

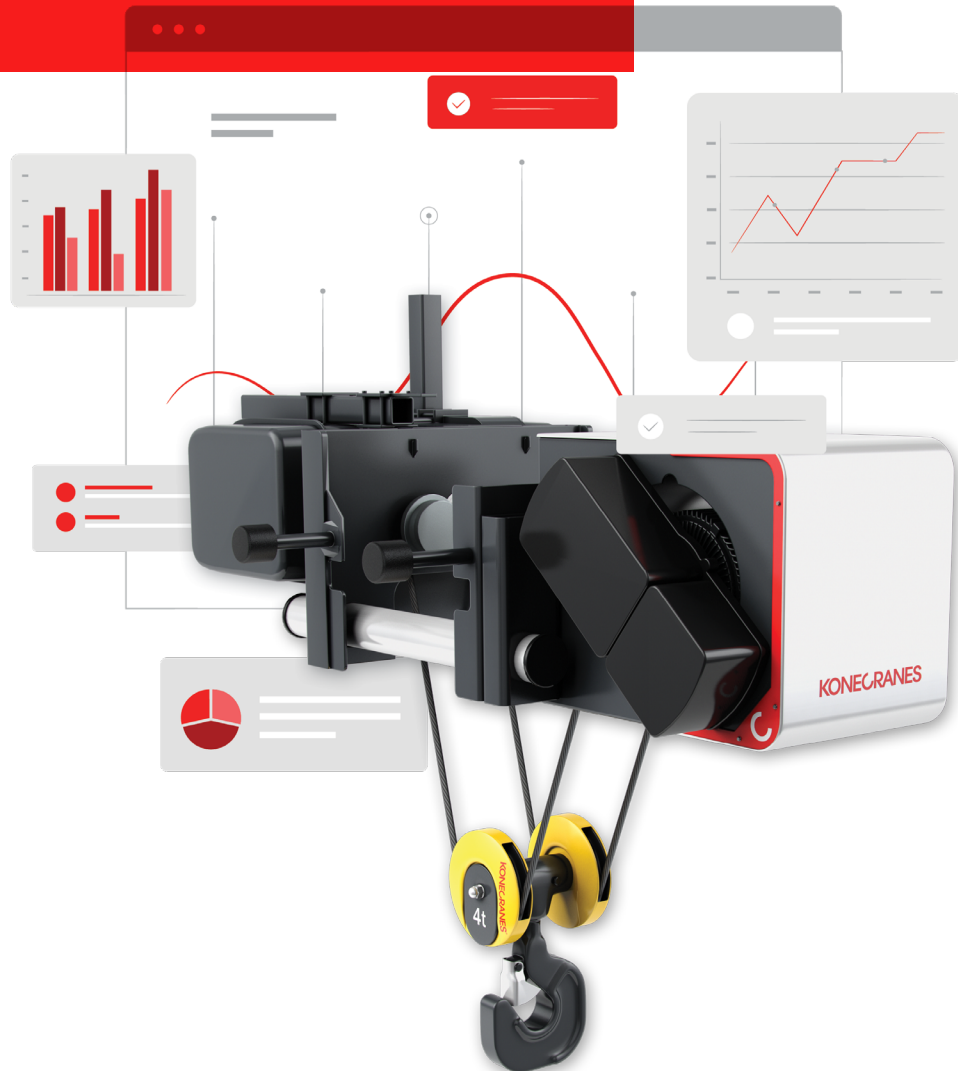
REMOTE MONITORING DATA ON yourKONECRANES.com

TRUCONNECT® user guide

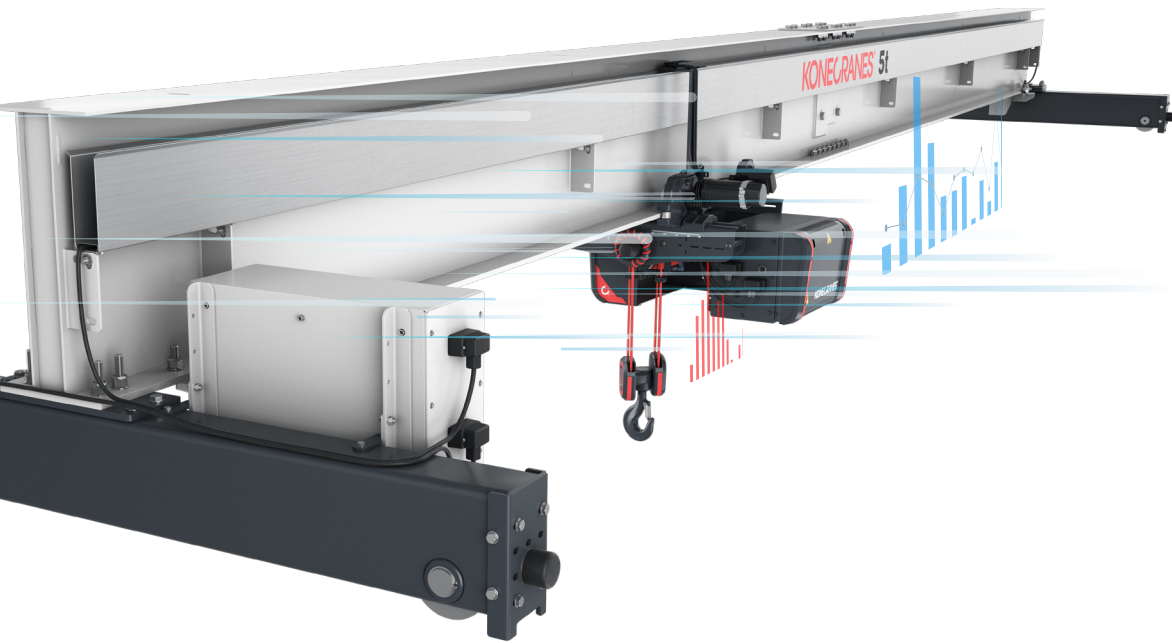
2021



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Data security

Konecranes digital services have been awarded ISO/IEC 27001:2013 certification for information security management. The ISO/IEC 27001 certificate demonstrates a commitment to pro-actively manage the information security of Konecranes digital services and ensure compliance with legal and customer requirements. The certification applies to the development and delivery of the yourKONECRANES.com customer portal, CheckApp for Daily Inspections and the Slings and Accessories Inspection app and the TRUCONNECT suite of remote service products.

Use TRUCONNECT data to optimize safety, productivity and maintenance activities

TRUCONNECT Remote Monitoring provides the visibility you need to fully understand the day-to-day use of your cranes. Looking at the data on yourKONECRANES.com should be part of your regular work routine to help you make decisions on maintenance, safety concerns, training, productivity, and service and equipment investments.

In between regular inspections and preventive maintenance, issues can arise due to operator error, irregular crane usage or other unforeseen events. TRUCONNECT data can alert you to problems with your cranes before they give way to critical issues that can impair safety and performance, helping you plan and leaving less room for surprises.

Analyzing TRUCONNECT data can also help you develop an operational baseline and identify opportunities for maintenance and process improvements.

Learn about how you can use TRUCONNECT data to increase safety and save time and expenses with less downtime. It doesn't take a data scientist to interpret the information—TRUCONNECT data is presented in easy to read graphs and color indicators on yourKONECRANES.com.

What to look for

Throughout this guide we give examples of anomalies, patterns and trends in the data and what it can mean. We've also added icons to indicate things you should be watching out for if you're responsible for safety, production or maintenance.

Safety

Safety-critical alerts make it easy to see what needs the most immediate attention. Seeing how your cranes are being used can also indicate the need for operator training to address unsafe practices.



Production

Production issues can result in crane stoppage or production downtime. Seeing how your cranes are being operated gives insights into how the production process is working and alerts call attention to problem areas.



Maintenance

Issues related to maintenance can include when to replace components or perform overhauls. Data can also indicate a need to review inspection and maintenance schedules.



TRUCONNECT tips

Get the most from TRUCONNECT Remote Monitoring

Connect your entire fleet

Remote Monitoring expands your view of your lifting equipment, providing a complete timeline of all crane operation data, rather than a static look at one crane at a time. Having a comprehensive view can help keep you from missing a minor usage abnormality—or help you connect seemingly unrelated problem patterns—before it becomes or contributes to a larger problem.

Pay attention to alerts

Alerts are intended to call attention to anomalies or events that may threaten safety or production and are used for troubleshooting purposes. You should promptly investigate these issues so corrective actions can be taken.

Check the data on yourKONECRANES

A quick look at the Overview page can give you a good idea if you need to further investigate your asset data. Clicking on the TRUCONNECT status on the Overview will take you to the Fleet view where you can filter by criticality and component condition.

It's good practice to check the data on a regular basis and any time there are alerts or issues with

the crane. You should also take a look at the service life estimates and TRUCONNECT data in the Business Review section when planning for maintenance, parts or replacements.

Data for your own service teams

For in-house maintenance teams, the data can help your technicians fine tune common inspection focuses, prepare maintenance, and record results of remedial measures against crane performance goals.

Use TRUCONNECT data for training program enhancement

Looking at the whole history of your crane usage, including trends in, and frequency of, abnormal use can be used to plan and execute operator and service training programs.

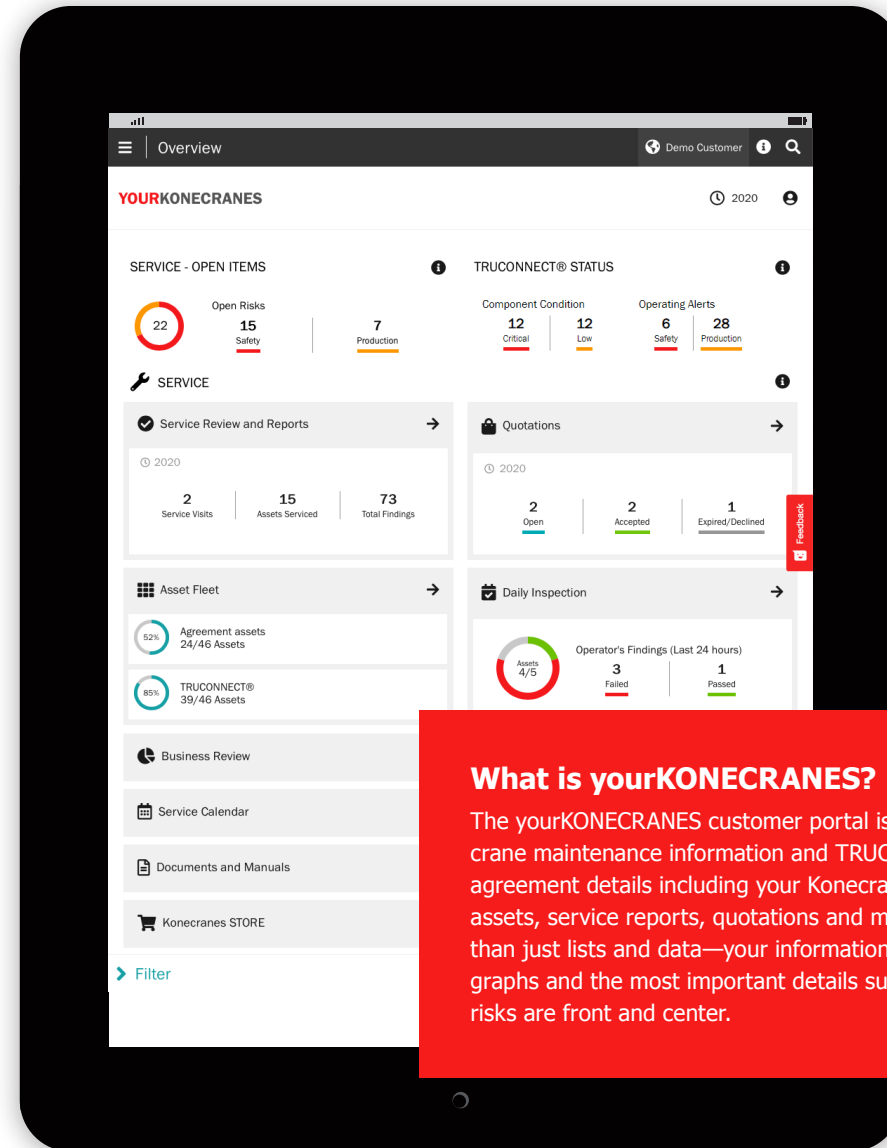
New training programs can clarify operator responsibilities and refine operator capabilities, helping to improve work cycle times and reduce some crane use problems.

Reach out for help

If you have questions about what you see in the data or concerns about component wear or operator training [contact us](#).



konecranes.com/contact-us



What is yourKONECRANES?

The yourKONECRANES customer portal is the online home for all your crane maintenance information and TRUCONNECT data. You can see your agreement details including your Konecranes contact, a fleet view of your assets, service reports, quotations and more. yourKONECRANES is more than just lists and data—your information is highlighted with easy-to-read graphs and the most important details such as safety and production risks are front and center.

TRUCONNECT status on the overview

When you log into yourKONECRANES you'll first see the Overview page. This is where you can get a quick glance at your TRUCONNECT information. Cumulative component condition and alerts are highlighted so you can act on them quickly.

Clicking on Component Condition or Operating Alerts takes you to the asset fleet view where you can see all connected assets pre-sorted by lowest condition or highest number of safety or production alerts.

The frequency with which you should check your TRUCONNECT data on yourKONECRANES depends on your equipment criticality and frequency of use. The more your cranes are used and the more critical to your operations, the more frequently you'll want to check in on their condition and usage.

You'll also want to check TRUCONNECT information for annual planning to help you make decisions on maintenance and training.

Click here on any page to access the menu.

The screenshot displays the 'Overview' page of the yourKONECRANES customer portal. The page is divided into several sections:

- Header:** 'Overview' and 'Demo Customer' with a search icon.
- Filter (3 selected):** Includes 'Selected customer(s) (1)' (Demo Customer) and 'Selected location(s) (2)' (Demo Customer Location 1 and Demo Customer Location 2).
- SERVICE - OPEN ITEMS:** Shows 'Open Risks' with a gauge for 22 total risks, broken down into 15 Safety and 7 Production.
- TRUCONNECT® STATUS:** Shows 'Component Condition' with 12 Critical and 12 Low, and 'Operating Alerts' with 6 Safety and 28 Production.
- SERVICE:** Includes 'Service Review and Reports' (Nov 2020) with 2 Service Visits, 15 Assets Serviced, and 73 Total Findings.
- Asset Fleet:** Shows 'Agreement assets' (52%, 24/46 Assets) and 'TRUCONNECT®' (85%, 39/46 Assets).
- Daily Inspection:** Shows 'Operator's Findings (Last 24 hours)' with 4/5 Assets, 3 Failed, and 1 Passed.
- Navigation Menu:** Includes Quotations, Daily Inspection, Service Agreements, Location Activities, Slings and Accessories, Business Review, Service Calendar, Documents and Manuals, and Konecranes STORE.

Open TRUCONNECT items show the number of components having a design working period (DWP) or remaining service lifetime under 10% left. Click to go to the Fleet view and see condition by asset.

This section shows total safety and production alerts on TRUCONNECT assets. Click to go to the Fleet view and see alerts by asset.

TRUCONNECT data for a single asset

There is a TRUCONNECT page in yourKONECRANES for each connected asset in your fleet. The page begins with a summary showing the main items that require attention in each category.

Condition: This shows the shortest current service life of a component from the Condition section. Condition values will change over time due to differences in the wear rate of components and different crane operating patterns, as these can significantly accelerate the wear rate. The effects of operation are described more closely in the Operating Statistics section.

Alerts: This shows the cumulative number of alerts in the review period from the Alert section. Details are provided in the Pareto analysis in the Alerts section.

Operating Statistics: This shows the current most significant problem that could affect the safe operation or condition of the crane from the Operating Statistics section.

The following pages explain in more detail the data in the Condition, Alerts and Operating Statistics sections.

The screenshot shows the TRUCONNECT interface for a single asset. At the top, there are navigation elements and a search bar. Below that, there are filters for time range (Preset Time Range, Start Date, End Date) and a button to download the report. The main content area is titled 'TRUCONNECT@ Summary - Last 30 Days' and is divided into three sections: Condition, Alerts, and Operating Statistics. The Condition section shows a gauge for '9%' and '9%' with a callout box stating 'Condition shows the current most significant problem that could affect the safe operation or condition of the crane.' The Alerts section shows a red circle with the number '4' and a callout box stating 'This shows the cumulative number of alerts in the review period.' The Operating Statistics section shows '46,086' starts and a callout box stating 'The current most significant problem that could affect the safe operation or condition of the crane.' Below these sections is a 'Condition' table with expandable rows for various components like Hoist DWP, Brake Service life, etc. A red box at the bottom right contains the text 'Data availability' and explains that data varies by asset make and model, and mentions special sensors for advanced condition monitoring.

Check and set the desired time frame.

Click here to download the report.

This section contains the main items that require attention in each category.

Condition shows the current most significant problem that could affect the safe operation or condition of the crane.

The current most significant problem that could affect the safe operation or condition of the crane.

This shows the cumulative number of alerts in the review period.

Data availability
Collected data varies depending on asset make and model so what you see here may not be available for all your assets. TRUCONNECT Remote Monitoring also has the option of special sensors for advanced condition monitoring of select critical components including Brake Monitoring and Wire Rope Monitoring.

Condition

TRUCONNECT condition data shows the current condition of the components, any risks related to safety and production, and the estimated remaining service life based on the usage history. Condition data also indicates when critical components should be replaced, inspected or overhauled/modernized.

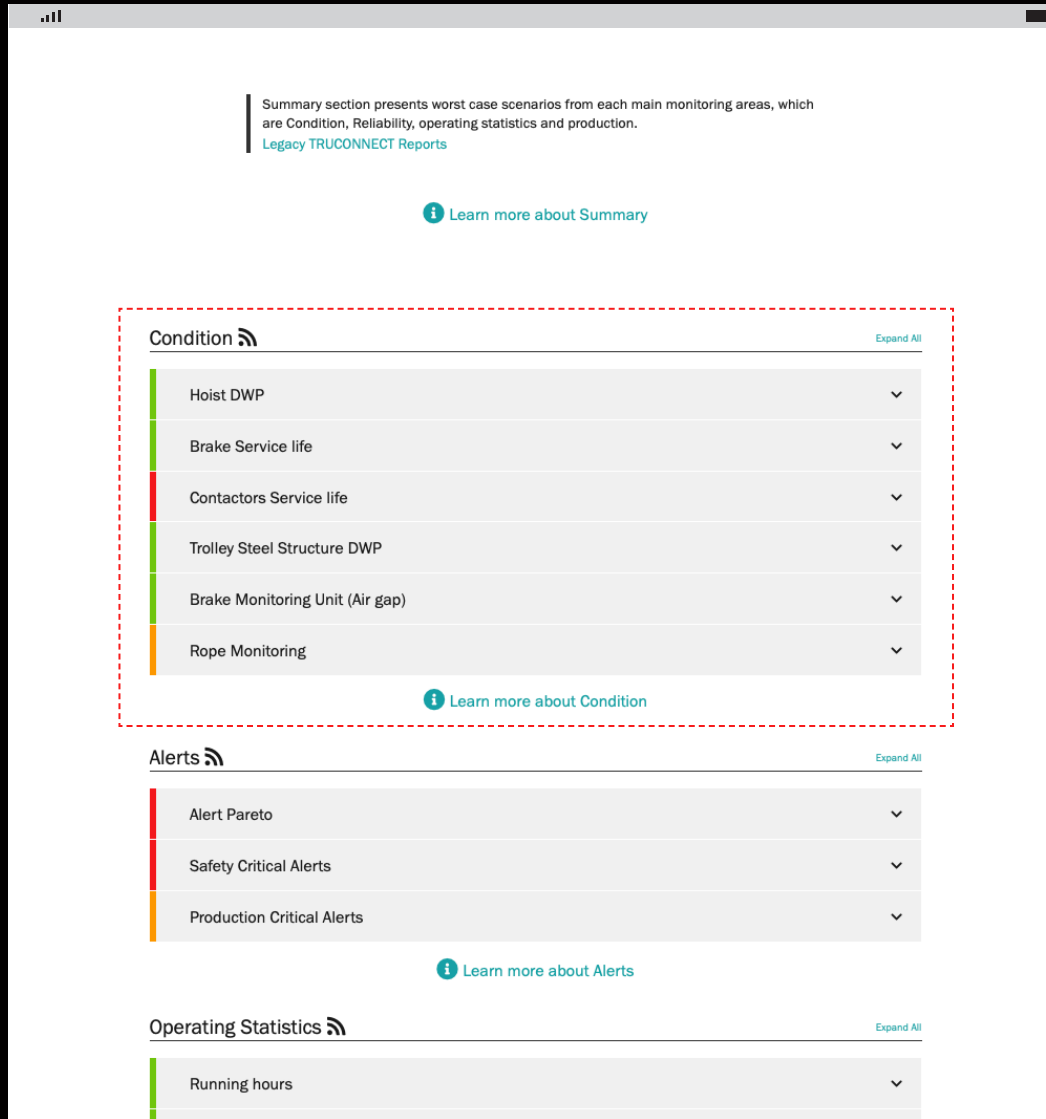
Condition monitoring can be used to check component replacement frequency, which provides a clear indication of **upcoming maintenance needs** and how changes in the operator's actions affect the service life of components.



Together with TRUCONNECT alerts, condition data provides essential information that can be used to plan and schedule maintenance actions and for troubleshooting in order to **improve safety** and **reduce unplanned downtime**.



Having the ability to plan an outage, rather than respond to a breakdown, helps **safeguard production goals** and keep your operations running smoothly.



CONDITION

Hoist DWP

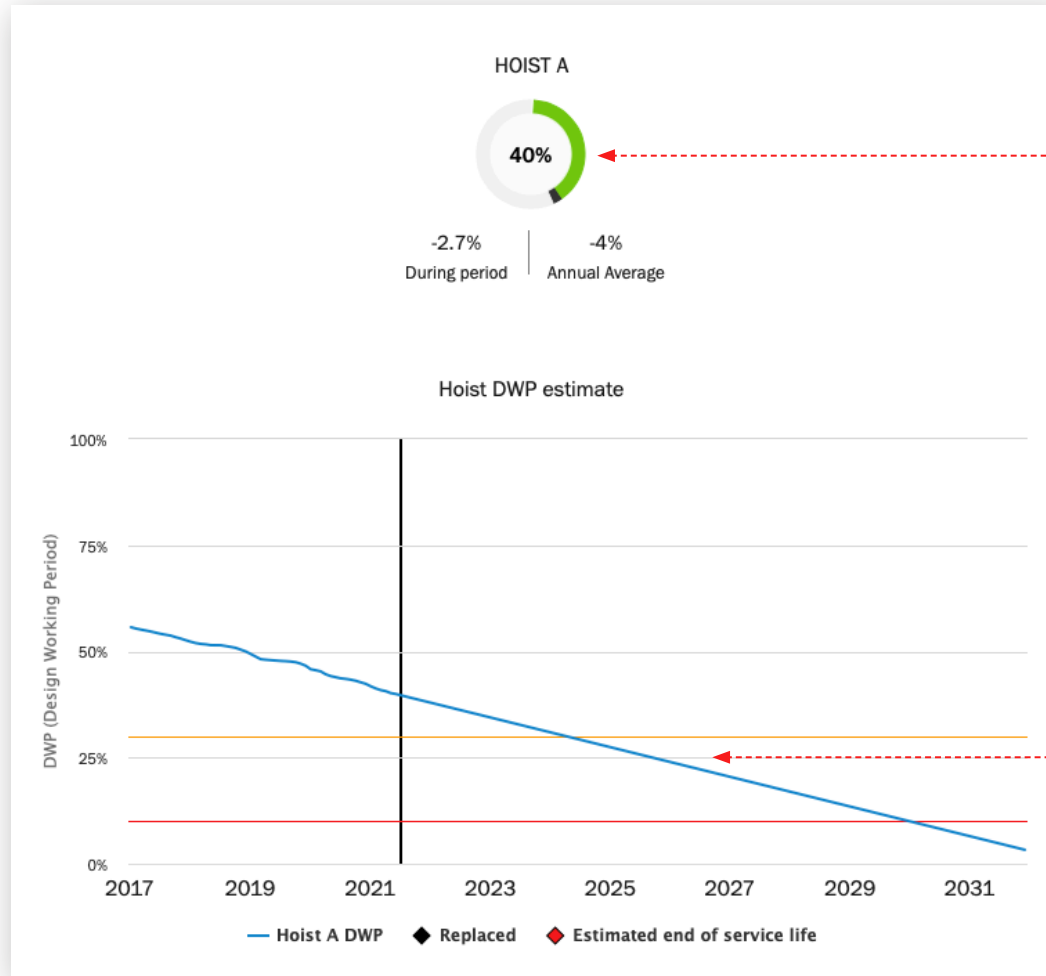
What the TRUCONNECT data tells you

Hoist DWP is a calculation of the remaining service life of the hoist and the remaining fatigue life of the machinery components.

Common issues and corrective actions you can take

When the hoist DWP is between 30% and 10%, you can begin to plan for an overhaul or replacement. The hoist DWP estimate gives you an estimated end of service life so you can plan well in advance.

If you notice an unusually fast decline in the hoist DWP, it can be because of continuous usage of the hoist near the rated capacity and/or continuous hoist operation. This can lead to premature wear on the hoist and hoist components so you may want to modify your inspection and preventive maintenance schedule to help avoid unplanned downtime.



Graph indicates that the hoist has 40% of its theoretical service life left. It's also shown as the black line on the graph below.

If hoist usage changes, i.e., longer running time or heavier loads, the end of service life will come sooner.

Begin planning for overhaul or replacement.

CONDITION

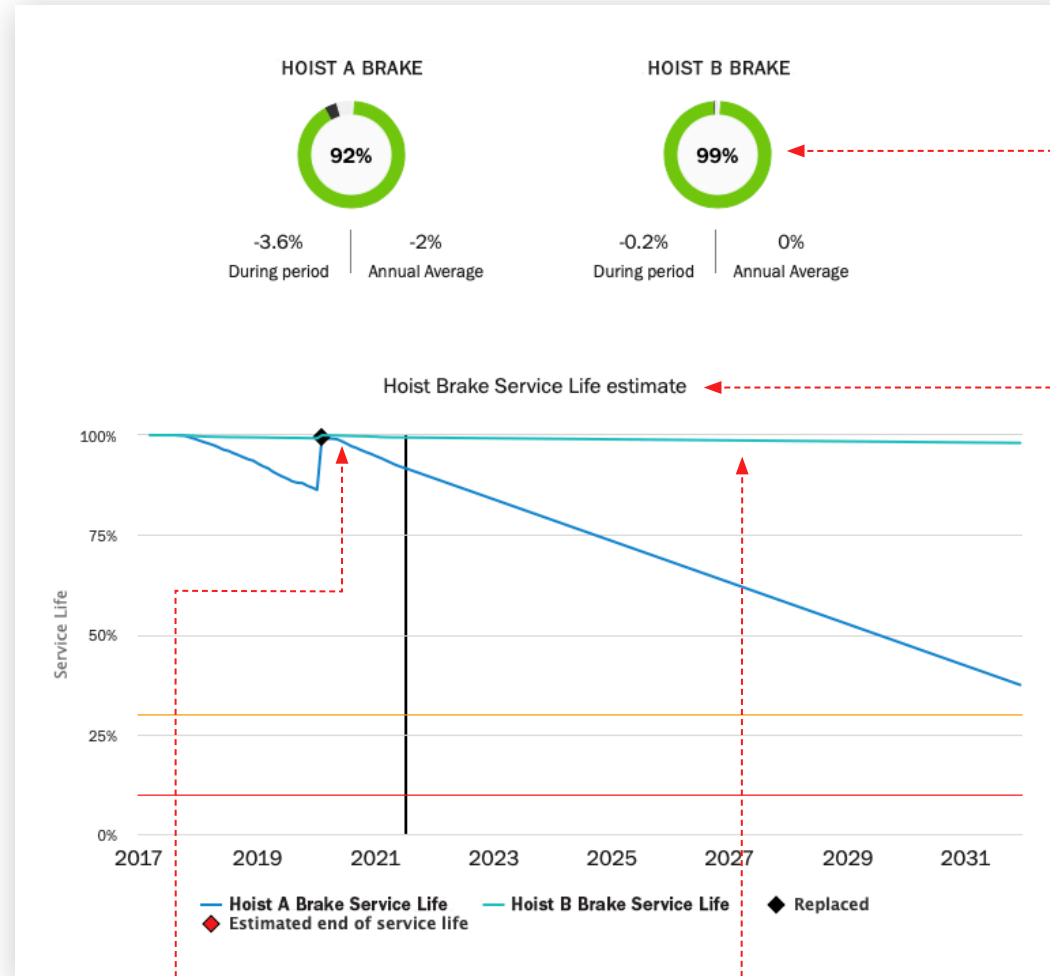
Brake Service Life


What the TRUCONNECT data tells you

Remote Monitoring data shows you when the entire brake must be replaced. The Brake DWP calculation is based on the number of hoisting motor starts and the number of emergency stops during lifting and lowering motions.

Common issues and corrective actions you can take

Continuous hoist operation, motor jogging, and emergency stops during lifting or lowering motion (hoist brake) or traversing and traveling motion (trolley or bridge brake) can lead to premature brake wear or failure. You should schedule brake replacement with Konecranes when required by physical inspection or when brake life warning is indicated in the graphic.



MAINTENANCE TIP: 

HOIST A BRAKE If this graph shows orange (warning level) you'll want to schedule a brake replacement.

HOIST A BRAKE If this graph shows red (alert level), you'll want to tag out the crane.

Brake service life is the calculated estimate of the mechanical service life of the electromagnetic disc brake.


Hoist A brake was recently replaced and Hoist B isn't utilized as much as A as indicated by the graph.

CONDITION

Brake Monitoring


What the TRUCONNECT data tells you

Brake Monitoring measures opening current and indirectly shows the status of air gap and friction material wear. As the air gap of the brake increases, the value decreases toward 0%. If the value is under 5%, there is very probable risk that the brake will not open. If the brake does not open you can be faced with sudden brake failure that can result in load drop and severe danger to everyone in the vicinity of the crane.

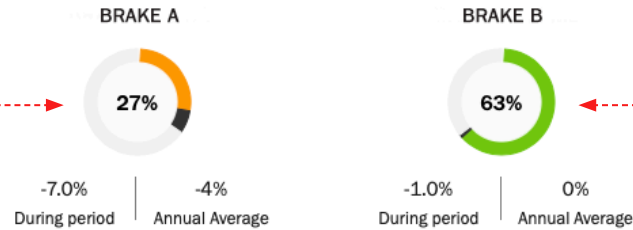
Brake Monitoring provides **safety alerts** so you can be alerted to brake issues such as condition warnings and failures by text or email. Alerts are shown in the Alerts section. 

Common issues and corrective actions you can take

An increase in air gap and moderate wear in the friction material of the brake indicate a need for corrective action. You'll want to closely monitor the condition of the brake and brake friction materials. You can also have the brake mechanics and electrics inspected and an inspection and adjustment of the air gap of the brake.

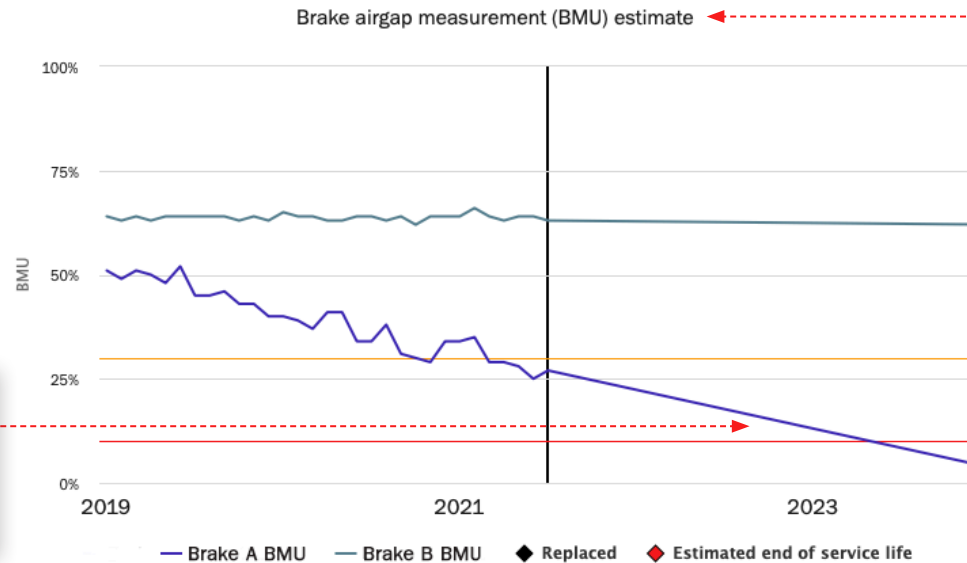
As the measurement approaches zero, adjust the air gap and change worn friction materials. 

The lower the value, the more wear there is in the brake lining, and the larger the air gap.



In a properly operating brake, the value is typically 80% to 30%. As the brake lining wears, the brake air gap increases, and the value trends towards 0%.

The Brake Monitoring Unit measures the opening current of the electromagnetic disc brake.



CONDITION

Contactors Service Life

What the TRUCONNECT data tells you

The service lifetime of hoist contactors is directly influenced by the usage rate of the hoist and, most significantly, by the use of jogging/inching. TRUCONNECT data indicates when you should start planning for, or there is an immediate need, to change the hoist contactors.

Common issues and corrective actions you can take

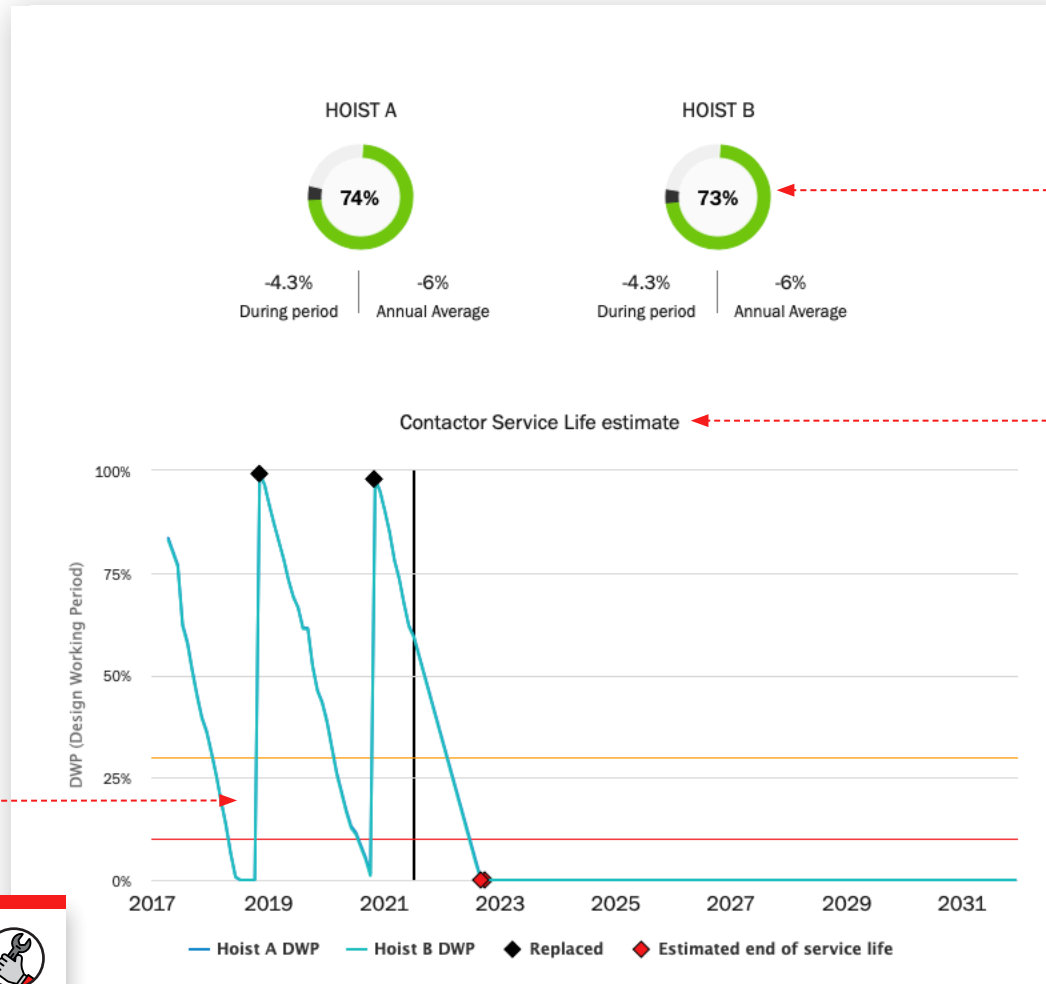
Operator behavior, such as jogging / inching of the hoist, peaks in production demands, or excessive hoist operation above design class of hoist motor starts can lead to sudden contactor failure that results in crane stoppage.



When contactor life levels reach warning level you'll want to plan for changing the hoist motor contactors. If the contactor life reaches alert level, you'll need immediate maintenance.



PATTERN: The graph shows that the contactor service life reached under the 30% threshold around 15 months after it was replaced. This can help you plan for replacement of components.



Graph indicates that the hoist has 73% of its theoretical service life left. It's also shown as the black line on the graph below. The DWP a new hoisting motor contactor is expressed as 100%.

The theoretical remaining DWP of the hoisting motor contactors are based on the operating history of the contactors.

CONDITION

Trolley Steel Structure

What the TRUCONNECT data tells you

Trolley and bridge steel structure DWP is a calculation of the remaining service life of the trolley steel structure. When the DWP value approaches zero, the steel structure should be overhauled or replaced. TRUCONNECT data shows the theoretical remaining DWP of the machinery based on the operating history.

Common issues and corrective actions you can take

If you notice a steep decline in DWP, it may be due to premature fatigue of the trolley steel structure. You should consider a [Crane Reliability Study](#).

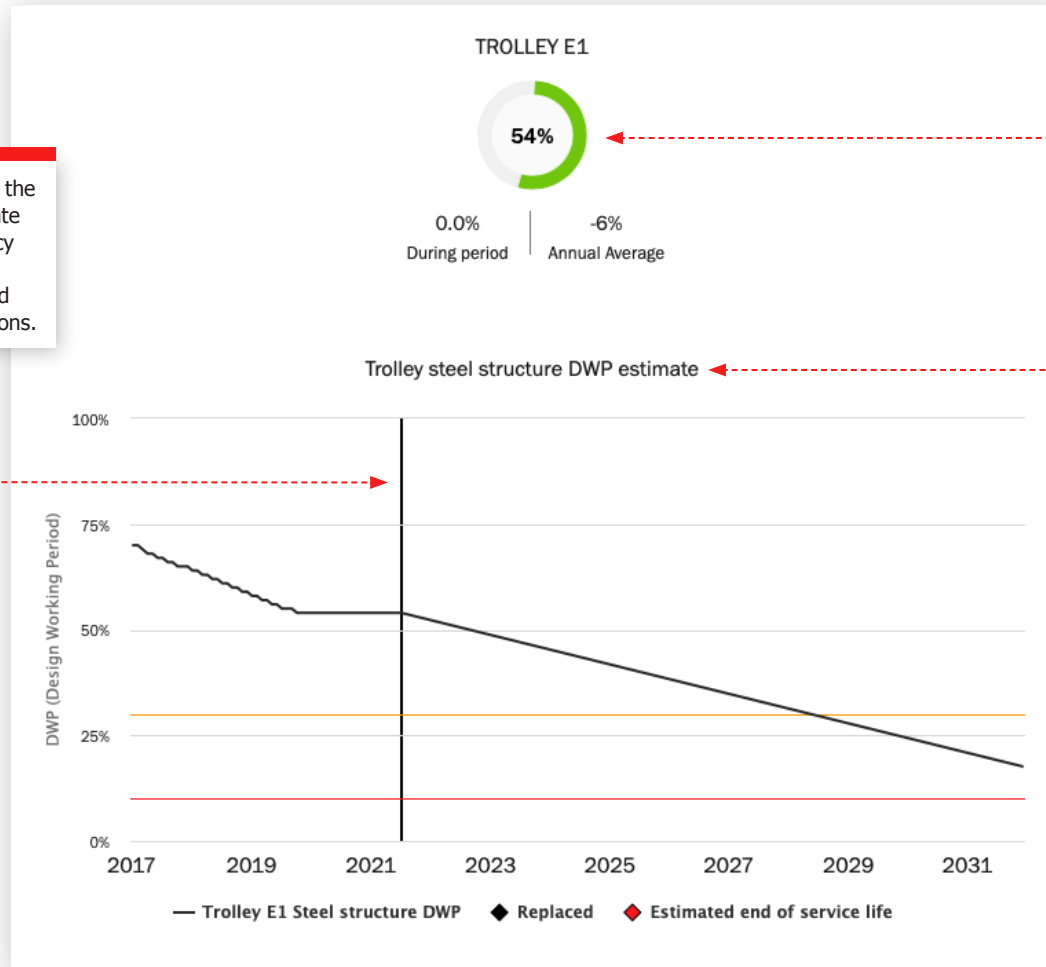
On or before reaching the end of DWP, a general overhaul is typically required. You can also use the information to modify your inspection schedule based on actual usage.



The DWP depends on the design class, usage rate of the crane, frequency of operation close to the rated capacity, and environmental conditions.

This crane has one trolley. There is 54% of its theoretical service life left.

The DWP value is calculated from the hoisting cycles and operating hours of the trolley. The more hoisting cycles and operating hours, the faster the DWP of the trolley steel structure decreases.



CONDITION Wire Ropes

What the TRUCONNECT data tells you

With TRUCONNECT Wire Rope Monitoring, sensors gather data while the crane is in normal operation to allow for continuous monitoring of the most wearing sections of the wire rope. Wire Rope Monitoring data shows a trend view which indicates the progress of rope defects over the selected time frame. Warning and discard limits are shown so you can plan for replacements or there is an immediate need to replace the wire rope.

Safety alerts can be sent by email when a Wire Rope Monitoring safety issue appears such as a pre-warning for a need to replace the wire rope or a warning that the wire rope needs to be replaced immediately.

Common issues and corrective actions you can take

Continuous hoist operation, especially when the same lifting height is used repeatedly, shock loads and overloads, repeated rope bends through rope sheaves during hoist operation with burden, and rope surface damage for an external reason such as a collision or corrosion can indicate that the number of broken wires is increasing which can cause sudden rope failure. Replace the wire rope according to the TRUCONNECT alerts.



View your rope type to help purchase the correct replacement rope.

Wear trend assists in optimal planning for rope change.

Unit of measure: Metric units

Rope condition indicator: Rope Diameter x 30 (LF30)

Rope1

Rope1
6X36IWRC2160U
Ø22mm
Ordinary
Last full rope measuring

Rope Condition is Warning.

Local Faults: 19 Broken wires | 21 Max limit
Defect severity was identified in worst measured segment over a length of 30 x Ø22mm according to ISO4309:2017.

Rope2

Rope2
6X36IWRC2160U
Ø22mm
Ordinary
Last full rope measuring

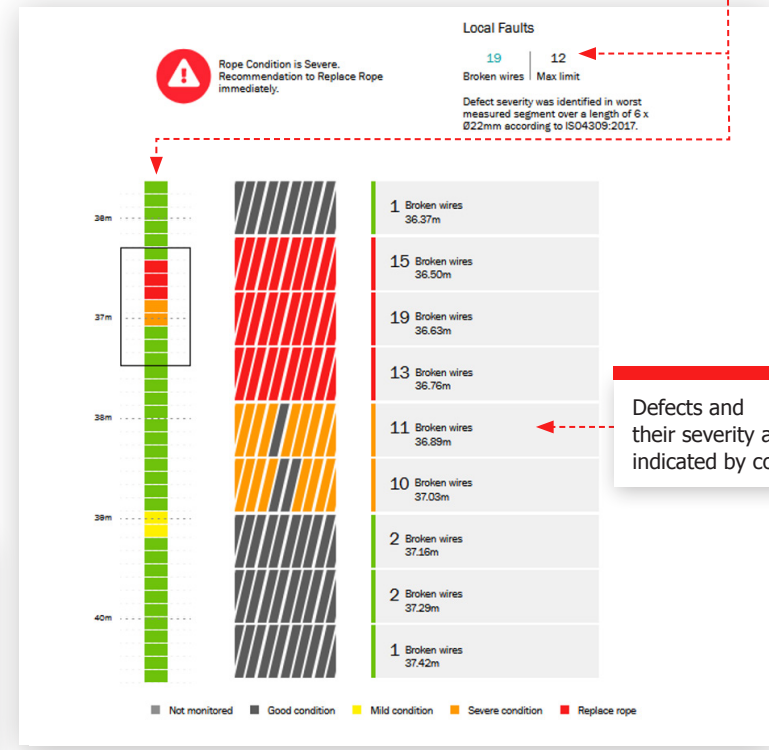
Rope Condition is Severe. Recommendation to Replace Rope immediately.

Local Faults: 32 Broken wires | 21 Max limit
Defect severity was identified in worst measured segment over a length of 30 x Ø22mm according to ISO4309:2017.

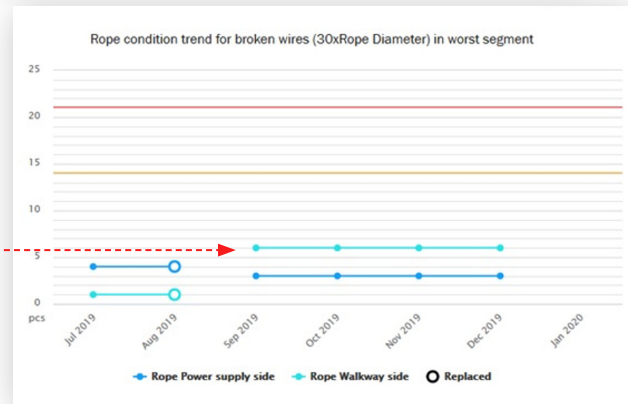
Real time status indicator summarizes rope condition and safety.

View the discard limit of the rope and see the biggest current defect on the rope.

One click to view details of the most severe spot on the rope. Scroll up/down the entire rope length for a comprehensive view of rope condition.



Defects and their severity are indicated by color.

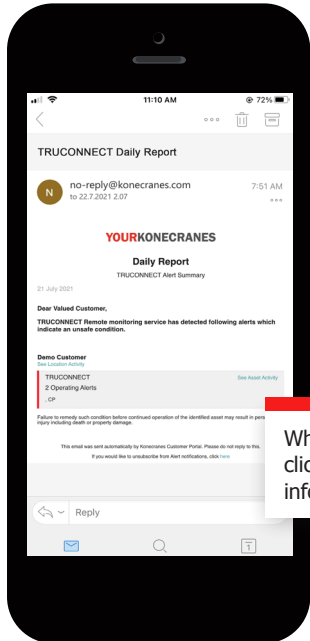


Alerts

In addition to Brake Monitoring and Wire Rope Monitoring alerts, Remote Monitoring also provides text or email alerts for safety and production critical issues.



Overloads, emergency stops and motor over temperatures can all contribute to premature wear on components. Alerts can help you take appropriate and immediate action before safety and production is compromised.



When you get alerts by email - you can click to go to that asset's TRUCONNECT information on yourKONECRANES.

The screenshot shows the TRUCONNECT web interface with the following sections:

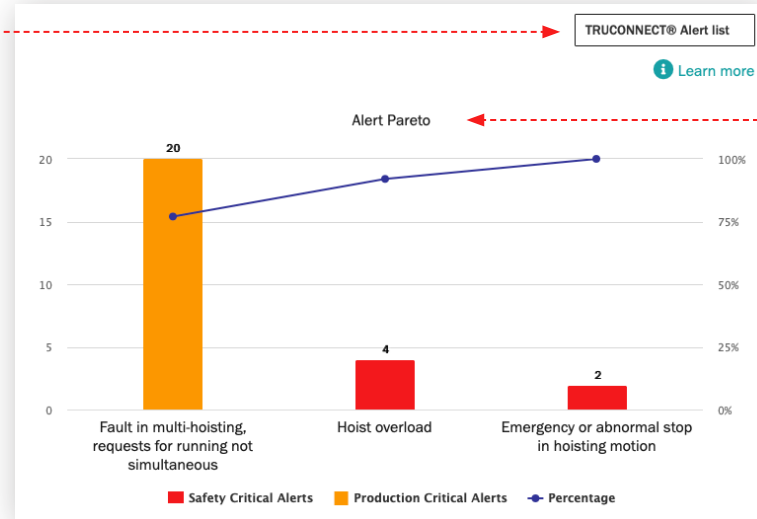
- Monitoring Categories:**
 - Brake Service life
 - Contactors Service life
 - Trolley Steel Structure DWP
 - Brake Monitoring Unit (Air gap)
 - Rope Monitoring
- Learn more about Condition** (Information icon)
- Alerts** (Expand All):
 - Alert Pareto
 - Safety Critical Alerts
 - Production Critical Alerts
- Learn more about Alerts** (Information icon)
- Operating Statistics** (Expand All):
 - Running hours
 - Load
 - Starts and Cycles
 - Emergency Stops impact on Brake Service Life
 - Overloads vs. Hoist Cycles
 - Motor Over Temperatures vs. Hoisting Speed
- Learn more about Operating Statistics** (Information icon)

Alerts

In the Alert Pareto a 20/80 rule can be formed to show the 20% of the causes that are responsible for 80% of the problems. In other words, the 20% of the most common causes are responsible for 80% of problems related to safety and/or production downtime.

By eliminating the root causes of the most frequently occurring alert types, it is possible to significantly improve the safety and reliability of the equipment.

Click here to see the timestamp and details of alerts.

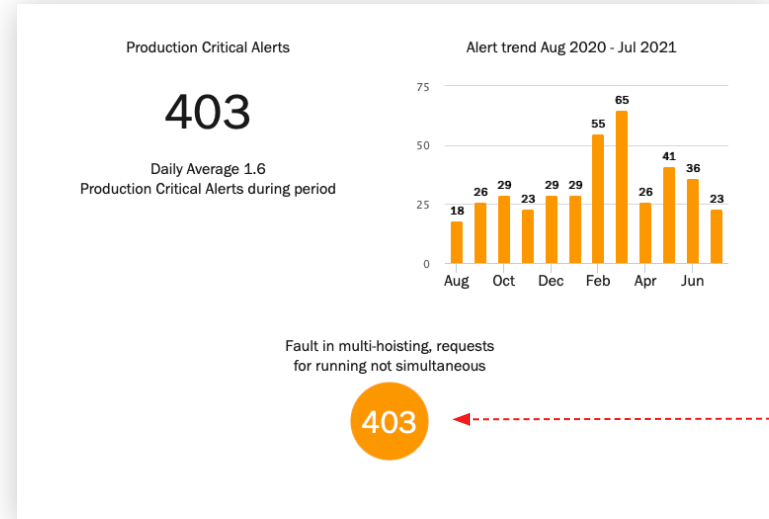
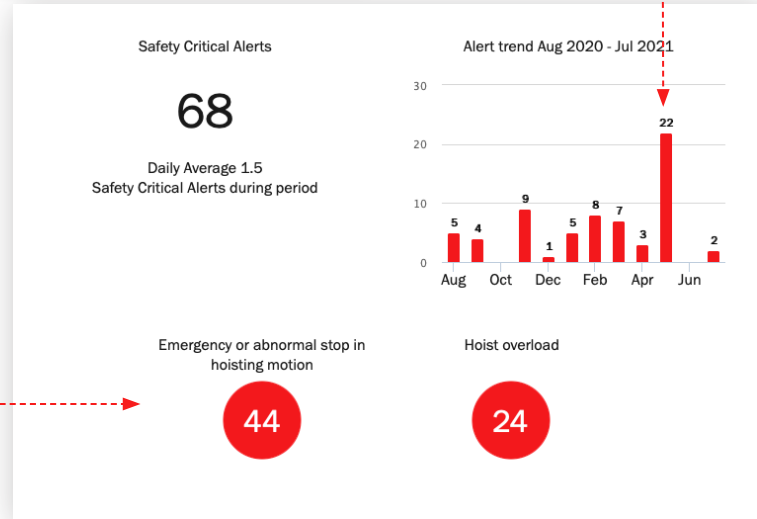


The Pareto analysis displays and ranks the most important causes of alerts related to the safety and usability of the crane.

ANOMALY: The graph shows a much higher number of safety alerts in May. The high number of e-stops may indicate operator misuse or an issue with the pendant or radio control.



Production-critical risks can result in crane stoppage or production downtime and can include motor overheating, inverter faults and control system faults.



Safety-critical risks indicate a safety risk to the crane or its operation and can include emergency stops, overloading and brake faults.



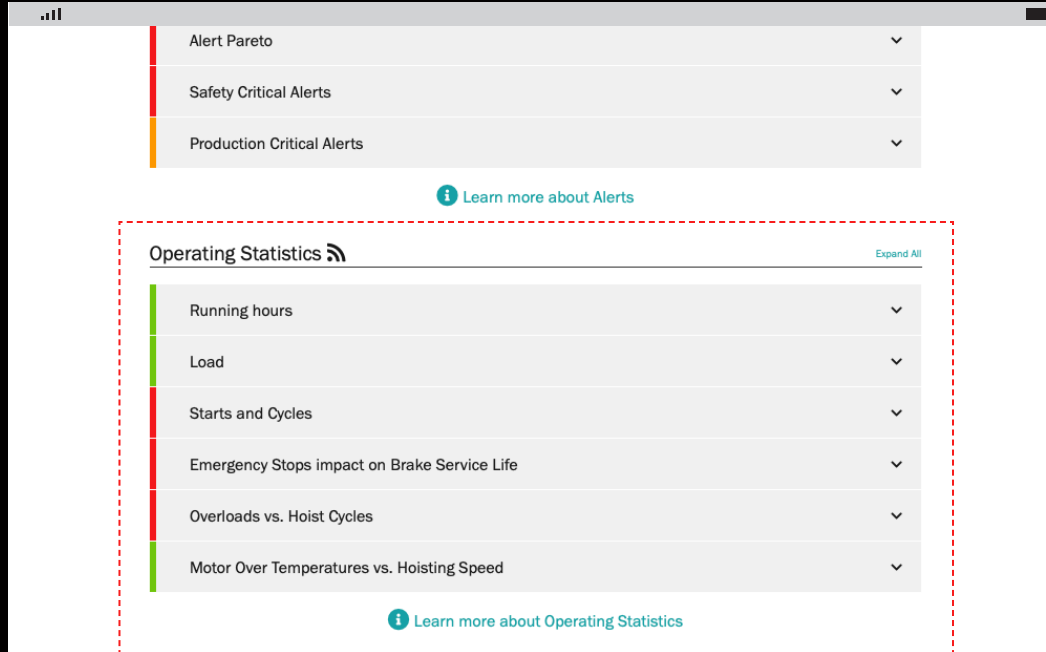
Operating Statistics

Operating Statistics show how different crane operating patterns affect the safe operation and condition of the crane and the service life of critical components.

Operating patterns can significantly influence the service life and safety of individual components. Looking at operating data can help you make decisions in regards to the appropriate operation of your cranes in order to achieve optimal results in terms of the safety, service life and maintenance costs of your crane investment.



Every crane is designed according to its anticipated use and your production process depends on the reliability of your lifting equipment. However, actual usage often varies and changes through the lifetime of the crane, based on factors such as application, production cycles and operator capabilities. Operating statistics can help tell you if your crane is being used in the way it was intended and designed and can give you insight into your process.



OPERATING STATISTICS

Running Hours

What the TRUCONNECT data tells you

Under normal operation, hoist running hours should not exceed the estimated design limit for its duty class. TRUCONNECT data shows the daily running hours of the hoist relative to the maximum design running time. If the design running time is exceeded, the hoist is being operated in excess of the design and its mechanical components service life will shorten.

Looking at the running hours trend is an easy way to examine hoist-specific running times, changes and the possible asymmetrical operation of different hoists. If only one in a pair of hoists is frequently used, it will reach the end of its service life much faster than the unused hoist.

Common issues and corrective actions you can take

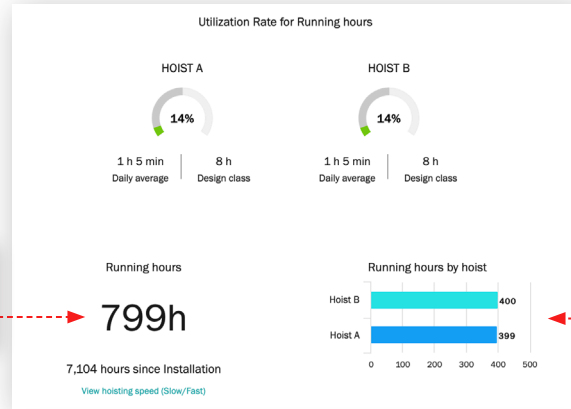
Process flow, long lifts, excessive use of low speed motion and long running periods at peak production demands can cause excessive running hours. This can affect the condition and temperature of the hoisting motor and increased motor temperature can lead to an over temperature condition and operational interruptions.



Excessive running hours can also increase wear of crane components such as the bridge, trolley and drive and reduce the service life of the hoist. You should review your inspection and preventive maintenance schedule so you can make changes according to actual usage.



TWO HOISTS

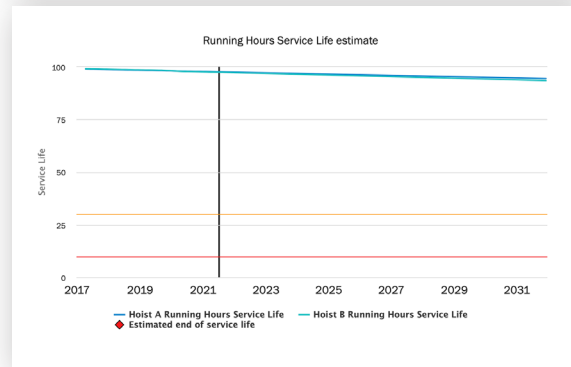


Total running hours of both hoists.

You can see here if one hoist is being used more frequently than the other.

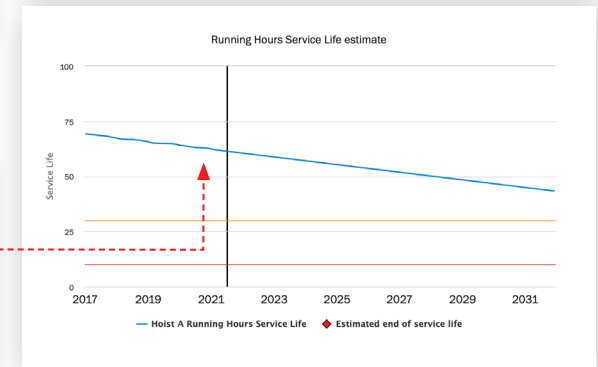
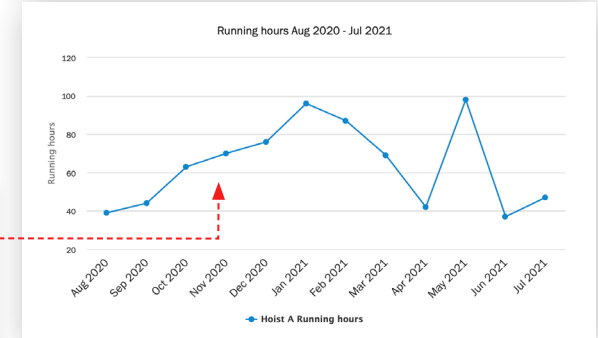
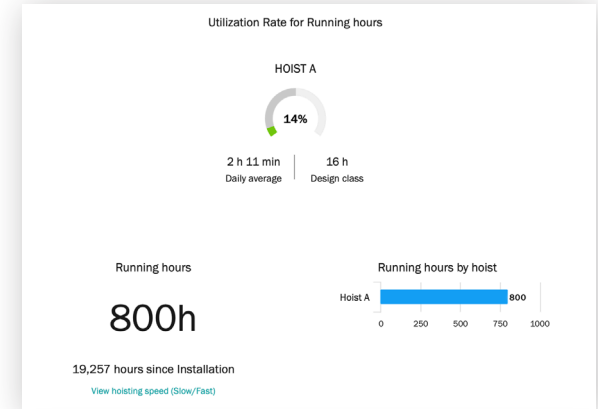


TREND: An increase in running hours may warrant a look at your inspection and maintenance schedule as components will wear faster with more use.



The running hours of this one hoist is twice that of one hoist in the pair at left. You can see the service life estimate falls more quickly for this one hoist.

ONE HOIST



OPERATING STATISTICS

Load

What the TRUCONNECT data tells you

Load data shows the production volume of the crane or individual hoist. Load spectrum shows the distribution of loads the crane operates with and whether the crane is in heavy or light use.

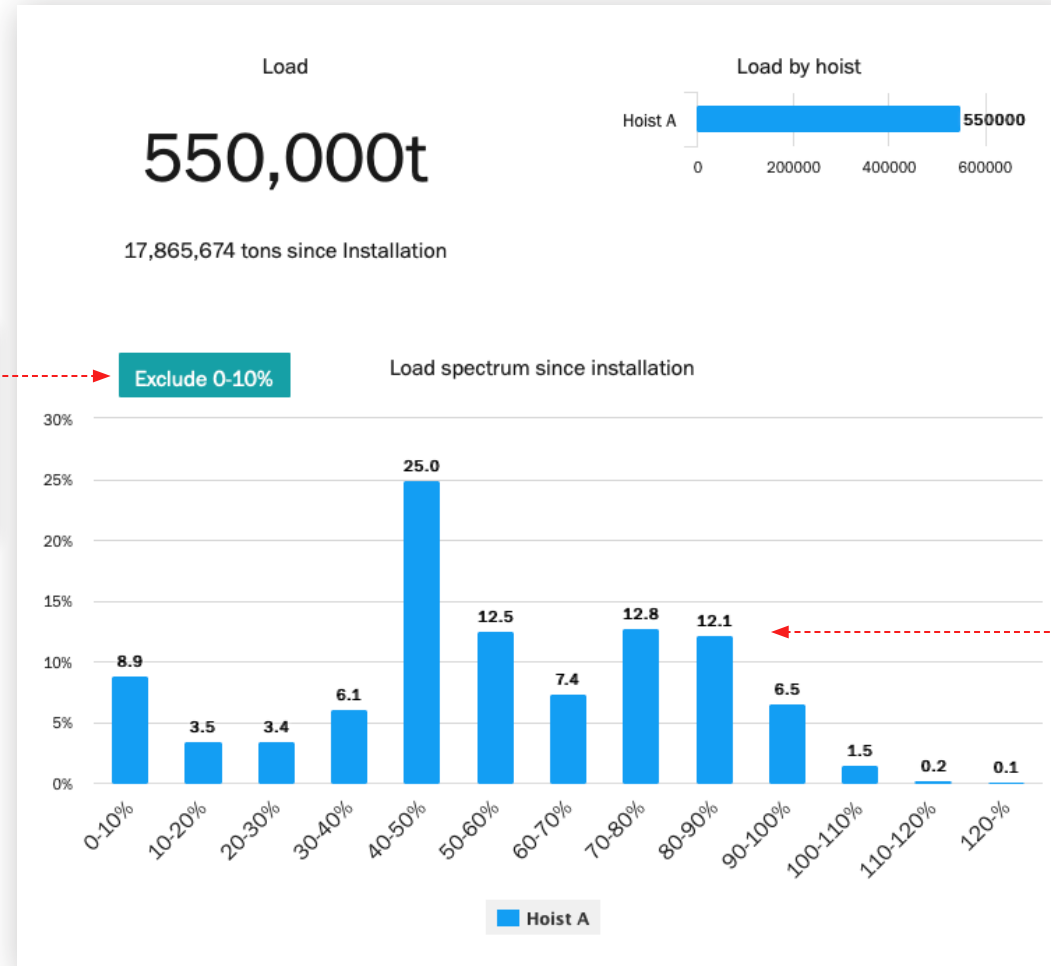
Operation close to the rated load value causes stress on the crane structures and requires increased attention to maintenance.

Common issues and corrective actions you can take

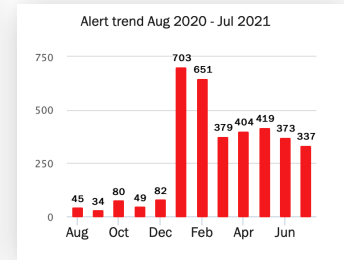
If loads are continuously at or in excess of 50%, it must be taken into account in the maintenance planning of the crane.



The load spectrum can also be used to assess the suitability of the crane for the current type of operation based on the frequency of overloading and how often the load spectrum reaches the rated load.



Load group 0%–10% refers to operating the crane with an empty hook. Click here to exclude the 1-10% range from the graph.



Based on how often this crane is reaching the rated load and the frequency of overloading—from the alerts section—it may not be suitable for its current operation.

OPERATING STATISTICS

Starts and Cycles

What the TRUCONNECT data tells you

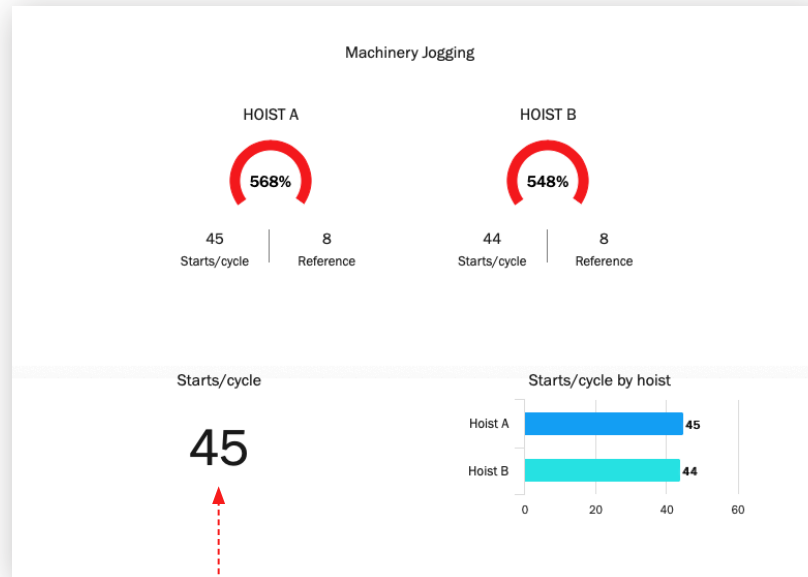
Hoist motor starts per work cycle (jogging/inching) shows the frequency of incremental lifting of the load. Inching significantly reduces the service life of the brake and hoist contactors, stresses mechanical structures and overheats the electric motor.

Common issues and corrective actions you can take

Operator behavior, such as jogging and/or inching (repeatable motor starts), peak production demands, and loose cabling can cause excessive starts. This can lead to premature wear of the brake, contactors and other components and reduce the lifetime of control equipment such as radio remote or pendants. Excessive starts can also increase the motor temperature which can lead to an over temperature condition and operational interruptions.

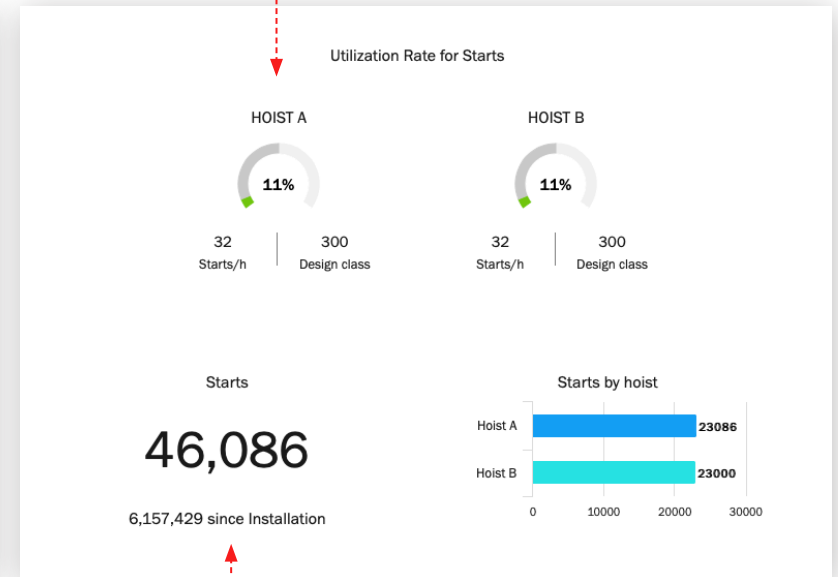


Excessive starts can indicate the need for operator training, inspection of brake components, motor and hoist contactors, and a review of your inspection and preventive maintenance schedule.



If the cumulative number of motor starts during a single hoist cycle is more than eight, it is considered light inching/jogging. If the cumulative number of motor starts during a single lift cycle is more than 20, it is clearly considered inching and/or jogging.

Starts per hour show the average number of hoist 2-speed motor starts per hour relative to the maximum start design values. If the design value is exceeded, the hoist motor can reach the end of its service life faster than the design value indicates.



Total starts for both hoists.

OPERATING STATISTICS

Starts and Cycles

What the TRUCONNECT data tells you

The maximum number of work cycles is an estimate of the remaining working period of the hoist. The working period is calculated from the cumulative number of maximum hoist cycles. TRUCONNECT trend data shows the remaining working period based on the operating history. When the end of the safe working period is reached, the hoist should be overhauled.

Common issues and corrective actions you can take

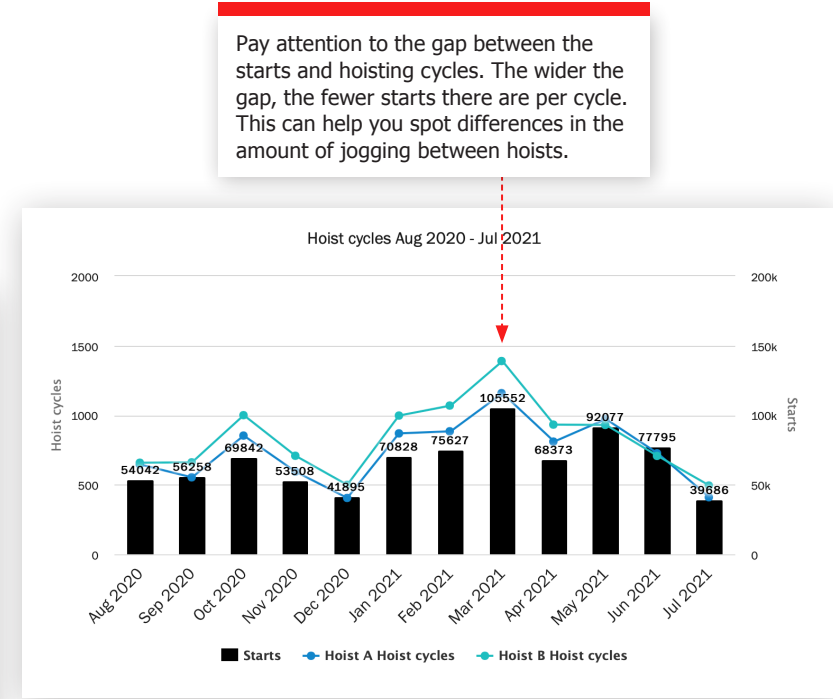
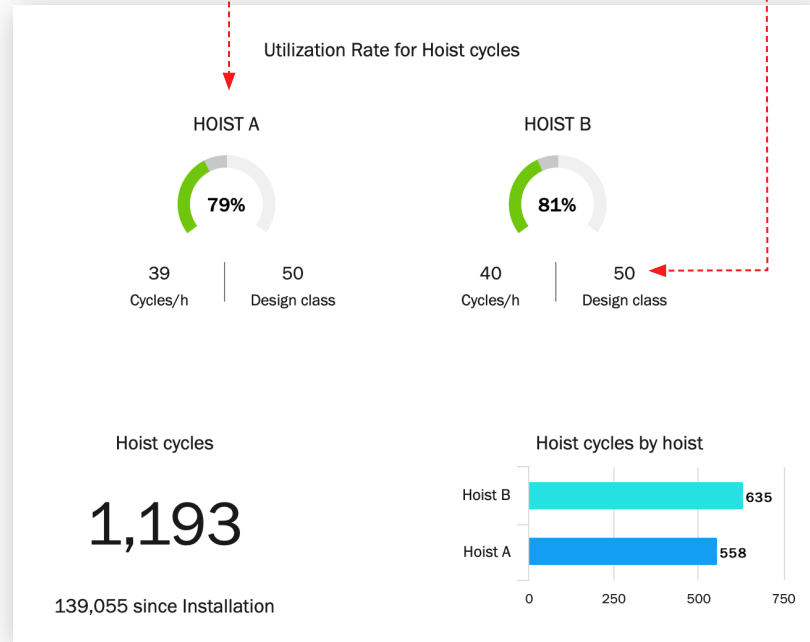
If there is an indication that the hoist is being used more than expected, you should consider operator training, an application study to determine whether the equipment suits current production and operating demands, and a review of your inspection and preventive maintenance schedule.



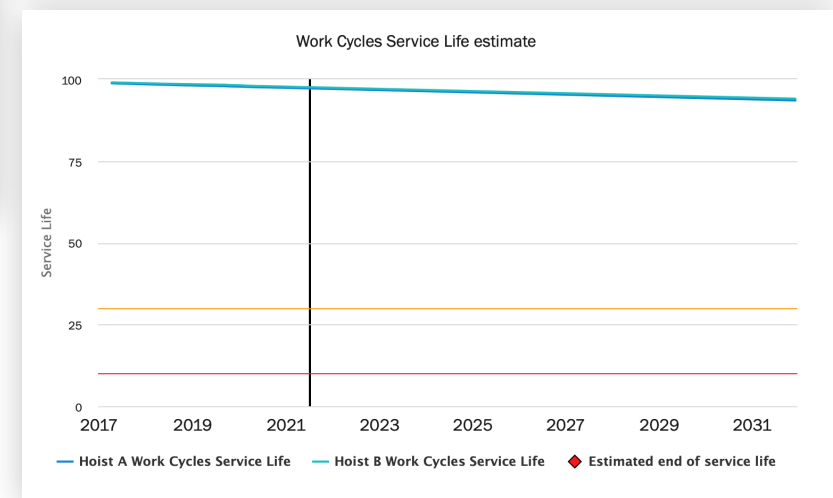
Work cycles per hour shows the average number of work cycles per hour relative to the design value. If the design value is exceeded, the hoist is being operated in excess of the design and its mechanical components service life will shorten.



The maximum number of cycles in an hour that the hoist was designed for.



Pay attention to the gap between the starts and hoisting cycles. The wider the gap, the fewer starts there are per cycle. This can help you spot differences in the amount of jogging between hoists.



OPERATING STATISTICS

Emergency Stops Impact on Brake Service Life

What the TRUCONNECT data tells you

TRUCONNECT data shows the impact of emergency/ abnormal stops on the brake service life in addition to the hoist motor starts. The impact of a single emergency stop during lifting or lowering corresponds to 50 normal starts. You can see the cumulative number of emergency stops per period and the service life trend of the brake.

Common issues and corrective actions you can take

Emergency stops can be caused by operator behavior such as using the e-stop as a normal means of stopping or lifting the hook to the upper limit switch, power quality including radio power, and loss of control signal between the controller and equipment.

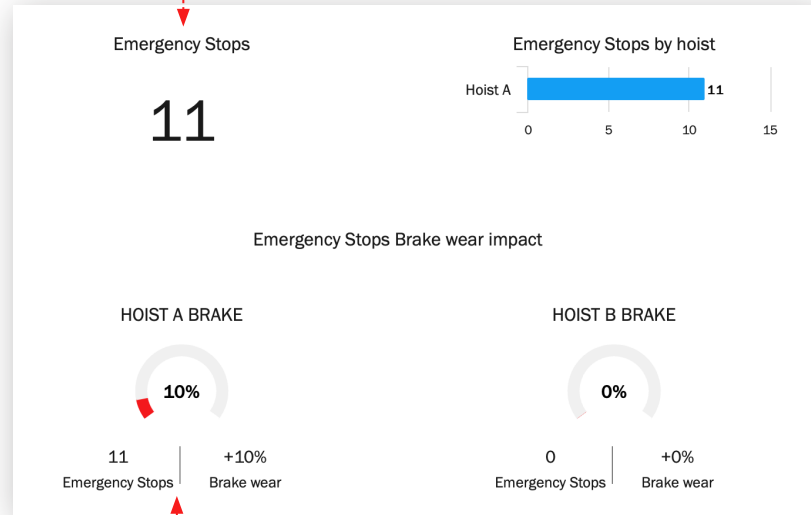
Emergency stops can indicate an actual emergency so it's important to look into the use of the e-stop. When emergency stops are misused it can lead to shock loading and premature wear of the brake, contactors and other components.



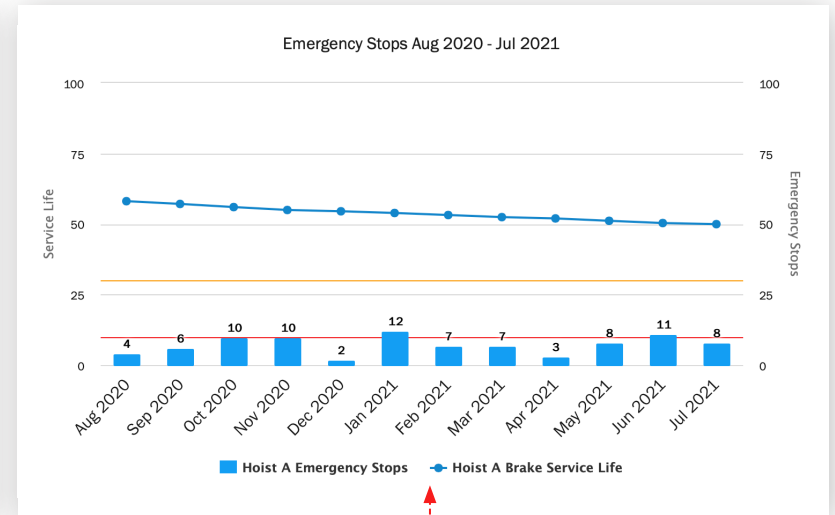
Abnormal e-stop usage can indicate a need for operator training, pendant or remote controller maintenance, power supply issues or the need for a hoist brake or other machinery brake inspection.



Total number of emergency stops in the selected time frame - in this case 30 days.



The percentage refers to the share by which emergency stops increase brake wear.



A higher number of emergency stops can indicate why brake service life is declining faster than expected.



OPERATING STATISTICS

Overloads vs. Hoist Cycles

What the TRUCONNECT data tells you

Overloading is registered when the load exceeds the rated capacity of the hoist. TRUCONNECT records the cumulative number of overloading episodes and the period at which the load exceeds the set limit.

TRUCONNECT load spectrum data shows how close to the rated load the hoist is operated at on average. It provides an indication of the suitability of the hoist to the application and the operator's usage habits. The information can be used to examine the frequency of overloading in work cycles.

Common issues and corrective actions you can take

Overloads can be caused by operator error such as attempting to lift loads beyond the rated capacity, shock loading or starting a load lift in high speed, improper rigging, improperly calibrated load monitoring device or improper use of below-the-hook devices. This can cause cumulative fatigue or damage to crane or hoist components such as hooks, weld seams, sheaves, wire rope, drums, gearboxes, couplings, motors and brakes.



If the data shows overloads you may want to consider operator training to address rigging, crane controls, load swing and pre-operational inspections. You may also need a more in-depth look at the critical components of your crane such as a gear case inspection or coupling inspection or a rail survey.



Total number of overloads during the selected time frame - in this case 30 days.

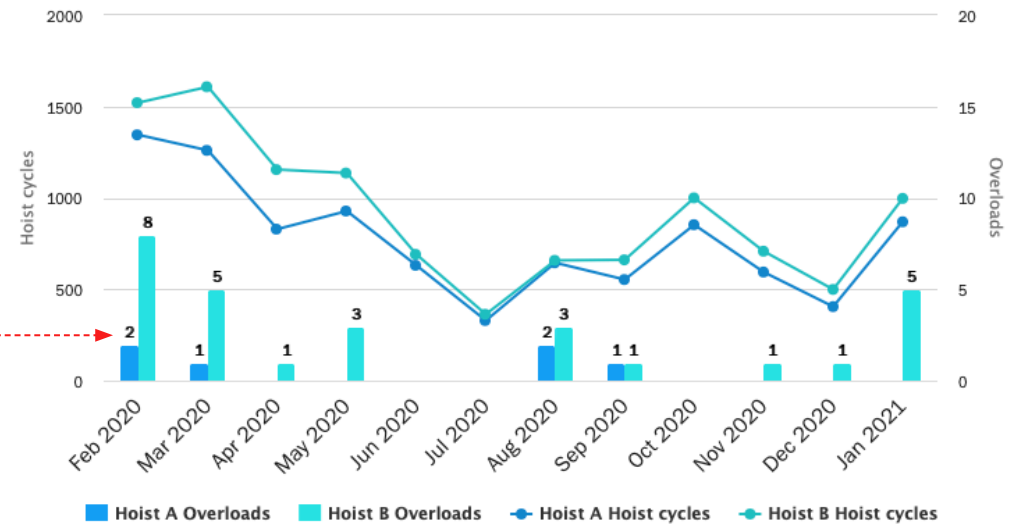
Overloads

5

Overloads by hoist



Overloads Feb 2020 - Jan 2021



If there is more than one overload occurrence per 1,000 hoisting cycles, the reason should be investigated.

OPERATING STATISTICS

Motor Over Temperatures vs. Hoisting Speed

What the TRUCONNECT data tells you

Over temperature has a significant impact on the service life of the motor. Even one episode of significant over temperature can halve the service life of the motor. TRUCONNECT data shows the ratio of low and high-speed operation of a 2-speed motor and the number of over temperature episodes in the same period. Frequent operation at low speed increases the likelihood of over temperature.

Common issues and corrective actions you can take

Hoist motor over temperature can be caused by excessive operation at slow speeds, too many starts in a short time frame, ED values have exceeded the nominal ED value of the hoist duty class, high ambient temperature and/or a dirty environment, the work environment is hotter than the design limit of the motor, the hoist is used above its design duty cycle, or the motor is dirty or the fan is inoperative. This can lead to premature motor failure.

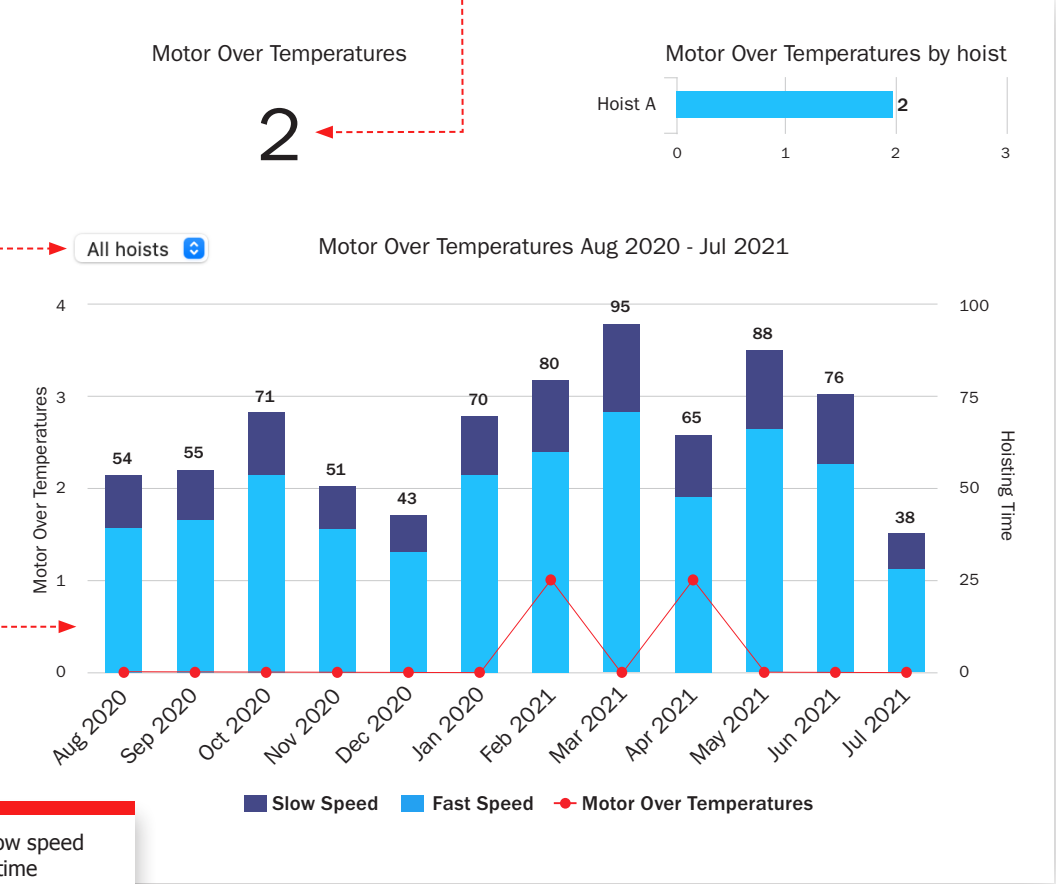


If excessive over temperature events are occurring you may want to consider operator training, check the motor design class, measure resistance and insulating resistance of motor windings, and review your inspection and preventive maintenance schedule.



A motor over temperature occurrence can result in a burned up motor, so any instance should be investigated.

View over temperatures for all hoists or switch to just one.



Operating the hoist in slow speed for extensive periods of time increases the likelihood of over temperature occurrences. As a general rule, slow-speed operating time must not exceed 30% of the fast-speed operating time.

TRUCONNECT data in the Business Review

Once a year or as needed, we'll conduct a Business Review with you using the information in the Business Review section of yourKONECRANES. You can check this information at any time and choose any time frame for the data.

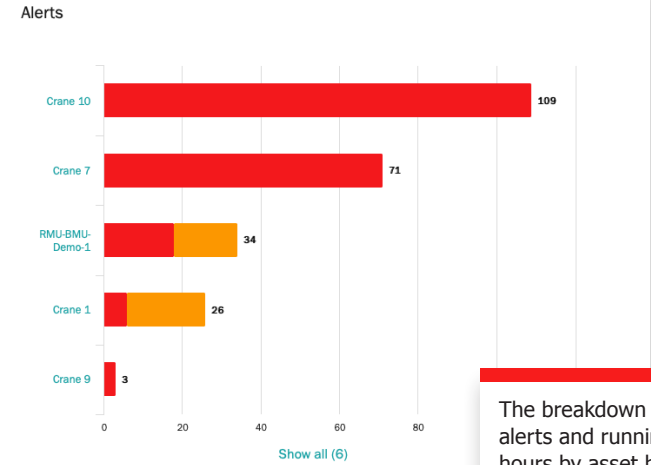
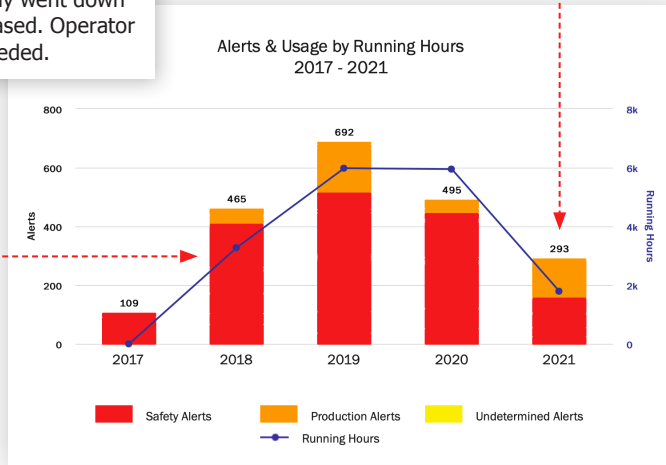
The Business Review section of yourKONECRANES provides an in-depth look at your service relationship with Konecranes. The TRUCONNECT information in this section gives you a high-level view of safety and production risks for connected assets. This information is useful for planning next actions.

The information in the TRUCONNECT section can help you pinpoint assets that need attention and make appropriate plans for budgeting and maintenance.

PATTERN: The safety alerts remained nearly constant over a three-year period and only went down when usage decreased. Operator training may be needed.



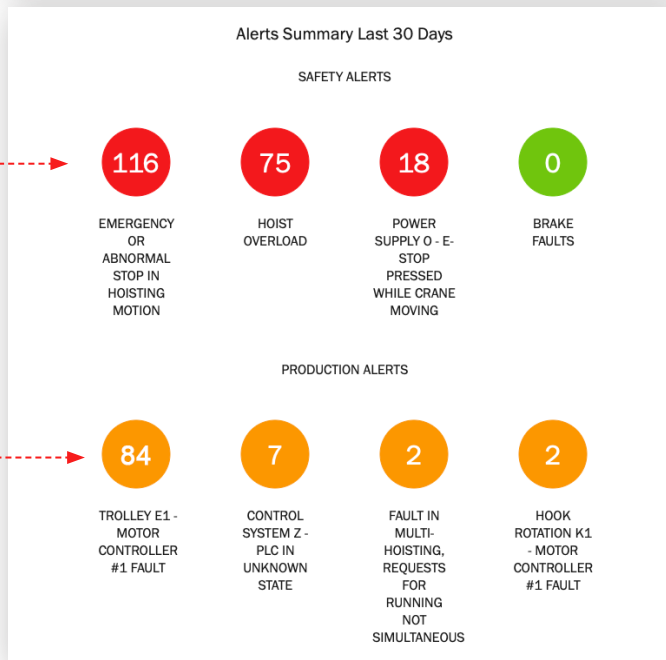
ANOMALY: The usage went down, but production alerts increased. An adjustment to the maintenance plan may be needed.



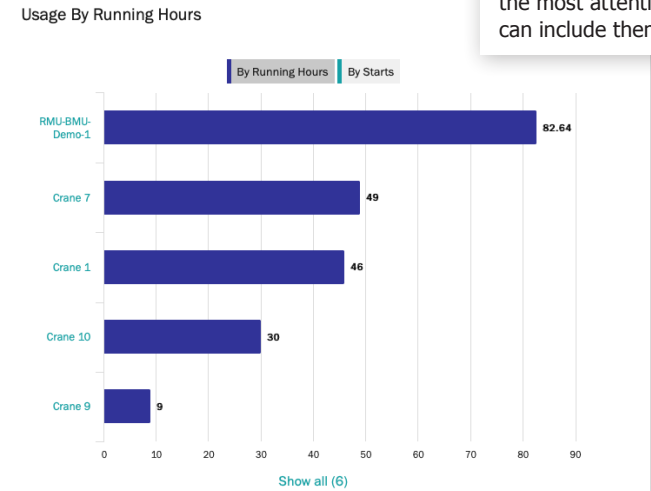
The breakdown of alerts and running hours by asset helps you see which assets need the most attention so you can include them in planning.



This overview of alerts lets you see which alert type is most prevalent. Safety alerts show a need to address e-stops and hoist overloads.



Production alerts show repeated motor issues. Motor overheating, inverter faults and control system faults can all contribute to unplanned production stoppage.





[konecranes.com](https://www.konecranes.com)