso and Júlio G. Ferreira, LAP/INPE, São José dos Campos - SP

The development of a cooling system for a 5A, 50kV electron gun, with a view to determing the heat-transfer rate between the gun corrugated external wall and forced air, motivated the construction of a thermal probe for measuring the air velocity as well as the convective heat transfer coefficient close to surfaces of geometry complex. The thermal proble probe is a device which associates temperature measurements with mathematical correlations for turbulent air flows, thus enabling flow quantities to be measured close to the gun external wall. The main feature of the probe stems from is small dimensions which give the probe letter handling flexibility to make devices. Measured results using the probe showed excellent agreement with those obtained from commercial devices in comparative tests which validated the use of the probe in other applications where air flow measurements are required.