SECOR
CHIPS & LIBRARY

Interview with founder and managing director Klaus Jungbauer

“Our concept is a paradigm shift”

SECOR has developed a radical new approach to the use of chips in cars: standard hardware replaces many specialized microcontrollers. In this interview, Managing Director Klaus Jungbauer explains exactly how the SECOR SDV CONCEPT (Software Defined Vehicle) works and what advantages it offers automotive companies in development, production and after sales.

Mr. Jungbauer, SECOR wants to fundamentally change the automotive industry with its SDV CONCEPT. Can you explain what is so special about this concept?

Historically, vehicle electrification has been function-driven - regardless of whether we are talking about engine control, transmission control or ABS, for example. This is controlled via individual controllers - electronic control units, or ECUs for short. And in these, a microcontroller - i.e. a chip - is used in which the function is programmed accordingly. However, this concept has now become outdated. This means that around 100 to 150 of these controllers are now installed in a vehicle. If they are to communicate with each other, this represents an enormous effort because there is no superordinate structure.

And what makes SECOR different?

We are focusing on the Software Defined Vehicle - SDV for short - with a zonal concept. This means that there is a central computer in the vehicle and it communicates with controllers that are installed in certain zones of the vehicle and control the functions there. This means that instead of 100 or 150 controllers, there are only five to ten controllers in the vehicle. There is only one power supply and one communication interface via the central computer. Everything else runs via the software.

What does that mean in concrete terms?

The ECUs contain a microcontroller consisting of several RISC-V cores, which we have completely redesigned. This can vary in performance, but is function- and pin-compatible. This means that it can basically be used for all possible functions in the car. Exactly which functions it controls is determined by the software.

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Is this not possible so far?

With conventional concepts, a monolithic software program is loaded into the microcontroller. This cannot be changed because there are no services that can be activated there. That's why we rely on Linux. Linux is a widely used operating system and thrives on the fact that services can be added or removed at any time. This is a fundamentally different approach than before and a clear paradigm shift.

What does this mean for vehicle manufacturers?

They are able to add new functionalities at a later date and change existing ones more easily. We decouple hardware and software and use a standardized interface to enable over-the-air software updates, among other things. The central computer receives and checks the data and passes it on to the zonal computer so that it can apply the changes. These can be new functions, but also bug fixes to close security gaps. As the structure, functions and pinout remain the same across chip generations, the software can also be continuously developed and does not have to be adapted from microcontroller to microcontroller.

However, functions can already be added to the current modern vehicles.

That is correct. But this only applies to functions that are already created when the car is purchased and are then activated. Completely new functions cannot be retrofitted to the chips. However, this is possible with our patent-pending concept. This means that the vehicle is already equipped for future applications. Our concept also offers OEMs considerable advantages in their development and production.

In what way?

The development of a vehicle goes through various phases. It starts with the concept phase. The E/E architecture is already defined in this phase, which also determines which chips are required. As development progresses, however, there are always new findings. And these may reveal, for example, that the performance of the chip already planned is not sufficient. Replacing this chip before the start of series production is hardly possible with conventional concepts, or only possible with a great deal of effort. This is different with our SECOR SDV CONCEPT. As the chips are pin-compatible, it is relatively easy to switch to a more powerful chip and install it shortly before the SOP - i.e. the start of production. What's more, working with standard chips also reduces the complexity for OEMs. They can plan and work with fewer different semiconductors. This simplifies parts lists and logistics.

So chips can also be replaced retrospectively?

I always like to compare this with IBM's x86 computers, which were widely used in the 1990s. They had a modular design and users could adapt them themselves. For example, it was relatively easy to expand the working memory independently. We are now transferring such a concept to the automotive industry. This also makes the use of vehicles more sustainable.

Why?

Because it will allow older vehicles to remain in operation for longer in the future. Thanks to pin compatibility, you simply replace the existing chips with new ones and the electronics are once again state of the art. This means that a vehicle with our technology could still be refurbished in 20 years' time with the latest hardware and the software based on it. This not only increases the utility value, but also the market value of the cars.

Which vehicle functions can be controlled with SECOR chips?

Basically all of them. However, we are currently concentrating on basic functions such as engine control, transmission control, brakes, battery management and steering.

Artificial intelligence is playing an increasingly important role in vehicle electronics. Are such applications also supported by the SECOR SDV CONCEPT?

Every microcontroller contains an FPGA - a Field Programmable Gate Array. This is the part of the hardware that is configured by software to map certain functions. And I can also instantiate a matrix multiplier there, for example, to accelerate AI functions. In this way, the SECOR SDV CONCEPT can also support future AI applications - purely via the software.

Many smart people work in the automotive industry. Why do you need a start-up like SECOR to bring such an innovative concept to the industry?

The forces of inertia at the OEMs and major suppliers are very strong. They don't simply throw an established concept, in which they have already invested many millions, overboard. You could make evolutionary changes to the existing E/E architecture, but that costs a lot of time and money. As a young company, on the other hand, we can take a green field approach and fully rely on the zonal SECOR SDV CONCEPT. We are getting positive feedback from the automotive industry, from experts in the development department to C-level managers. Some are already talking about a “game changer” for the industry.

How far along is SECOR with the SDV CONCEPT?

The concept is now fully developed and it is time for implementation, which we are currently pushing ahead with. We have already designed the controller so that it meets our expectations. We are now developing the matching software. We will be presenting the SECOR SDV CONCEPT to the public for the first time at embedded world 2025.

Who is actually behind SECOR?

SECOR is backed by a team of senior management and industry insiders with many years of experience in the automotive, IT and project management sectors.

And what units does the SECOR Group consist of?

On the one hand, there is SECOR Chips & Library GmbH. This develops the chips and provides the software that optimally supports them. The chips themselves are manufactured in parallel by contract manufacturers on several continents. This gives us flexibility in the event of geopolitical developments and strengthens the resilience of our customers.

And the second business unit?

That is SECOR Supply Chain Transparency GmbH. With this, we offer tools as software as a service that enable our customers to be better prepared for the next crisis than their competitors. For example, they can use our tools to identify supply chain risks and analyse how well they are prepared for potential bottlenecks or award components with a standardized resilience score.

What are you planning to do next after embedded world 2025?

We are already working with a development partner to implement the SECOR SDV CONCEPT CARS. Our goal is to present the roadworthy SECOR SDV CONCEPT CAR for the first time at the IAA 2025.

Thank you very much for the informative conversation - we are already looking forward to further updates, at the latest in September 2025 at the IAA. As a BMWK-funded start-up, we wish you continued success!