

Electronics research boosted

Co-operation between industry and universities in high technology was strengthened recently when the federal government formally established a network for microelectronics design research and increased funds for two related areas.

The government has announced the establishment of the non-profit Canadian Microelectronics Corp. to help oversee a university research network for silicon-chip technology and produce graduates better qualified to enter industry.

At the same time, it has given the Natural Sciences and Engineering Research Council \$17.4 million more this year for its university research and manpower training program and \$16.5 million over the next three years for a university and industry program.

Science and Technology Minister Donald Johnston said the measures indicate a recognition by government that "intellectual capital" is the most important ingredient for success in the highly competitive microelectronics industry.

The corporation was launched in January at Queen's University in Kingston, Ontario and oversees work stations at ten universities in integrated circuit design research.

Within three years, it hopes to have in place about 40 design stations involving 20 to 25 universities and at least 150 more students graduating with better qualifications.

Telecom wins giant US order

Northern Telecom Inc., the US subsidiary of Mississauga-based Northern Telecom Ltd., has landed an order worth more than \$130 million (US) from the United States long-distance telephone company, MCI Communications Corp.

The telecommunications company announced recently that it will supply DMS-250 digital switching systems and related equipment for use in MCI's long-distance network.

The DMS-250 will be used to connect MCI's trunk lines with telephone switching centres to link MCI customers across the United States.

"MCI is the largest of the so-called 'AT&T alternatives', specialized common carriers offering long-distance rates 20 to 40 per cent cheaper than those charged by the US giant American Telephone & Telegraph Co.

Illuminating pipe lights up the darkness



Lorne Whitehead, inventor of the Light Pipe and head of TIR Systems Ltd., holds sections of Light Pipe material.

A device for moving illumination from a remote source to the desired area in a building is being manufactured by a Vancouver company.

The inventor of the Light Pipe, Lorne Whitehead, said he came upon this application of the optical principle called total internal reflection while working in a dim basement room for a master's degree in physics from the University of British Columbia. He is president of TIR Systems Ltd., formed over a year ago.

The acrylic pipe made and marketed by TIR Systems is 20-centimetres-square in cross-section and available in standard lengths of 2.4 to 7.2 metres.

Several units can be joined and custom lengths of up to 19.8 metres can be made — with elbows to bend light around corners. The desire to pipe light is not new. Mr. Whitehead said an inventor applied for a patent in 1882 for a device to transmit light from a carbon arc lamp throughout a building. His problem was that too much light was absorbed by the "pipe".

"We have, for the first time, a light pipe that is both inexpensive and efficient enough. All light piping is based on reflecting light. In our case, the mirror is more efficient."

Sawtooth ridges

Mr. Whitehead hit upon the idea of forming the surfaces of the acrylic sheets into a series of sawtooth ridges on 45-degree angles.

As the light rays moving along the pipe

at random angles bounce off the walls, they are virtually all reflected back into the pipe by these serrations.

Precision in forming these angles is critical and TIR is one of only a few companies in North America molding to such demanding specifications, Mr. Whitehead said. Any light source can be used but high-intensity discharge lamps such as clear metal halide or high-pressure sodium lamps are especially suitable.

Marketing is concentrated for now on applications where the benefits are obvious from easier maintenance or safety, such as providing light over a swimming pool.

Light could be piped into space where installed electrical fixtures would pose a potential danger of sparks, such as solvent storage areas, paint shops, grain elevators, gasoline storage or explosive storage areas.

Variations tested

TIR is testing a variation of the light pipe for large-scale illumination, as an alternative to recessed fluorescent ceiling fixtures in office buildings. One light source with reflectors could serve two six-metre lengths of light pipe. The lengths would have mirrors at their ends to reflect light back and a controlled diffusion panel on the bottom to provide a source of even, glare-free light.

TIR is satisfied that its current manufacturing process is serviceable and has just taken delivery of a new press that will produce larger pieces.

(Article from the Globe and Mail.)