
EXPERT INTERVIEW

PxG[®]



YOUR PxG® EXPERTS

1.



2.



3.



4.

WHY PxG® PLANETARY SERVO GEAR UNITS SIMPLY OFFER GREATER VALUE

What sets the new PxG® planetary servo gear units from SEW-EURODRIVE apart? Which application requirements are they optimized for? In our interview, our experts answer this and other questions, and offer interesting insight into the world of research and development at SEW-EURODRIVE that is unique on the market.

1 Dr. Markus Wöppermann
Head of the Precision Gear Units development group

2 Philipp Abele
Precision Gear Units Commissioned Design development group

3 David Bohny
Market Manager for Drive Mechanics, Standard Gear Units and Servo Gearmotors

4 Christof Völkel
Product Engineer for Standard Gear Units and Servo Drive Technology

EXPERT INTERVIEW

1 →

HOW DID YOU SET ABOUT DEVELOPING THE NEW PxG® PLANETARY SERVO GEAR UNITS?

Bohny: We started with a simple document that outlined an agreed framework between sales, market and development. It included the target portfolio and jointly agreed metrics that were, however, quite deliberately not set in stone. This approach created the perfect degree of flexibility to start again from scratch. In this way, we were able to flexibly balance technical possibilities with benefits for customers, even during the development phase, meaning we could also respond to new market requirements. The special features of this project included involving lead customers, who were provided with test drives at a very early stage of development so they could actively help shape the portfolio.

2

WHAT WERE THE REASONS FOR TAKING THIS APPROACH?

Vöikel: Many customers know and value SEW-EURODRIVE because of the familiar asynchronous drive technology that they frequently use in the stationary conveyor lines outside their machinery. As soon as our competitors had to deal with major supply problems, these customers came to us and asked about drives from SEW-EURODRIVE that

would be suitable for the machines themselves. However, the products we previously had available were not always sufficient for the requirements there. Our customers value our comprehensive modular system. There are very few other drive manufacturers with such a wide-ranging modular concept and the expertise that goes with being able to offer everything from a single source. This is one of SEW-EURODRIVE's greatest market advantages.

”

There are very few other drive manufacturers with such a wide-ranging modular concept and the expertise that goes with being able to offer everything from a single source.

3

WHAT WERE THESE REQUIREMENTS, AND WHAT WAS THE PRIMARY GOAL OF THE PROJECT?

Wöppermann: In line with market demands, our primary focus was on achieving the highest possible power density in the smallest space while also maintaining maximum consistency for all sizes. With the help of a digital twin, it was ultimately possible to make optimum use of every single cubic millimeter in the gear units.

Bohny: Another of our goals was to make it immediately obvious from the outside that SEW-EURODRIVE is breaking completely new ground with its PxG® planetary servo gear units. We wanted surfaces that are as smooth and offset-free as possible, while also adopting a hygiene-friendly design. The solution we found was a round steel housing with a specially treated surface without any additional painting. This both provides an elegant finish and offers great advantages for machinery in the food industry in particular, as there is no paint to chip off and land in the food product or cause contamination.

4

THE PxG® PLANETARY SERVO GEAR UNITS HAVE A COMPLETELY NEW FORM OF NAMEPLATE. WHAT IS SPECIAL ABOUT IT?

Wöppermann: The unique nameplate tape is one of our design highlights. Three QR codes enable a connection to the digital world with further, in some cases customer-specific, features, almost regardless of the installation position. A symbol similar to a tachometer makes the performance class of a gear unit immediately clear. The performance class is also part of the product name – the "x" in PxG® is a placeholder for this. The brand name and nomenclature therefore clearly show that SEW-EURODRIVE has created something completely new and can supplement the portfolio for the future if required.

”

In line with market demands, our primary focus was on achieving the highest possible power density in the smallest space while also maintaining maximum consistency for all sizes.

5

HOW WAS IT POSSIBLE TO DEVELOP SUCH A PRODUCT FROM SCRATCH IN WHAT IS, BY MARKET STANDARDS, A RELATIVELY SHORT PERIOD OF TIME?

Wöppermann: Hardly any of our competitors have such a large team of engineers and a comparable division into technology and development groups as we do at SEW-EURODRIVE. While the development groups were able to focus completely on the individual components and the modular system, the technology groups concentrated on the gear unit's core physical issues, such as bearings, lubrication and seals.

6

WHAT DID YOU DO DIFFERENTLY IN TERMS OF THESE CORE ISSUES OF BEARINGS, LUBRICATION AND SEALS?

Abele: Together with SEW-EURODRIVE's technology partners – renowned major suppliers who are also among the market and innovation leaders in their fields – these points were considered from new angles, calculated, simulated, and improved significantly. From the digital twin and the Premium Sine Seal oil seal to SEW GearOil, the new PxG® planetary servo gear units proved to be a technological driver for other products, too, such as the Generation X.e industrial gear units. These measures – some of them exclusive – make it possible to improve the service life of gear units considerably.

”

The unique nameplate tape is one of our design highlights. Three QR codes enable a connection to the digital world with further, in some cases customer-specific, features, almost regardless of the installation position.

7

DID YOU DRAW INSPIRATION FROM OTHER MANUFACTURERS AND INDUSTRIES DURING THE DEVELOPMENT PROCESS?

Wöppermann: Yes. For the nameplate tape, for example, we used a film with adhesive that is similar to what is used in the automotive industry. It is suitably robust, and resistant to heat and wear, for instance. These are the ideas you come up with through external collaboration in technology groups and working groups, where you come across staff from other companies and industrial sectors and share experiences of how they have solved similar problems.

”

Hardly any of our competitors have such a large team of engineers and a comparable division into technology and development groups as we do at SEW-EURODRIVE.

8

SEW-EURODRIVE IS KNOWN FOR ITS MODULAR PORTFOLIO. WHAT IS SPECIAL ABOUT THE PxG® MODULAR SYSTEM?

Bohny: We have a relatively large modular system for the PxG® planetary servo gear units. In fact, it's really a modular system within a modular system. There are various design levels within the different performance classes. However, if we look at the components, they are interchangeable throughout. For example, performance classes 5 and 7 both have a size 52. This flexibility means individual components can be selected according to the requirements of the application.

9

WHAT MAKES THIS PARTICULAR DIGITAL TWIN SO IMPORTANT FOR USERS?

Abele: The digital twin concept is based on a verified database set up by the gear unit engineers during the product development process that will continue to be expanded in the future during the further development of the technology. This gear unit data is the calculation result of an automated generation process. The result is an intelligent modular system that offers billions of gear unit variants thanks to the consistent installation space interfaces and the resulting reusability of a few hundred standard and finished parts.

”

From the digital twin and the Premium Sine Seal oil seal to SEW GearOil, the new PxG® planetary servo gear units proved to be a technological driver for other products, too.

10

THERE ARE VERY TIGHT TOLERANCES IN THE PxG® PLANETARY SERVO GEAR UNITS. AT THE SAME TIME, CUSTOMER REQUIREMENTS CAN DIFFER GREATLY DEPENDING ON THE APPLICATION AND MACHINE. WHAT IMPLICATIONS DOES THAT HAVE FOR PRODUCTION AT SEW-EURODRIVE?

Völkel: To ensure the PxG® planetary servo gear units maintain the necessary high level of precision while they are in use at the customers' premises, we also have to be particularly accurate and clean in our work during their manufacture. The clean room conditions in our former electronics plant proved ideal for this purpose. To clean the components, for example, we have washing machines there that are on a par with or far beyond the level found in the automotive industry.

But that's not all. While PxG® planetary servo gear units are put together using standard modular components, each individual gear unit is tailored precisely to the customer application. In other words, production follows the principles of Industry 4.0.

P

11

WHAT SHOULD CUSTOMERS LOOK OUT FOR IF THEY NEED PxG® PLANETARY SERVO GEAR UNITS FOR DIFFERENT MOUNTING POSITIONS?

Bohny: That's what's so special about the PxG®. Unlike our standard 7-series gear units, the very compact and symmetrical installation space of the PxG® means it always needs the exact same oil fill volume. Users can therefore deploy their PxG® planetary servo gear units flexibly in the most suitable position and alignment. This offers the advantage that there is no need to keep a spare gear unit in stock for every possible mounting position.

12

WHAT DO OUR CUSTOMERS THINK OF THE NEW PxG® PLANETARY SERVO GEAR UNITS?

Völkel: Users have been very impressed by the features such as the stiffness, clearance and synchronized operation and the high quality of the gear units. We have also observed that our customers are increasingly placing great value on the look and machine design. And what the mechanical engineers do on a large scale is

also becoming more important for us in the small things. Performance has long since been joined by looks when it comes to priorities. We have also received very positive feedback about noise levels. Occupational safety is a major consideration and noise protection is a top priority. Volume is not the only issue in this regard, but also loudness – the feeling of how a drive sounds.

PxG® planetary servo gear units are thus not only very quiet, their noise frequencies are also perceived as very pleasant. PxG® planetary servo gear units are a pleasure to listen to for anyone familiar with conventional drive technology products. This is also reflected in our customers' feedback.

”

The intelligent modular system offers billions of gear unit variants thanks to the consistent installation space interfaces and the resulting reusability of a few hundred standard and finished parts.

13

WHAT IS IT THAT MAKES THE PxG® PLANETARY SERVO GEAR UNITS SO QUIET AND PLEASANT IN NOISE PERCEPTION TERMS?

Wöppermann: This has a lot to do with what we have done in the field of tribology. For example, we have not only optimized the gearing surfaces and gear geometry, but the lubricants, too, which were developed exclusively in collaboration with us.

”

The very compact and symmetrical installation space of the PxG® means it always needs the exact same oil fill volume. Customers can therefore deploy their gear units flexibly in the most suitable position and alignment.

G

X



SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Str. 42
76646 Bruchsal/Germany
Tel. +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com

→ www.sew-eurodrive.com