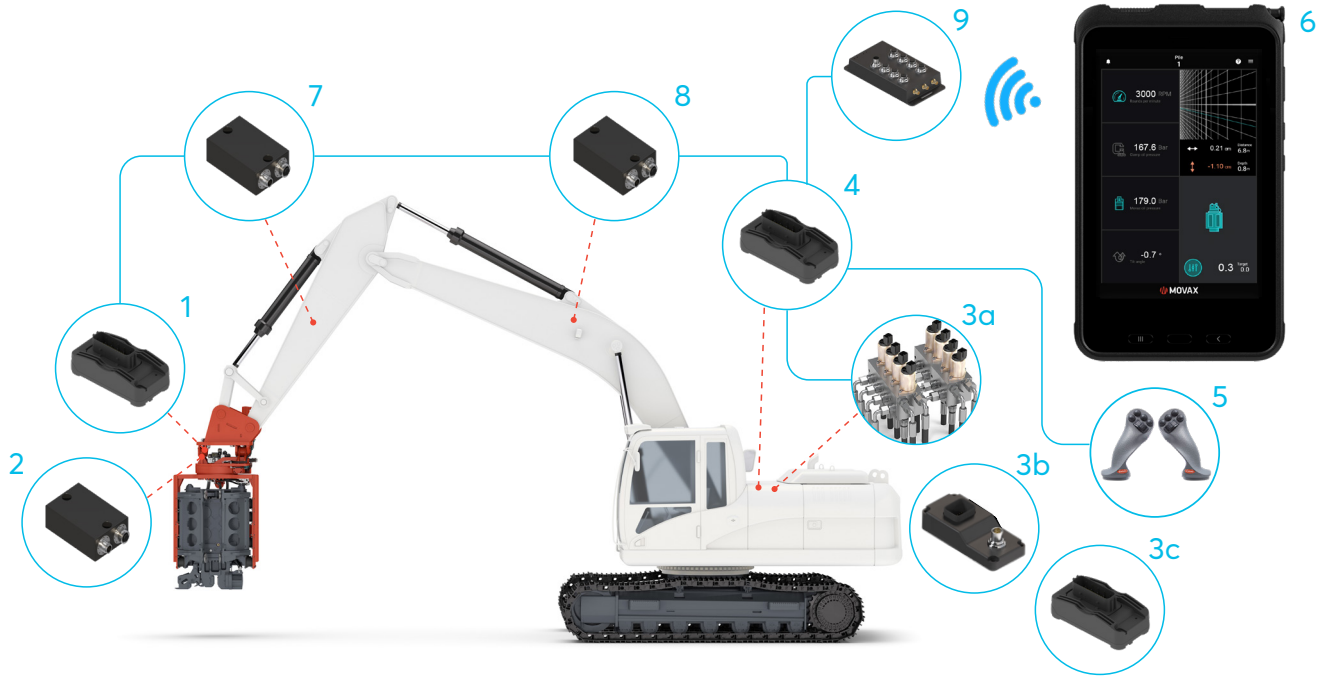
MOVAX CONTROL SYSTEM

mControl+ PRO

mControl+ PRO is a state-of-the-art automatic control system based on advanced 'tip'-control (autoT™)computing technology and angle sensors mounted onto the excavator's boom and stick which utilises either proportional pilot valves, a PWM controller or a CAN pilot circuit/interface for the control of the excavator's auxiliary hydraulics.

The autoT™-feature of the mControl+ PRO effectively assists the operator in achieving a faster and more efficient, high quality piling installation. The mControl+ PRO also provides valuable information which further assists the operator in achieving a higher production rate and quality. The information also ensures the highest possible availability by providing information protecting the MOVAX piling equipment.



1. MOVAX module (MXM) / 2. MOVAX angle sensor (MXS) / 3. Pilot circuit control a) hydraulic valve block, b) PWM control, c) CAN interface / 4. Excavator module (EXM) / 5. Control grips / 6. mControl+ PRO display / 7. Stick angle sensor / 8. Boom angle sensor. *(In case of two-piece boom one additional sensor is required.)* / 9. MIMS module

The mControl+ PRO is installed onto the excavator without making any changes to the original functionality of the excavator whatsoever. mControl+ PRO is utilised to control all MOVAX piling equipment, multi-tool piling leaders and column stabilisation leaders.

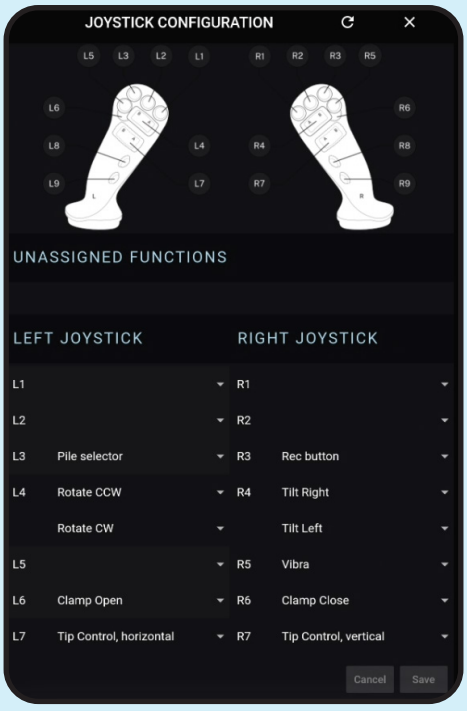
FEATURES

Display

mControl+ PRO is equipped with an independent 8” Android tablet that is used as the control system display. The ergonomic user interface is utilised to monitor and control the MOVAX piling equipment and customised solutions. The display is also utilised, for instance, to input user data related to the pile set criterion (mLogbook) and the angle for raked piles when using autoT™.

Control grips

The ergonomic mControl+ PRO control grips are equipped with multiple rollers and buttons which allow complete operation with a single grip. The control grips include extra buttons and rollers for accommodating functions from the excavator’s original handles.



Control modules

mControl+ PRO is equipped with two electronic control modules, one Excavator module (EXM) and MOVAX module (MXM) The excavator cab-mounted EXM controls the excavator's auxiliary hydraulics with either proportional valves, a PWM controller or a CAN bus control circuit. The type of pilot circuit control is dependent on the excavator brand and model. The MXM, installed and delivered with the MOVAX equipment, controls the hydraulic valves on the MOVAX piling equipment, Multi-tool piling leaders and Column stabilisation leaders, and monitors the operation with angle- and pressure sensors.

NOTE!

The MOVAX module is always supplied with the MOVAX piling equipment, Multi-tool piling leaders or Column stabilisation leaders.

The MOVAX module is factory installed onto the MOVAX equipment.

Excavator module

PWM controller

Angle sensors

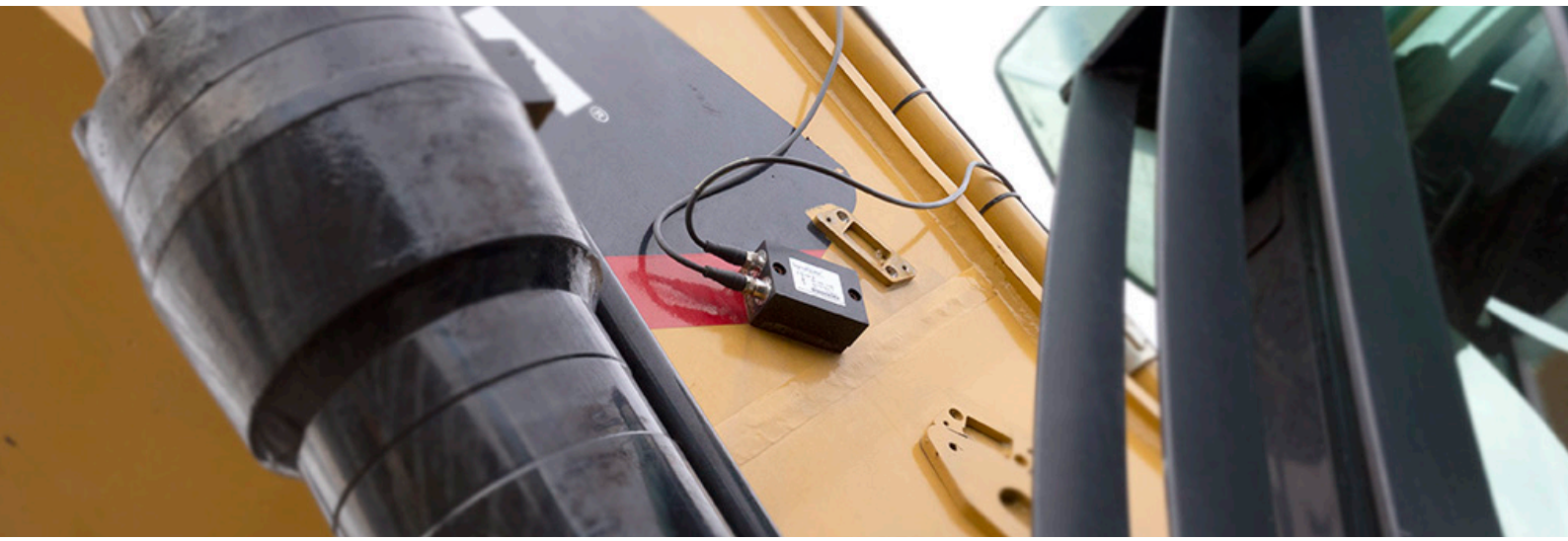
mControl+ PRO system provides highly accurate angle and distance information under extreme vibration conditions. The measurement is based on next-gen 360° angle sensors. These sensors are also equipped with gyroscope to provide maximal accuracy.

OPTIONS

mControl+ PRO is available with the following options:

Information	Additional sensor(s) for excavators with a two-piece boom
	Software licenses for mFleetManagement and mLogbook
Control grips	Ergonomic control grips with 3-rollers

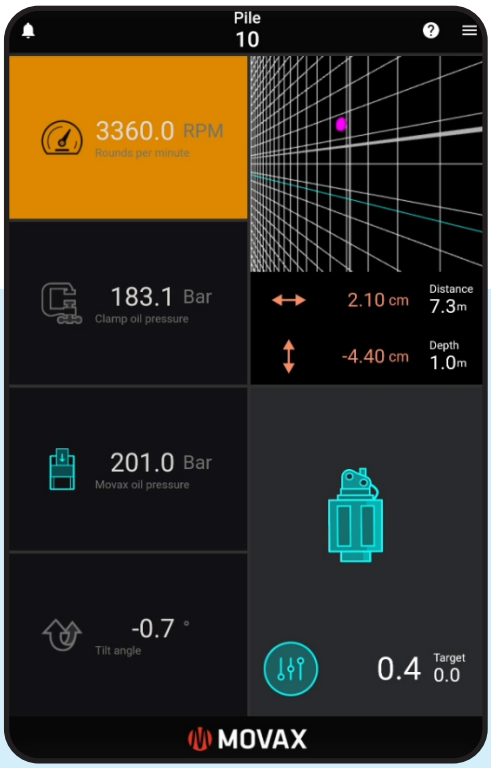
Update kits are available to connect existing MOVAX side grip pile drivers and piling hammers to mControl+ PRO.



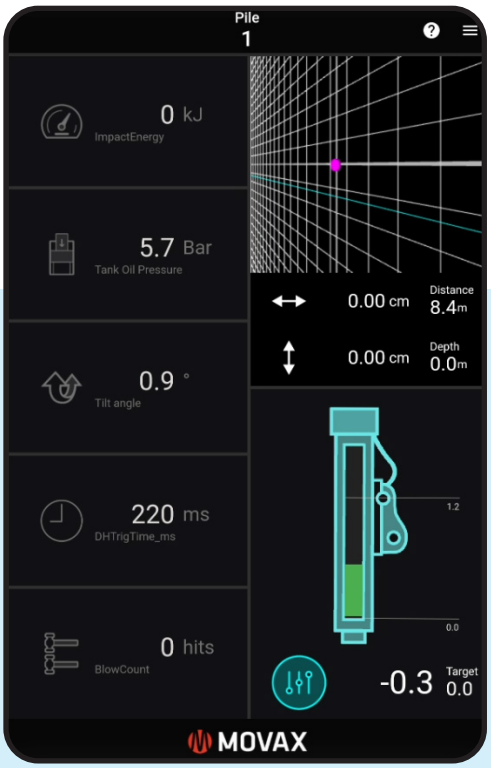
INFORMATION

mControl+ PRO provides comprehensive and essential information about the operation of the MOVAX piling equipment, Multi-tool piling leaders and Column stabilisation leaders and the piling process allowing the operator to monitor and optimize the operation for the best possible overall performance.

mControl+ PRO includes the hardware required for the connectivity to the MOVAX Information Management System and the necessary sensors for a mono-boom excavator - also as required for the MOVAX mLogbook documentation and reporting tool. The same sensors are utilised to for instance provide information about the 'refusal'.



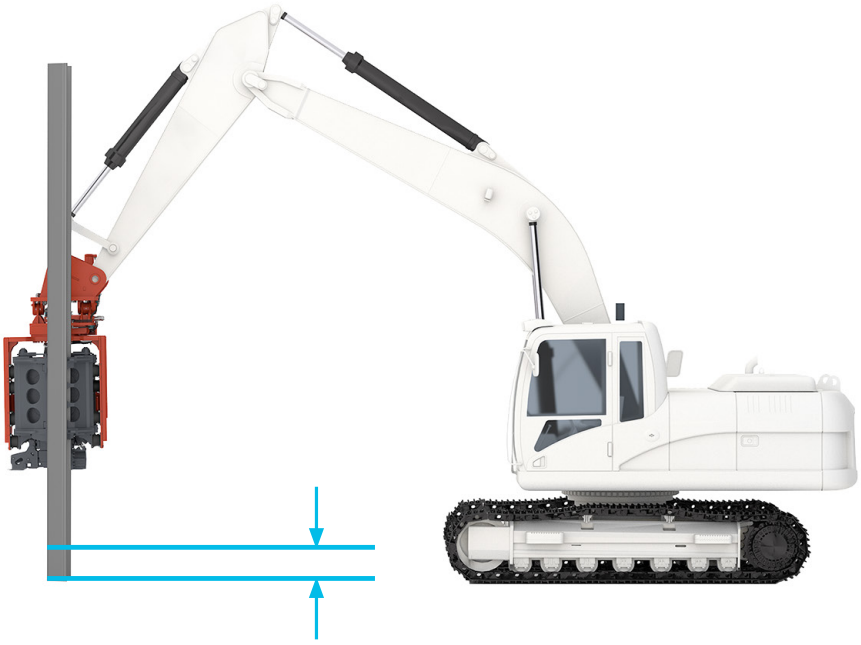
mControl+ PRO, main screen with SG, overvibration warning



mControl+ PRO, main screen with DH piling hammer

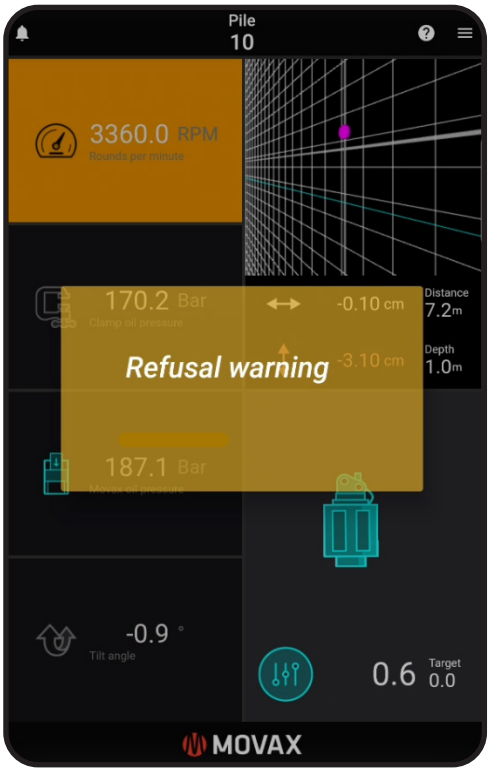
Refusal

mControl+ PRO is designed to secure the maximum availability of the MOVAX side grip vibratory pile drivers and piling hammers. The mControl+ PRO REFUSAL™ -feature assists the operator by displaying a clear and visible warning when the refusal is reached during the pile driving process thus protecting the MOVAX piling equipment.

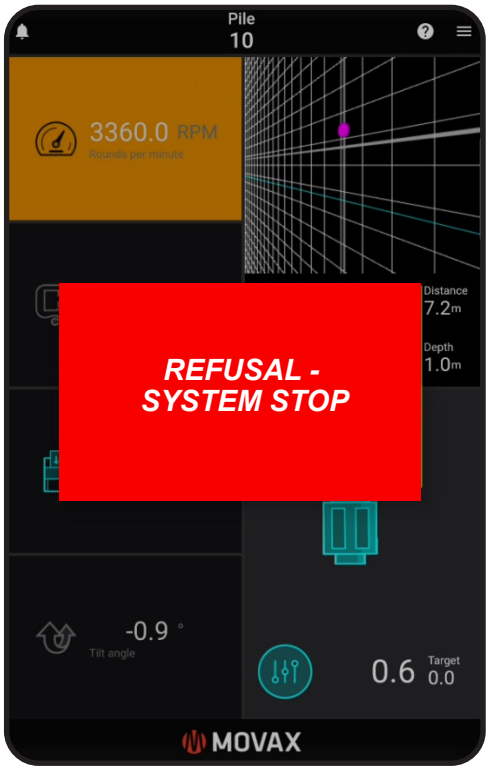


REFUSAL

< 250 mm/4min OR < 1 mm/s (SG)
< 5mm with 30 blows at full stroke (DH)



mControl+ PRO, main screen with SG, refusal warning



mControl+ PRO, main screen with refusal system stop

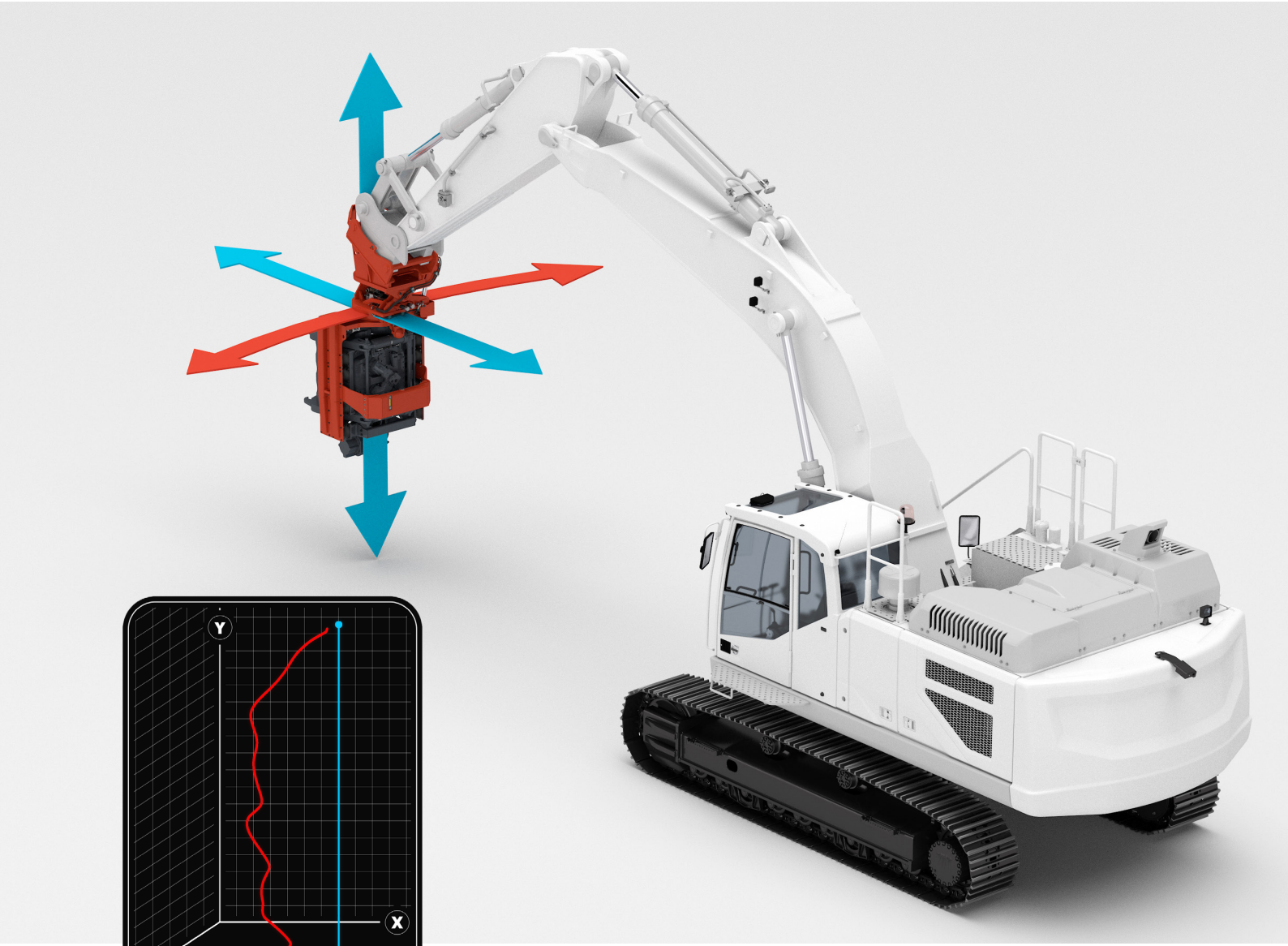
AUTOMATIC CONTROL - autoT™

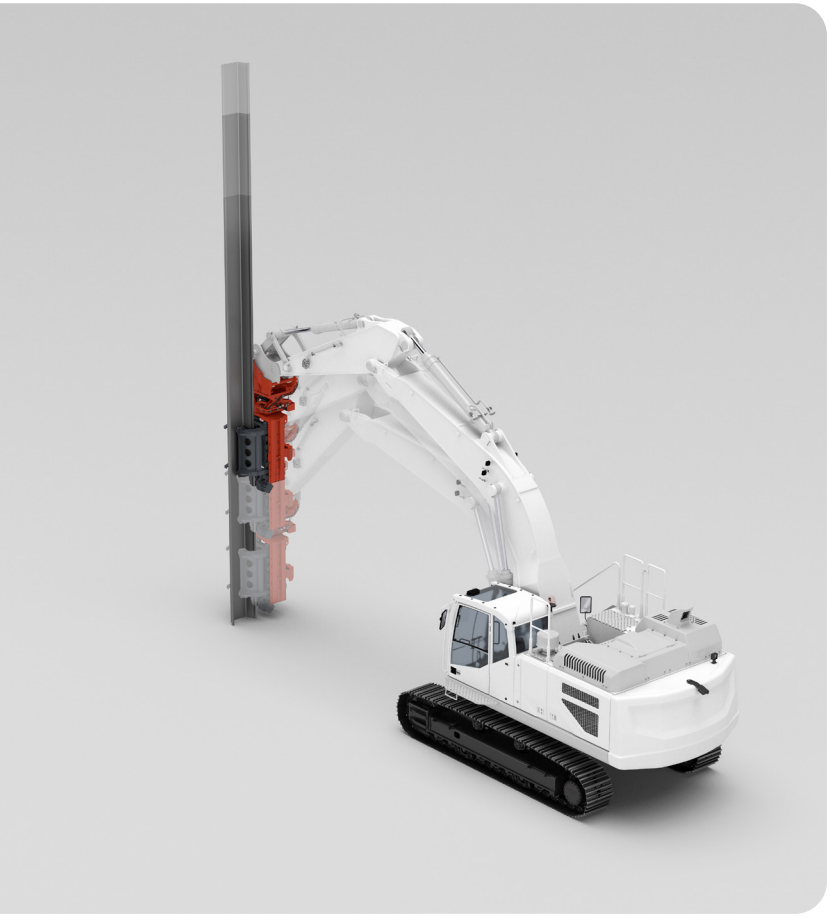
mControl+ PRO is equipped with the advanced, state-of the art autoT™ control feature assisting the operator in achieving a faster and more precise piling process and ultimately resulting in higher production rates and increased quality of installation. autoT™ is available for MOVAX side grip pile drivers and piling hammers.

MOVAX mControl+ PRO autoT™-tip control uses the power of computing, pre-programming and sensors in such a manner that a single action by the operator affects multiple movements at the same time. The basic functionality of the autoT™ makes the MOVAX side grip pile driver or MOVAX piling hammer travel in a straight line by taking over demanding parts of the excavator's boom control.

The mControl+ PRO tip autoT™-control feature, which makes the MOVAX side grip pile driver or MOVAX piling hammer travel vertically in a straight line, can principally be divided into two parts: Vertical Tip Control [Y-AXIS] and Horizontal Tip Control [X-AXIS].

The autoT™ functionality itself is based on angle sensors mounted onto the carrier's boom and stick, and the MOVAX side grip pile driver or piling hammer, and proportional pilot control of the excavator's auxiliary hydraulics.





Vertical movement with a stationary excavator.

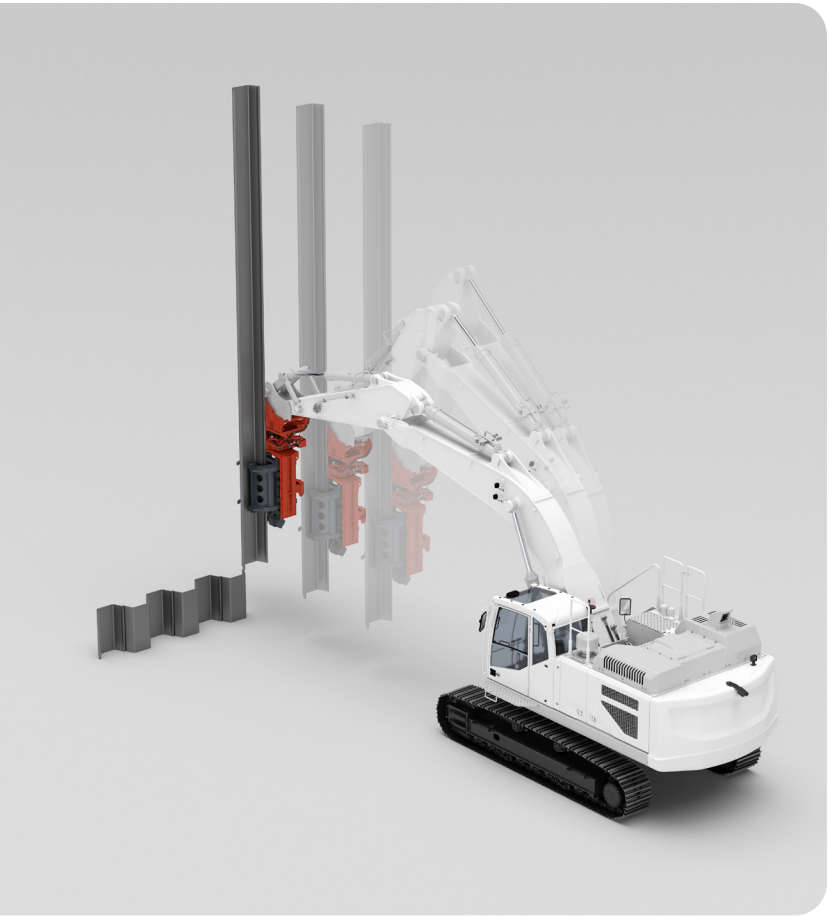
autoT™ - automatic control, Y-AXIS

The operator can pilot the boom assembly of the excavator in both directions, up and down, with a single control grip roller command – with a horizontally constant distance position, and the MOVAX side grip pile driver or MOVAX piling hammer parallel to the pile at all times.

The speed of the action can be adjusted fly-by with the proportional roller when the movement occurs.

Highly accurate calibrations can be done in the mControl+Pro application, based on operator preference.

The autoT™ -feature is used when driving or extracting piles with the MOVAX Side grip pile driver, or to change the position of the MOVAX side grip pile driver along the pile for the purpose of re-gripping the pile.



Horizontal movement with a stationary excavator.

autoT™ - automatic control, X-AXIS

The operator can pilot the boom assembly of the excavator in both directions, forward and backwards, with a single control grip roller command – with a horizontally constant distance position, and the MOVAX side grip pile driver or MOVAX piling hammer parallel to the pile at all times.

The speed of the action can be adjusted fly-by with proportional roller when the movement occurs.

Highly accurate calibrations can be done in mControl+Pro application, based on operator preference.

The autoT™ -feature is used when accurate and steady horizontal movement is required – a particularly good example is sheet pile pitching: Guiding the pile into the lock insert is faster when the MOVAX side grip pile driver and the pile are in zero level and the MOVAX side grip pile driver motion only happens in the X-axis of the coordinate system.


CAUTION
Pinch Point
0 kJ
168.9 Bar
0.0 Bar
2.1
20 ms
0 hits
3.4
MOVAX