

National Polytechnic Institute

The *Instituto Politécnico Nacional (IPN)*, National Polytechnic Institute, is relatively specialized. It offers industrial consulting services and its expertise includes laser-beam technology. In addition, the IPN's Centre for Research and Advanced Studies is developing robot prototypes.

SYSTEMS INTEGRATION CONSULTANTS

According to interviews with industry participants, there are anywhere from 15 to 20 firms in Mexico that provide systems integration services for industrial automation applications. The staff are mostly Mexican, although some consultants are brought in from abroad for specific needs or projects. Many of them have foreign partners.

Most of these firms provide automation hardware and software as well as services. Some firms concentrate on individual industries, but specialization is more typically defined by discipline or type of solution offered. Specialization, however, has become more difficult since the 1994 devaluation of the peso. Even where a firm is very strong in a particular industry or discipline, it will be forced to look for new niches in order to survive in the present environment.

Large-scale integrated systems based on the computer integrated manufacturing (CIM) model can be developed by only a handful of computer hardware suppliers. They include IBM, Hewlett Packard, EDS and Digital Equipment Corporation. Some experts commented, however, that none of these companies is providing truly integrated systems that go all the way from production to manufacturing resource planning.

PRODUCT TRENDS AND OPPORTUNITIES

The market for industrial automation has grown rapidly over the past few years, as Mexican companies struggle to modernize and maintain their competitive positions. Traditionally, low labour costs and protected markets led to a labour-intensive approach to design and production control. Recently, however, the influx of foreign competition, combined with the need to export, have added product quality, flexibility and consistency to increased efficiency as reasons for automating. The high cost of capital is driving efforts to minimize inventory and streamline distribution.

For all of these reasons, industry experts predict that the market will continue to grow at a healthy rate, even though the economic crisis has cut the rate of expansion.

The devaluation of the peso in 1994 dramatically increased the cost of capital, which was scarce even before the crisis. This has forced many companies to look for quick solutions. Normally, the automation of a plant is a long-term investment. But, in today's economic environment companies are worried about survival, so they have much shorter planning horizons.

In many cases advanced automation systems are implemented at the request of a manufacturer's customers. Ford, for example, requires suppliers to have computerized design systems because they allow the electronic communication of designs. Advanced systems are also necessary for just-in-time (JIT) delivery, which is increasingly being demanded by customers. It is now almost impossible to be a supplier to the large multinational manufacturers without the new computer aided design/computer assisted manufacturing (CAD/CAM) technologies.

All of the experts interviewed for this study believed that the industrial automation market will continue to be dominated by imports. There are a few local companies that provide specific solutions for small companies, but there are no local firms with the resources to provide integrated solutions to the large firms. Some observers believe that import penetration will rise as foreign service providers, such as systems integrators and trainers, begin entering the Mexican market.

BEST SALES PROSPECTS

Business leaders in the Mexican industrial automation sector were asked which equipment and services they considered to be the best prospects over the medium term. In general, they agreed that a trend towards computer integrated manufacturing (CIM) is only in its infancy in most industries. Experts say that there will be a gradual shift towards fully-integrated systems. But in the short run, they agree that smaller-scale projects with fast results will dominate the market. The specific products mentioned include the following:

Automation Hardware

- The full range of equipment control products includes presence sensors, PLC's, starters, drives, intelligent sensors and interfaces. There is particular demand for equipment that can be adapted to existing production machinery.

Computer Hardware

- UNIX-based client-servers. These are now replacing larger computers as the standard for higher-end systems.
- Communications network products.

Design/Engineering Software

- Products that can be run on high-end personal computers rather than workstations. The majority of companies have access to PCs but cannot afford workstations. Solutions in the US \$6,000 range will have the greatest potential.