Hello again

Hello and welcome, once again, to the fischertechnik newsletter - Australian edition.

In this issue we discuss the new solar powered kit from fischertechnik. We also discuss the new Windows software that's available and other important developments.

Going Solar!

Yes! Fischertechnik harnesses the sun's energy with environmentally friendly solar technology that works in the dark. This is made possible by a three-component drive set comprising the latest generation of polycrystalline solar modules (3 Volts, 0.24 Amps), a gold capacitor (2.3 Volts, 10 Farad) to store electrical energy and a bell-type armature gear motor which has a very soft start (as low as 0.15 Volts).

The electrical energy generated by the solar cell is stored in the capacitor which then drives the motor. This arrangement allows the motor to continue to operate in shady or cloudy conditions. The kit contains over 400 parts with a detailed experiment and assembly manual containing instructions for the building of six models including; a helicopter, a crane, a forklift truck and a solar powered car. This kit is suitable for 9 year olds and over. Part No. 30497.

Also new is the Action Set Racing Car (part no. 30333) and the King of the Road set (part no. 30200).
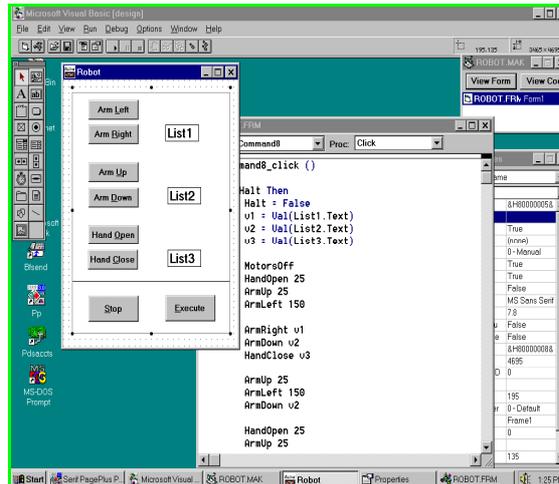
New Software

New programming software is now available for Windows 3 and Windows 95. The VisualBASIC for Windows programming language together with the fischertechnik robotics software (pictured above) provides the ideal environment to enhance learning in problem solving, science, math and logic. The construction and animation of robots provides concrete, hands-on experience with goal-setting and achievement, cause and effect, estimation and measurement and logical reasoning. It's ideal for children and adults at home or at school to learn about computer programming in automation and control.

The VisualBASIC environment is one of the most popular languages in use for Windows programming. Many books and magazines are devoted to VisualBASIC. Fischertechnik example software is now available for all computer controlled kits (except the plotter/scanner kit which has been discontinued). The programs are not only provided ready to install and run under windows but complete source code for VisualBASIC version 3 and above is supplied to allow you to modify and write your own programs.

With Windows you can also make use of all those sophisticated add-ons such as Voice Control of your models. We have already demonstrated how a program called Voice Assist (from the manufacturers of the soundblaster card) can be used to control fischertechnik models programmed under Windows.

Finally, for those wishing to program in other languages under Windows; the fischertechnik drive routines are given as a general purpose DLL file capable of being called from many programming languages such as; TurboPascal for Windows, Visual C++ & Delphi (16 bit only).

Robot Update

The second wave of the robotics revolution is upon us ... but Australia is lagging behind according to newspaper reports. You may have noticed that the promised robotics revolution fizzled in the early 1990's but with new developments in artificial intelligence and computer technology cutting prices and expanding the application of robots there is now a resurgence of activity ... and Australia could be missing out!

The per capita king of robots is the small island nation of Singapore

with one industrial robot per 212 people, next is Japan with one robot per 322 people, further down the list is the USA. with one robot per 3,076 people, Australia has only one robot per 7,940 people!

One way that fischertechnik can help is in the research and development area. Fischertechnik products have been used by Universities and Companies worldwide in the development of new technology. A quick search on the internet will bring to light many such projects. For example, research into imitating insect behavior through artificial intelligence software often uses models constructed with fischertechnik components.

Fischertechnik can also assist in the area of education. Many Universities, TAFE colleges and Secondary Schools use fischertechnik as an educational tool - allowing students to experiment and experience automation technology at a relatively low cost. As a further example of how fischertechnik could be used by schools; in the USA. the last four consecutive year's winning teams in the High School Section of the Control Technology Division, TSA conference competition have used fischertechnik kits and controlling software!

The Future?

Imagine being able to see the factory of tomorrow? With fischertechnik you can! According to the German magazine 'Suddeutsche Zeitung' models of tomorrow's factories and machines have been built by Universities, colleges and companies such as Renault, Bosch and Siemens. One such model plant, cost $500,000 and measured two metres by fifteen metres. It was built using fischertechnik by the Ulm Research Institute for Applied Knowledge Transfer.

Most readers of this newsletter wouldn't wish to build such a huge model - but isn't it nice to know that even with the simplest computer control kit you can get a taste of the future!

Hints & Tips

Most of the computer software for the IBM-PC has been upgraded to work on Pentium machines under Windows 95. If you are experiencing problems why not upgrade at 50% off the retail price!

Tip 1. One of the main problems with the old fischertechnik software when running on high speed computers is 'contact bounce'. Contact bounce occurs when a mechanical switch - such as a micro switch - changes from on to off or off to on. During the transition the switch makes contact and then breaks contact a number of times before finally coming to rest in the correct state. In order to avoid counting these pulses as actual switch conditions there should be a delay before reading the switch again (this happens automatically on slow speed computers) or the switch should be read a number of times and only when it has settled in one state should the condition be 'accepted'. The following QBASIC program provides one way of eliminating contact bounce:

```
I% = USR(E1)
DO
      J% = I%
      I% = USR(E1)
LOOP UNTIL I% = J%
```

Tip 2. How can you construct a simple pressure sensor which can be used in the gripper of a robot arm to pick up delicate objects? A simple sensor can be constructed using black conductive foam available from most electronic shops. Cut two thin strips, clamp a wire to each strip and tape them together. As the two strips are pressed together their resistance decreases. The two strips via the wires may then be connected to an analogue input. Because of the high resistance involved you will need to match the software to the computer by following the instructions in the lucky logic manual.

Tip 3. How do you increase the number of analogue inputs available? For example, you'd like to monitor the temperature, using thermisters (part no. 36437), of four fish tanks. To extend the two analogue inputs to four use a relay unit (30075) connected as shown:
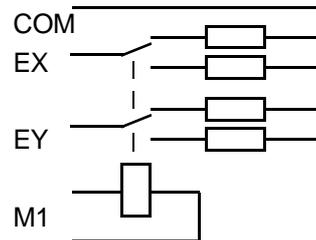
To read the extra thermisters, activate the motor output M1. Don't forget to add a delay in the program (to allow time for the relay to operate) and then read the analogue inputs EX and EY.

More?

Why not write to me, Peter King, and tell me what you'd like to see in this newsletter. If you'd like a full colour 95/96 catalogue please send 4 x 45c stamps to cover costs.

Procon Technology
Box 655, Mt. Waverley
AUSTRALIA, 3149
PH: (03) 98306288
FAX: (03) 98306481