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Harrison Pick and Place Automation

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**SENIOR DESIGN
FINAL REPORT**

***Presented to
Professors' Hack & Whang
EET Department***

***by Steve P. Thomas
May 1, 1992***

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By: Steve P. Thomas

ABSTRACT

This abstract will summarize the senior design project that was put together for ALCIOLS, 802 E. Short St. , Columbia City, Indiana.

In 1991, a pick & place machine was proposed to eventually be used, when automated, to check the coil height of GM's Harrison Thermofuse Coil(used in GM automobile air-conditioning units). In the fall of 1991, John Wall assigned this project to me and I used it as my senior design project.

The project entailed building two control and interface units to manipulate the pick & place machine which would produce the desired result. A 286 Compaq computer, Basic software, a transistor array, latches, I/O board, interface board, and 24 VDC & 5VDC power supplies make up the major components of the system. Both units were made for easy serviceability by using plug-in type modules for replacement parts. The first unit being the prototype was not as modular as the second unit but both are functional.

The machine itself contains 11 proximity sensors to allow tracking of position and 5 air solenoids to control 5 major functions of the machine:

- 1) main slide
- 2) arm in and out to stop coil on assembly line
- 3) up down actuator
- 4) expander to pick up and drop the coils
- 5) rotation device to allow checking coils

The software written in Basic ties everything together by monitoring position and controlling machine movements.