

Scanning important recent technology developments, we spot four startup companies that you should keep an eye on -- in X-rays, batteries, genetic engineering, and robotics.

GENERAL IMAGING

Filmless

X-ray

Digital X-ray sensitive enough for medical applications has been achieved by General Imaging Corp. (*IR&D*, Jan. 24, p. 5). Development program, heavily funded by US Air Force, had previously been focused on industrial imaging and quality control applications, but improvements in sensitivity, meaning less exposure and clearer pictures, will now move the technology into the much bigger medical X-ray market. Filmless technique will work against \$1-billion/yr US medical X-ray film business. Money will be saved in storage and management.

Opportunities. Exploring development partnership with companies who have strategic positions in medical imaging market. Needs funds to complete development, then will license.

Technology. Has just been advised that patent, carrying 1985 filing date, has been approved on solid-state X-ray sensor. Covered: 1) Use of any semiconductor for direct sensing of X-rays where adsorption is enhanced; 2) use of any random access sensor; and 3) scale-up technology for 14-in. x 17-in. full-format X-ray sensing arrays. Sensor is being scaled up to a contiguous 10-cm x 10-cm, 1-million-pixel imager with analog acquisition and digital readout. Images are produced with exposures of less than 3 mR.

Company Status. Finishing work financed by December 1988 \$609,000 grant from Air Force to produce small commercially viable X-ray sensors by December 1990. Now negotiating with companies to form strategic partnership to develop non-military medical and industrial products. Company has received more than \$3 million in development investment over the past four years.

Company Background. FutureTech Industries, founded in November 1984 to commercialize technology arising from its founders, University of Florida, and other academic institutions, started General Imaging as its first startup company in January 1985. FutureTech's founder and inventor of the General Imaging filmless X-ray technology is Dr. John Cox. He is vice president, engineering, and chairman. David E. Fowler is president and CEO.

Address. General Imaging Corp., 901 NW Eighth Ave., Suite B-1, Gainesville, FL 32601. Phone: 904-378-0047.

LDI Space-saving Batteries

Flat lead-acid battery will fit computers better and -- in future high-voltage version -- make UPS (uninterruptible power supply) cheaper (*IR&D*, Jan. 24, p. 2). LDI's original research aim had been a lead-acid UPS, now within reach. Advantage: It would have a high voltage, eliminating the cost of conversion which is normally about two-thirds of the cost of a UPS. But along the way people became interested in the fact that LDI had come up with a very flat battery (0.75-in. thick), which would be handy to fit into portable telephones, hand-held copiers, TV cameras and under the processor board in a portable computer. It will compete with more expensive nickel-cadmium battery. Lead-acid battery won't have the memory-effect problem that nickel-cadmium batteries have, in which each recharge lowers the total capacity of the battery.

Opportunities. Company is actively licensing its flat battery technology.

Technology. Chemically, it is a conventional lead-acid battery. But, by reducing the thickness of the electrode plates from 0.25 cm to 0.05 cm, energy per unit weight has been doubled. Amount of energy plates can discharge over two hours or less is increased. Two lead negative plates sandwich a lead dioxide posi-