Think & Do Featured Applications

Semiconductor Material Handling Application

Think & Do Software is becoming the software programming tool of choice for Phase 2 Automation. Phase 2 Automation, a worldwide leader in clean room automation, is finding that the flowchart programming environment, combined with the built-in operator interface tools, make most automation projects within their target markets a snap.

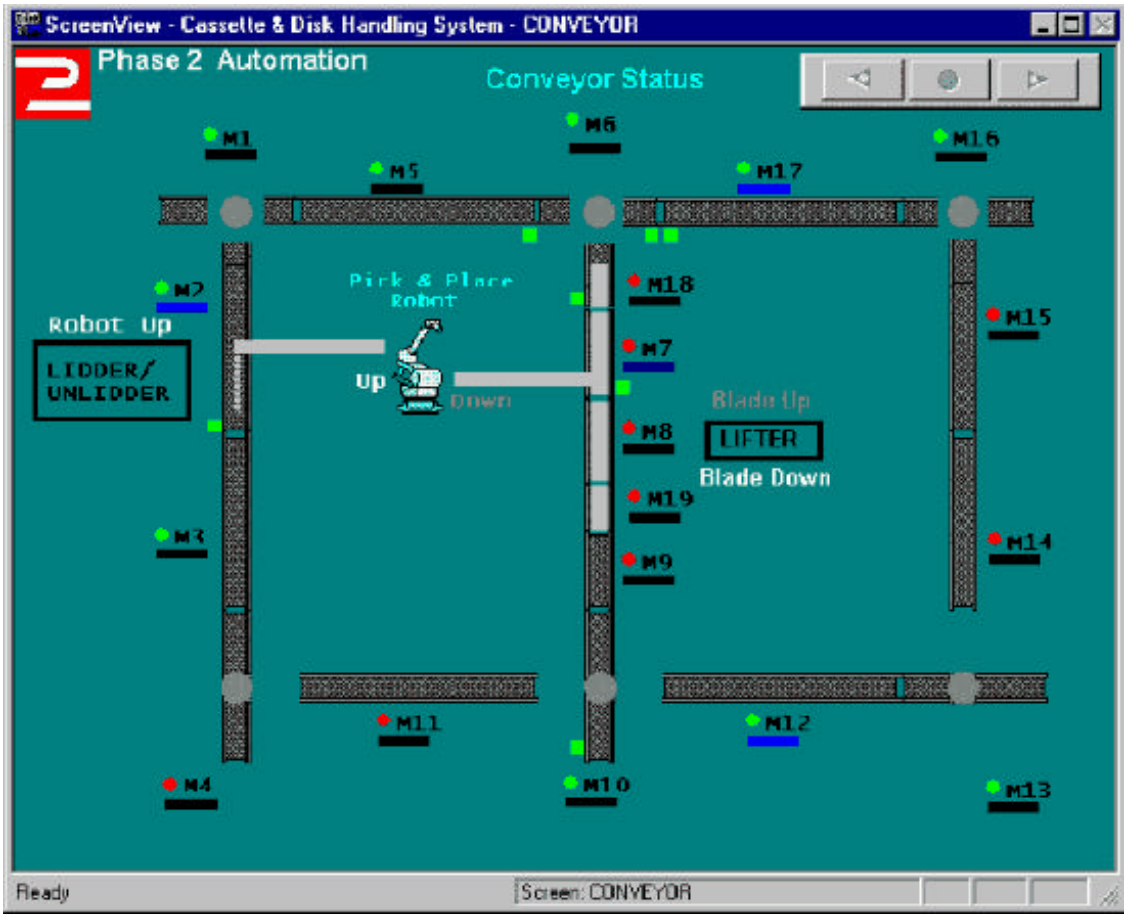
Most recently, Phase 2 Automation implemented a complex material handling application designed to show-off their broad expertise and capabilities. They used Think & Do software to control the system, known as the Multi-Platform Cassette and Disk Handling System. The system is used as an on-site demonstration tool highlighting their material handling system capabilities and their state-of-the art Think & Do PC-based control system solution. The system demonstrates a wide range of capabilities, including:

- Wet Conveyors
- Dry Conveyors
- Semi-Wet Conveyors
- Roller & Belt Technology
- Cassette Handling
- Disk Handling
- Sortation
- Pick & Place Robotics
- PC-based Control with Operator Graphics
- Seriplex I/O Bus Interface

The process of developing this application with flowcharts was a natural transition from paper to Think & Do Software. Like many material handling designers, Phase 2 engineers typically think through their system using a flowchart notation before they even begin to design the control program. So, with Think & Do, Phase 2 was able to rapidly transition from concept to working prototype!

To speed the implementation of repetitive logic, Phase 2 engineers made extensive use of the duplicate-with-offset capability within Think & Do Software, for both flowchart and graphical screen development. One place where Phase 2 made use of this powerful feature was in the development of conveyor logic. They started by offsetting all conveyor motor related data items by a count of 20. Once the flowcharts for the first conveyor were designed and tested, it was literally a matter of minutes to implement the whole control strategy - such as cassette transfer, pivot point transfer, conveyor acceleration and deceleration routines - for each conveyor and its respective motor.

The graphical display of the material handling system provides an overview as to the system status (as shown below). The status of each of the 17 conveyor motors is provided - color animation indicates whether the motor is running, stopped or faulted. The bar located below each conveyor identification number indicates the cassette status (i.e., full or empty). The status of the Lifter and Lidder/Unlidder operations are also shown, as is the position of the Pick & Place Robot used to pick disks from a cassette on the conveyor line and place them in a cassette on another line.



In this application Phase 2 took advantage of the Seriplex I/O driver provided at no extra charge with Think & Do Software. With built-in Seriplex network configuration display and debug capability, Think & Do made it easy for Phase 2 to leverage Seriplex for its dramatic reduction in wiring costs and its high-speed operation.

Phase 2 Automation engineers immediately realized the inherent advantages of using the Think & Do Software flowchart-based development language. Jim Wilson, Phase 2 Automation Control System Engineer, cited the following advantages of flowchart programming: Rapid program development (especially when there are many sequential tasks), faster execution time compared to other control methods, simplified debugging, concise documentation, and ease of maintenance.

Jim Wilson, a senior member of the Phase 2 control engineering staff, further explains the benefits as compared to PLC (programmable logic controller) based control using RLL (relay ladder logic). "When a program bug occurred, which was seldom, it was a simple matter to look at the appropriate flowcharts on the development PC to see where the sequence was halted. The problem could then be pinpointed easily, rather than searching all over a ladder program to find out why a routine was not being called, a bit not getting set, etc. *Since the flowcharts are simple to write and understand in the first place, start-up success is very high and debugging/troubleshooting time is low.* "

More Think & Do Software Application Stories

Here are some more **Think & Do Software** Application Stories you may find interesting:

- Think & Do - Batch Processing of Starch Slurry
- Application Stories - Tray Filling with Vision Inspection
- Application Stories - Inspection with X-Y Motion and Vision
- Application Stories - Semiconductor Material Handling Application
- Application Stories - Semiconductor Fab Application
- Application Stories - Sorting and Conveyor Application
- Application Stories - Railroad Classification Yard

Do **YOU** have a **Think & Do Software** Application that you think is something special? Tell us about it!.
