

## 전달관로를 갖는 공기압 실린더 구동장치의 위치제어성능 향상에 관한 연구

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### Improvement of Position Control Performance of Pneumatic Cylinder Driving Apparatus with a Transmission Line

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**Key Words:** Pneumatic Cylinder(공기압 실린더), Position Control Performance(위치제어성능), Transmission Line(전달관로)

**Abstract :** In this study, a design method of position controller based on the linearized model of pneumatic cylinder driving apparatus including transfer characteristics of transmission line is proposed. The pneumatic cylinder with a transmission line is modeled by fifth order transfer function and the controller using position, velocity and acceleration of pneumatic cylinder is designed to ensure the stability and performance of the position control system. The effectiveness of the proposed method is proved by comparison of experimental results using conventional method.

## 곡주판 자동용접을 위한 레이저 비전 시스템 개발

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### Development of Laser Vision System for Automatic Welding of Curved Shells

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**Key Words:** laser vision sensor(레이저 비전 센서), Seam tracking(용접선추적), Curved shell plate(곡주판), Robot welding(로봇용접)

**Abstract :** For fully automatic welding of curved shell plates, a 3D Laser Vision System(LVS) is developed, which is based on optical triangulation technology. The misalignments in two-curved hull blocks, which are to be joined, occur because of the inaccuracies in joint fit-up and positioning, warp-age, and distortion of the work-piece. Hence the data related to this configuration of 3D curved shell plate is obtained for finding optimized welding conditions. In this paper a LVS is developed for automatic welding operation to measure this information of V-groove joint geometry. A novel algorithm for detecting this parameter is proposed. In LVS calibration, a standard -jig which is composed of three parts is made and a linear least square techniques are described.

Finally, experimental result using carriage welding system is presented for verifying the LVS performance.