Robots used in car business

General Motors of Canada Limited is using robots to do some of the dull routine work now performed by human operators.

The company based in Oshawa, Ontario, has announced that by 1983 it will have installed about 91 robots in its various plants in Canada, mainly in welding, material handling and painting operations.

The company already has four robots at work. Two, named Laverne and Shirley, are used in spray-painting operations at the company's truck assembly plant in Oshawa, while another two, Mork and Mindy, are being used in material handling at its St. Catharines foundry. The robotic systems were installed last year.

These early experiments with robots – actually an extension unit programmed to move like a human arm and hand – have proved the systems can be both popular and successful, said R.C. Walter, vice-president and general manufacturing manager.

The company claims robots improve employee morale by eliminating physical danger, stressful work conditions and monotonous repetition by removing lower level tasks from workers' lives. While jobs are eliminated, maintenance and inspection jobs are created.

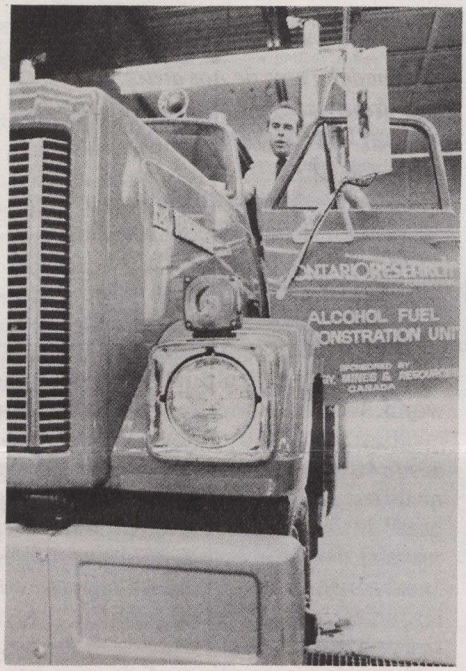
The company said robots are already performing about a dozen different types of operation in the automotive industry.

Fuel mixer saves energy

Combining methanol and diesel fuels under normal circumstances is like trying to mix oil and water. However, a researcher with the Ontario Research Foundation (ORF) has developed a compact device that, in laboratory tests, enables a commercial transport diesel engine to burn a combination of up to 25 percent methanol and 75 percent diesel fuels.

Road tests, this summer, will determine whether the device, called a HydroShear, heralds a breakthrough for alcohol fuel use in the transport industry.

Dr. Alex Lawson, principal scientist with the ORF's department of environmental chemistry developed the device, prototypes of which have been supplied to major truck engine manufacturers, including Ford, Detroit Diesel (a division of General Motors), Caterpillar Tractor and Perkins Diesel (a manufacturer in England) for testing in their own laboratories.



Dr. Alex Lawson of the Ontario Research Foundation climbs aborad a diesel-methanol test truck.

Where current emulsion research considers the use of a third or fourth chemical to stabilize a mixture, the HydroShear consists of an in-fuel-line mechanical emulsification device which spins the two fuels together.

Whirlpool effect

"The whirlpool effect is created," says Lawson, "and acts as the emulsifier, dispatching an emulsion that will remain stable long enough for the fuel to make its way through the engine."

To date, laboratory tests show methanol can be used as a diesel fuel extender. In addition, smoke emission was substantially reduced when the emulsion was tested on the bench-scale unit, "particulate emissions were reduced by 50 per cent, with carbon black being reduced by 75 per cent". The emission of nitrogen oxide was one negative aspect which Lawson anticipates can be relieved, "perhaps through the recirculation of the exhaust gas".

To accommodate the device a vehicle would have to undergo relatively minor retrofitting. An additional saddle tank would be needed to carry the methanol, for example. In the ORF experiment, the tank was attached to the underside opposite the diesel tank.

Maps for the blind

A British Columbia cartographer has developed a new kind of inexpensive many-textured tactile map that the blind can read.

It started with an accident in the laboratory. Simon Fraser University (SFU) cartographer Ray Squirrell dropped a map he was making on the floor while the paint on it was still wet. There wasn't much he could do about it, so he picked it up and left it to dry.

He discovered later that the wet paint had gathered sand off the floor which had dried on the map where the paint had been wet – leaving those areas textured.

Mr. Squirrell later took his discovery to Paul Thiele, Librarian and Head of the Crane Library for the blind at the University of British Columbia, to talk about the feasibility of using the ink and texturing materials idea for making tactile maps for the blind.

Mr. Squirrell and Mr. Thiele got together with the Provincial Resource Centre for the Visually Impaired, the SFU Psychology Department and Crane Library staff to test and try to discover which types of surface were the most effective for the blind to read. Map making for the blind is so new, all their work was and is still experimental but despite the challenges, they decided to forge ahead to produce a multi-media version of a B.C. atlas for the blind.

"It costs between $40 and $400 now for a commercial map for the blind, made in a mold," explains Mr. Thiele. In addition, these maps are large, rigid and unwieldy.

"With this new process braille maps with textured surfaces denoting different geographical features can be made available economically, as well as being portable and compact," he said.

In addition, Mr. Squirrell has used a thermograver, normally used for printed cards or invitations with raised lettering, for printing the braille text on the maps. If a clear ink is used instead of coloured, this braille can even be superimposed on inked printing so that both the blind and sighted can use the same materials. Not all maps in the atlas can be reproduced using the new process, because too many textures on one map would only be confusing, so in producing tactile versions, each is simplified, and not too much information is crammed on one map.