

developing an innovative, model-based process and content enabling port businesses to identify suitable measures for boosting their energy efficiency and use of renewable energies. The process comprises various newly developed tools – such as a catalogue of sustainability measures, an energy simulation tool, life cycle assessment models and efficiency models – with which energy sustainability measures can be analysed as comprehensively as possible and from four key perspectives: energy, ecology, economy and operations. Overall, with the aid of this structured process and these tools, it is possible to come up with a tailored road map for the efficient attainment of individual sustainability targets of any port.

Cookie

In the world's export nations, the demand for empty containers far outstrips their availability due to imbalances resulting from the flow of goods. This is causing frequent bottlenecks when it comes to supplying empty containers because, until now, the necessary upstream process for identifying and remedying any damage has had to be conducted primarily manually by highly skilled experts. The result is an increased potential for error, as well as delays caused by the semi-digital process steps previously employed. Furthermore, the necessary experts are not always available, which further diminishes the reliable scheduling of repair jobs and availability of repaired containers, resulting in unnecessary stockpiling and excessive repositioning.

The IHATEC project Cookie, funded by the Federal Ministry of Transport and Digital Infrastructure, therefore seeks to optimise the process of damage identification and assessment in the empty container depot with the aid of artificial intelligence. The project name Cookie stands for "COntainerdienstleistungen Optimiert durch Künstliche Intelligenz" (container services optimised by artificial intelligence). Together with our research partner, the Fraunhofer Center for Maritime Logistics in Hamburg-Harburg, the aim is to develop an adaptive algorithm for image recognition processes. The aim is to help inspectors identify and assess any damage to empty containers with the aid of machine learning methods (specifically, deep learning) and the explicit linking of CEDEX codes, which are subject to syntax rules. The integration of an AI-based system for identifying damage is expected to reduce error rates, increase the uniformity of damage assessments and improve process speed in order to further boost efficiency and achieve reliable availability planning for containers within the processes at the empty container depot.

BVLOS

HHLA Sky has developed a globally scalable, end-to-end drone system that allows the secure operation of drones beyond the visual line of sight (BVLOS). The industrial drones are extremely robust, very light and equipped with safety technology. Customers can integrate the system into their own business processes independently, or use it as a service operated by

HHLA Sky. HHLA Sky has also developed software and related information systems. The HHLA Sky software can be purchased for use on a licensed basis. The control centre is used operationally for drone flights, including the inspection of container gantry cranes at the HHLA terminals.

HHLA Sky is also contributing its expertise to the UDVeO (urban drone traffic efficiently organised) research project. The project is funded by the Federal Ministry of Transport and Digital Infrastructure (BMVI) from 2020 to 2022, under the leadership of the Helmut Schmidt University in Hamburg. The aim of the project is to develop the basis for a drone management system for efficient and safe transport within densely populated urban spaces. The focus of development in 2020 was on controlling the drones and a live-streaming application.

Modility booking portal

Together with eleven partners in the transport and freight-forwarding sector, HHLA has initiated the development of a new booking portal for intermodal transport. As a booking and placement portal, Modility seeks to connect intermodal operators' available transport capacities with the transport needs of freight forwarders and to strengthen intermodal transport as an efficient, environmentally friendly transport system.

Purchasing and materials management

Purchasing is a shared service provided by the HHLA Group's management holding company in Hamburg. HHLA Group purchasing supports corporate strategy by means of its professional management of procurement activities. The aim is to establish a consolidated supplier base that is characterised by maximum value added, top quality and optimum life cycle costs.

HHLA's supply chains comprise capital goods (such as port handling equipment) as well as consumables and other services (such as maintenance). The overwhelming majority of suppliers are from Germany and other European countries.

The strategic purchasing function supports and advises Group companies as part of its holistic management of product groups, suppliers and contracts so that the service and performance requirements of internal customers are met as completely as possible. Market developments relating to new technologies, innovations and the service performance of specific suppliers are considered in close cooperation with the operations and technology departments. In this regard, the purchasing department ensures that all Group requirements for the procurement processes are observed in accordance with the framework guidelines. These guidelines are binding for all employees.

In order to develop viable future solutions for port infrastructure, HHLA remains committed to its strategic and collaborative partnerships with selected suppliers while taking into account both economic and ecological aspects. Products, facilities and processes are systematically enhanced by drawing on the potential of digitalisation.

When selecting partners, great importance is attached to reliability, quality, innovative strength, cost structure, economic stability, sustainability and compliance. Compliance with these criteria is monitored by an IT-based supplier management system. All suppliers undergo this process, especially potential new suppliers. This also facilitates a continuous internal assessment. Strategic suppliers are evaluated annually by their internal customers and departments. The evaluations include experience on first contact as well as information about project procurement and processes. This information is fed into the “key figures cockpit”, which provides the key facts and figures of a supplier and can be used as part of the supplier management system in order to prepare for negotiations and annual discussions.

In 2020, equipment and energy accounted for 35.7 % of the Group’s managed purchasing volume, while information technology (IT) accounted for 14.3 %, construction for 28.6 %, MRO (maintenance, repairs and operations) for 13.0 %, and other indirect services for 8.4 %. The total managed purchasing volume amounted to approximately € 197 million.

The extensive reorganisation of the department initiated in 2018 and the continuation of the process, into which the department’s employees are closely integrated, revealed the need for adjustments in the product group portfolio. A comprehensive project for the revision of the existing product groups was launched midway through the year. As a result, there will be three main product groups in future for which the distribution of purchasing volumes is disclosed: technical purchasing (generally comprising the previous equipment & energy and MRO groups), construction purchasing, information technology (IT) and indirect purchasing. Similar to the previous main product groups, the managed purchasing volume in 2020 was therefore divided as follows: technical purchasing 48.8 %, construction 28.7 %, IT and indirect purchasing 22.5 %.

We are continuing to drive the automation of purchasing processes for day-to-day requirements. In the reporting period, 48.1 % of all purchasing processes were handled fully automatically by means of the systems (previous year: 32.9 %). This enables us to streamline processes and ensure both non-bureaucratic procedures and compliance with process standards. By systematically continuing these optimisation and automation measures, further automation potential is expected for

the 2021 financial year. Among other things, this potential is to be achieved by replacing the current e-procurement system with a more modern tool.

In the field of process automation, a fuel supply project initiated in 2019 was successfully completed. Processes, purchasing volumes and supplier structures across all companies were carefully analysed and restructured. The procurement process was switched over to a VMI (vendor-managed inventory) concept, which means that the supplier bears the responsibility for inventory and coordinates supplies independently. In addition to lowering procurement costs, the revision of these processes has streamlined and automated the system, resulting in lower process costs.

After mainly focusing on optimising the key procurement topics in 2019 and 2020, the purchasing department will concentrate again on strategic alignment and modelling the entire process chain in 2021. The emphasis will be on product group and supplier management. In terms of processes, the main focus will be on restructuring the procurement of capital goods, as well as procuring indirect goods and services.

Sustainable performance indicators

Direct and indirect energy consumption by HHLA and its companies were as follows in the year under review.

Direct and indirect energy consumption and supply

	2016	2017	2018	2019	2020
Diesel, petrol and heating oil in million liter	26.6	27.4	28.4	28.0	24.1
Natural gas in million m ³	2.4	3.6	4.4	8.0	9.1
Electricity ¹ in million kWh	139.6	135.6	135.9	123.2	117.0
thereof from renewable energies	73.2	82.8	78.9	78.7	86.2
Traction current in million kWh	150.0	157.5	181.4	185.0	191.9
District heating in million kWh	3.6	3.6	3.7	3.6	3.1
District heating supply ² in kWh	–	–	10.9	33.3	32.8

Consumption of natural gas, traction current and district heating in 2020 is based on preliminary and estimated figures.

¹ Electricity without traction current

² Generated by a highly efficient combined heat and power generation plant (CHP) based on preliminary figures

For more information about sustainability, please refer to the [Sustainability](#) section of the Annual Report.