

# FVA

COMMITTS TO DEVELOPING STANDARDS FOR GEARBOX DATA WITH SEW EURODRIVE AND SCHAEFFLER

The software landscape in the field of gearbox development, simulation, and production is extremely diverse today. Although these programs perform different tasks, the data they use is largely identical. However, no industry-wide standard has been established for the exchange of gearbox data. This leads to high-cost, high-maintenance custom solutions and duplication of work that can be avoided.

“The goal is to be able to efficiently and effectively use different systems with their own computational focuses, such as *Bearinx*, *SIMPACK*, and *FVA Workbench*,” said Dr. Heinrich Bolz, head of calculation and simulation in gearbox development for SEW-Eurodrive.

FVA, the German Research Institute for Drive Technology, is committed to the goal of developing an industry-wide standard for the exchange of gearbox data. The interface will be developed in close cooperation with industry and research under the name REXS (Reusable Engineering EXchange Standard).

REXS defines an industry-wide uniform modelling and nomenclature for the gearbox and its components based on the detailed terminology of 25 of FVA’s project committees. With many years of experience and broad roots in industry and research, FVA is in a unique position to develop an industry-wide standard in this area.

For FVA partners SEW Eurodrive and Schaeffler, the focus is primarily on the exchange of gearbox data related to bearing calculation. However, instead of developing another specialized solution, both companies became involved in the FVA “Standardization

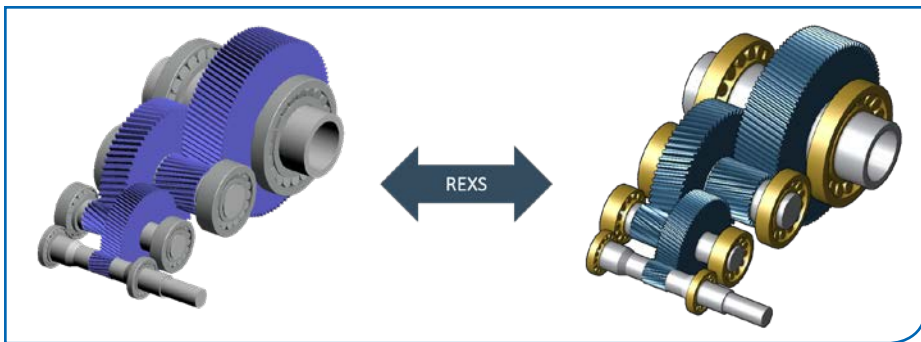


Figure 1 Three-stage parallel shaft gearbox from SEW in *Bearinx* and *FVA Workbench*.

of Gearbox Modelling,” research project, thus laying the foundation for the interface.

Their many years of experience with gearbox software will ensure that the developed concept is applicable for the industrial environment.

“For this purpose, we made a deliberate decision to develop a common standard with FVA, as this approach holds tremendous potential for the future,” said Bolz.

The first practical implementation of the REXS interface was the exchange of data between the *FVA Workbench*, Schaeffler’s *Bearinx*, and SEW’s *Wesilab* software.

The advantages of the REXS interface are clear: it reduces errors during the exchange of data and minimizes the effort required for communication between different programs. Development of a new interface is very labor intensive, therefore, the barriers to creating new links between existing software tools are high. A uniform interface can be used to efficiently implement such links, and to accelerate and improve the product development cycle.

“With REXS, gearbox data can be transferred quickly and reliably. Thus, the interface helps us to optimize our innovation processes,” stated Bolz.

“We can greatly reduce the effort for the technical coupling of CAD software

tools, and at the same time simplify the IT architecture,” added Stephan Evert, leader of CAE application development for research and development processes, methods, and tools at Schaeffler.

In REXS, the components of a gearbox are defined based on common parameters. The REXS specification includes everything necessary to define a gearbox model. Essentially, this includes the machine elements, their attributes, and the relations which are used to define the relationships between machine elements. The simple and generic structure of REXS makes it possible to depict individual components, assemblies, and complex gearbox structures.

The interface has an open architecture, so companies can define their own extensions without affecting the standard. Thus, the interface is suitable for exchanging data between standard programs as well for internal use with custom software solutions.

The first version of the REXS interface was released at the annual FVA Information Conference in November 2017. It is freely available under Creative Commons License (CC-BY-SA) at [www.rexs.info](http://www.rexs.info).

Anyone who is interested can learn more about the interface as well as how they can contribute to its future development. Schaeffler and FVA demonstrated the simple transfer of data between their *Bearinx* and *FVA Workbench* software packages using the REXS 1.0 interface live at their stand at the FVA Information Conference.

“REXS defines a very simple, extensible data structure that was created from its conception as a standard to be distributed via free licensing,” Evert said.

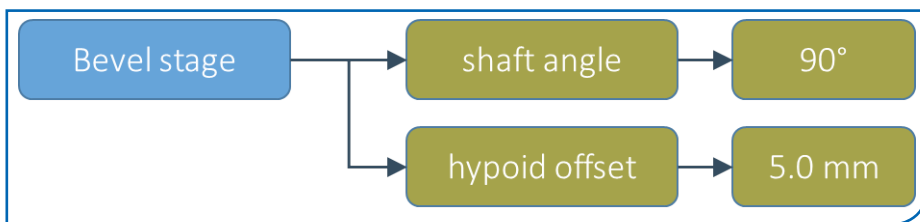


Figure 2 A bevel stage component with shaft angle and hypoid offset attributes.

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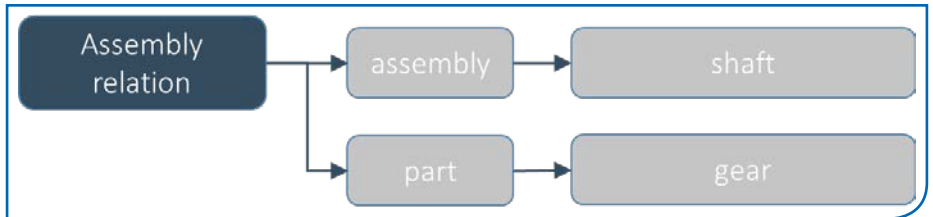


Figure 3 A connection between shaft and gear components via an assembly relation.

Although the current version of the interface is focused on the definition of gearboxes for calculation programs, the possibilities for future development are broad. According to the motto “If you want to achieve great things, you have to set high goals,” FVA’s vision for REXS is to develop an interface that can be used for all CAE powertrain applications.

“REXS is a real step toward new business models based on digital services, and can be used as a standardized data container for digital twins,” said Evert.

The *FVA Workbench* is a platform in which new concepts for the further development of REXS are already being implemented and tested for practical suitability.

From version 5.0, the *FVA Workbench* will always support the latest version of the REXS interface. This will make an

important contribution to the efficient exchange of data and provide users with reference software for the implementation of the interface.

“In order to take advantage of digitization, it is essential that data can be exchanged beyond system boundaries. Proprietary data formats do not help, as they increase complexity in the digital world,” said Norbert Haefke, managing director of FVA GmbH. “That is why we see the *FVA Workbench* not just as a calculation platform for the community, but also as a common data hub and enabler for digitization in drive technology.”

**For more information:**

FVA GmbH  
Phone: +49 69 6603-1663  
[www.fva-service.de](http://www.fva-service.de)

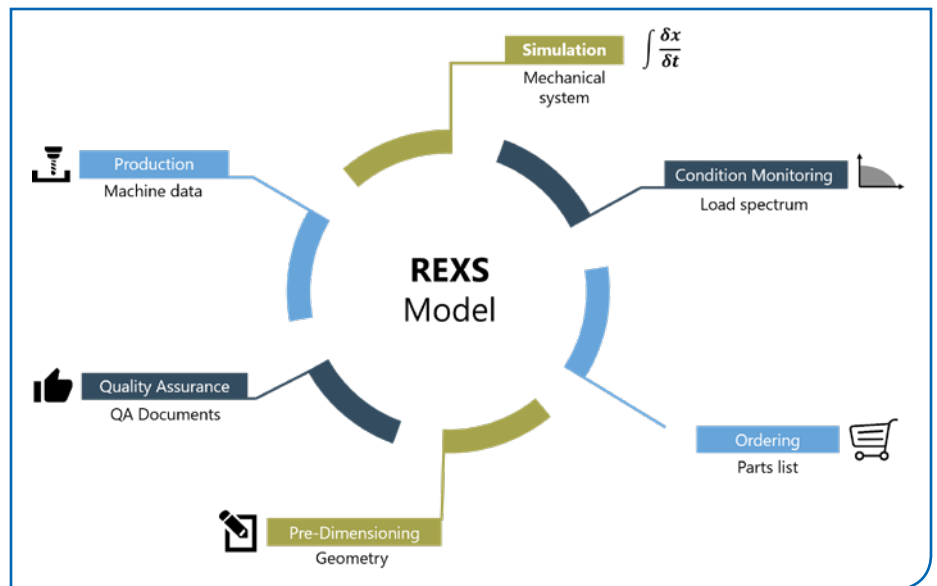


Figure 4 The vision for REXS is a standard interface for all CAE powertrain applications.

# B&R Automation

8LS SERVOMOTORS OFFER MAXIMUM TORQUE DENSITY

B&R Automation has taken the next step in development of its 8LS servomotors. Three newly designed size 5 motors in lengths A, B and C fill out the mid-range of the 8LS product line. Compared to their predecessors, they offer more compact dimensions and improved thermal design.

The new 8LS servomotors are highly dynamic and offer a high torque-overload ratio. They are suited for applications such as plastics processing, printing presses and servo pumps. With a flange size of 142mm, the new motors deliver excellent torque density. Customers profit from more power with smaller space requirements. They can be combined with any of B&R's many gearbox options and shipped as pre-assembled motor-gearbox combinations.

All motors from the 8LS series are offered with an optional digital encoder and optional safety functions. For the majority of speed variants, motors up to size 7 are also available with a single-cable solution that combines the cables for the motor and encoder. This reduces cabling to a minimum and substantially reduces installation costs.

## For more information:

B&R Automation  
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# Thomson Industries

EXPANDS ELECTRAK LINEAR ACTUATOR LINE

Thomson Industries, Inc. has extended the capability of its Electrak HD electromechanical linear actuator line to loads of up to 16 kilonewtons (kN) (3,600 lbs). This new offering delivers heavy load handling capacity comparable to hydraulic technologies but with greater controllability, smaller footprint and low maintenance.

"Hydraulic cylinder users are increasingly converting their hard-to-maintain, hard-to-control systems to low-maintenance electromechanical technology with onboard electronics," said Chad Carlberg, product line manager—Industrial Linear Actuators-Americas at Thomson. "By expanding our popular Electrak HD capacity to 16kN, we offer clean, compact and smart electromechanical replacement for hydraulic actuators in just about any size application."

Hydraulic systems require integration of many components, including a motor, pump, reservoir and hoses, as well as the cylinders themselves. Any control capability desired, such as position feedback or dynamic braking, requires additional equipment, and the fact that hydraulic systems are prone to leakage adds additional operating and maintenance costs.

Smart electromechanical actuators accomplish all operation and control functions with onboard electronics, dramatically reducing footprint, installation and maintenance costs. Electrak HD actuators simply connect to a power supply and PLC or other control source to bring the benefits of

onboard electronics to high load applications for construction and agriculture, material handling, and factory automation.

By expanding from 10kN (2,250 lbs) to 16kN and enabling that capability at stroke lengths up to 500mm (20 in), Thomson has also created a high performance and durable electromechanical actuator with onboard intelligence. It offers a minimum duty cycle of 25 percent among stroke lengths up to 500mm. For 16kN loads at those stroke lengths, Thomson also offers speed options up to at least 5mm/s (0.197"sec).

With enhanced functionality provided by an advanced onboard Electrak Modular Control System (EMCS) and its optional functions, the Electrak HD line offers a simpler method of control and communication, which reduces operating costs, requires less space and simplifies setup and installation. Optional out-of-the-box J1939 CAN bus communication enables control and monitoring, while optional low-level switching, end-of-stroke indication output, choice of analog or digital feedback, and a customer control interface provide additional versatility.

### For more information:

Thomson Industries, Inc.  
Phone: (540) 633-3549  
[www.thomsonlinear.com](http://www.thomsonlinear.com)



# Parker Hannifin

RELEASES ACRVIEW MOTION  
DEVELOPMENT SOFTWARE

Parker's Electromechanical and Drives Division North America is pleased to announce the release of *ACRView* version 6.4.2, which allows users to develop applications using the Windows 10 operating system from Microsoft. *ACRView* is a code-development tool that assists users of ACR controller and IPA drive products to program, debug, and commission their application. Several features are incorporated to assist both the novice and expert users in developing code. This motion development software is designed to please both existing users with requested new features and new users with an intuitive, step-by-step configuration wizard with up-to-date help files. *ACRView* 6.4.2 also supports Windows 7 and 8 and is available for free at the website below:

## For more information:

Parker Hannifin  
Phone: (800) 272-7537  
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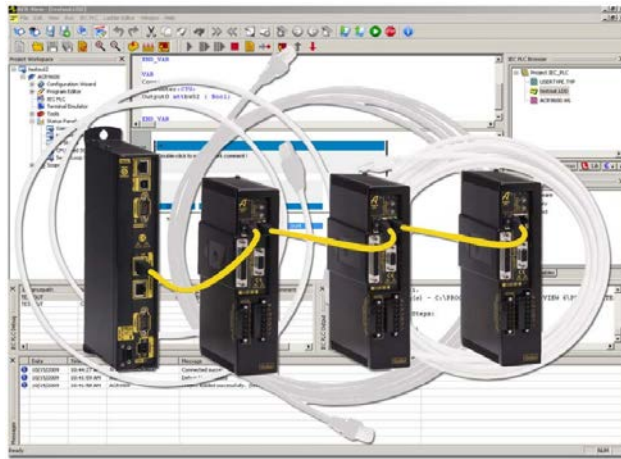
# Dana Incorporated

OFFERS AXLE/GEARBOX COMBINATION  
FOR DRUM ROLLERS

Dana Incorporated has announced a new, optimized axle/gearbox combination for small- and medium-sized single drum rollers that enables original-equipment manufacturers to reduce the package size of motors, pumps, and other hydraulic components.

Dana now offers a solution that includes the Spicer 192 rigid planetary axle, a Brevini CTU Series gearbox, and Brevini SH Series variable displacement hydraulic motors. This combination facilitates the use of an axle with a high reduction ratio, which increases the power available to the rest of the system and allows manufacturers to use more compact hydraulic components while maintaining optimal performance.

"The designs of single drum rollers



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are becoming increasingly compact and versatile to provide improved visibility, enhance operator comfort, increase productivity, and accommodate advanced emissions controls and other new systems,” said Aziz Aghili, president of Dana Off-Highway Drive and Motion Technologies. “This configuration illustrates the tremendous value Dana can deliver through our unique portfolio that combines Spicer drive systems and Brevini motion systems.”

Dana offers a wide range of products for both single and tandem drum roller applications ranging from 4.5 to 23 tonnes (5 to 25 tons), including rigid planetary axles, gearboxes, drum drives, fixed and variable displacement hydraulic motors, vibration motors, gear pumps, piston pumps, valves, and associated electronic controls.

## Varvel

OFFERS RS AND RT SERIES WORM GEARBOXES

The Varvel RS and RT series worm gearboxes demonstrate the company’s versatility and innovation for a variety of demanding applications.

To optimize costs and avoid the unnecessary use of bronze (a precious and therefore high-cost metal), Varvel began long ago to produce worm wheels made from two components, with bronze used only where really needed.

Varvel’s standard worm wheel features a hub normally made from cast iron and a bronze sleeve bearing the teeth that mesh with the worm. This solution produces worm gearboxes that are suitable for most normal applications. In certain areas of industry, however, this standard hub in grey cast iron may not be able to achieve the level of performance required.

Where greater mechanical strength is needed, Varvel offers worm wheels with a hub in spheroidal cast iron, an alloy that offers superior performance to grey cast iron and is therefore better suited to heavy duty use.

In applications in the food industry and in all areas associated with shipbuilding and the marine sector, cast iron hubs are unable to withstand the



### For more information:

Dana Incorporated  
Phone: (419) 887-3000  
[www.dana.com/offhighway](http://www.dana.com/offhighway)



highly oxidizing operating environment. Food processing machines have to be washed with highly aggressive sanitizing solutions. In addition, the atmosphere on or near the sea is too rich in chlorides for marine applications. To avoid the problem of oxidation in these sectors, Varvel produces worm wheels with a stainless steel hub.

For situations that demand greater mechanical strength, where spheroidal cast iron cannot be used, and for limited production series, Varvel also makes hubs in normalized or hardened and tempered steel.

Worm wheel customization and adaptation options also extend to the bronze sleeve in which the teeth that mesh with the worm are cut. The normal material for this part is leaded bronze, an alloy that remains malleable throughout the fusion process and that therefore reduces production times while improving efficiency. Under normal conditions, leaded bronze gear sleeves satisfy the needs of most common applications.

Here too, however, different

circumstances may require customized and specific solutions. Variations in performance can be achieved by changing the bronze alloy from which the sleeve is made. Nickel bronze gear sleeves are used for higher torque transmission, to improve resistance to compression and impact and to combat corrosion. In applications involving larger worm wheels and wherever particularly high loads and stresses lead to violent impacts, aluminum bronze (also known as BRAL) sleeves can be used. Gear teeth made from this bronze alloy are less likely to break under the effect of sudden, violent impacts, and therefore guarantee less machine downtime for repairs and replacements.

### For more information:

Varvel USA LLC  
Phone: (770) 217-4567  
[www.varvelusa.com](http://www.varvelusa.com)