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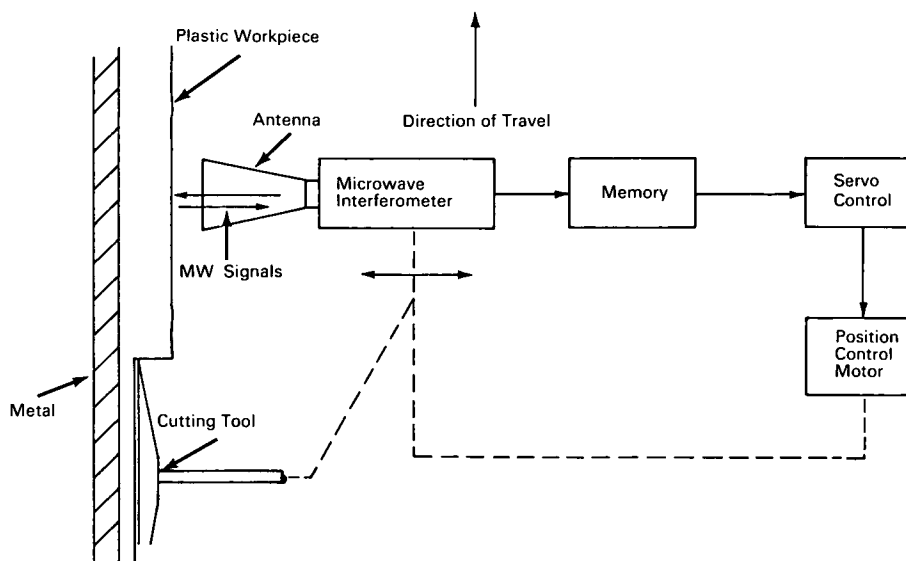
Brief 69-10012

NASA TECH BRIEF



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Microwave Interferometer Controls Cutting Depth of Plastics



A microwave interferometer system has been developed to control the cutting of plastic materials to a prescribed depth. Previous methods required the use of a probe to penetrate the plastic or removal of test cores to determine the thickness of the cut material. These methods were slow and wasteful of material.

The microwave interferometer is mounted on a carriage with a spindle and cutting tool. A cross slide is mounted on the carriage to allow the interferometer and cutter to move toward or away from the plastic workpiece. The cross slide is driven by a motor which is controlled by a servo positioner. A change in distance of the part from the interferometer is compensated by the closed-loop system. A constant preset distance is thus maintained between the end of the cutting tool and the metal backing on the plastic material being machined.

The interferometer may be displaced from the centerline of the cutting tool by a preset leading distance. In this case, a tape memory unit would be connected between the microwave output and the servo control unit. For larger-diameter cutting tools, a hollow cutter and hollow spindle may be used. The interferometer would be mounted in the hollow spindle and thus eliminate the need for the memory tape unit.

Note:

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(continued overleaf)

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C., 20546.

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