

# The 3rd generation tiltrotator-system



With over 30 years of expertise developing tiltrotators, we proudly unveil our latest innovation – the 3rd generation tiltrotator system.

With its brand-new hydraulic design, our system operates dynamically, intelligently distributing hydraulic pressure throughout the tiltrotator and ensures that the machine does not release more flow or pressure than necessary. This results in lower energy consumption at the same workload. As an added bonus, users also benefit from smoother movements.

The brain of the system is our new state-of-the-art control system DC3. It boasts a range of new and improved features such as automatic calibration and remote support via the cloud. The system is prepared for several features that will be released continuously, such as tool recognition.

With these innovations combined, we proudly present our most energy-efficient tiltrotator system to date. That is why we call it **smooth, smart and efficient**.

**Your move.**



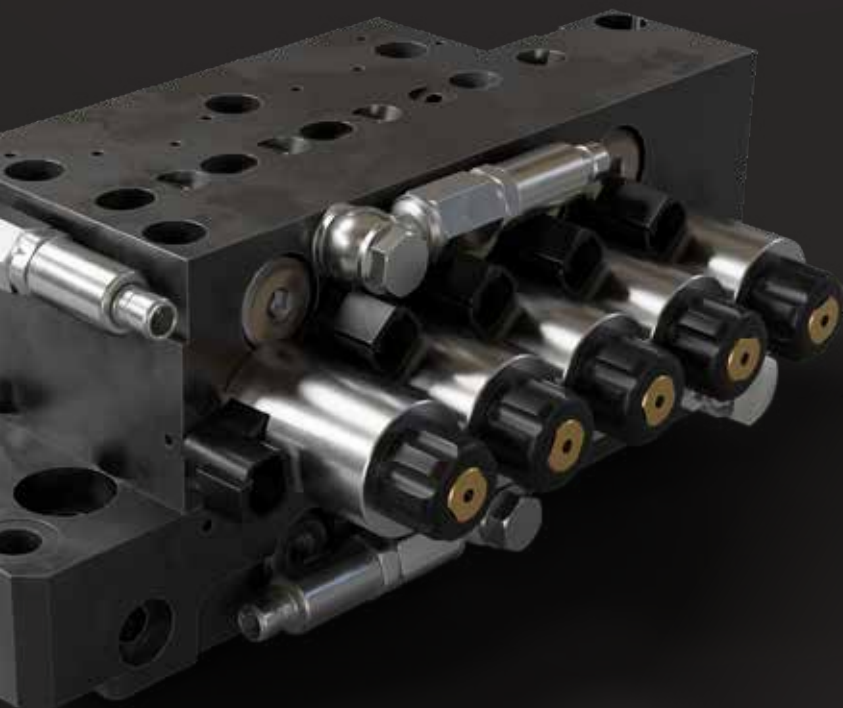
# New Tiltrotator

- ▶ Load-sensing hydraulics.
- ▶ Improved simultaneous operation of multiple functions through individually pressure-compensated functions.
- ▶ Proportionally controlled extra functions with higher flow.
- ▶ New energy efficient valves for the tilt function.
- ▶ Up to 120l/min on extra 2.



## New load-sensing hydraulics

The load sensing on the machine only affects pump activation and the amount of oil the pump delivers to all consumers (functions). By measuring the pressure in the tiltrotator, we optimize the amount of oil to be delivered to the tool. This means that the oil quantity is constantly adjusted to the functions being used and to what extent they are being used. Our load-sensing system is not connected to the machine's load-sensing system in any way.



# New Quick coupler

The new S60 quick coupler has an enhanced solution on the axles that makes it more durable. The flow for EC-Oil is improved and engcon has developed a hoseless design. S60 is also available with lifting eye.



## Quick coupler advantages

- 1.** Hooks facing the direction of excavation ensures an evenly distributed digging force on both axles.
- 2.** Unique safety solution with U-shaped locking hooks that prevent dropped tools. The hooks are designed to minimise play between the coupler and the tool.
- 3.** Extraordinary design that reduces wear, increases durability, and thus extends the lifespan.
- 4.** engcon's light and sound module for improved safety are included as standard with all quick coupler purchases. (Read more about the light and sound module on page 30).
- 5.** EC-Oil comes as standard on automatic couplers with flexible hose routing.

# New Control System

- ▶ Enables the next generation of tiltrotators.
- ▶ Has been designed for today's and next generation of excavators.
- ▶ New mobile app that can be used by both iOS and Android users.
- ▶ Provides the potential for new, additional features such as tool recognition.
- ▶ Remote support.
- ▶ DC3 is compatible with Generation 2 tiltrotators.



## New hardware

- ▶ New control system modules and cabling systems of a higher standard with standardised connectors.
- ▶ Multiple sensors can be used for increased added value and more functions, such as lock monitoring and tool recognition.
- ▶ The absence of a visible screen allows integration with the machine without any major impact on the operator environment.
- ▶ Modular system that can be expanded as additional modules and features become available.



## New app for iOS & Android

- ▶ engcon-ID offering the potential to save custom settings in the cloud.
- ▶ Continuous software updates with new functionality, which is made available Over The Air updates.
- ▶ Connect to control via Bluetooth.
- ▶ Enhanced remote support
- ▶ Soft assignments.
- ▶ ePS view.
- ▶ Status view.
- ▶ Alarms.



iOS



Android





## Join the engcon revolution

A **tiltrotator** is an accessory that can be connected between the excavator's arm and bucket, acting as a flexible wrist. Using a tiltrotator, the bucket or other selected attachment can tilt (up to 45°) and rotate (infinitely). engcon's tiltrotators fit all excavators between 1.5 and 33 tonnes, regardless of manufacturer or model.

# Five benefits of an engcon tiltrotator.



## Increase efficiency by ~25%\*

Working with a tiltrotator saves time and increases the efficiency by ~25%\*. Machine wear and the need for manpower is reduced and the precision of the maneuvers makes you waste less material.



## Reduce manual work

A tiltrotator increases the safety around the machine due to its high maneuverability and low space requirements. It significantly reduces the need for manual work, like the use of shovels and rakes. Thanks to EC-Oil the operator can stay in the comfort of the cab while switching between tools. ~61% owners perceive safety as main benefit. \*



## Transform the excavator into a tool carrier

The tiltrotator easily tilts and rotates different tools as required, regardless of the machine's position. In addition to ordinary buckets, the machine can also attach different types of tools and replace several other machines at the same work site. The excavator is transformed into a versatile tool carrier and ~2.2 number of tools or machines can be replaced. \*



## Change tools from the comfort of the cab

With a tiltrotator and the EC-Oil system, the operator retains control and comfort in the working environment without leaving the cab to attach hydraulic tools, which also increases safety.



## Reduce your fuel consumption

The reduced need to move the excavator around means reduced environmental impact by cutting fuel consumption and at the same time making less damage to the ground. ~113,000 kg CO<sub>2</sub> could be saved over the excavator's lifetime (7 years\*). Since you can dig around obstacles and in narrow spaces, there's less need to move obstructing objects.

# Quick coupler

Elevate your construction efficiency with engcon's innovative quick couplers catering to excavators in the 1,5–40 ton weight class. We offer both automatic quick coupler to seamlessly enhance your equipment's versatility and performance on the job site.

## Automatic quick couplers S40–S80

- ▶ For all excavators in the 4–40 ton weight class with quick couplers S40–S80.
- ▶ EC-Oil automatic quick coupler system connects the tiltrotator and hydraulic tools without the operator having to leave the cab.
- ▶ Hydraulic locking with fourfold safety, engcon's light and sound module for improved safety comes as standard with all quick coupler purchases.
- ▶ Hooks oriented towards the excavation direction distributing the forces across the entire coupler.

Quick coupler on picture: S40



**Combine  
with engcon's  
locking system  
to improve  
safety.**



Read more on page 30.

# EC-Oil

## Switch jobs in an instant – from the cab

EC-Oil is the key to our system. It allows for quick switching of hydraulic tools and connection/disconnection of the tiltrotator for increased breakout force. The EC-Oil automatic hydraulic connector is now a standard feature.

When you order an engcon S40–S80 automatic quick coupler we include the EC-Oil automatic oil connector in the machine coupler, the upper section of the tiltrotator, and in the tiltrotator quick coupler (S40–S80). EC-Oil is always included as standard, on all engcon hydraulic tools with S40–S80.

## Time is money

In certain tasks, EC-Oil can result in time savings of an hour or more each day compared to manual connections.

### The old way:

**48** switches/day  
**90 sec** to connect hydraulics manually  
**72 min** total time/day

### The engcon way:

**48** switches/day  
**10 sec** to connect hydraulics manually  
**8 min** total time/day

## Benefits with EC-Oil

- ▶ EC-Oil is standard with all purchases of engcon's automatic quick couplers and tiltrotators.
- ▶ Allows you to change hydraulic tools in around ten seconds without leaving the cab.
- ▶ Connects hydraulic tools automatically.
- ▶ A reduced need to get out of cab when changing attachments improves safety for groundworkers and machine operators.
- ▶ Can be retrofitted to all types of hydraulic tools, regardless of manufacturer.\*
- ▶ Durable couplings allows connection without pressure relief.
- ▶ Drip-free system = Lower environmental impact.
- ▶ Reduces problems with manual hydraulic connectors.





# Sandwich solution

engcon's sandwich solution, featuring EC-Oil on the top and bottom of the tiltrotator, offers the flexibility to easily detach the tiltrotator when not in use. This prevents added weight and height at the stick's end from hindering the excavator's capabilities. Detaching the tiltrotator enhances the excavator's force for direct tool use, enabling uninterrupted traditional work during maintenance and saving costs in tough or frozen ground by preventing unnecessary wear.

Hydraulic quick coupler

Tiltrotator

Hydraulic quick coupler

Detachable gripper

Stone & sorting grapple



## EC-Oil block

1. Electrical connector, 12 pole.
2. Central lubrication.
3. Two oil connectors (supply and return).

# Control systems



## Control system

- ▶ engcon's proportional control system DC2 is suitable for most machines on the market.
- ▶ Controls up to six proportional functions as standard and a further 14 on/off functions with engcon's joysticks.
- ▶ Option of track control, wheel steering, boom slew, VA-boom, outriggers and blade control.
- ▶ Function settings and tools can be adjusted using an android phone/tablet with the Microprop App via Bluetooth for up to four different operators.



## Locking system

- ▶ engcon's intelligent, safe locking system comes as standard on engcon tiltrotators and optional extras for the machine coupler.
- ▶ Standardizes excavator operation, regardless of make and model.
- ▶ Features self-guidance lock panel.
- ▶ Enhances tool change safety with ground pressure sensor, and includes visual/audible warning for connection.



## Light and sound module

- ▶ engcon's secure quick coupler, combined with the light/sound module, warns both visually and audibly if not safe connected.
- ▶ The module is installed on the left side of the excavator's stick, with integrated wiring in the control system cabling.
- ▶ If a control system other than DC2 is utilized, separate wiring for the warning module to the excavator cab can be arranged.



# Joysticks



## Enjoy your work with good ergonomics and functionality



engcon's excavator joysticks seamlessly integrate comfort, efficiency, and functionality while adhering to improved safety and control requirements. Developed in collaboration with operators and industrial design specialists, each joystick can be fitted with three rollers and seven buttons, providing twice the controls of two-lever setups. This design allows operators to work at maximum efficiency, minimizing physical strain and reducing stressful working positions.

The joystick includes an integrated hand support for wrist comfort without compromising excavator movements, featuring a flexible and adjustable hand rest suitable for different hand sizes. Beyond ergonomic considerations, engcon's joystick introduces new capabilities for operators, with rollers designed for the thumb, index, and middle fingers, enabling simultaneous control of six rollers when necessary.

# engcon Positioning System

Together with the excavator guidance system, engcon Positional System reduces the need for conventional setup. The driver can see the excavation area via the machine control system's display in the cab. This control, allowing the driver to excavate the correct amount of material, comes with many benefits.



## Benefits with ePS

- ▶ Reduced job time.
- ▶ Reduced fuel consumption.
- ▶ Reduced wear on machines and tools.
- ▶ Saves time for other units, such as trucks/dumpers.
- ▶ Adapted to the engcon proportional system but also possible to install on other control systems.
- ▶ Completely independent of model or make of control system via own cabling.
- ▶ Possible to order/retrofit on all tiltrotators from EC204 and up.

engcon has standardised ePS sensors on tiltrotators EC214-EC233\*\*. The advantage is that rotation and the tilt angle can be obtained for integrated, aftermarket installed machine control systems.\* The use of standard sensors makes retrofitting ePS more straightforward. ePS is available as an option for EC204 and EC209 tiltrotators.

\* This through our machine control rated sensors  
\*\* Depending on market. Contact your local sales office for more information.

