BIG DATA =
BIG CHALLENGES
A SOLUTION BASED APPROACH

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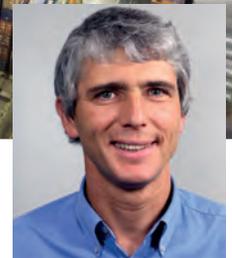
By helping to grow international trade, containerships continue to show themselves to be an important part of the logistics chain for international value creation. As the number of container terminals along international shipping routes grows, so too does the demand for automated systems to manage data and information throughout individual terminals. In all areas we see growth trends for smart systems that infuse technical capabilities into a company's operation and maintenance strategies.

SMART OPERATIONS

An ongoing concern at every port is how much activity at terminals will cease as a result of equipment failure. Variables such as multiple equipment systems on a single platform and maintenance intervals, or crane hourly rates, contribute towards increasing operational expenses (OPEX). However, these costs can be offset with

the use of technical options that are paired with a supplier's intelligent maintenance strategy.

The market for port equipment supplies has grown at an historic rate in recent years, which leads to increased service issues. Now, servicing personnel must be familiar with every system as well as knowing how to comply with each system's respective maintenance intervals. It is unlikely that various systems have the same maintenance intervals, so service personnel must find the most appropriate balance. Setting interventions to be performed too frequently will unnecessarily increase a company's OPEX; enacting them too few and far apart creates operational risks and even safety hazards.

Industry 4.0 has become a global benchmark within manufacturing and process industries. In ports and container handling also, key players want to ride the

technological changes. Many are ready for this, and several port operators now expect their suppliers to provide machines and systems that include data transfer and automation capabilities. Just as numerous solutions are currently available for the Smart Home and Smart Factory, the industry is primed for offerings for the Smart Port and Smart Warehouse. These new systems will use data transfer to increase security and performance for port operations worldwide.

In this new landscape, companies emerge almost daily, each dedicated to addressing these future demands and developing new technologies with creativity and competence, or combining them with each other to offer added value. Likewise, established organizations have been planning for years on how to succeed in this new market. In terms of the Internet of Things, there is a frenzied atmosphere on both supply and demand.

SECURITY, TECHNOLOGY, AND PERFORMANCE

As a company in this space, we are having to prepare too. Any business which doesn't offer a full-liner portfolio that covers the entire range of energy and data transmission within the port environment, and future expansions which cover security, technology and performance will be left behind. As part of our own development, we've tested products and systems for decades in various applications and markets. Keeping in mind how automation has worked in sister sectors, or even unrelated sectors, can offer us excellent insight into the trends that are likely to follow after early implementation.

With new intelligent systems, it is now possible to positively influence OPEX by setting maintenance schedules according to actual demand. In doing this we are monitoring the system for condition and deviation from specified operating states, thereby drawing conclusions about the wear of individual components from actual operating conditions and calculating their service life using a data model. When the need for a new part or process comes up, this can be automatically recognized and communicated in real time. Via this methodology, operators and suppliers can design the supply chain in the most efficient way, ensuring the entire business model has been individually provided for with the appropriate technology.

Systems such as motor-driven cable reels or a cable trolley on an STS or RTG crane are sources for process data analytics to increase operational safety and performance where humans no longer can. Once equipped with sensors, these systems will become the eyes and the ears of communication technology. Additionally, the CPU will collect, analyze and interpret data to provide the user with clear and simple options.

DATA-BASED SOLUTIONS

We at Conductix-Wampfler rely on cloud technology which can be accessed through a large number of communication channels. Since data security can be a daunting topic, we rely on a physical separation of the equipment network and the operator's network (i.e., there is no connection between the path of the data collected and transmitted, and the operator's data network). With a system like this in place, any attempt at unauthorized manipulation will fail. This use of such technology will enable us to monitor our systems remotely in future and increase operational reliability – all of which will reduce an organization's OPEX. Furthermore, an extension to systems that do not come from our company is also conceivable, as it is technically possible.
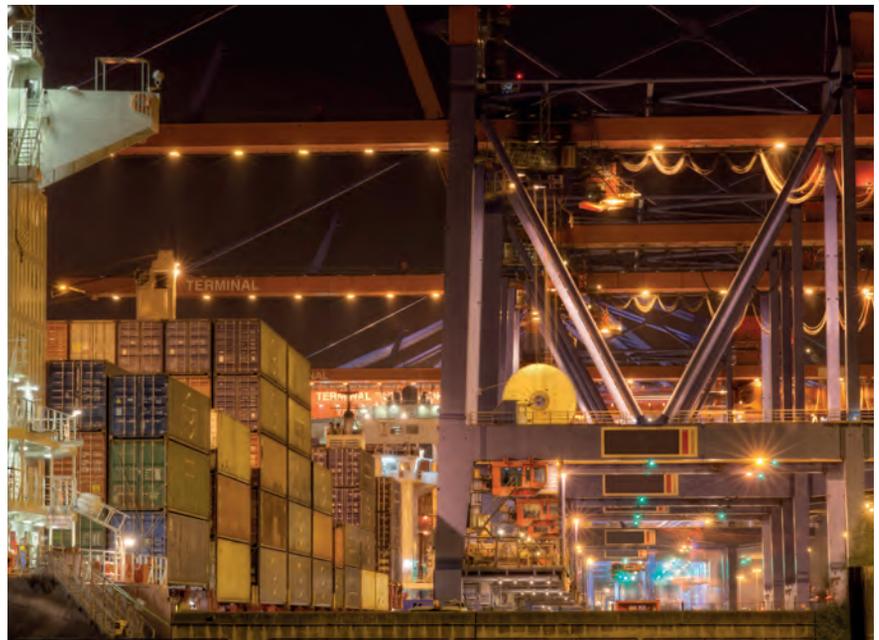
Together with our ProfiDAT contactless data transmission and compact systems or high rate, uninterrupted fibre optic rotary joints, we aim to offer a comprehensive data solution for on-site and remote data communication from one source. This data is hosted on a cloud-based service portal and is available to every user who is registered for this service. Given the demands the industry is facing from the wave of change, this marks a first step in the right direction on a long journey, in the author's opinion. This is chiefly because data gives us the opportunity to offer our customers condition monitoring and predictive maintenance as part of our service portfolio. Whether a company provides a service from an HQ or a local service centre, the modern solution provider needs to be just a mouse click away. This is the customer expectation now, as once one company has that capability, all are falling behind if they do not also offer this speed of service.

These functionalities should be gradually extended to other product areas so that a company can offer its customers – in all applications and markets – data-based service solutions from a single source. This will be in addition to the well-known and proven systems for energy and data transmission, which, like most of our products, will be available via our web shop.

The first applications in terminals show us that we are getting a precise feel of the market demand, and that our portfolio expansion has been positively received by terminal operators. This shows us a path worth pursuing to unlock the potential that automated ports have to offer. The key is maintaining a responsive, digital system which allows both real time data analysis and long term trends spotting and machine learning.

ABOUT THE AUTHOR

Olivier Ruelle graduated as Applied Physics Engineer from Ecole Centrale de Paris with minors in mechanics, electronics, civil engineering and major in informatics. Olivier has 30 years of professional experience as people, project and product manager in the fields of mechanics, electronics, informatics and performance improvement, gained in international companies such as Michelin, IBM, Zahnradfabrik Friedrischshafen, Nortel and Conductix-Wampfler. Olivier as Global Product Manager drives the development of Conductix-Wampfler's Reeling Systems since 2014 and now has the lead of Conductix-Wampfler's Predictive Maintenance initiative.

ABOUT THE ORGANIZATION

In ports and terminals everything needs to be reliable when operating 24/7/365. Energy and data transmission systems play a crucial role in these operations and within the trend towards remote control and port automation. Conductix-Wampfler is a globally leading supplier of mobile energy and data transmission systems and offers all available technologies and products that meet the most challenging demands of port equipment.

ENQUIRIES

https://www.conductix.com/en