

THREE MAJOR TRENDS THAT WILL IMPACT THE POWER TRANSMISSION SECTOR

The global electric transmission and distribution equipment market is expected to reach an estimated \$312.8 billion by 2026, with a compound annual growth rate (CAGR) of 4,8% over this period, according to a recent [report](#). But like every other industry, this one too is a subject of disruption.

Until recently, the original equipment manufacturers (OEMs) took care of everything from conveyors to automated storage and stretch wrapping equipment. They were the ones that chose the power transmission equipment needed for a specific job and assured that the equipment was reliable and cost-effective. Therefore, business owners or managers did not have much to do with it. Let's be honest: what you need to do is just turn on the power transmission equipment. After that, it runs by itself. Continuously. Easy for you, right?

But some trends have begun to conquer this market. And even though the operating specifics haven't changed, some major shifts are prone to change the power transmission equipment as we used to know it. Let's have a look at three of them.

END USERS ARE BECOMING INVOLVED IN THE POWER TRANSMISSION SPECIFICATION PROCESS

Power transmissions are the driving equipment behind countless machines and units over a wide range of applications and industries. Complexly functioning, yet simple looking, power transmissions are used in mechanical drivetrains to transmit or translate movement into usable functions. But now, the one-size-fits-all approach is not working any more. The demand for custom power transmission solutions based on application is on the rise. Business owners want equipment that's more integrated, compact, energy-efficient, and easier to install.

But what percentage of end-users are actively engaged in power transmission decisions? "Less than 5% are anywhere nearly fully engaged. Probably 15% to 20% are on the path", [says](#) Dan Zachacki, product manager for servo products at Mitsubishi Electric Automation. He mentions that the greatest activity is with larger companies, especially those in consumer package goods and automotive. "With smaller and medium-sized companies, it is very much hit or miss," adds Zachacki.

Even though these numbers do not seem big, it is clear that this trend is gaining some momentum. Manufacturers start to fulfill custom transmission requests for a diverse customer base - anything from small gearbox adaptations to the design and manufacture of an innovative new power transmission for pioneering hybrid drive technologies.

THE TECHNOLOGY OF POWER TRANSMISSION IS CHANGING

This kind of customization is possible thanks to technological advancements. The digitization in this sector is [possible](#) thanks to the integration of smart sensors, smart meters, connected devices, Internet of Things (IoT), and other digital network technology systems and solutions.

Future power transmission equipment will evolve to become smarter, more decentralized, and more connected. This evolution will bring great improvements such as increased reliability, security, environmental sustainability, and asset utilization in addition to enabling more control, real-time optimization of consumption and production, fewer carbon emissions, greater choice, seamless interaction with customers, always-on connection, higher transparency, better reliability, and security, among other benefits.

The IoT adoption is gaining momentum thanks to 5G technology that enables utilities to move data from smart meters, sensors, and other devices to the cloud, where they can more effectively and efficiently analyze and act on it.

THE POWER OF COLLECTING AND ANALYZING DATA

Thanks to all this technology, it will be possible to collect and analyze a huge amount of data. The Internet of Things (IoT) and the cloud are the next big thing in this area, given the fact that data is collected at the point of use and shared across networks that monitor performance and condition of motors and other equipment.

This will allow a better understanding of the actual usage of the equipment and the real needs of the customer, paving the path to a more efficient customization and greater control.

5G technology is a major key factor in developing this kind of smart equipment, because it enables utilities to move data from smart meters, sensors, and other devices to the cloud, where they can more effectively and efficiently analyze and act on it.

Here are some of the most compelling areas where 5G can add value, according to a recent [Deloitte](#) survey:

- IoT – 5G can help utilities decentralize energy infrastructure and manage the grid more nimbly as they connect devices and assets through the Internet of Things.
- Smart grid modernization, automation, and control – 5G’s low-latency capabilities allow for the adoption of more smart devices and interconnectivity of the grid.
- Utilities in the cloud – 5G helps drive cloud adoption, which can improve efficiency through always-on availability and faster access to more data, assets, and systems.
- Cybersecurity compliance considerations – As utilities integrate a cloud infrastructure across their IT environment, 5G can assist in integrating operational workloads, such as Bulk Electric System Cyber System Information (BCSI).
- Digital twins – Digital twins allow utilities to visualize and control resources from an interactive one-to-one map. High-speed 5G data transmission can improve response times and overall system management.
- Unmanned aircraft – 5G can enhance unmanned aircraft system (UAS), or drone, programs by establishing a permanent and reliable connection and faster data transfer.

As a result of these changes, end users will be able to make the most of the equipment with these improved power supplies. Ultimately, end users will also be able to collect data from each individual component within the facility and to visualize the performance of the facility as a whole. After that, they will be able to identify problems or anomalies and to make adjustments, if needed, in order to optimize and increase productivity.

EXAMPLES OF CUSTOMIZATION OF POWER TRANSMISSION EQUIPMENT

Worm gears continue to be used extensively today but they experience efficiency reductions due to their design, which limits where they are typically mounted on conveyors. For higher efficiency, the manufacturer Regal Rexnord suggested a helical hypoid gear box paired with a compatible motor. The end game is to make power transmission as compact as possible while maximizing energy efficiency without sacrificing integration or ease of installation.

Meanwhile, Lenze has come up with a smart conveyor calculator to help reduce total motor costs and customize decentralized solutions. It takes into account the controls cabinet configuration, length of conveyor, number of conveyor modules and the length of the cable from the drive to the cabinet. The calculator helps maximize power transmission design, especially with Lenze’s Smart Motor. Known as the m300, the Smart Motor’s freely adjustable speed reduces the number of different drive versions by 70%. It also reduces wiring requirements and can be operated from a cell phone.

Sources and further reading

- A Fresh Look at Power Transmission – [Supply Chain Management Review](#)
- Global Power Transmission and Distribution Equipment Industry – [ReportLinker.com](#)
- Guidance on Energy Transmission Infrastructure and EU nature legislation – [European Commission](#)
- 2022 power and utilities industry outlook – [Deloitte](#)