Design development and optimization of a stepper motor based vacuum-feed-through drive for electric probe diagnostics in APPEL-plasma device

Abstract

In this project a novel probe drive system shall be developed using a combination of stepper motors and rotatable vacuum feedthrough drive, placed outside the vacuum system to translate a probe shaft placed inside the vacuum chamber over a distance of 3.0 m. the mechanical system shall be fabricated and the stepper motor automated using Lab-view and optimized. Analog signal from the drive will be used for the measurements in plasma parameters. The project will involve:

- Conceptualization / Preliminary design of probe feed-thru.
- Develop the Coupling scheme with the stepper motor.
- Automation development using stepper motor using standard tools
- Calibration/ optimization of the system
- Initial plasma measurements using the probe drive in APPEL-device

Academic Project Requirements:

1) Required No. of student(s) for academic project: 1

2) Name of course with branch/discipline: M.E./M.Tech Electronics and Instrumentation Engineering

3) Academic Project duration:

(a) Total academic project duration: 50 Weeks
(b) Student's presence at IPR for academic project work: 5 Full working Days per week

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