

# DaimlerChrysler Relies on TargetLink for Engine Controls

- TargetLink for new engine control functions
- Easy integration into the existing development environment
- Greater transparency throughout the whole development process

To benefit from process standardization in the powertrain development of electronic control units, the Engine Control department at DaimlerChrysler has switched completely to automatic code generation for the function and software development of in-house functionalities. TargetLink passed exhaustive testing and proved its abilities as a production code generator. This is partly thanks to its technical features and to the ease with which it could be adapted to our requirements and integrated into our existing development environment. Another major factor in choosing TargetLink was the extensive and dedicated technical support given to us by dSPACE.



▲ Hartmut Weckenmann

The more complex the interplay of ECU functions and different ECUs becomes in today's automotive electronics, the higher the level of specialist knowledge possessed by individual employees and teams. This means that a mass of internal know-how is available,

but also that the exchange of models and model components between specialists from different areas is becoming increasingly difficult.

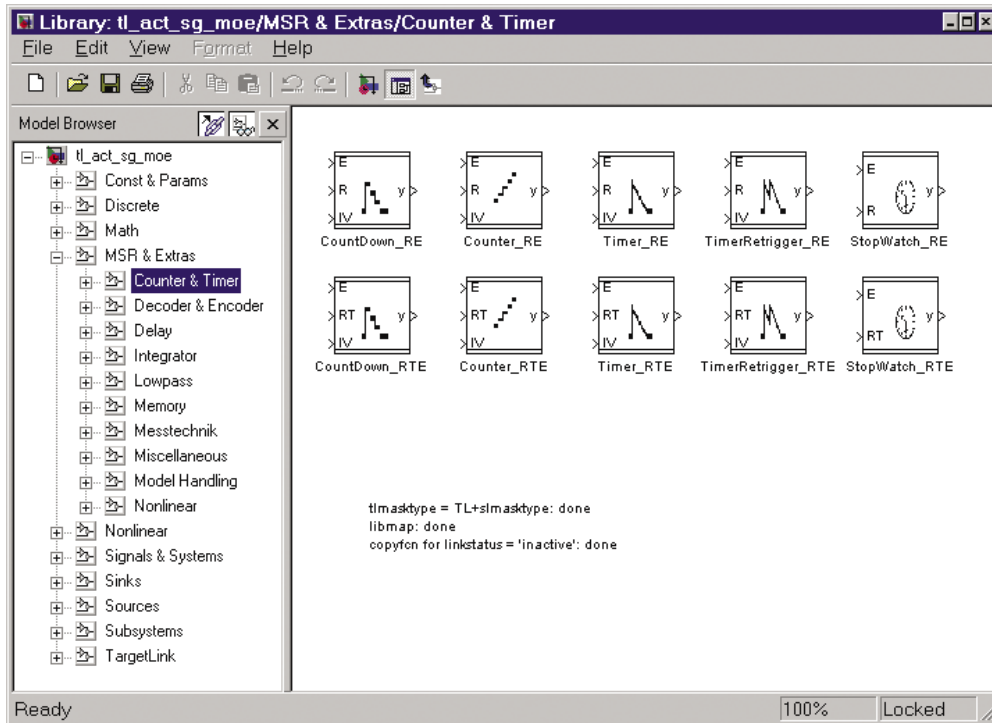
## Standardization for Greater Transparency

One of DaimlerChrysler's major objectives in ECU development is to streamline the cooperation between different development areas. We place great importance on constantly improving and simplifying the exchange of models between individual developers and teams by means of standardized development processes. We have been using TargetLink, dSPACE's production code generator, since 2001, and it plays a major role in our standardization efforts, as code generated automatically by TargetLink avoids the

individual differences inherent in handcoding and thus eliminates the majority of possible error sources. This ensures maximum transparency throughout the entire in-house process. The Powertrain Electronics section at DaimlerChrysler currently has 25 TargetLink licenses in the area of ECU development.

## Function Development with TargetLink

As the basis for code generation, DaimlerChrysler provided a special Simulink block library for automotive applications, and dSPACE adapted this to TargetLink. The function developers implement the models in TargetLink, at our request supported on site by dSPACE from the Project Center in Stuttgart. This cuts traveling times and ensures a fast response when we have queries. dSPACE support includes individual adaptations and developments in the areas of autoscaling and support of model-based tests (code coverage). The Engine Control department is now performing further development and the development of new functions exclusively on the basis of TargetLink. Moreover, code generated automatically using TargetLink is also being integrated into existing projects. The target processor for the production code is the MPC555 from Motorola. Three partial projects have so far been implemented successfully with TargetLink.



▲ DaimlerChrysler's special Simulink block library for automotive applications

**Same Code for Same Model Components**

The Powertrain Control department sees the great advantage of automatic code generation with TargetLink, compared to the procedures previously used, in the consistency of the generated code with the model, and in having the same code for comparable model components. This allows functions

that are needed in different projects to be interchanged easily.

*Hartmut Weckenmann*  
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*"With TargetLink, we are able to convert complex, executable, functional specifications available as Simulink/Stateflow models to C code for production ECUs, with no conversion losses and in a process-safe way. Thus, over the last two years, we were able to bring new, high-quality functions up to production status, giving us the competitive edge. The maturity of the implementation environment, the quality of the code that is generated, and direct support from dSPACE enabled us to set up a development environment that can be seamlessly integrated into our software development process with reasonable effort."*

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