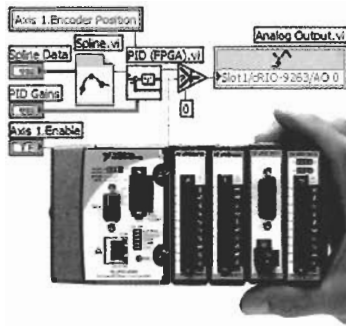


Develop Your Next Machine with LabVIEW



Graphical System Design for Machine Control

Develop your next machine in 1/2 the time with National Instruments LabVIEW and CompactRIO.

LabVIEW Graphical Programming Language

- Develop custom logic in reconfigurable FPGA hardware
- Download the real-time (RT) processor application
- Deploy with built-in Web-based human-machine interface (HMI)
- Automate your development with more than 650 function blocks for motion control, PID, logic, analysis, and more

CompactRIO Reconfigurable Embedded System

- Low-cost, production-ready design
- Open access to low-level electrical architecture
- Isolated industrial I/O modules
- FPGA performance, reliability, and parallel execution for multiple control loops exceeding 200 kHz

Learn how to reduce your machine development time. Download the CompactRIO machine control white paper at ni.com/compactrio. 800 891 2755



© 2005 National Instruments Corporation. All rights reserved. CompactRIO and LabVIEW are trademarks of National Instruments. Other product and company names listed are trademarks or the names of their companies.

2005-4857-161-101-D



A good example of bad design

Intuitive design means something different to practically every industrial designer. To me, it means users needn't think too much about how to use a product. That is, its use is straightforward and comes naturally. Unfortunately, many products used daily are nonintuitive. That's because designers and engineers too often do what is expedient, with no regard for end users. This situation would improve a lot if engineers had to actually use products they designed.

A good example of nonintuitive design comes from hotel shower controls. I have traveled a lot lately, and saw some interesting devices. For instance, one control had a handle that regulated Hot-Cold and On-Off. Too bad the room rate didn't include an instruction manual. Smart individuals figure out how to work the control *before* jumping in the shower. Otherwise, bet your bottom dollar, the temperature of the first water jets is ice cold or scalding hot.

Another control involved a novel way of turning on the shower. It so happened I was in the tub before I even looked for a shower control. I saw none at all. Finally, I spied a small brass plaque screwed to the wall. (I'm not making this up.) The lighting in the shower was dim, but I tried to read the instructions anyway. They said "Pull down on nozzle to activate shower." I thought about this for a moment. I looked up at the showerhead and saw nothing to pull. I bent low and examined the spout. Nothing there either. I squatted down further, felt around un-

der the spout, and saw only an opening from which water was gushing. I looked at the plaque again. This time, I grasped a little round tube on it, and pulled. My reward was a face full of hot water. I stumbled and almost fell over.

When done with my shower, I naturally reached under the faucet and

pushed up on the spout. Nothing happened. The shower kept pouring out water. I looked at the plaque yet again: No explanation on how to turn it off. Finally, I asked my wife. She'd had a similar experience with the control, but had somehow figured out that



turning off the water turned off the shower. To make matters worse, the handles rotated in opposite directions. I hope the hotel got a good deal on those worthless fixtures.

Part of why such nonintuitive designs happen might be that what makes perfect sense to one individual won't to the next. Engineers tend to be precise, and they organize things according to logic. But most users aren't logical. Users don't know or care how mechanisms work; they just want the parts to work as intended, with the least amount of interaction possible.

As designers of the future, industrial designers and engineers should become familiar with end users, even cater to their expectations. After all, they might affect whether products we design are purchased, and thereby help pay our meager salaries. Smart designers should regard the end user as king. **MD**

Mike Hudspeth, ISDA, is an industrial designer with more than two decades of experience. Got a question about industrial design? You can reach Mike at Mike.Hudspeth@TycoHealthcare.com.

Edited by Leslie Gordon