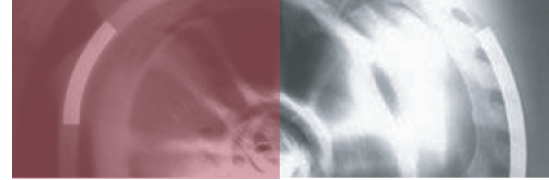


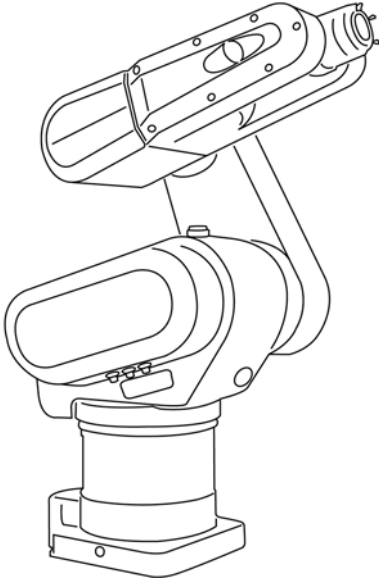


**White Paper**

**Case Study**



## **In-Arm Robot Controls**



## **In-arm Robot Controls**

### **The Challenge**

Traditional robots require a large cabinet outside the robot to house control electronics. The challenge in this application is to integrate the motor and motion control electronics inside the robot arm. The result is a radical reduction in wire harness cost and assembly labor, as well as improved product reliability and reduced floor space.

### **Considerations**

Moving the control electronics inside the robot arm requires a dramatic reduction in package size, ultra-high reliability for severe operating environments, and careful attention to thermal management and cable repetitive flex. Robot OEM's required a distributed control network and field upgradeable operating firmware in order that they are able to add new types of sensors and end effectors.

### **The Solution**

Starting with proven design cells, Agile has developed a custom three axis module which combines three brushless servo motor amplifiers, motion control and I/O processing, and a fiber-optic distributed network interface into a single module. Each robot arm integrates two of these modules for six axis of coordinated motion. The modules provide total DigitalPower™ control using high performance DSP technology, integrated MOSFET brushless motor amplifiers, and patented circuit and packaging concepts.