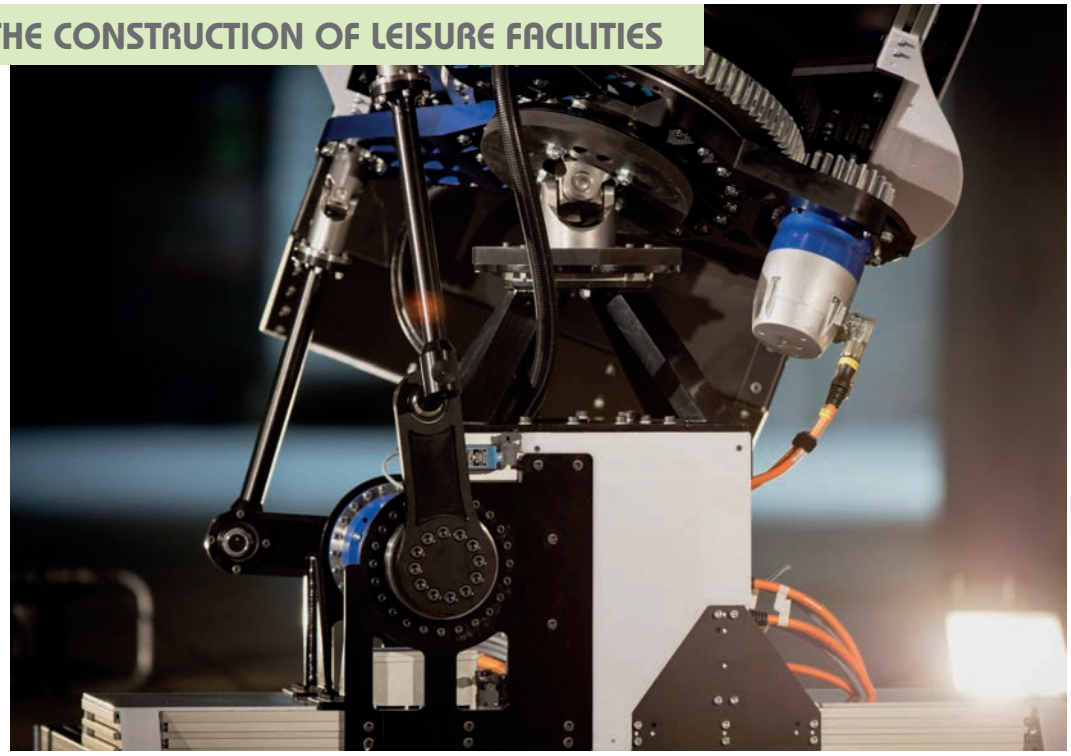
SUSTAINABILITY IN THE CONSTRUCTION OF LEISURE FACILITIES



Sustainability has played an important role in the leisure industry for several years now: Rainwater treatment, reduction of plastic waste, or the switch to renewable energies are exemplary approaches that many operators are establishing or have already established with their attractions. But sustainability already starts in the construction of technical components for a park or a ride. Four examples show how optimisations in the construction of leisure facilities can lead to more sustainability:

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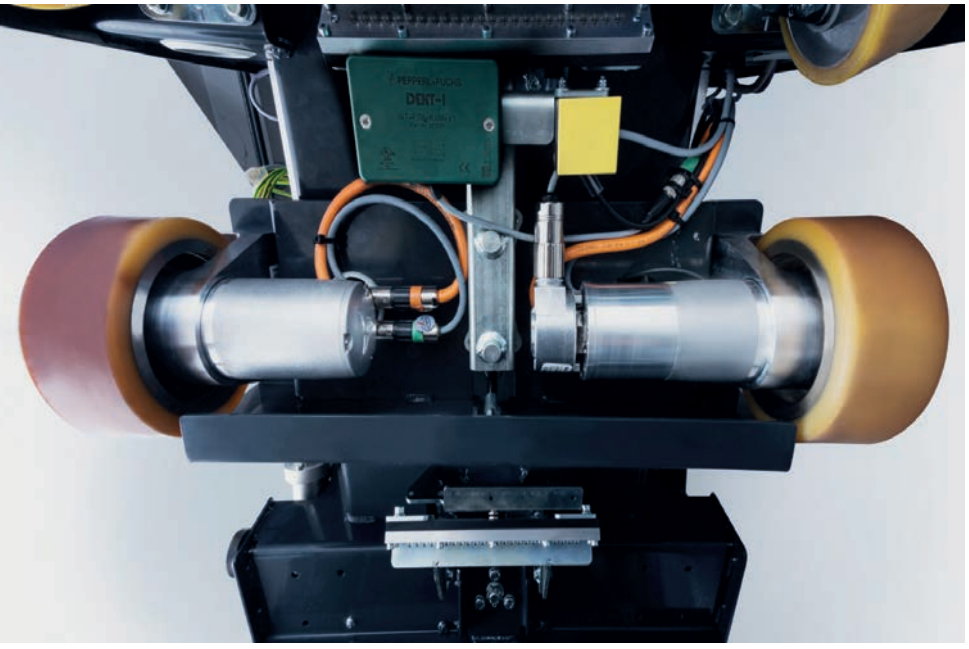
Photos: Wittenstein SE

1) Higher Effectiveness and Energy Efficiency

A higher effectiveness and the connected saving of energy are the most obvious forms of long-term sustainability improvement. It is important to ensure a good effectiveness of all technical components in the drive. The right choice of gearbox and motor technology plays a decisive role here; planetary gearboxes and synchronous servo motors in particular have efficiencies well above 90 %. This requirement for efficiency in no way detracts from the high demands for smooth running, positioning accuracy and feed force; the technologies mentioned even reinforce these.



2) Modularity supports Sustainability

Positive effects for sustainability can be achieved not only in terms of energy optimisation, but also in the design of a drive system. For example, it is advantageous to design the entire system as modularly as possible. During maintenance and modernisation, individual components can be removed more easily and replaced if necessary. In addition, a modular design offers the advantage that various components can be replaced after a certain time and exchanged for newer models. In this way, a machine such as a ride or animatronic can always be operated with newly developed low-wear and energy-efficient technology.

3) Minimising of Technical Components

Especially in the construction of amusement rides, minimisation or downsizing of components is an important means of building more sustainably on the one hand, and increasing economic efficiency on the other. In many cases, it is possible to replace a motor-gearbox unit that has already been selected in terms of design with a more energy-efficient component in a smaller size without compromising performance. This helps to save assembly space and, in moving machine structures such as Powered Coasters, Flying Theatres or carousels, to reduce the accompanying weight and thus the kinetic energy to be expended. Energy savings of up to 20 % can be achieved when using highly compact servo actuators. Then, every ride becomes a little bit more sustainable – in years of continuous operation, these savings become quite noticeable for the operator in monetary terms.

4) Smart Transmissions in the Industrial Internet of Things

In the Industrial Internet of Things (IIoT), mechatronic drive systems with sensors independently record information and send it to a receiver. In this way, data such as temperature, operating time, vibration or acceleration can be retrieved. With the help of this information, anomaly analyses will be possible in the future. Machine learning methods are used to evaluate the data set for deviations in individual processes or component behaviour. With these findings, wear can be detected at an early stage and failures of attractions can be avoided by replacing damaged components. The operation of the facilities thus becomes more sustainable economically and environmentally, because those components are ordered and delivered that will have to be replaced in the foreseeable future.

Conclusion: Sustainability runs through the Entire Technical Components

Sustainability in the leisure industry concerns more factors than an operational focus on environmental protection. Sustainability should already be the focus in the construction of the attraction. In this way, great effects can be achieve in the long term – incidentally not only for the protection of nature, but also in terms of economic efficiency. Sustainable construction and operation means not only dealing responsibly with resources such as materials or energy, but also keeping an eye on sustainable positive effects on operating efficiency. Both together result in the future viability of the company, just like the entire industry, which is already facing major challenges due to factors such as a shortage of skilled workers, rising energy prices, or shortages in material procurement. ■

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The author of this guest article is a Business Development Manager, responsible for the Attractions Industry Division, at Wittenstein SE. The company is represented in more than 45 countries and has around 2,800 employees worldwide, generating sales of €461 million in the 2021/22 financial year. The Wittenstein Group (*www.wittenstein.de*) develops, produces and sells high-precision servo drives and linear systems, servo systems and motors as well as cybertronic drive systems, among other things, for mechanical and plant engineering, aerospace and oil and gas exploration. Nanotechnology and software components complete the portfolio. ■