CAT® EXCAVATOR
TECHNOLOGIES
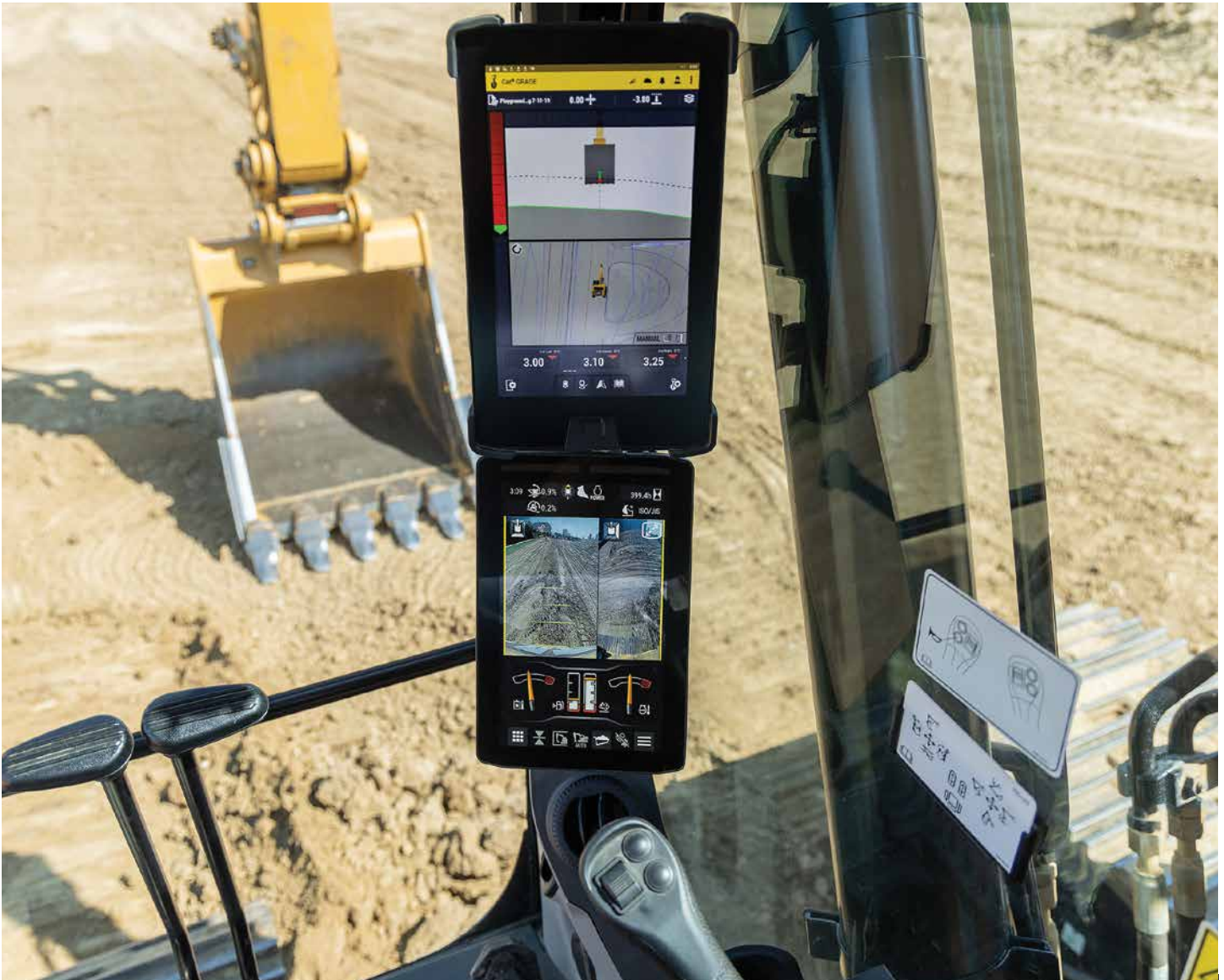
CAT®

CAT® EXCAVATOR TECHNOLOGIES

AVAILABLE FOR SELECT MODELS*

Cat® Excavator Technologies are designed to provide practical and reliable solutions that work effectively across various job sites. These solutions help maximize productivity, enhance safety, and minimize costs. Whether your fleet consists of one machine or many, Cat technologies give you the competitive edge you need to succeed.

Consult your Cat Dealer for details.

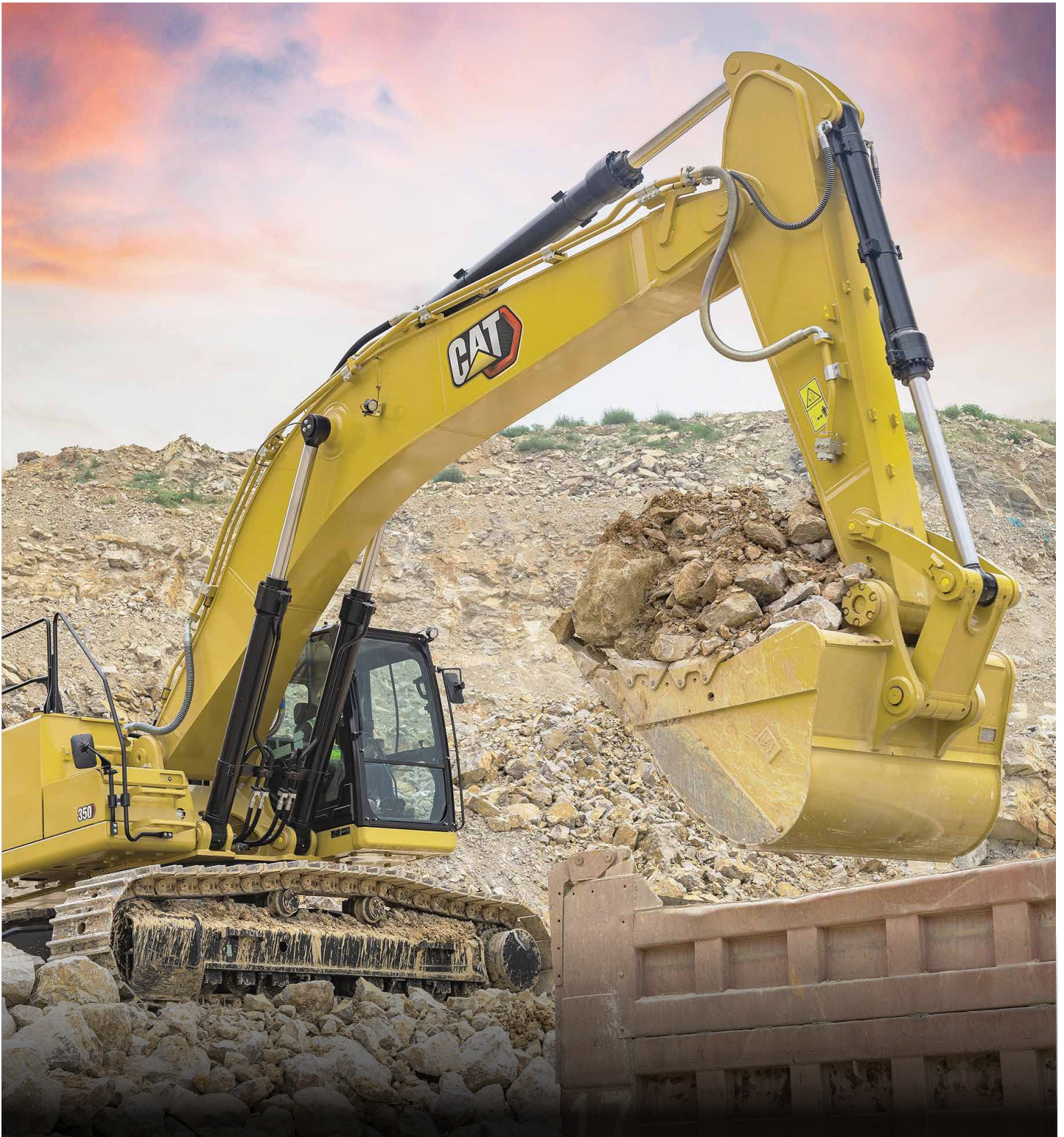## FACTORY-INTEGRATED TECHNOLOGY

The technology designed for Cat excavators has been specifically created, built, and tested to ensure optimal performance. You can expect seamless functionality that cannot be achieved with third-party add-ons.

+ A wide range of technology options are available to enhance operator safety, comfort, and performance.
+ Automated features assist novice operators in achieving greater efficiency with minimal effort and time.
+ Experienced operators can benefit from reduced strain, less fatigue, and faster, more accurate results.

CAT TECHNOLOGY
ELEVATE OPERATOR PRODUCTIVITY

Unlock your equipment's full potential by optimizing every bucket, grading pass, and operational hour with Cat productivity technology. Experience increased efficiency and performance that will elevate your projects to new heights!

CAT GRADE
INCREASED PRECISION IN FEWER PASSES

Cat Grade provides guidance to help operators hit precise grade requirements in less time. Additionally, optional automated controls help reduce resource consumption and operator fatigue.

GRADE WITH 2D

Grade with 2D helps excavator operators work more efficiently in various applications.

+ Eliminates ground stakes in most applications.
+ Displays target grade with visual guidance plus height and depth.
+ Easily adjust to target depth and slope using joystick commands, a touchscreen interface, or a jog dial.
+ Integrated components are protected from damage, ensuring long life.
+ Move and maintain consistent grade with optional laser catcher capability.
+ Works with various bucket types: digging, cleaning, grading, and tilting.

GRADE WITH 3D

Grade with 3D adds real-time satellite positioning guidance. This system uses one or two GNSS receivers along with a correctional data source to achieve Real Time Kinematic (RTK) positioning guidance in three-dimensional space.

+ Maintain accuracy across job sites and multiple machines with in-field design plan functionality and control.
+ Automatically compensates for excavator pitch and roll.
+ Set up 2D avoidance zones within the design file to inform operators where not to work within the site plan.
+ Grade 3D systems are compatible with radios and base stations from Trimble, Topcon, and Leica.

GRADE WITH ASSIST

Grade with Assist adds semi-autonomous digging to help boost operator efficiency.

+ Grade Assist – Takes over boom and bucket functions to maintain desired depth and slope.
+ Bucket Assist – Maintains bucket angle and keeps the cut accurate in sloping, leveling, and trenching applications.
+ Boom Assist – Automatically raises the boom to keep the excavator from lifting off the ground when digging, lifting or rotating under load.
+ Swing Assist – Automatically stops excavator swing at defined points.
+ Tilt Assist – Takes over bucket angle movements to automatically maintain the desired slope.

EXPANDED CAPABILITIES
GRADE 3D OPTIONS

CAT GRADE 3D READY

The Cat Grade 3D Ready option includes all the hardware required for the Grade with 3D system, installed and tested from the factory.

This option provides an easier upgrade path for customers who want to add Grade with 3D after their initial purchase.

To activate, contact your Cat Dealer to purchase the required 3D software licenses. Licenses can be installed remotely or manually loaded onto the machine.

SINGLE & DUAL GNSS ANTENNAS

Caterpillar's single antenna global navigation satellite system (GNSS) makes it easy by giving you visual and auditory guidance to grade.

Upgrade to dual antenna GNSS for maximum grading efficiency. The system lets you create and edit designs on the touchscreen monitor while you're on the job, or you can have the plan design sent to the excavator to make your work easier.

Plus, you get added benefits such as avoidance zones, cut and fill mapping, lane guidance, augmented reality, and advanced positioning capability.

CAT GRADE CONNECTIVITY

Cat Grade Connectivity* is designed to make using Grade with 3D easier. Depending on local cellular and internet service availability, Grade Connectivity can eliminate the need for additional cellular radio modems and local base stations. It is ideal for use in urban areas and anywhere that offers good virtual reference system (VRS) coverage via reliable cellular service and internet access.

Cat Grade Connectivity enables you to:
+ Install, configure, and update individual machine Cat Grade licenses.
+ Send Grade 3D design files remotely without the need for external USB drives.
+ View active and inactive devices on individual machines and add or update firmware.
+ Remotely assist operators using Grade's online monitoring features.

Grade Connectivity subscription required. Availability may vary by region, consult your Cat Dealer for more details.

CAT PAYLOAD
LOAD EVERY TRUCK RIGHT THE FIRST TIME

Cat Payload[1] provides operators with on-the-go weighing to help them hit load targets and avoid overloading, underloading, or misloading materials. Advanced Payload[2] is a system upgrade that offers expanded features and capabilities, including custom tags, daily totals, and electronic ticketing. Combine Payload with VisionLink® to analyze jobsites and individual assets for remote management of production targets and key metrics.

+ **Reduce Costs:** Save on time, labor, and fuel costs.
+ **Improve Accuracy:** Precise payload targets help eliminate over and underloading.
+ **Increase Efficiency:** Experienced operators work more accurately than ever, while new operators can get up to speed faster.
+ **Enhance Safety:** Helps prevent truck overloading, which creates heavier and more unstable loads.

[1] *Cat Payload for excavators is not legal for trade.*
[2] *Advanced Payload requires an additional software license (SEA). Not available for wheel excavators.*

ADVANCED PAYLOAD

Advanced Payload is a system upgrade that offers expanded features and capabilities.

+ **Custom Lists:** Create, select, and arrange up to four customizable lists containing customer names, order numbers, and site details. Customized lists provide more detailed payload information for reporting.
+ **Daily Totals:** Operators can easily access detailed payload reports using the in-cab display. They have the flexibility to view reports for the current day, the previous day, or since the last reset. Additionally, operators can conveniently check report totals categorized by truck, material, or custom lists.
+ **Smart Target Weight:** Enables operators to choose from the four most frequently utilized target payloads.
+ **E-Tickets:** Gain the convenience of receiving payload tickets via email instead of printed versions. Upgrade to a VisionLink® Productivity subscription to unlock this feature.

CAT STICK STEER

INCREASE COMFORT. INCREASE EFFICIENCY.

Cat Stick Steer for Excavators allows operators to comfortably and confidently track and steer the machine using the joystick rather than traditional pedals and levers.

With simple push-button activation, the left joystick becomes the travel and steer command, while the right joystick allows control of the attachment or optional blade.

Additionally, cruise and blade controls are integrated into the joystick, enhancing comfort and reducing operator fatigue.

The Cat Stick Steer system eliminates the need for operators to switch back and forth between travel levers and joysticks, streamlining operation.

CAT OPERATOR COACHING

EMPOWER OPERATORS. EXCEED TARGETS.

Operator Coaching allows operators of all experience levels to take their efficiency and productivity to the next level. With tips and data at their fingertips, operators can track and improve their productivity through everyday work on the job site. There are two coaching tip categories -

1. **Operational Efficiency Tips**
   Help operators stay at the top of their game by identifying areas to increase skill and efficiency, such as digging technique and idle times.

2. **Machine Health Tips**
   Some actions are inefficient and cause unnecessary wear and tear on the machine and its components. Following machine health tips can help extend the life of the machine, improve digging techniques, and reduce fuel waste.

SAFETY-FOCUSED TECHNOLOGIES

PRIORITIZE SAFETY ON YOUR JOBSITE

Maintaining a safe jobsite is crucial for maximizing productivity and minimizing costs. Cat safety technologies help lower risks, allowing operators to perform their tasks effectively.

CAT LIFT ASSIST

Cat Lift Assist is a safety feature designed for excavators that quickly calculates the actual load being lifted and compares it to the maximum rated load the excavator can handle. It monitors the reach available for safely lifting and moving the load around the machine. The system provides visual and auditory alerts to inform the operator if they are within the machine's safe working limits or if action is needed to prevent tipping.

+ Enhance Safety
  Keep your excavator firmly grounded when lifting heavy loads.

+ Increase Productivity
  Easily pick and place pipes, manholes, and trench boxes.

+ Reduce Wear and Tear
  Less machine stress gives you more working hours with lower owning and operating costs.

CAT 2D E-FENCE

Cat 2D E-fence keeps the front linkage within a predefined work area to avoid hazards like traffic. 2D E-fence uses data from position sensors to automatically stop motion when the front linkage reaches the defined boundaries.
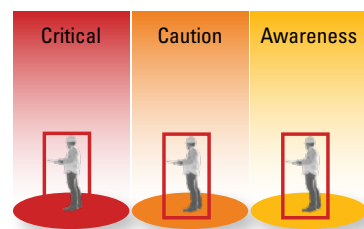
Features -

+ E-ceiling: Avoid overhead obstacles - power lines and structures - by setting a height boundary that automatically stops your boom and stick.

+ E-floor: Avoid unseen underground obstacles - fiber optics and other utilities - by setting a depth limit that will stop your work tool.

+ E-swing: Avoid swinging the boom and stick into traffic or adjacent structures by setting boundaries to the side of your excavator.

+ E-wall: Avoid hitting structures in front of the excavator by setting a boundary a precise distance away.

+ Cab Avoidance: Avoid contact between the work tool and the excavator's cab.

CAT DETECT - PEOPLE DETECTION

IMPROVE SAFETY AROUND OPERATING EQUIPMENT

While Cat machines are designed to maximize operator visibility, it can be challenging to constantly monitor what is going on around them. Cat Detect - People-Detection for Excavators is an intelligent vision camera system that can alert an operator when someone enters a machine's hazard zone.*

Critical	Caution	Awareness

IMPROVE JOBSITE SAFETY

Reduce the risk of injury for people working around machinery by detecting multiple moving and stationary workers on the jobsite.

INCREASE OPERATOR AWARENESS

Monitor ever changing jobsite conditions by providing progressive visual and audible safety alerts to the operator based on a person's proximity to the machine.

ENHANCE MACHINE SAFETY

Expand machine safety distances for ground personnel with technology that detects individuals with up to 270 degrees of camera coverage.

The system may not detect personnel in certain circumstances, such as fast swings speeds, people lying down or crouching, or when cameras are impaired by low light conditions (dusk, dawn, overcast), inclement weather (snow, rain, fog), or other similar conditions.

CAT COMMAND
ENHANCE OPERATOR SAFETY

Cat Command is a sophisticated remote control system that takes operators off the machine and away from potential dangers when working with hazardous materials or in unsafe conditions. It also maintains the option to utilize other advanced control technologies, such as Cat Grade, Payload, Detect, and other machine-specific assist features.

Once operators become familiar with the feel of the remote control system, they can operate as efficiently, accurately, and confidently as in the cab. Because they experience dramatically less noise and no vibration, operators can work efficiently for longer periods of time with less fatigue.

TWO SYSTEMS TO MATCH JOB NEEDS

CAT COMMAND CONSOLE
(LINE-OF-SIGHT)

Portable, lightweight system allows the user to work outside of the cab while remaining on site and in direct visual contact with the machine.
+ Ideal for short-term and emergency use.
+ Requires no on-site communications infrastructure.
+ Provides line-of-sight operation from up to 400 meters (1,312 ft) away.

Over The Shoulder Harness Not Shown

CAT COMMAND STATION
(NON-LINE-OF-SIGHT)

Enables the operator to work remotely in a seated indoor "virtual cab" located on site or miles away.
+ Helps reduce operator fatigue with a comfortable working environment.
+ High quality video delivers a clear view of the work area.
+ Select and activate machine features: Grade, Payload, Assist, E-Fence & more.

EQUIPMENT & JOBSITE MANAGEMENT

LISTEN TO YOUR FLEET WITH THE RIGHT TECHNOLOGY

Track material types and tonnage moved, fuel costs, and machine hours. Pull payload data for analysis and compare productivity between shifts.

MAXIMIZE LIFE SPAN

Monitor equipment health, fault codes, and fluid analysis, and keep track of inspection due dates. Order parts and schedule service, all within the same platform.

MINIMIZE DOWNTIME

Reduce unplanned downtime with critical alerts and service-interval reminders to keep you on top of maintenance.

PL161 ATTACHMENT TRACKER

The Cat PL161 Attachment Tracker mounts easily to your attachments or anything else you want to track.

+ **Track Location**
  View the location of attachments across multiple work sites, and reduce the number of lost attachments.

+ **Track Utilization**
  Track the working hours per attachment to help predict the need for tool maintenance or replacement of worn parts.

+ **Work Tool Recognition**
  A simple shake of the attached tool confirms its identity and ensures all the attachment settings (pressure, flow, and dimensions) are correct so you can work quickly and efficiently. Many excavator models also feature work tool profiles that automatically import attachment settings into Cat Grade, Cat E-fence, and more.

CAT INSPECT

Cat Inspect allows you to access your equipment data on your mobile device. This easy-to-use app lets you capture inspection data and integrates with your other Cat data systems so you can keep a close eye on your fleet.

+ **Populates Current Fleet Data**
  Save time with auto-populated equipment information and data.

+ **VisionLink® Integration**
  Inspection results can be viewed in Cat equipment management applications, making it easier to track machine health.

+ **Save Time with Digital Inspections**
  Digital inspections provide current information for review, retention, sharing, and printing.

CAT REMOTE SERVICES

Cat Remote Services is a suite of technologies that improve jobsite efficiency. Two of its key functions are Remote Troubleshoot and Remote Flash.

+ **Remote Troubleshoot**
  Allows your Cat dealer to perform diagnostic testing on your connected machine remotely, pinpointing potential issues while the machine is in operation. Remote troubleshooting helps to ensure the technician arrives with the correct parts and tools the first time, eliminating additional trips to save you time and money.

+ **Remote Flash**
  Allows you to update onboard software without a technician being present, allowing you to initiate software updates when convenient, increasing your overall operating efficiency.

VISIONLINK®

MACHINE AND JOBSITE DATA AT YOUR FINGERTIPS

VisionLink® is a flexible and scalable cloud-based application designed to monitor all aspects of your operations, whether for individual machines or multiple interconnected job sites. It analyzes the collected data to provide insights into fleet utilization, identifies potential friction points, and tracks payload and grade production data. With VisionLink, you can make informed decisions that enhance operational efficiency and boost profits.

MAXIMIZE UPTIME

Monitor equipment health, fault codes, fluid analysis, and inspection due dates. Reduce unplanned downtime with critical alerts. Order parts and schedule service within the platform.
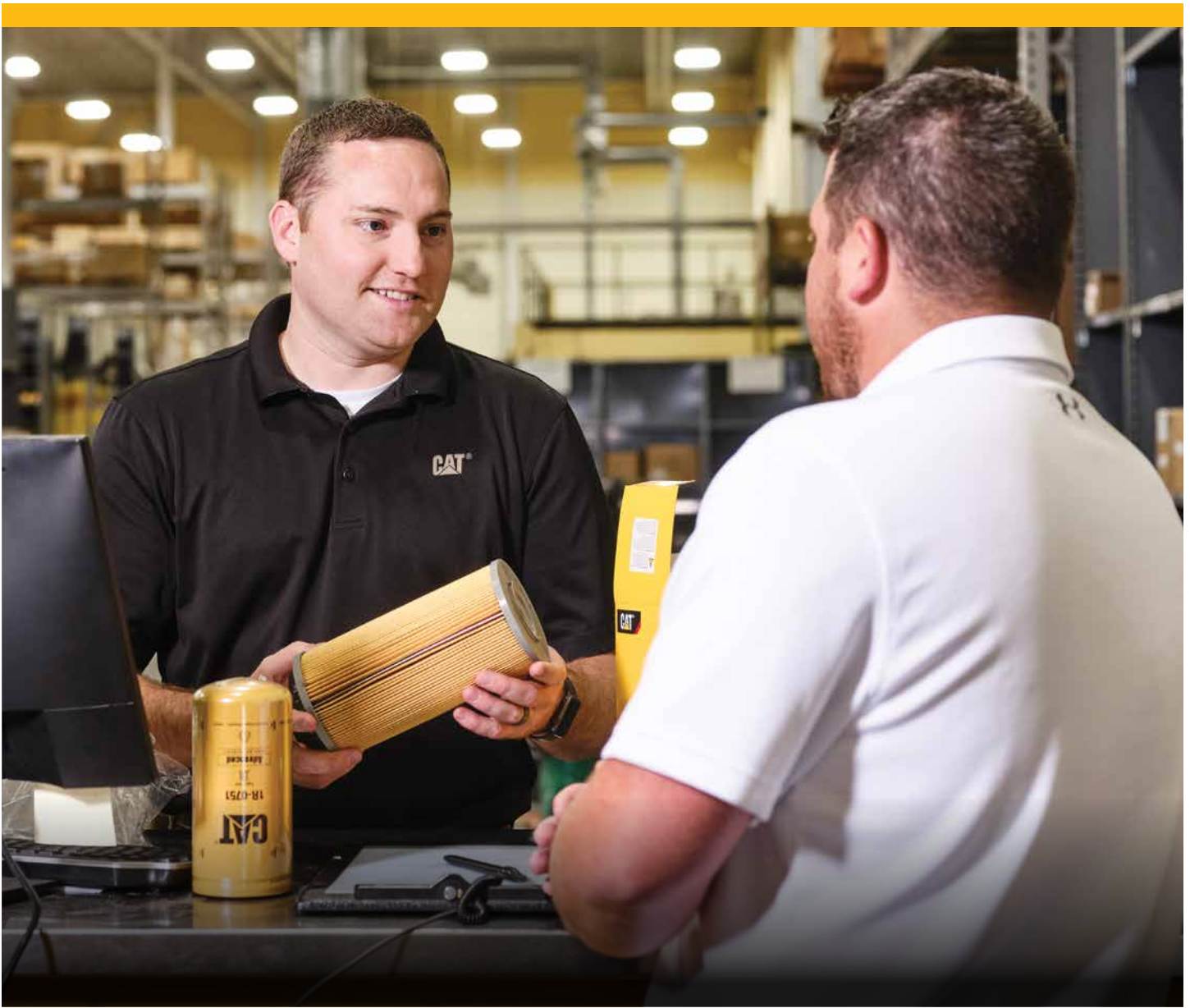
ANALYZE PRODUCTION

Track material types and tonnage moved, fuel costs & machine hours. Pull performance data for analysis and compare productivity between shifts.

OPTIMIZE UTILIZATION

Manage assets by projects, groups, or geofences. Set utilization targets and monitor performance. Make informed, data-based decisions to reduce operating costs.

PRIORITIZE SAFETY

Enhance operator awareness and worker vigilance on job sites by utilizing situational awareness alerts to mitigate risks and improve safety protocols..

When you select Cat equipment and technology, you benefit from the support of the largest and most experienced dealer network in the industry.

You gain a partner committed to assisting you and your operation at every stage. Whether you require expert advice or emergency service, your Cat dealer is there for you from day one.

Cat Excavator Technologies May Vary by Region and Model.
Consult Your Cat Dealer for Details.

CAT®