

Mentor Graphics development tools allow Powis Corporation to turn up the heat in the hotly contested industrial oven sector

Powis Corporation, based in Blue Springs, Missouri, is a privately-held manufacturer of industrial control systems for commercial ovens serving the world's leading meat processing companies. Recognized brands such as Armour, Swift-Premium, and Smithfield Foods rely on Powis' state-of-the-art industrial oven control technology to deliver smoked and processed foods to absolute perfection.

So what does embedded software have to do with high-end meat? Lon Hemmen, Powis Corporation's chief engineer says that his customers need durable, easy-to-use industrial oven controls to provide accurate temperature control, efficient thermal flows, consistent processing schedules and electronic data logs, and precise performance in order for Powis to deliver the highest quality meat product on the market today. Powis' customers must also produce food products that meet strict industry standards, so there is no margin for error with these industrial oven controls. Even with power failures, Powis industrial oven controls are able to track and record critical data to ensure product quality throughout the food process. With costs exceeding tens of thousands of dollars, the technical reliability of Powis' industrial products is crucial for their customer's future success.



Enter Nucleus RTOS

As head of the Powis design engineering team, Lon first became familiar with the Mentor Graphics® Nucleus® Real Time Operating System (RTOS) and embedded software products back in 1998, when he was over-seeing a solution for an 8-bit industrial control technology. With a team of skilled hardware engineers and software developers, he realized the importance of embedded software, particularly in how it helped build Powis' reputation as one of the most technology-superior brands for industrial oven controls in the world. Recently, Lon's team was tasked with

building a new line of industrial oven controls.

The EDGE Developer Suite

Powis selected the Nucleus RTOS because it provided excellent source code availability, plus it offered an embedded graphical user interface, Nucleus® Graphics. The team was also familiar using Mentor's EDGE™ developer suite, a comprehensive set of software development tools available within one, highly integrated design environment (IDE). Using EDGE, Lon and his team were able to take advantage of a rich set of capabilities. EDGE



was also important because it provided the flexibility needed to integrate previous embedded software into their new product design.

team migrated to the latest release of Mentor's EDGE developer suite (version 2.0) and experienced some rather impressive results.

in serial channels for further debugging information. Overall, I have to say that all these pieces together are what make EDGE work."

"Mentor's new 2.0 EDGE developer suite release allowed us to deliver a new product in three weeks without any problems."



— LON HEMMEN
CHIEF ENGINEER
POWIS

EDGE Debugger Impressive

One tool within the EDGE developer suite, the EDGE debugger tool provides a configurable register view, which allowed Lon's team to add further processor registers and peripheral registers – both the I/O chips and a large CPLD that the company used for its existing product line. Lon added that EDGE debugger provided the ability to add other objects to the register viewer, "As we looked over EDGE's documentation, the example of a linked list really got us thinking, and we were determined to try this out," added Lon.

"Honestly, the strength of EDGE is the complete package," stated Hemmen. "The ability to edit the XML configuration files, to add an old compiler from past projects, the use of codelets in conjunction with break points, and the product's kernel awareness are all great features." In the middle of planning and developing his state-of-the-art industrial oven control, Lon and his

"Mentor's new 2.0 EDGE developer suite release allowed us to deliver a new product in three weeks without any problems," stated Hemmen. The engineering team at Powis was able to apply a couple of custom Eclipse plugins (new in 2.0) for searching and file editing functions which are generally not available with other IDEs. "Having the ability to use the CVS functionality of Eclipse enabled us to have multiple developers working on a project and consolidate their changes quickly and efficiently – all from a single IDE," stated Lon.

More To Like With New EDGE 2.0

Lon was also quick to comment on some of the other new features found in the EDGE 2 "I'm intrigued by the way EDGE uses TCP sockets to control its channel feature." The channels in EDGE are communications abstractions for arbitrary bytes streams of data. "We normally use this feature

Mentor Support Rises To The Occasion

When asked about the overall product value of Mentor's EDGE developer suite, Lon replied, "Is it a good value? Yes, version 1.3.2 was a great value for the money and I foresee version 2.0 to be an even greater value, which we are still exploring with new enhancements to the channels and Nucleus SIM." During the development phases, Hemmen also worked with Mentor support. He had some initial issues with source code integration and Mentor's support and service team was able to help resolve these early challenges. And how would he describe Mentor's technical support, "Its top-notch" he stated quickly.

Nucleus Graphics Also A Winner

As mentioned earlier, Powis was also using Mentor's Nucleus Graphics user interface (UI) tool to develop

"For now, Mentor's EDGE 2.0 tool suite is rocking!"

— LON HEMMEN

a graphical user interface for their products. Nucleus Graphics is a key differentiation technology that enables the quick and rapid creation of visually rich, highly usable graphical user

interfaces. “While we’ve been using an older version of Nucleus Graphics, we’re going to look at this latest version since our customers are interested in new control panel technologies, like touch screens, that can replace buttons and knobs,” added Hemmen. “Our customers want larger displays that have more style and pizzazz, and we’re also exploring remote capabilities, so our customers can control their industrial ovens from a Web server. We are actively looking at new technologies to integrate into our products.”

The latest version of Nucleus Graphics provides easy-to-develop features that Powis is looking for in order to develop more dynamic user interfaces. And Mentor Graphics is now enabling machine-to-machine (M2M) communication which allows wireless,

remote-control operations via a Web server.

Looking To The Future

One final remark from Lon on his experience with Mentor’s EDGE developer suite, “When EDGE works with Linux or other RTOSes, then I think Mentor will have a hard package to beat. For now, Mentor’s EDGE 2.0 tool suite is rocking!”

It looks like Lon will get his wish. Recently, Mentor Graphics acquired Embedded Alley, a leading provider of embedded Linux and Android-based development technologies and integration services. With Mentor now offering Linux, Android, and Nucleus – and the latest release of EDGE development tools, the future looks very promising for Mentor and Powis Corporation’s hot new products.

Visit Mentor Graphics at www.mentor.com/embedded for additional product information.

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Corporate Headquarters Mentor Graphics Corporation 8005 SW Boeckman Road Wilsonville, Oregon 97070 USA Phone: 503.685.7000	Silicon Valley Mentor Graphics Corporation 1001 Ridder Park Drive San Jose, California 95131 USA Phone: 408.436.1500 Fax: 408.436.1501	Europe Mentor Graphics Deutschland GmbH Arnulfstrasse 201 80634 Munich Germany Phone: +49.89.57096.0 Fax: +49.89.57096.400	Pacific Rim Mentor Graphics (Taiwan) Room 1603, 16F, International Trade Building No. 333, Section 1, Keelung Road Taipei, Taiwan, ROC Phone: 886.2.27576020 Fax: 886.2.27576027	Japan Mentor Graphics Japan Co., Ltd. Gotenyama Gardens 7-35, Kita-Shinagawa 4-chome Shinagawa-Ku, Tokyo 140-0001 Japan Phone: 81.3.5488.3030 Fax: 81.3.5488.3031
Sales and Product Information Phone: 800.547.4303 Fax: 800.684.1795	North American Support Center Phone: 800.547.4303 Fax: 800.684.1795			

