

MULTIPLE ECH LAUNCHER CONTROL SYSTEM*

M.T. Green, D. Ponce, H.J. Grunloh, R.A. Ellis,[†] W.H. Grosnickle, R.L. Humphrey
General Atomics, PO Box 85608, San Diego, CA 92186-5608

[†]Princeton Plasma Physics Laboratory, Princeton, New Jersey
greenm@fusion.gat.com

The addition of new, high power gyrotrons to the electron cyclotron heating and current drive arsenal at DIII-D required a system upgrade for control of fully steerable ECH launchers. Each launcher contains two pointing mirrors with two degrees of mechanical freedom. The two degrees of motion are called *facet* and *tilt*. Therefore, up to four channels of motion per launcher need to be controlled. The system utilizes absolute encoders to indicate mirror position and therefore direction of the microwave beam. The launcher movement is primarily controlled by PLC, but future iterations of the design may require this control to be accomplished by a CPU on a fast bus such as Compact PCI. This implementation will be necessary to accomplish real time position control. Safety of equipment and personnel is of primary importance when controlling a system of moving parts. Therefore, multiple interlocks and fault status enunciators have been implemented. This paper addresses the design of a multiple ECH launcher control system, and characterizes the flexibility needed to upgrade to a real time position control system in the future.

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M.T. Green
General Atomics
P.O. Box 85608
San Diego, CA 92186-5608
(858) 455-2269
Fax (858) 455-4190
e-mail: greenm@fusion.gat.com

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