

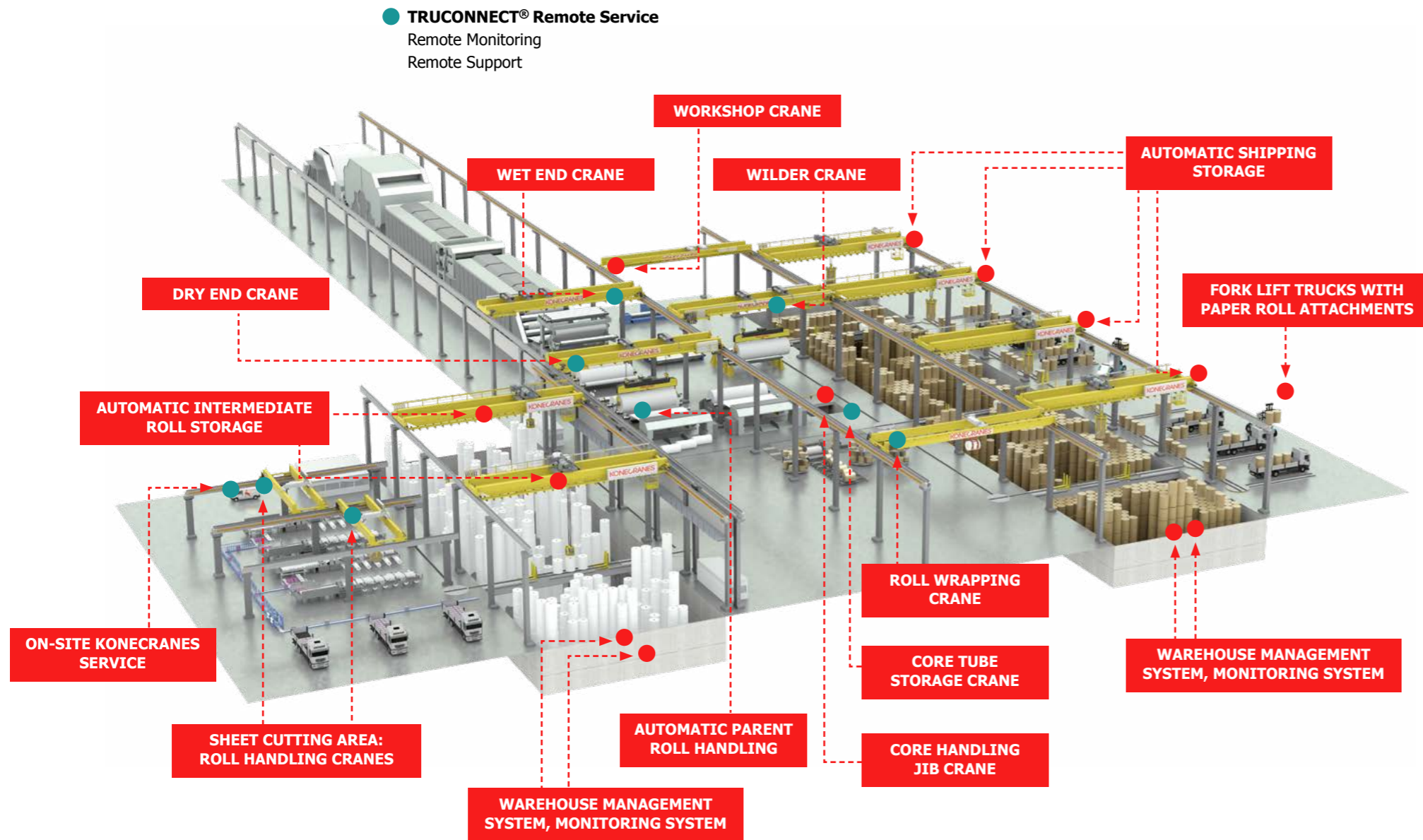
PAPER WAREHOUSES

Automatic storage and retrieval system



Better storage handling

The Konecranes Automatic Storage and Retrieval System (ASRS) gives you the advanced roll handling tools necessary to boost your productivity with improved handling capacity and effective warehouse management.



Drawing on our long experience with paper manufacturing, we have specially designed our ASRS for paper storage facilities. It uses fully-automated cranes to help speed up work cycles, reduce roll damage and track inventory. Without the need for forklifts or open aisles, you can optimize your storage space and minimize your labor costs.

Adaptable and long-lasting

Advanced features and customizable options provide you with the flexibility you need for

the unique conditions of your existing facility. Automated and expandable, the ASRS is easy to expand to as your business grows.

The durability of our ASRS and ease of maintenance allow you to keep using it for many years to come, minimizing the cost of your downtime, and giving your storage facility equipment a long and productive lifecycle.

State-of-the-art technology

Konecranes utilizes the latest in crane development to provide you with reliable and versatile roll handling. Fully-automated roll storages use our cranes to pick up rolls, stack them vertically, and get the paper ready for retrieval. We use components from the world's leading manufacturers, run extensive quality control with fully integrated testing, and continuously develop technical features to raise work cycle efficiency. The resulting ASRS brings you cranes and an operating system to increase your productivity and improve safety.

Safety built in

All the way from initial concept to design and manufacture, safety comes first in the minds of our design engineers.

Our ASRS system synchronizes access to the automated area with crane operation, only allowing entry when the crane is on stand-by. In case of unauthorized entry, motion sensors inform the system and it stops immediately. You can also define separate protected areas within the normal operating area. Synchronization uses hardwired signals between the conveyor control and the crane, so either system can stop the process if faults or alarms occur.

Additional safety features include overload and overspeed protection, crane motion limits, and emergency stops. Our equipment always meets applicable international and local safety regulations, and regular maintenance keeps it in full working order.

Paper warehouse management

Warehouse operators do not use automated paper cranes directly. The operator or an automated Manufacturing Execution System (MES) uses the Warehouse Management System (WMS), the part of the ASRS that controls your cranes.

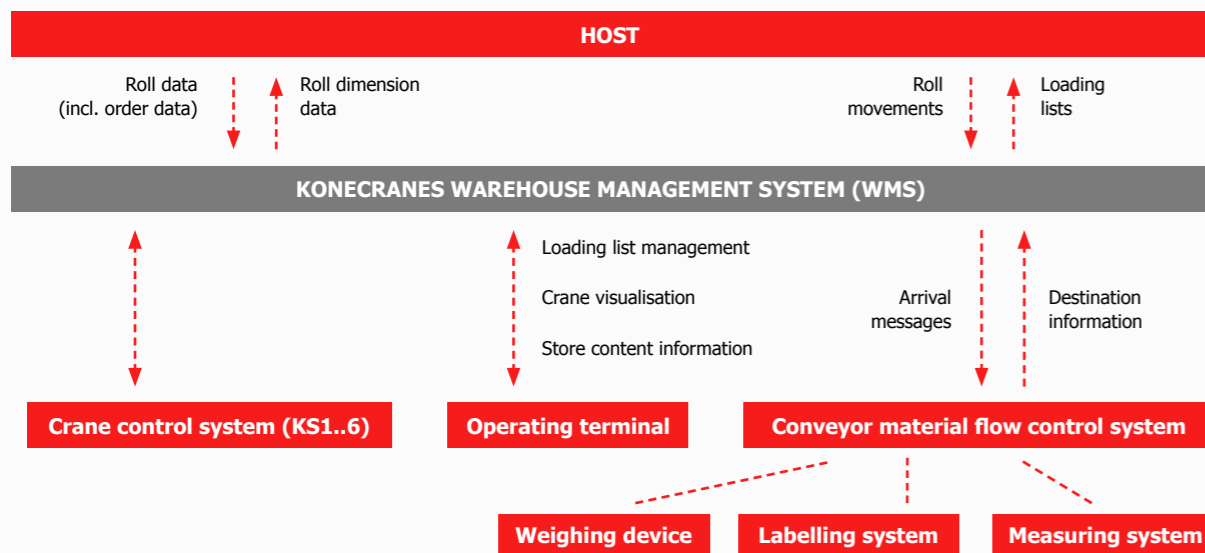
Customer requests get fed into the WMS. The WMS then tells the warehouse conveyors and crane control which paper rolls to collect and finds the best input location in the warehouse. Retrieval is quick and accurate, as customer loading lists ensure that paper rolls arrive just in time at their loading bays.

Smooth and streamlined

The WMS links production with storage, shipping, and your customer. Conveyors bring your paper into the automation area. Using time stamp and location data, the WMS keeps track of your inventory.

A WMS helps increase productivity while minimizing the number of lost or damaged rolls. In a busy storage facility, up to 9,600 rolls can be moved per day with the WMS.

Konecranes warehouse management system with interface to customer's host system



Vacuum Lifter



Mechanical Gripper

Paper handling equipment

We offer two lifting options for paper storage and retrieval. They have been designed specifically for moving paper rolls, so your valuable inventory stays in good condition throughout the entire process.

Vacuum Lifter

The Konecranes vacuum lifter really makes a difference to your paper storage by making the most of your available space. Plenty of smart features, like automatic vacuum detection and collision avoidance, combine with a gentle gripping action to prevent damage to your paper rolls and improve work efficiency. It adapts easily to different paper grades and roll sizes.

Mechanical Gripper

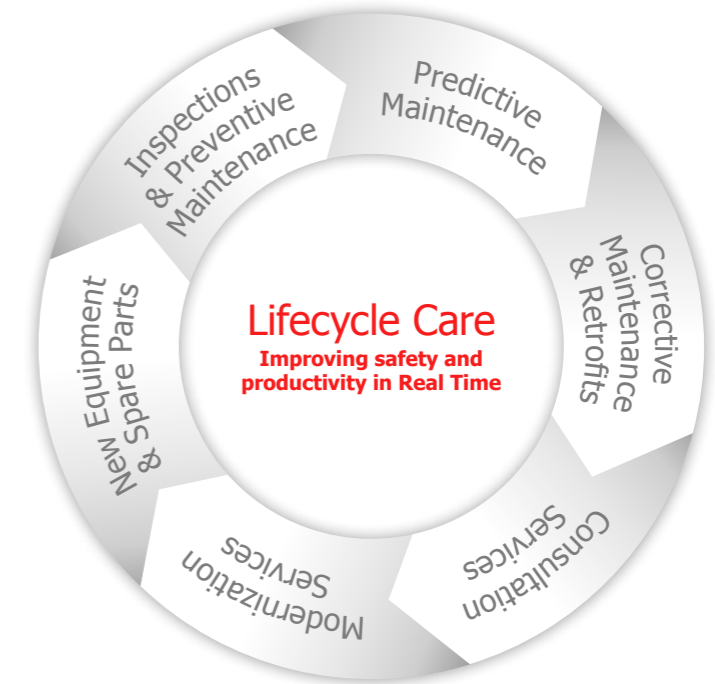
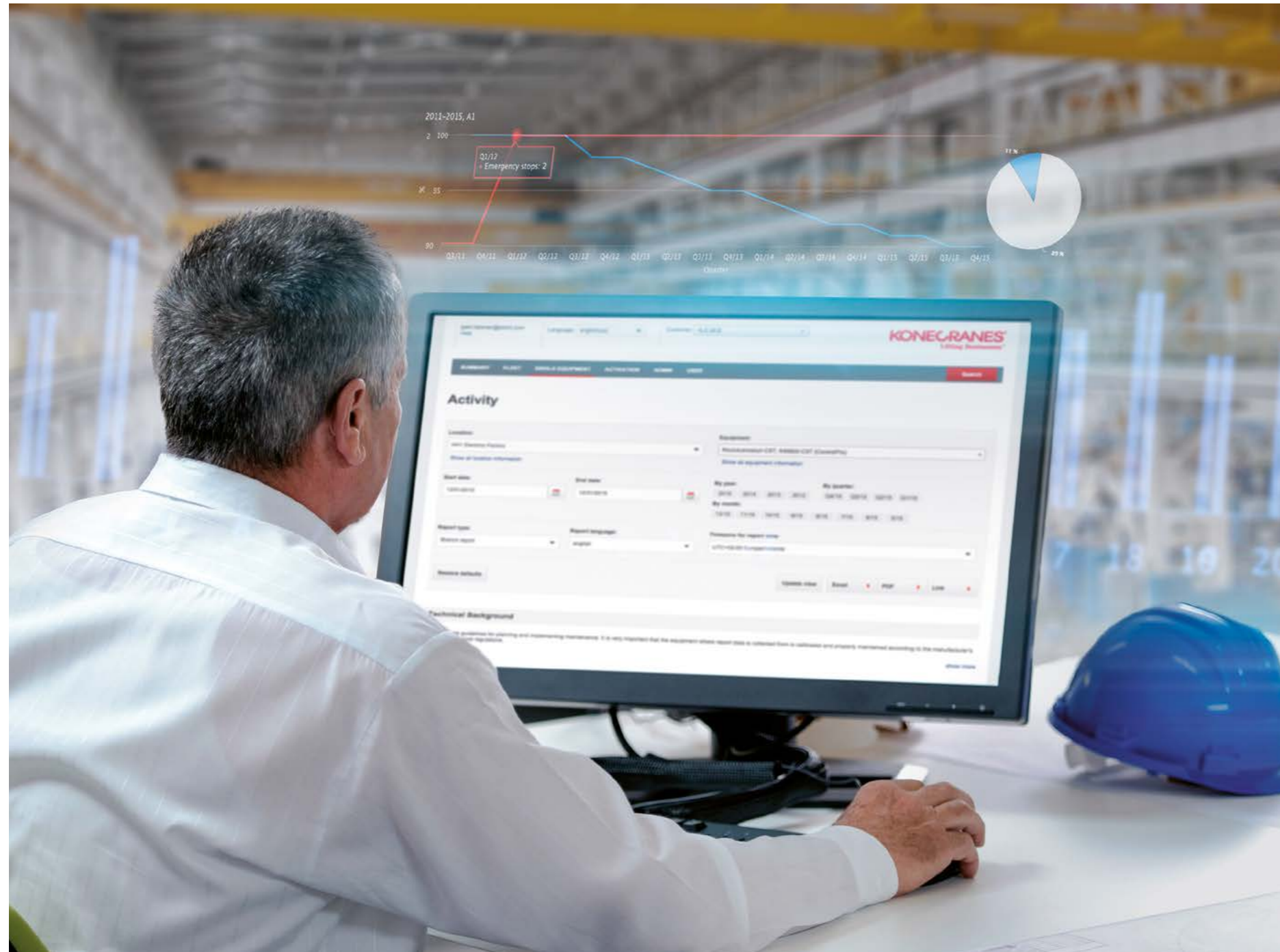
Our mechanical gripper is the ideal addition to your paper storage facility. Fitted with the latest technology to ensure high precision and fast work cycles with the ability to move up to four wrapped rolls of paper at speed simultaneously. Stack your rolls to a height of nearly 15 meters (49 feet) with only 150 millimeters (6 inches) between them. You can then move your rolls directly to your conveyor lines.

Specialized equipment gives you faster and safer work cycles. Combined with the Konecranes trademark strength, durability, and world-class service, these roll grips are a wise investment with high lifecycle value.

Service second to none

Konecranes provides specialized maintenance services and spare parts for all types and makes of paper handling cranes, storage handling and warehouse management systems. Your high-performing Konecranes equipment

is designed for easy serviceability and low maintenance to keep your processes running efficiently and minimize your downtime. We call this "highest lifecycle value".



Lifecycle Care

Value comes from Lifecycle Care in Real Time, a comprehensive and systematic approach to maintenance, supported by world-class digital tools and processes. But to merely keep your paper handling cranes running is not enough. You must also achieve the highest productivity possible during every shift.


All equipment requires maintenance and occasional repairs to help it function at its best. Based on your specific storage and retrieval equipment, the operating environment of your facility, and your local statutory requirements, a preventive maintenance program improves the safety and efficiency of your cranes, and your entire business will benefit in the long-term.

Technical insights

Remote monitoring is a valuable addition to a preventive maintenance program. TRUCONNECT Remote Monitoring collects condition, usage and operating data from control systems and sensors on an asset and provides alerts of certain anomalies. Remote Monitoring data combined with inspection and maintenance data provided by the maintenance program gives a comprehensive view of equipment maintenance needs and performance.

When you need service personnel on-site, you get the benefit of a global service network with more than 600 locations worldwide, boosted by local support near you. Ask us for inspections, retrofits, consultations, or any other service you may need.

Konecranes is a world-leading group of Lifting Businesses™, serving a broad range of customers, including manufacturing and process industries, shipyards, ports and terminals. Konecranes provides productivity enhancing lifting solutions as well as services for lifting equipment of all makes. In 2018, Group sales totaled EUR 3.16 billion. The Group has 16,100 employees at 600 locations in 50 countries. Konecranes shares are listed on the Nasdaq Helsinki (symbol: KCR).

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