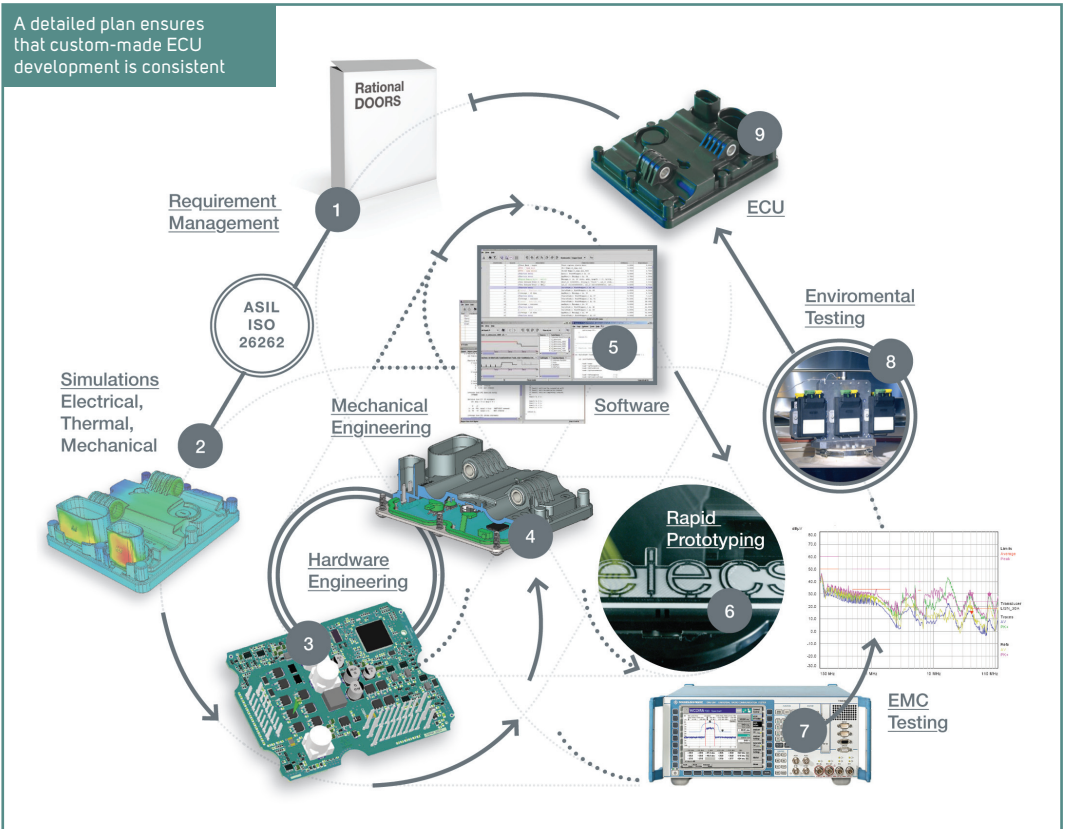


Custom-made ECUs

Electronic control units have a wide range of applications. A detailed, step-by-step plan regulates the development process and ensures consistent, timely delivery

▶ Drawing on many years of experience in various product development projects, electronics specialist Melecs EWS strives for innovative and customized solutions within its electronic control unit (ECU) development and manufacturing process. The company's ECUs control and regulate actuators, and can be found in both passenger cars and trucks, with applications ranging from all-wheel drive, to water pumps, oil pumps and air-dryers. Innovative solutions – such as the connector sockets being integrated directly into the housing, and the housing itself being made of lightweight plastic and aluminum – ensure cost advantages. Moreover, the large quantity of generic designs that Melecs has at its disposal means that the company is able to provide custom-made ECUs quickly and at a fixed price

A detailed, step-by-step plan regulates the development process, and ensures all steps are completed to deadline. The process itself starts with the customer placing an order. Customer specifications are then either manually entered into the requirement management tool, DOORS, or directly imported through DOORS-Exchange. ASIL-classified (ISO26262) products are handled by a cross-discipline, independent, TÜV-certified safety manager. The subsequent steps include electrical (Pspice), thermal (6Sigma-ET) and mechanical (ProeMechanica) simulations, which are concluded through detailed work in hardware engineering (Altium Designer), software development and mechanical engineering (Wildfire Creo). This process also includes parts management and purchasing activities. This results in short



decision paths for new products, and flexibility in ongoing projects. Finally, rapid prototyping is used to create 3D prints or milling samples from original raw materials. As a result of strong supplier relationships, A-samples may be delivered as early as within eight weeks. The customer's approval of the A-samples initiates the actual development activities. The resulting B-samples are usually then built up with volume production equipment, while all mechanical parts are sourced from external suppliers. First samples of housing parts are optically measured and automatically compared with the CAD data. This facilitates a fast

process and the availability of an initial sample test report right from the day of sample delivery.

Next, the prepared samples are validated at Melecs' in-house validation center. The center provides environmental, as well as electrical and EMC tests. During this step, TÜV-certified quality managers also perform quality-related activities, such as FMEA and FMEDA analysis. The validation is followed by a report to Tier 1 and the subsequent sourcing of serial tools and test equipment. With this, the redesign loop for the production of the C-samples is initiated. After the production and EOL testing of C-samples in serial

production with serial equipment, the samples are validated at the in-house test center. Depending on specific OEM requirements, different external EMC labs are available for testing the specific OEM norms. The final step is formed by PAPP preparation and the production of D-samples, as well as run-at-rate tests in the TS16949-certified Melecs plants in Siegendorf, Austria; Győr, Hungary; or, from 2016, the company's plant in China. ©

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