



Application solutions for
the automotive industry:

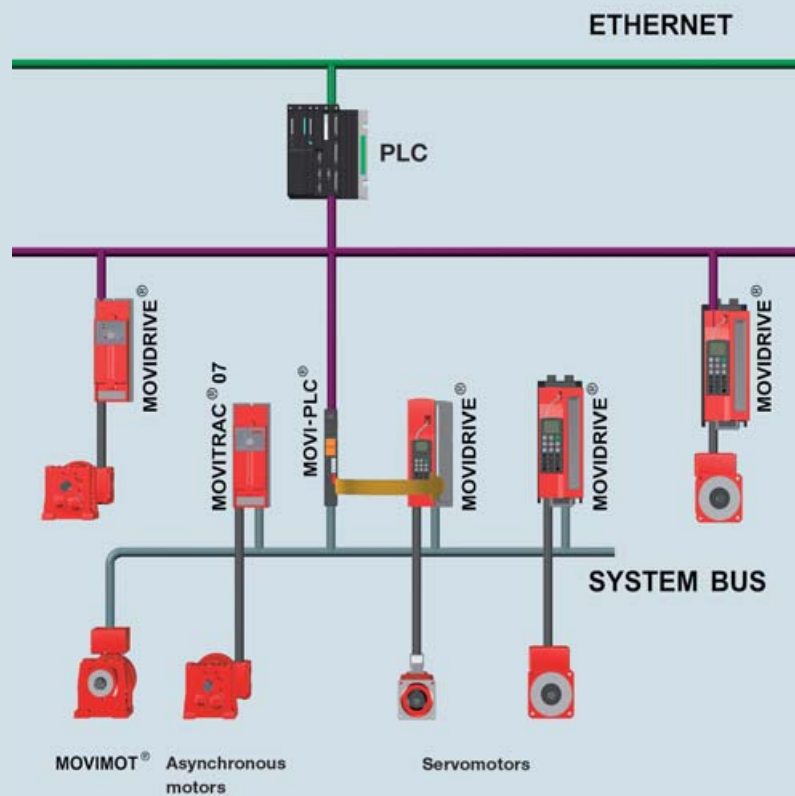
**Motion solutions
with MOVI-PLC®**

for storage and
retrieval units



Modular SRU Control

In automobile manufacturing plants, high-bay storage systems are used, for example, to store car body components temporarily according to type between the press shop and the adjoining welding and assembly lines. The high-bay storage systems are connected to other production facilities, for example, via overhead trolley systems or forklift operation. Within the storage system itself, storage and retrieval units (SRUs) work to ensure that parts to be put into storage, or rather the product carriers, are moved into the correct position in the store or to their discharge positions at the right time, synchronous to the neighboring processes.



i	Application description	Criteria
	<p>A higher level controller sends travel commands to the SRUs via PROFIBUS transmission paths. An SRU moves to the specified slot position or pick-up place and picks up a box or a pallet. It then transports the product carrier as quickly as possible to the storage or discharge point subject to jerk limitation. The fine positioning required to line up the SRU with the individual storage slots or feed and discharge points places exacting demands on the SRU controller due, for example, to thermal expansion in large storage systems or the exact positioning needed to transfer parts to an overhead trolley system.</p>	<ul style="list-style-type: none"> – Straightforward specification of travel commands – The storage and retrieval unit must execute travel commands independently – Modular and scalable solution – Fast cycle times – Cost-effective
?	Task	Techn. requirements
	<p>Reduce the workload of the higher-level rack controller using simple travel command information: Does the product carrier have to store or remove a product; in other words, which slot does the SRU have to move to? All axes involved in the sequence of motion must be included in one intelligent function module. The SRU should use target coordinate specifications to coordinate the motion sequences of the individual axes so that it can move to the required slot position and then pick-up or hand over the product carrier subject to jerk limitation. The higher-level controller no longer has to coordinate the axes; it simply has to specify the target coordinates.</p>	<ul style="list-style-type: none"> – Intelligent function module – Jerk-limited, coordinated motion sequences – Fine positioning of SRU using sensor signals via the SRU controller – Elementary axis functions (jog mode, referencing, positioning) – Engineering with standard tool in standard languages
✓	Solution from SEW-EURODRIVE	Success factors
	<p>An intelligent function module comprising gearmotors, MOVIDRIVE® B drive inverters and a MOVI-PLC® controller connected via an integrated system bus. MOVI-PLC® receives the travel commands from the higher-level controller and transfers them to the control program. Starting from the current position within the storage system, MOVI-PLC® calculates a jerk-limited travel profile and coordinates the SRU axes to reach the target slot. During this process, MOVI-PLC® not only evaluates the motor encoder; if required, it can also use distance sensors and external synchronous encoders. The streamlined interface with the higher-level controller enables the functionality of the SRU to be tested during startup fully independent of the higher-level controller. A standardized tool with programming languages to IEC 61131 and extensive libraries are available to help you with the functionality.</p>	<ul style="list-style-type: none"> – Intelligent function module with gearmotors, MOVIDRIVE® B drive inverters and a MOVI-PLC® controller – Programming to IEC 61131 – Modular control topology – Fast cycle times – Cost-effective solution

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