



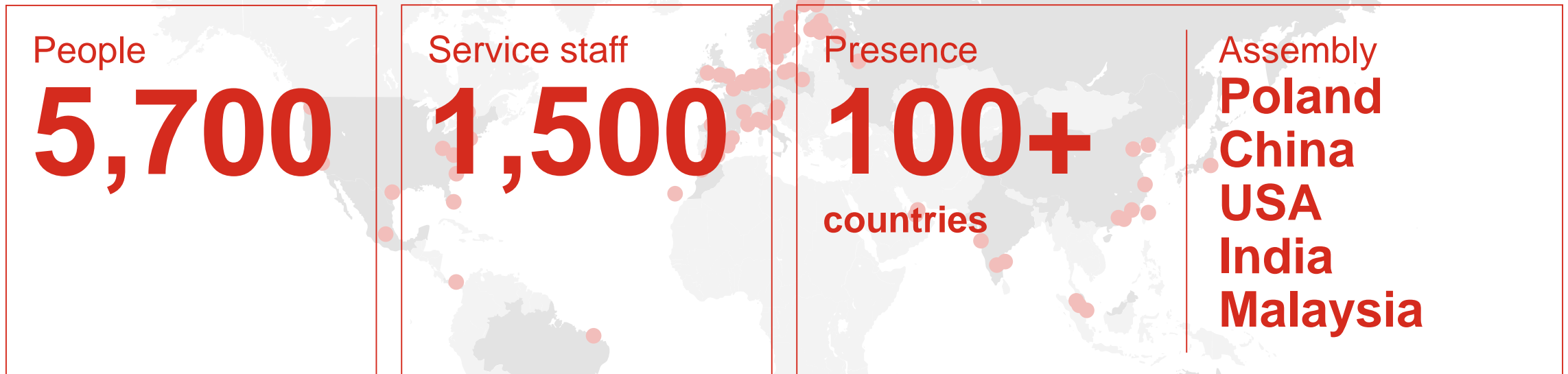
7th Mediterranean Ports and Shipping 2019 Casablanca

Optimising the terminal equipment maintenance processes with digital services



One in four container movements around the globe is handled by a **Kalmar solution.**

A global reach with personnel in 30 countries and sales and service in more than 100 countries.



Kalmar's operating environment



Provides integrated port automation solutions including software, services and a wide range of cargo handling equipment



TOS coordinates and optimises the planning and management of container and equipment moves in complex business environments.

Navis provides also maritime shipping solutions:

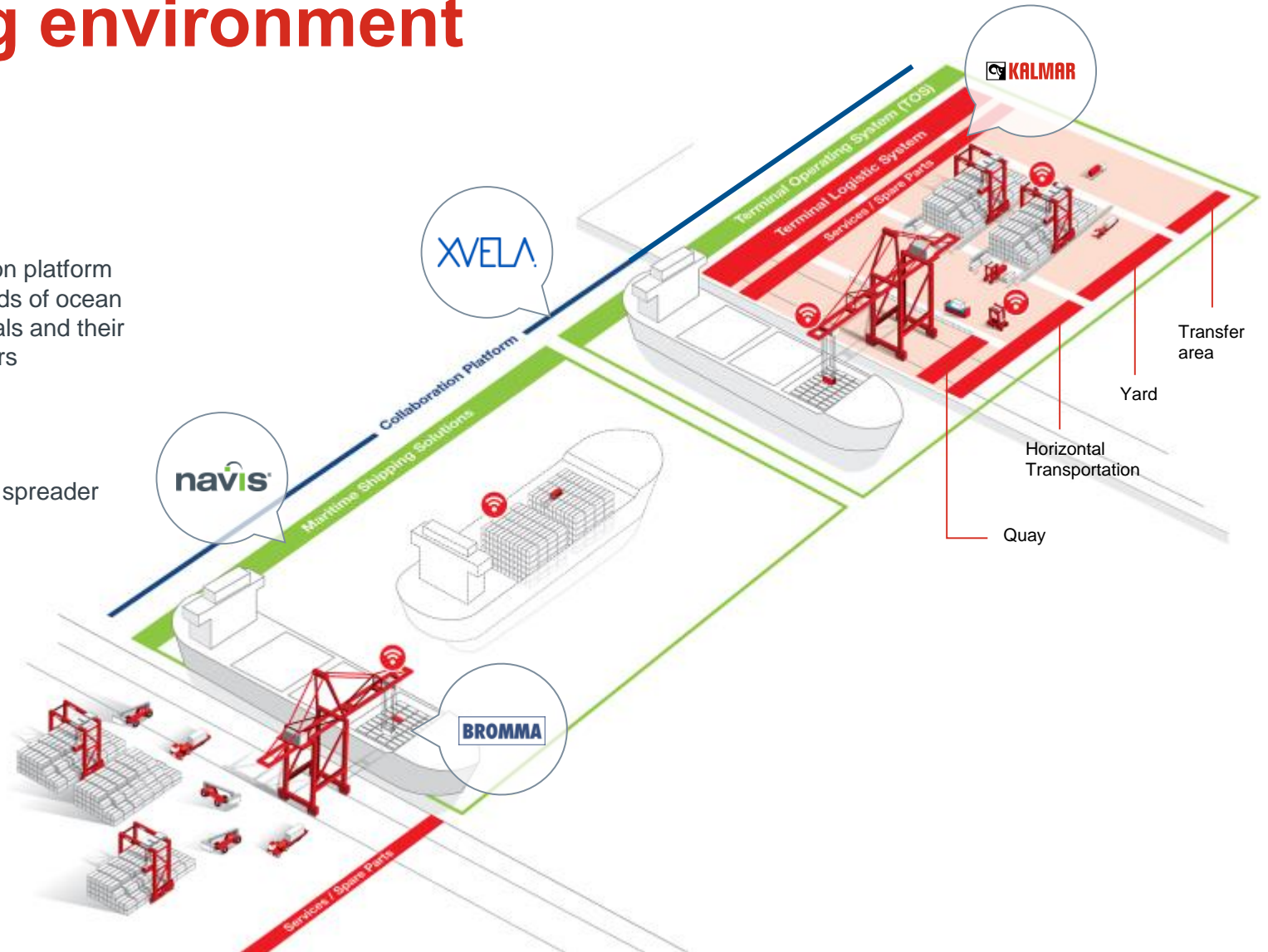
- Stowage planning
- Vessel monitoring
- Loading computer
- Route planning



The collaboration platform serving the needs of ocean carriers, terminals and their shipping partners



Industry leading spreader manufacturer



Our complete offering



Equipment

Service

Automation

Industry megatrends imply that there are needs for better efficiency, transparency and guaranteed performance



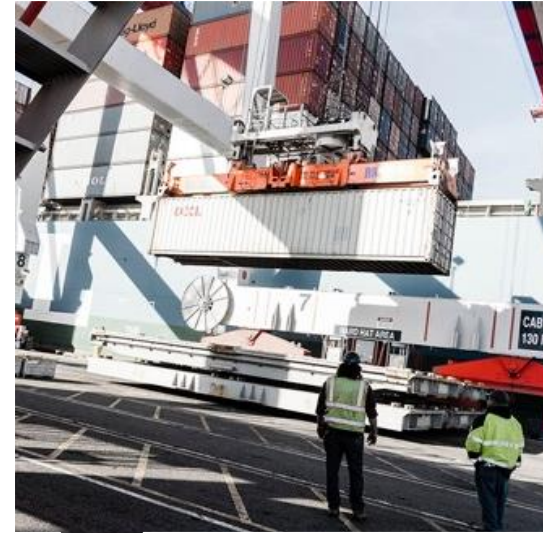
Mega vessels

Efficiency demands increase as marine transport continues to grow. Larger ships require capacity improvements from port operators.



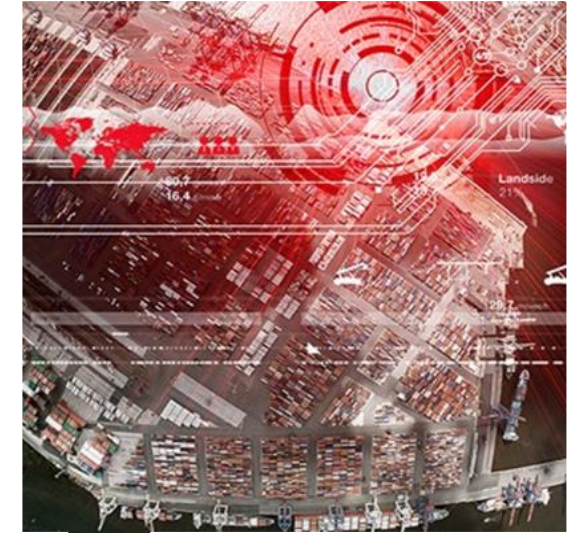
Sustainability

Strict emission requirements & growing concern for the environment increase the demand for more intelligent machines with smaller environmental impact.



Industry consolidation

New alliances between shipping lines are impacting container traffic flows and setting new efficiency standards for port operators.



Digitalisation & automation

Digital and automated solutions provide new possibilities for port operators to improve efficiency, safety and sustainability.

Some key challenges related to equipment fleet management

- › Multiple OEMs providing the terminal equipment, multiple systems to monitor equipment performance. Single system preferred.
- › Managing the maintenance of multi-brand equipment
- › Overall, low level of digitalization in maintenance management
- › Variance in digital capabilities of equipment make it complicated to offer harmonized digital services (long lifetime)

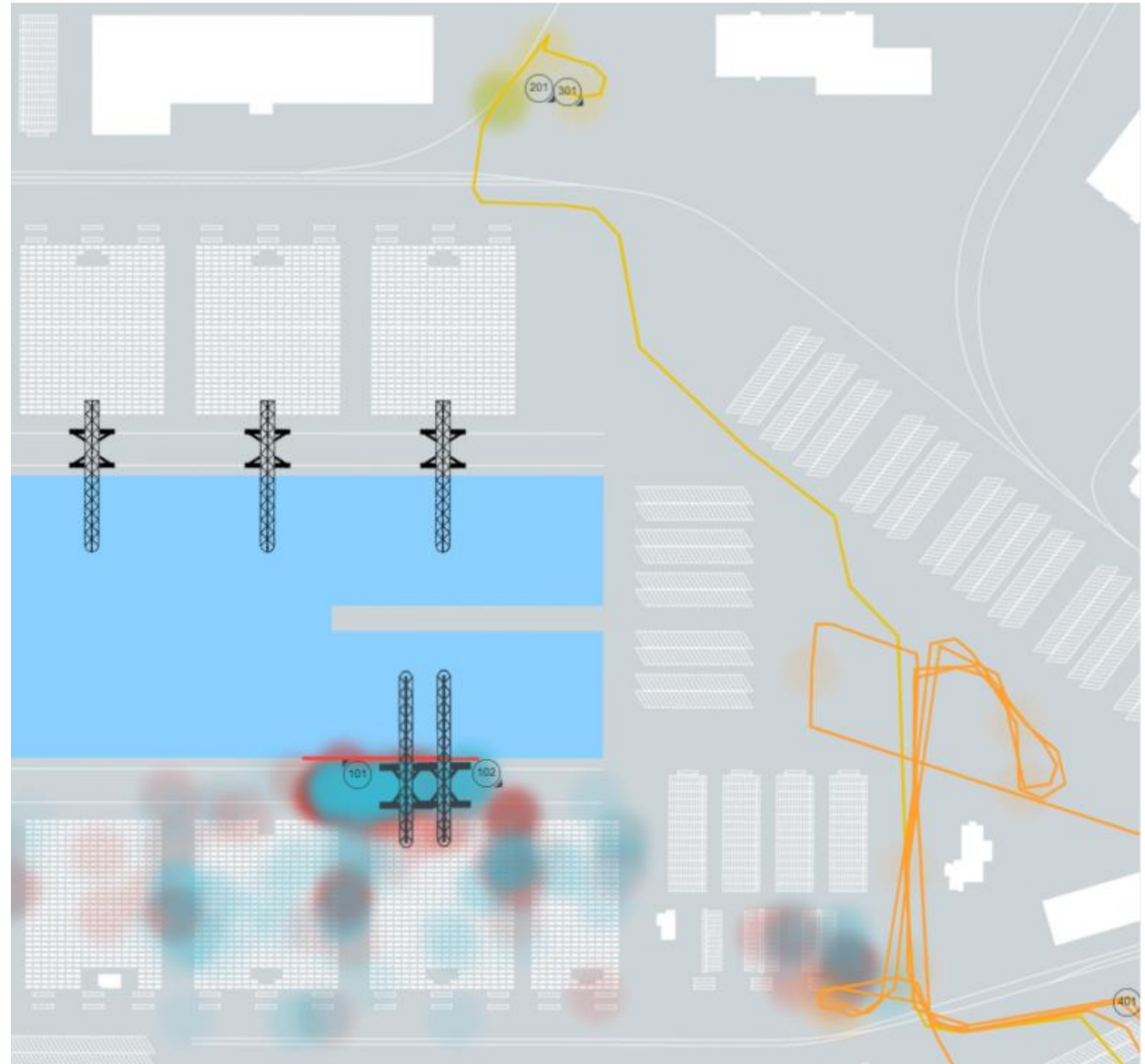




**Terminal equipment data
is a key ingredient for optimized
performance and maintenance strategy**

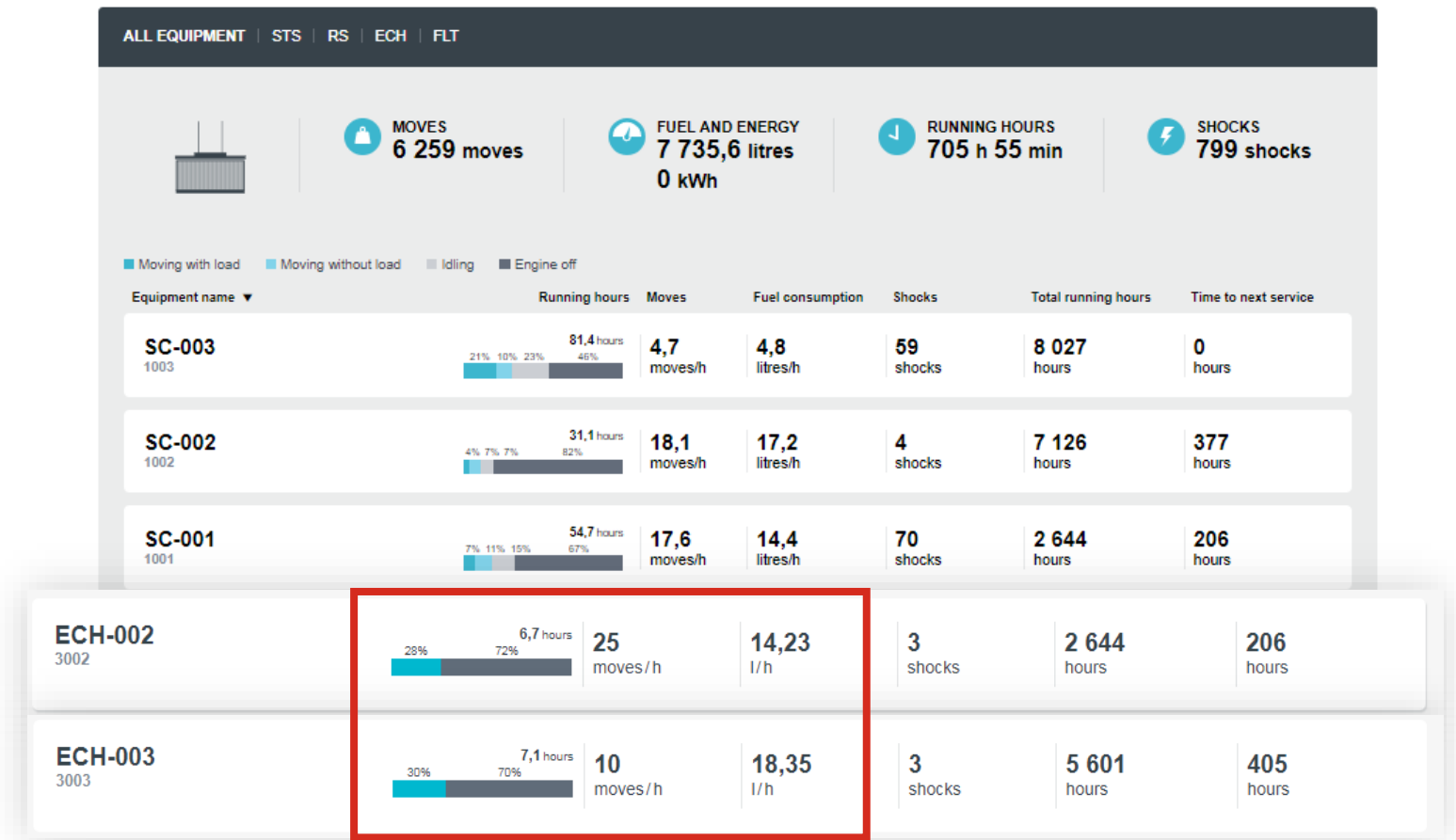
What does equipment data tell us?

Automatic bottleneck detection



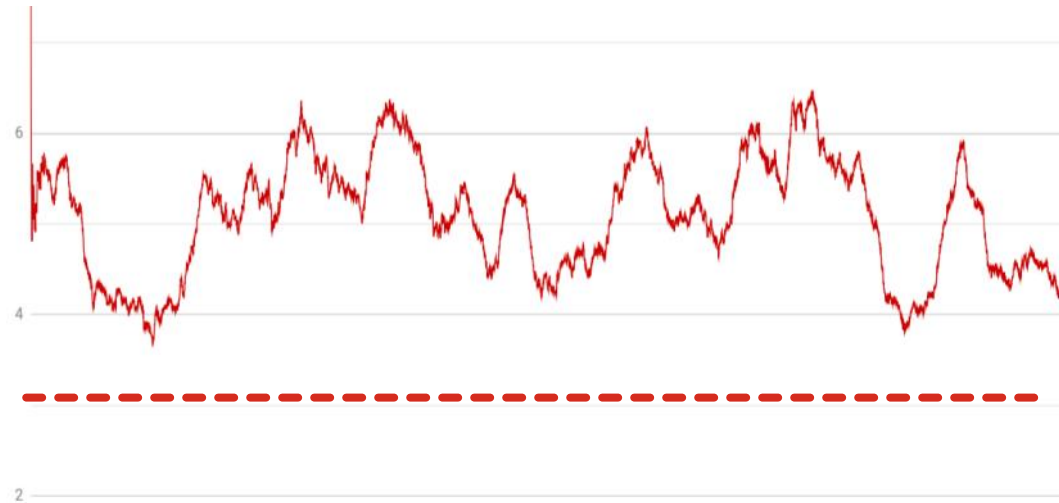
Fleet and driver performance monitoring and comparison

Operational and fuel performance

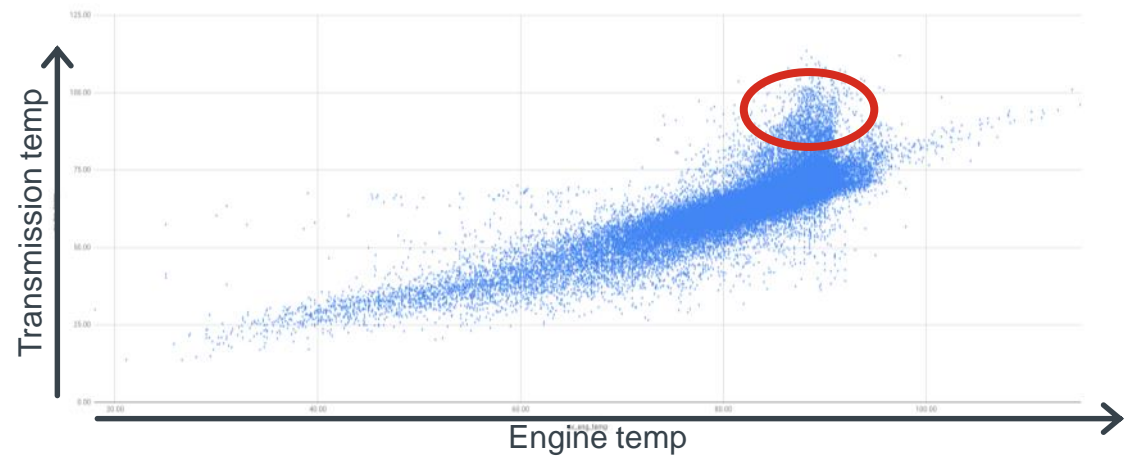


Predictive maintenance

Threshold values indicating downtime risk



Identification of peak loading of components with temperature monitoring



Automating service flow

Field service tools

Service technician logs and confirms performed maintenance

Kalmar Insight

Operations performance and maintenance management

Automated service flow

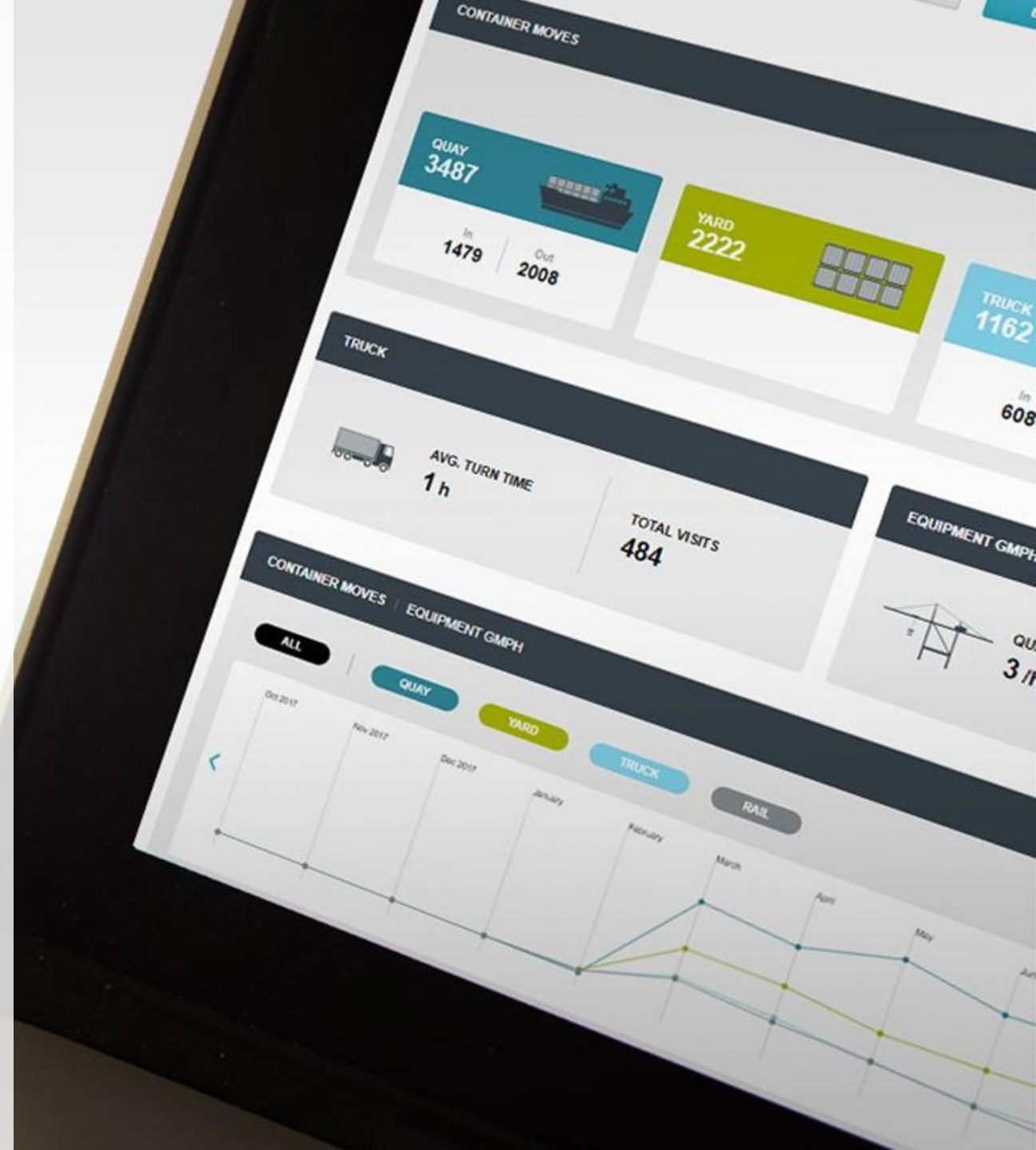
Automated maintenance need planning and scheduling, parts delivery

Connectivity

Availability of real-time information, KPIs and maintenance need indicators

Automating the service flow

- › Connecting real-time information of machine usage to maintenance plans and parts delivery process enables automating the service flow
- › Maintenance manager receives automatically a notification of an approaching maintenance need
- › Availability of the correct set of materials (maintenance parts) is confirmed with delivery times
- › Automated scheduling of the job
- › Automated delivery of the needed parts at the right time in the right place
- › The platform may be extended to cover predictive maintenance



Service flow automation— benefits

Better awareness: Actual running hour information available online through connectivity.

Better planning: Automated planning also reduces the number of repetitive manual admin tasks and improves availability of needed parts while keeping the parts stock levels to a minimum.

Better control: Timely execution of preventive maintenance plan minimizes the risk of unexpected downtime.

Better reporting: Modern digital services provide enhanced reporting capabilities and transparency to the service delivery process.

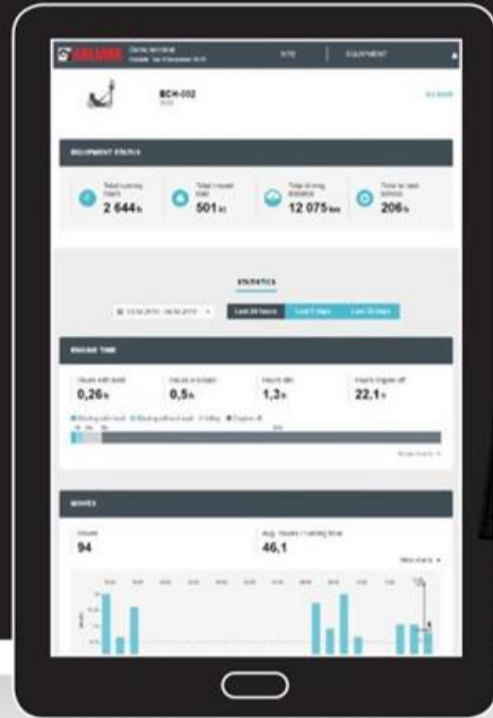
Better availability: Optimized service flow provides better availability of the fleet as downtime risks are reduced.



Kalmar Insight

Turning data into actionable, impactful insights.

Kalmar Insight™ interface



Data integration with other systems



Kalmar Insight™

Performance data from operations



INTERMODAL

DISTRIBUTION CENTRES & WAREHOUSES

PORTS & TERMINALS

FORESTRY & METAL HANDLING



Maintenance scheduling and management

Easy maintenance planning: Maintenance module enables automated spare parts recommendations and ordering.



Playback mode of historical data

Shows process bottlenecks and help to identify areas for improvement.



Single view for all equipment types and brands



Everything at a glance

Simple to use and understand: data can be accessed with any device – smartphone, tablet, laptop or desktop.



Maintenance scheduling and management

STATISTICS | ALARMS | **MAINTENANCE**

ONGOING MAINTENANCE TASKS

Scheduled 2018-08-09	+ 500 h maintenance service	Order confirmed 2018-05-06	Delivery status enroute, TRACK	ETA 2018-08-04
--------------------------------	---------------------------------------	--------------------------------------	--	--------------------------

SPARE PART		MODIFY	ORDER INFO		EVENTS (TIME STAMPS)	
Component 425803.0202	Amount 1	Net price 386.88 €	Purchase order 2974520845	Way of shipment DHL – Air Express	Called:	2018-05-04
Description FILTER KIT, DRT400-450H			Kalmar Order 2974520845	Tracking code FI27843582455890	Ordered:	2018-06-05
					Shipping date:	2018-06-08
					Delivery date:	2018-06-18
					Confirmed delivery:	2018-06-20

This is the task you haven't yet reacted to lorem ipsum.

MAINTENANCE SCHEDULING

SEPTEMBER

- RS 005 + 500 h maintenance Booked: 2018-09-25
- RS 005 + 500 h maintenance Spare part delivery ETA: 2018-09-15

AUGUST

- RS 005 + 500 h maintenance Booked: 2018-08-02

JULY

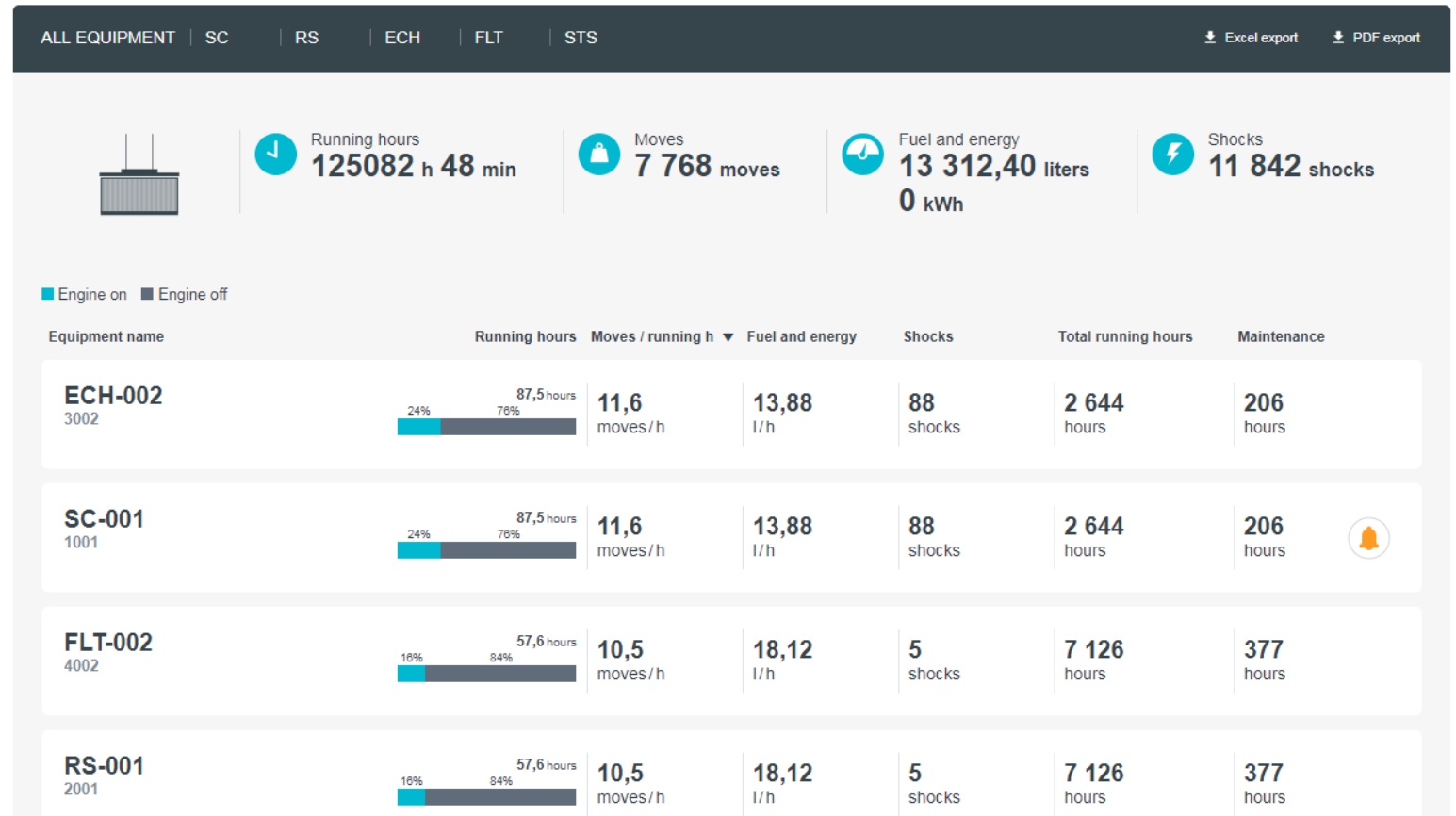
- RS 005 + 500 h maintenance Booked: 2018-07-17
- RS 005 + 500 h maintenance Completed: 2018-07-07

2018 ● Booked ● Completed

APRIL							MAY							JUNE						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
26	27	28	29	30	31	1	30	1	2	3	4	5	6	28	29	30	31	1	2	3
2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10
9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17
16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24
23	24	25	26	27	28	29	28	29	30	31	1	2	3	25	26	27	28	29	30	1
30	1	2	3	4	5	6	4	5	6	7	8	9	10	2	3	4	5	6	7	8

JULY							AUGUST							SEPTEMBER						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
25	26	27	28	29	30	1	30	31	1	2	3	4	5	27	28	29	30	31	1	2
2	3	4	5	6	7	8	6	7	8	9	10	11	12	3	4	5	6	7	8	9
9	10	11	12	13	14	15	13	14	15	16	17	18	19	10	11	12	13	14	15	16
16	17	18	19	20	21	22	20	21	22	23	24	25	26	17	18	19	20	21	22	23
23	24	25	26	27	28	29	27	28	29	30	31	1	2	24	25	26	27	28	29	30
30	31	1	2	3	4	5	3	4	5	6	7	8	9	1	2	3	4	5	6	7

Connecting real-time operational information of the fleet with maintenance management



Customer and users

Customers

Kalmar Insight can serve variety of different size and type of customers

- › **Port terminals:** automated, manual
- › **Intermodal terminals**
- › **Industrial sites** (forestry, metal)
- › **Distribution centers**
- › **Equipment dealers**
- › **Any business with a cargo handling equipment**

Users

Kalmar Insight provides valuable information for different user groups

- › **General Management** - up-to-date business information on site or fleet performance, easily accessible with mobile devices
- › **Operations Management** - identify bottlenecks and improvements for site and fleet operations, maximize equipment utilization
- › **Maintenance Management** - easy way to actively follow fleet performance and health status, assisted maintenance planning
- › **Health & Safety Management** - remote monitoring of processes and events to improve safety

Equipment data availability

Kalmar equipment

Full equipment data available via Equipment Management System

- › Location and routes
- › Running hours (production vs. idle)
- › Fuel and energy consumption data
- › Shock and overload events
- › Moves, pick and ground events
- › Lifts and load spectrums, container sizes
- › Idling, travel and speed data
- › Alarms and error codes
- › SOLAS reporting and tyre pressures*
- › Driver identification*

3rd party equipment

Basic equipment data set available from any type of equipment

- › Location and routes
- › Running hours
- › Fuel consumption**
- › Shocks***
- › Moves, pick and ground events****
- › Lifts, container sizes****

- * requires additional HW
- ** availability depends on fuel tank setup
- *** accuracy dependent on installation location
- **** with Kalmar SmartPort system

Summary

- › Equipment data is a valuable asset to optimize operations and maintenance processes
- › Automating the service flow brings tangible benefits in terms of reduced admin work, process efficiency and better availability
- › Kalmar Insight combines operations and maintenance management into a single tool allowing to optimize the performance

More information about Kalmar Insight:

<https://www.kalmarglobal.com/showrooms/insight/>

<https://www.kalmarglobal.com/services/optimize/kalmar-insight/>

