Abstract

Bead-Pull is a commonly used Radio Frequency (RF) field measurement technique. RF field measurements play an important role in qualifying any RF cavity. They are used in evaluating the field distribution inside a resonant structure and in tuning them to obtain the required field flatness [1]. The Bead-Pull system consists of a small dielectric or metallic bead being pulled through a cavity while the electric field measurement in the cavities is done. A step motor and a pulley system guide the motion of the bead through the cavity while a Network Analyzer is used to take the RF measurements. We wrote a program in National Instruments' Laboratory Virtual Instrumentation Engineering Workbench (LabVIEW) to control the hardware of a Bead-Pull system. The software will coordinate the step motor's movement, acquire data via the Network Analyzer and process the data as required. This paper describes the development and the testing of this software.

Key Words: *Bead-Pull RF Measurement System, Step Motor, LabVIEW, Network Analyzer.*