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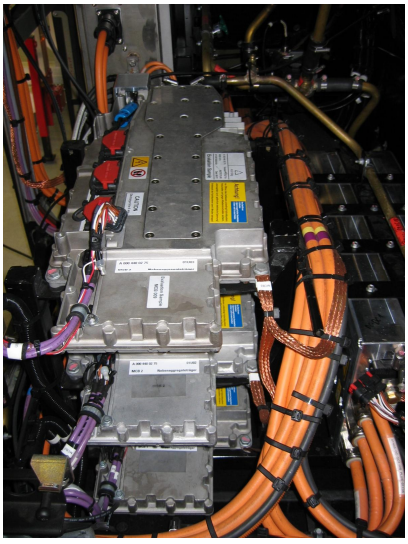
Project Note

Developing innovative solutions efficiently

Model Driven Development with IBM Rational Rhapsody® in C – drive controllers for vehicles

The development of safety-relevant components to meet stringent quality requirements is demanding. Schmidhauser AG meets this challenge successfully with Model Driven Development and Rational Rhapsody®. A conversation with Peter Bode, Project Manager for Mobile Drives.

Schmidhauser
member of the Lenze group



Auxiliary unit inverters for Diesel Hybrid Bus.

Schmidhauser AG is a member of the Lenze Group and a competence center for customer-specific drive controllers. With 55 employees at the headquarters in Romanshorn, Switzerland, the company provides a diverse range of services in product development (hardware, software, and power electronics). At the end of 2006, Schmidhauser decided to develop its mobile drive controllers for vehicles with the Embedded UML Studio from Willert Software Tools. The tool is based on Rational Rhapsody® from IBM and is focused on target platforms with small memory footprints. The main factors driving the decision were the high quality requirements that must be met by safety-relevant components of Schmidhauser.

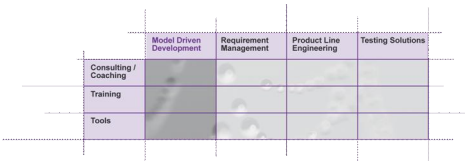
Responding better to customer needs

For Peter Bode, only Rational Rhapsody® was under consideration from the beginning – especially because of its leading options for modelling and full automatic code generation. "Often we are confronted with the situation that product requirements have not yet been completely defined at the beginning of the project. With Rhapsody®, we can represent new functionalities graphically and present various possibilities for a solution to our customers. This allows us to respond flexibly and address needs much better."

Success-critical advantages

"Many of the products we develop must meet extremely stringent requirements in terms of quality and electromagnetic compatibility. In addition to the advantages already mentioned, significantly better product quality is therefore a critical success factor for us." Other advantages cited by Peter Bode are

- significantly higher efficiency
- easy training for new employees
- simpler software maintenance
- better consistency when changes are made and
- the fact that the documentation, model, and code are always at the latest level.



Accompanied project start-up

To be able to work efficiently in a short amount of time, three employees attended a relevant tool training session before Rational Rhapsody® was introduced. A coach ensured seamless tool integration into existing infrastructures on site. The first development project was completed within nine months: two auxiliary unit inverters for the EvoBus Citaro Diesel Hybrid Bus. Currently there are three products developed with Rhapsody® on the market.

Peter Bode,
Project Manager for Mobile Drives,
Schmidhauser AG
"A picture is worth a thousand words. Thanks to Rational Rhapsody® models, we can discuss new functionalities much better with our customers – even without knowledge of the code."

Lessons learned

On-site support coordinated by EVOCEAN was important for ensuring an efficient start. "The five-day Embedded UML Studio start-up training was also worth its weight in gold," adds Peter Bode. "I would recommend Rational Rhapsody® at any time. Today we are able to concentrate on the actual problem of an application. And we are significantly more efficient than in projects in which we're not yet using Rhapsody®."

Looking ahead

Something Peter Bode would like in the future is an integrated solution for "Performance Testing" in the embedded software on the target platform.

The next goal is for additional savings in time and money. "So far we have invested primarily in improving quality. Now we would like to improve our time to market and reduce costs by about 30%. I'm convinced that we're on the right path with Rhapsody®."

Technologies used

Development environment	Before Rhapsody®	With Rhapsody®
UML	Visio	Embedded UML Studio Rhapsody®
IDE	Tasking / Keil	Tasking / Keil
RTOS	Internal development	Embedded OO-RTX
Target platform	ST 10 / DSP TI F28xx	ST 10 / DSP TI F28xx
Programming language	C	C
Debugger	Hitex	Hitex / PLS UDE

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