BAUER

B-Tronic Display

Technology

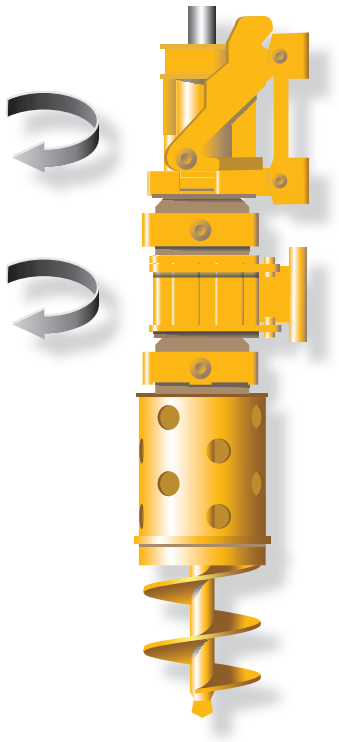
BAUER

Kelly Drilling

The Kelly drilling technique is a classic bored pile system in which the torque and the crowd force are transferred to the drilling tool by a multiple telescopic Kelly bar and the drill spoil is removed from the borehole intermittently by the drilling tool. With each spoil removal cycle, the drilling tool is emptied and returned into the borehole. Depending on prevailing ground conditions, cased drilling may be required to ensure that the borehole does not collapse and/or is secured against ingress of water.

- Support of the borehole wall by way of excess fluid pressure (support fluid) or drill casings
- Installation of the casing sections with the rotary drive or with attached casing oscillators
- By using a variety of different drilling tools, applications in all types of soil (including rock) are possible
- Drilling diameter 600 - 3,000 mm
- Drilling depth 15 - 100 m

The on-screen displays, designed specifically for Kelly drilling operations, present the relevant parameters in a clear layout. Special features, such as the Kelly visualization or the torque display related to the Kelly bar, support the rig operator in a safe operation.



Available assistance systems:

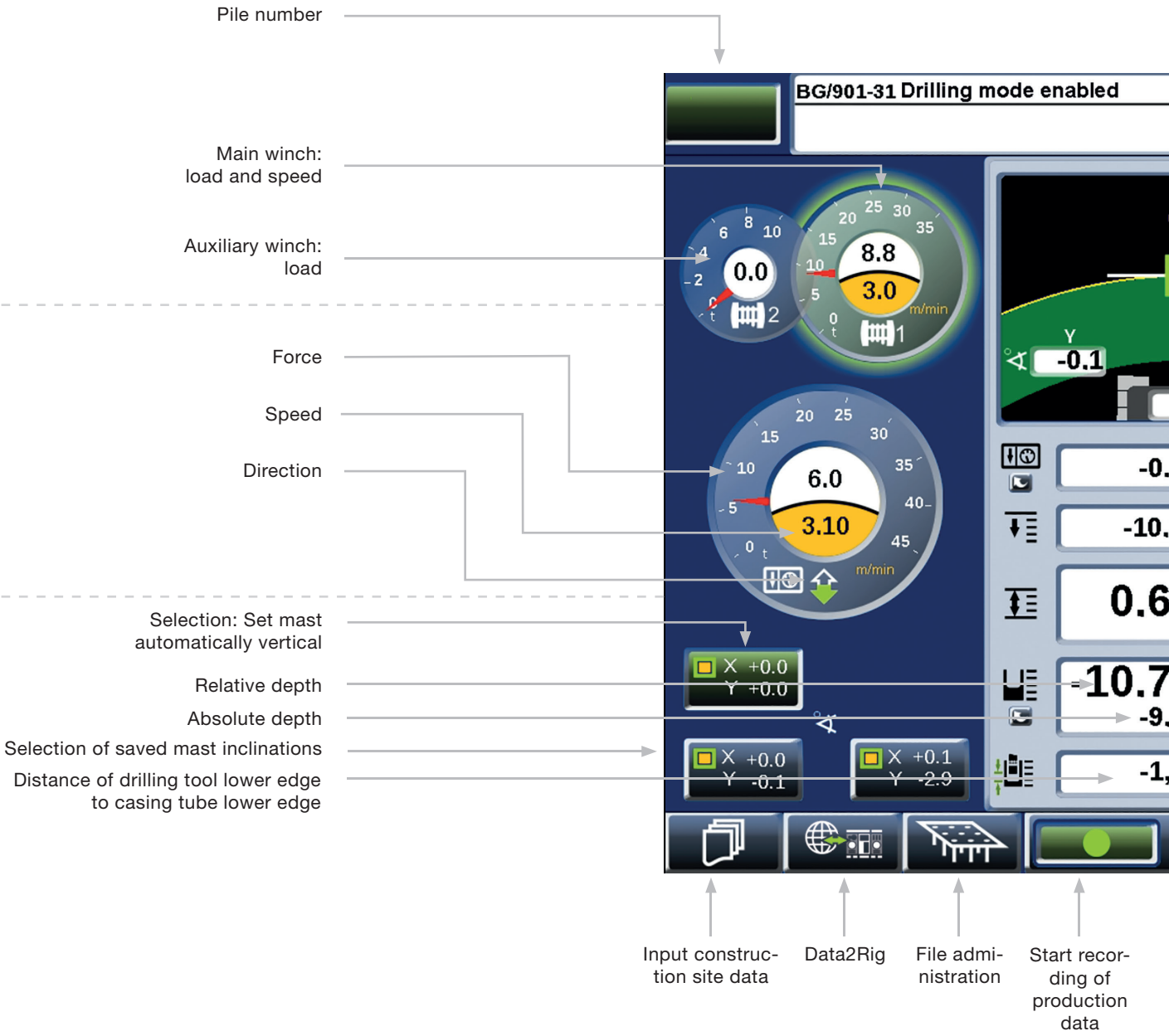
- Adaptive Kelly speed assistant
- Kelly drilling assistant
- Automatic crowd control
- One-directional spoil discharge assistant
- Bi-directional spoil discharge assistant
- Casing extraction assistant
- Slew angle indicator
- Automatic swivel alignment
- Hold-back control
- Slack rope prevention
- Crowd stroke monitoring
- Automatic mast alignment
- B-APS (Bauer-Assistant Positioning System)
- Control lever assistant
- Casing pulling assistant Crowd Plus

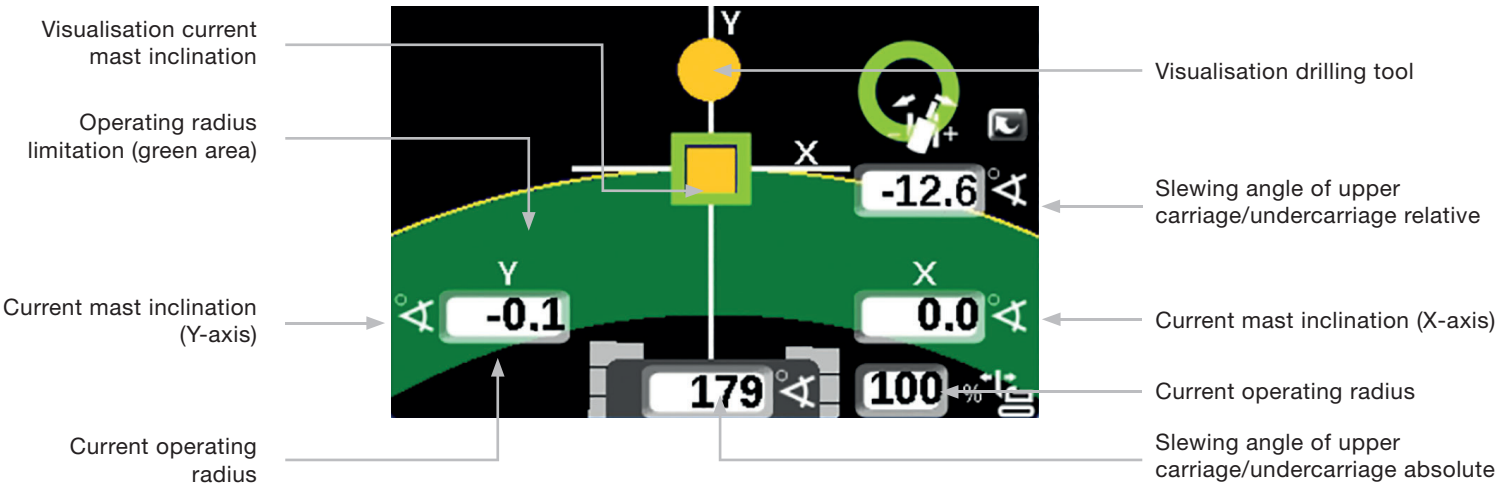
Kelly Drilling

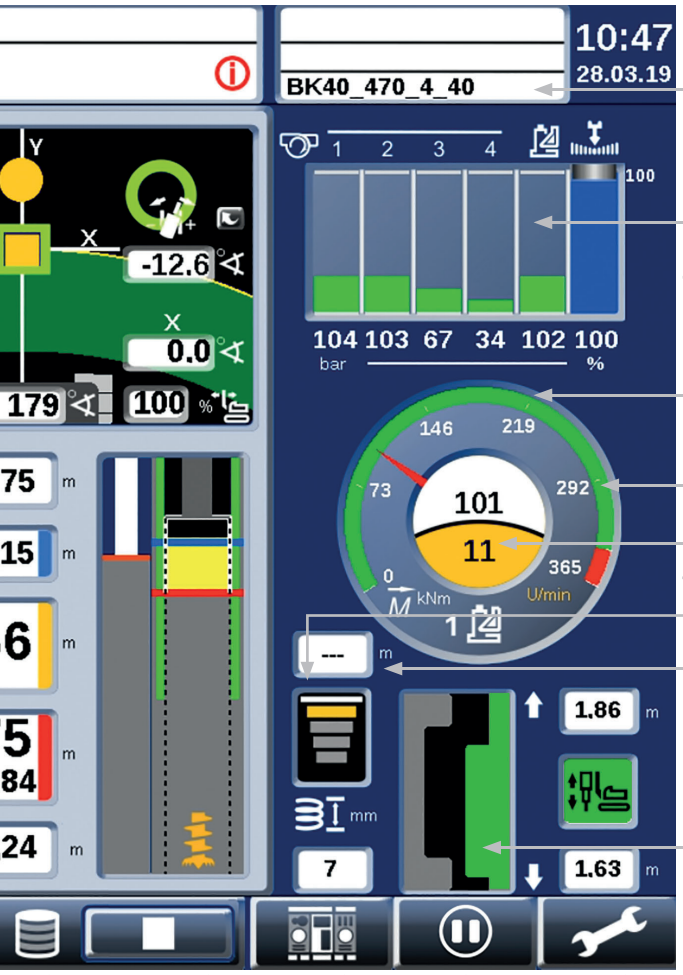
Winch

Crowd System

Mast







List of current messages

Kelly bar type

Load pressures
P1, P2, P3, P4, P_{KDK}, P_{crowd}

Available torque

Prohibited torque

Speed

Rotary drive

Kelly segment display/spring compression

Distance next Kelly segment

Crowd distance upwards to next locking recess

Status adaptive Kelly speed assistant

Kelly locking recess display (green)

Crowd distance downwards to next locking recess

Kelly visualisation

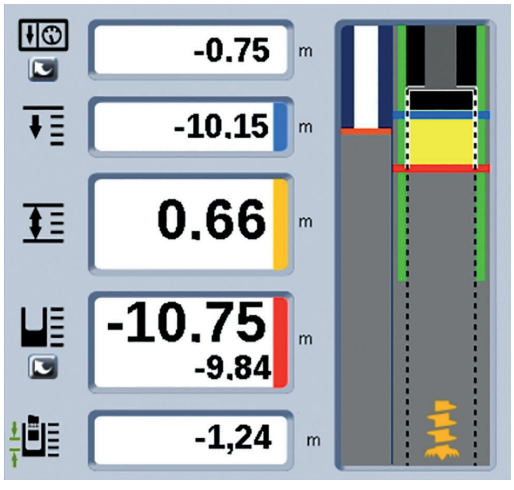
Storage space display

Stop re-cording of production data

Select equipment compo-nents

Interrupt input

Main menu



Position of the crowd sledge

Set crowd depth indicator to zero

Last depth reached

Progress since the last depth reached

Current depth

Set main winch depth indica-tor to zero

Distance of drilling tool lower edge to casing tube lower edge

Casing tube (green)

Progress of drilling tool (yellow)

Current drilling depth (red)

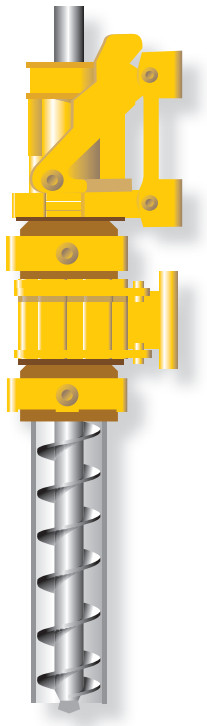
Drilling tool

Cased Continuous Flight Augers Drilling (CCFA)

By using long continuous flight augers (CFAs), which are drilled into the ground in one piece, the drilling performance can be increased significantly. In contrast to the CFA technique, the CCFA technique is carried out by drilling a casing string simultaneously with the continuous auger into the ground.

- The soil is loosened by the tip of the auger and conveyed to the surface by the auger flights
- The application of the crowd winch enables penetration into hard soil formations
- Concrete is placed in the pile bore through the hollow stem of the auger by a concrete pump as the drill string is simultaneously extracted
- Drilling diameter 500 - 1,200 mm
- Drilling depth 10 - 25 m

For cased continuous flight auger drilling (CCFA), optimal control of crowd force and speed of rotation is essential to prevent blockages in the auger or getting stuck during drilling. This process is automated with the automatic drilling control for single-pass processes. On the working screen, the operator can accompany the course of the desired penetration rate and the actual penetration rate. The rig operator can monitor on-screen the progression of the target penetration rate against the actual penetration rate and exercise control if necessary.



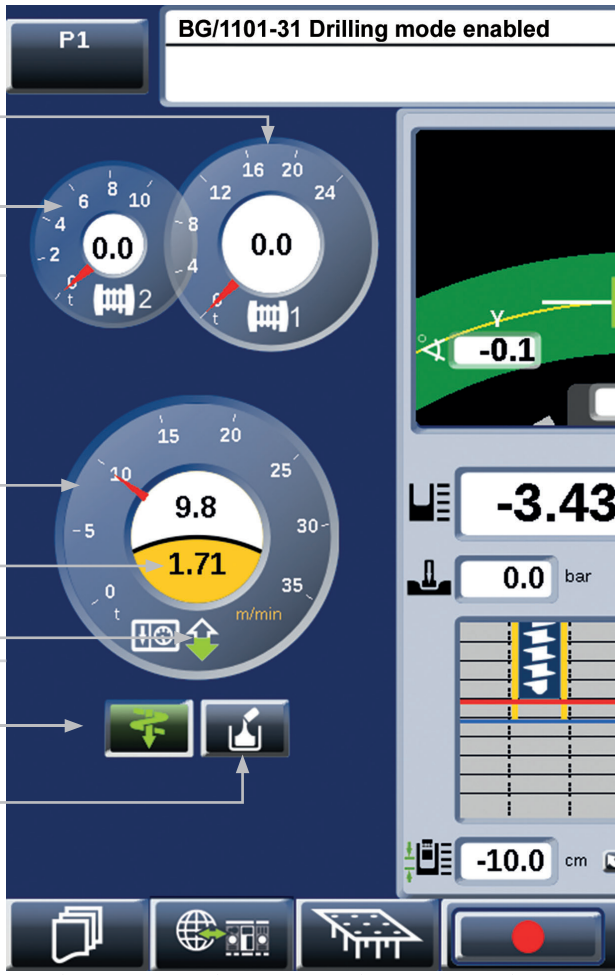
Available assistance systems:

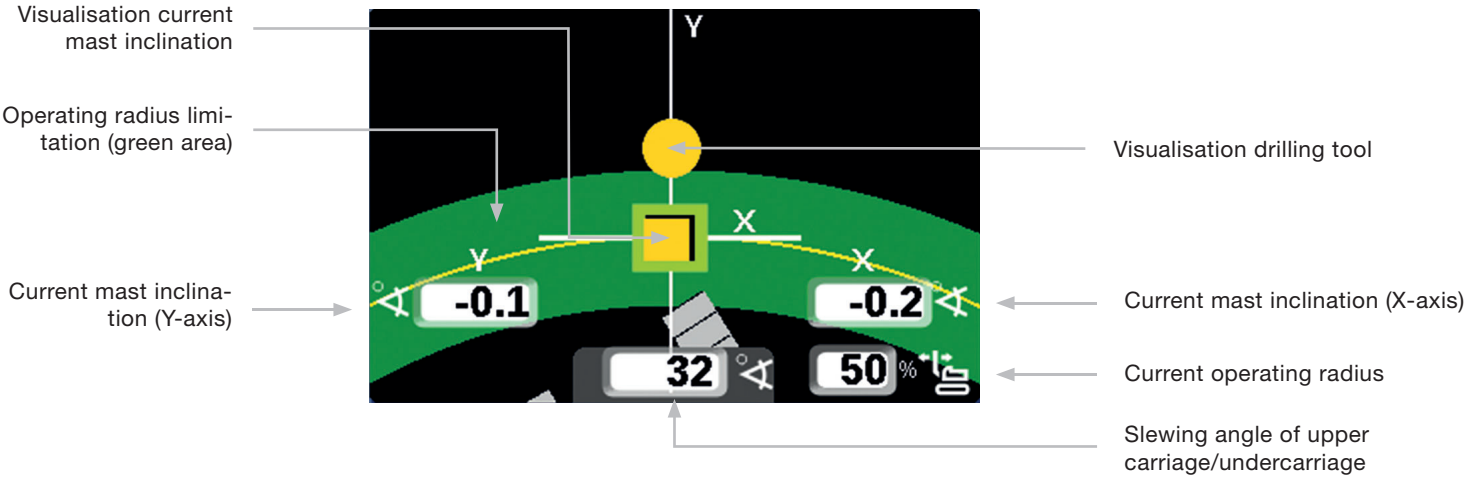
- Automatic drilling and extraction control – single pass
- Hold-back control
- Slew angle indicator
- Active mast support
- Control lever assistant

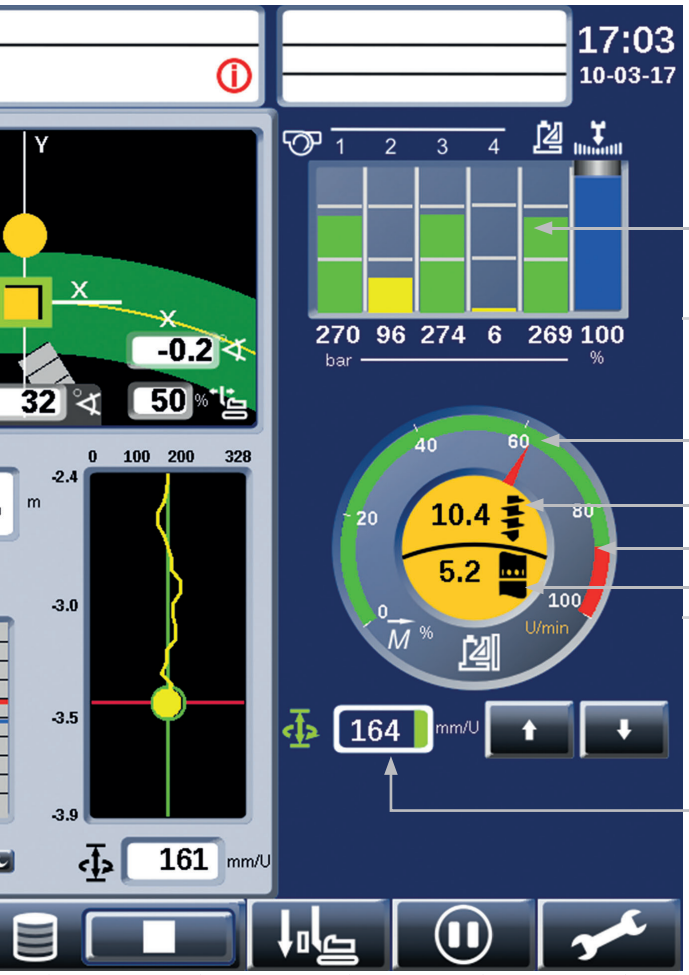
Drilling in CCFA

Winch

Crowd System







List of current messages

Load pressures
P1, P2, P3, P4, P_{KDK}, P_{crowd}

Available torque

Auger speed

Prohibited torque

Casing tube speed

Correction penetration rate

Penetration rate
nominal value

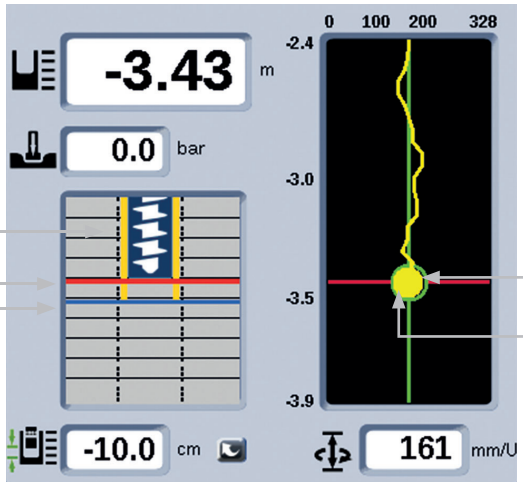
Storage space display

Stop re-cording of production data

Input production parameter (automatic drilling and extraction control)

Interrupt input

Main menu



Current depth

Pressure (concrete/air)

Casing tube

Drilling depth reached
Depth of casing tube

Relative movement

Nominal crowd speed

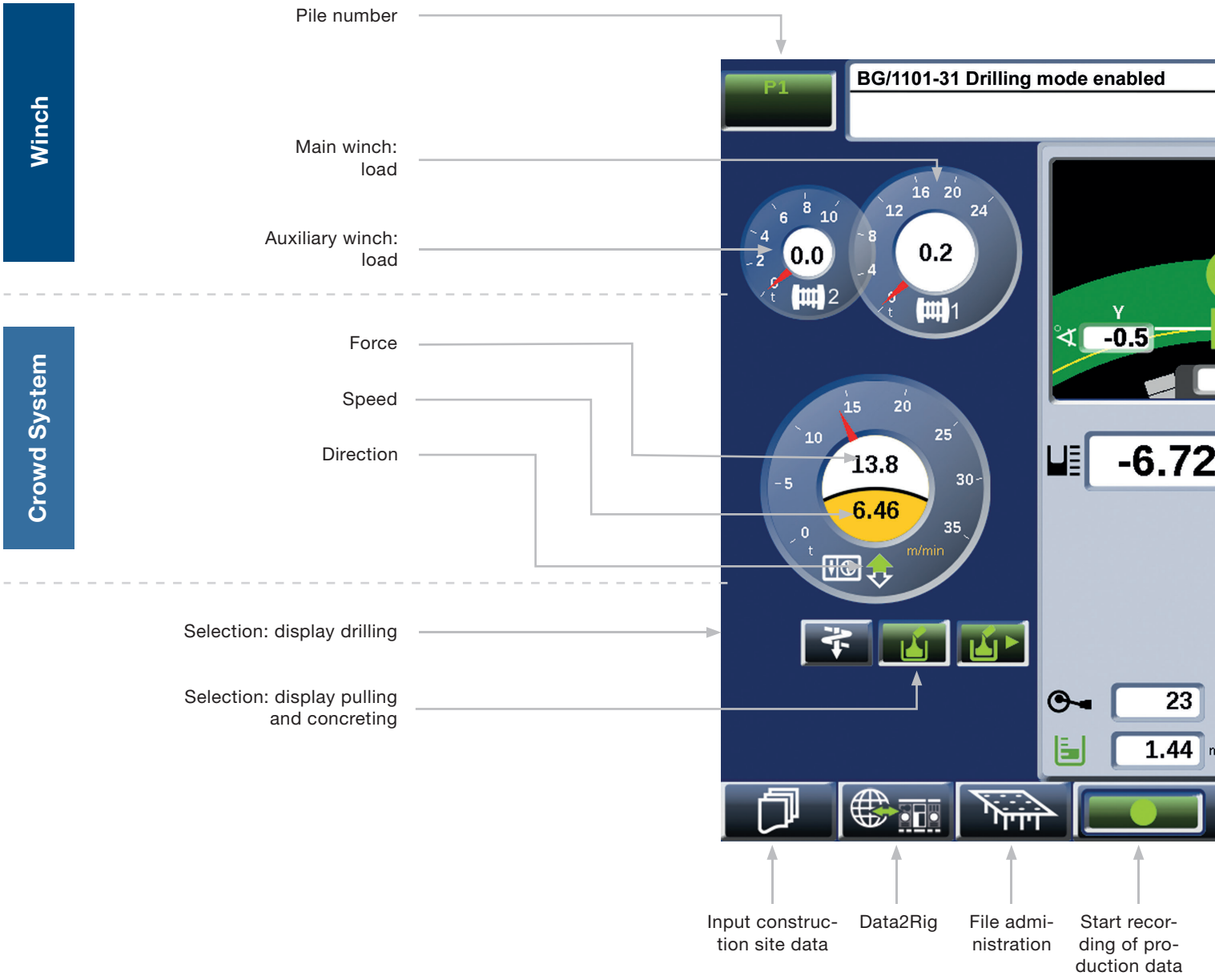
Current crowd speed

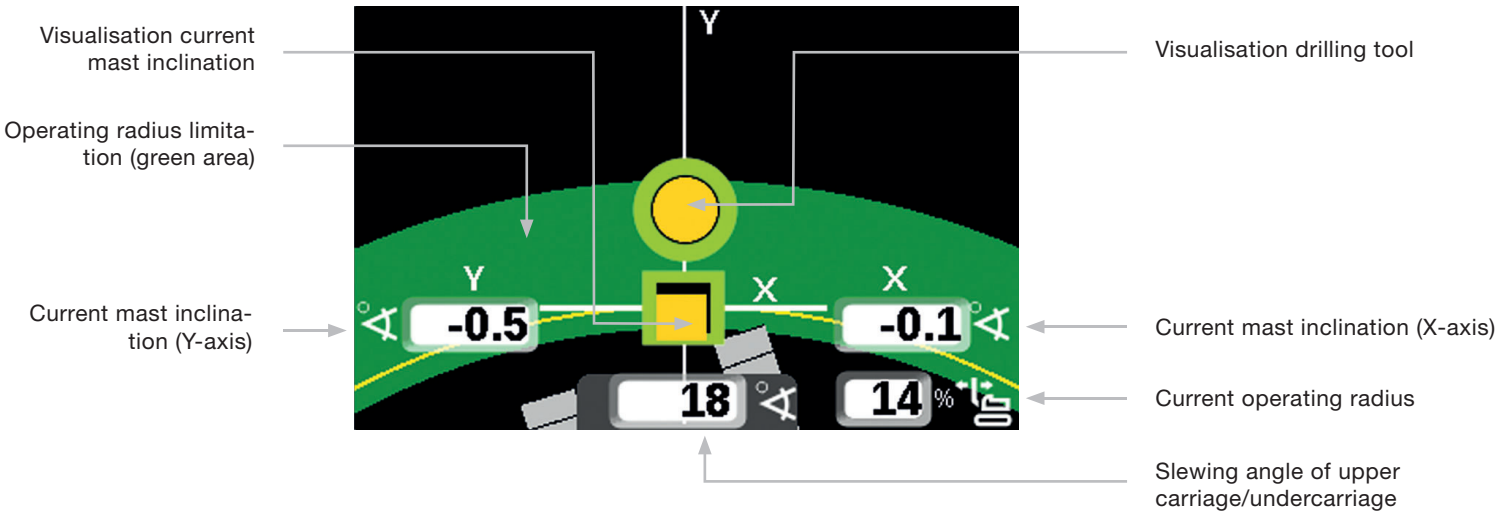
Penetration rate
actual value (drilling progress per rotation)

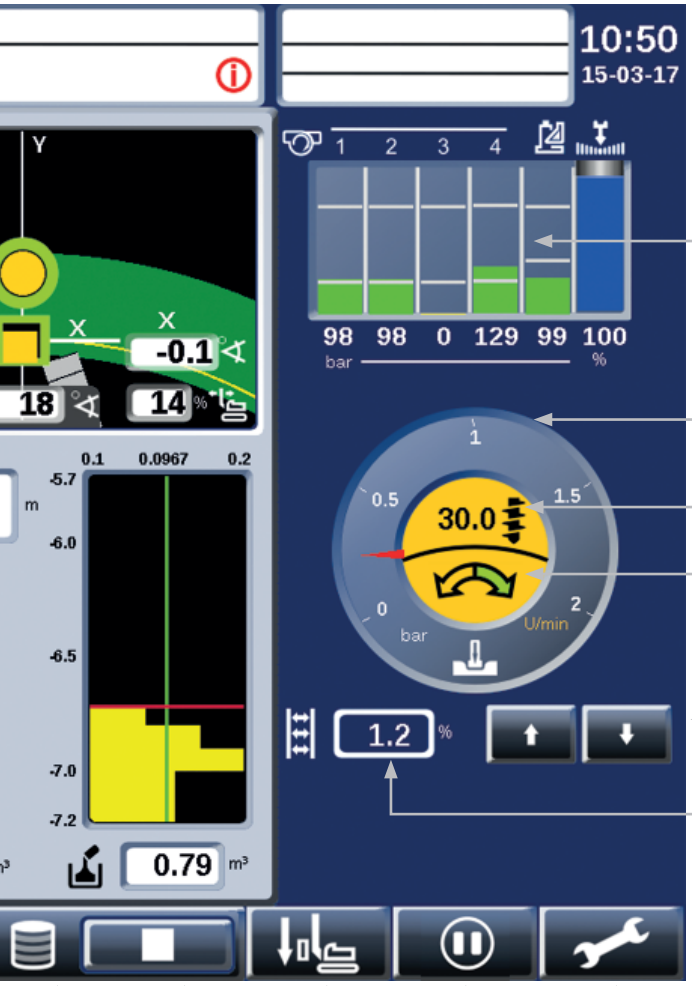
Pulling in CCFA

Winch

Crowd System







List of current messages

Load pressures
P1, P2, P3, P4, P_{KDK}, P_{crowd}

Concrete pressure

Auger speed

Rotational direction auger

Correction of detection of concrete piston pump stroke

Differential pressure peak recognition

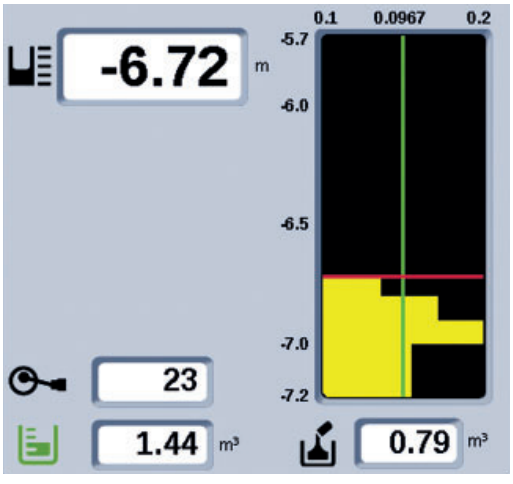
Storage space display

Stop recording of product-ion data

Input produc-tion parameter (automatic drilling and extraction control)

Interrupt input

Main menu



Current depth

Concrete pump stroke counter

Concrete quantity nominal value

Concrete quantity actual value

Multi-Purpose Crane

The duty-cycle cranes can be used for multi-purpose applications in specialist foundation engineering:

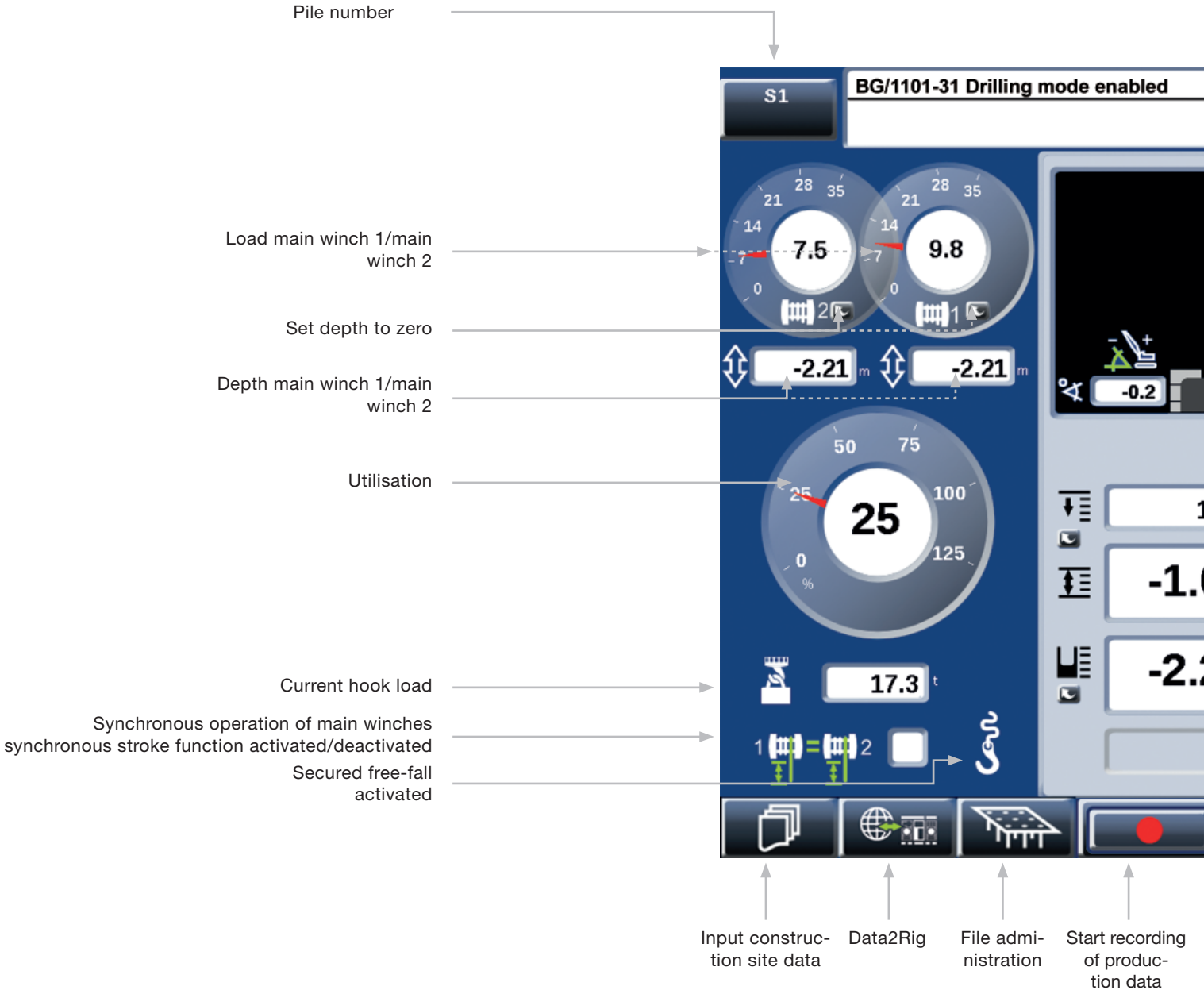
In crawler crane operation
- with mechanical clamshell for 2-rope clamshell grab operation
- with drop weights for Bauer dynamic compaction (BDC) in automatic mode

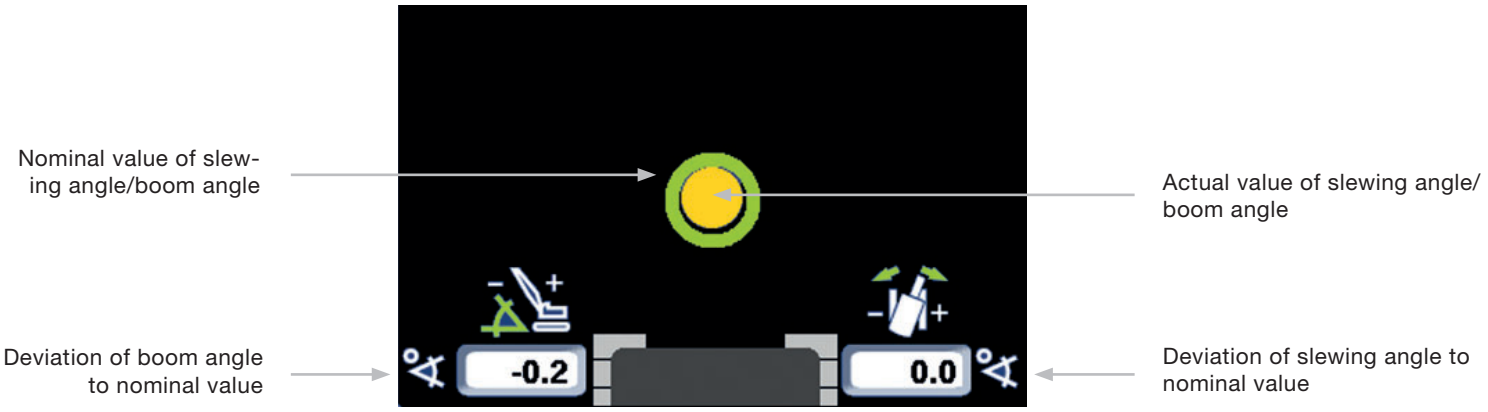
In liftcrane mode as base carrier
- for hydraulic diaphragm wall grabs with hydraulic hose drum system and grab rotation device
- for cased bored piles in combination with a grab and a casing oscillator
- for different types of vibratory pile drivers
- for Bauer trench cutters with different hose drum systems
- for Bauer Flydrill with the power coming from the on-board hydraulics

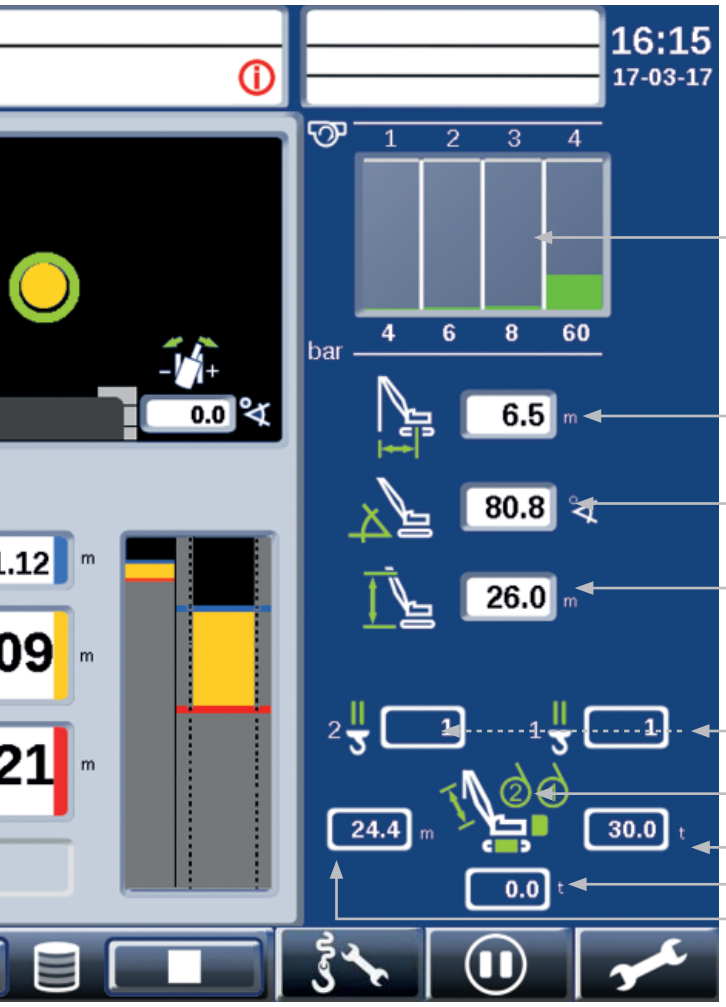
Depending on the machine configuration and the current operating radius, the B-Tronic shows at a glance the current load and the percentage of the maximum allowable load. When selecting the operating procedure LML (load moment limiter), the B-Tronic prevents any further operation beyond the allowable range as soon as 100 % of the maximum allowable load is reached, in order to ensure machine stability and component strength.

Available assistance systems:

- Grab assistant
- LML (load moment limiter)
- Slew angle limiter
- Boom angle limiter
- Slew angle indicator
- BDC automated control (Bauer Dynamic Compaction)
- HDS (Hose Drum System) control
- Automated chisel control
- Slack rope prevention
- Synchronised winch speed control
- Control lever assistant


Pile number
Load main winch 1/main winch 2
Set depth to zero
Depth main winch 1/main winch 2
Utilisation
Current hook load
Synchronous operation of main winches synchronous stroke function activated/deactivated
Secured free-fall activated
S1
BG/1101-31 Drilling mode enabled
7.5
9.8
-2.21
-2.21
25
17.3
-0.2
Input construction site data
Data2Rig
File administration
Start recording of production data


Nominal value of slewing angle/boom angle
Actual value of slewing angle/boom angle
Deviation of boom angle to nominal value
Deviation of slewing angle to nominal value
-0.2
0.0



List of current messages

Load pressures P1, P2, P3, P4

Current operating radius

Current boom angle

Current roller height

Number of reevings (main winch 2/main winch 1)

Indication of active main winches (active green)

Counterweight at back

Undercarriage counterweight

Boom length

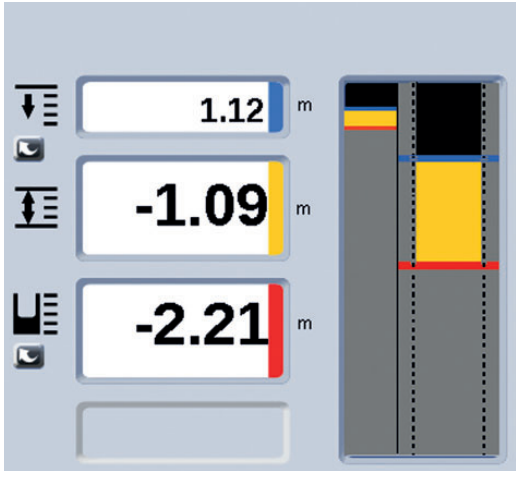
Storage space display

Stop recording of production data

Input free-fall settings

Interrupt input

Main menu



Last depth reached

Progress since the last depth reached

Current depth

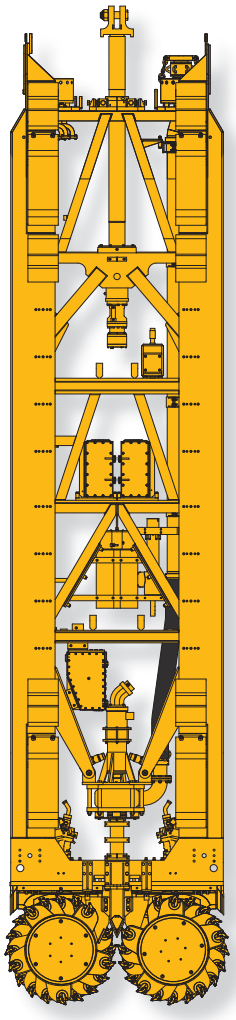
Set current depth indicator to zero

Diaphragm Wall Cutting

A continuous wall is constructed by a series of independent rectangular panels. The open trench is supported and stabilized during excavation by a thixotropic slurry. Subsequently, a reinforcement cage is lowered into the open trench and concrete or self-hardening sealing material (plastic concrete) is placed into the trench from the bottom up using tremie pipes.

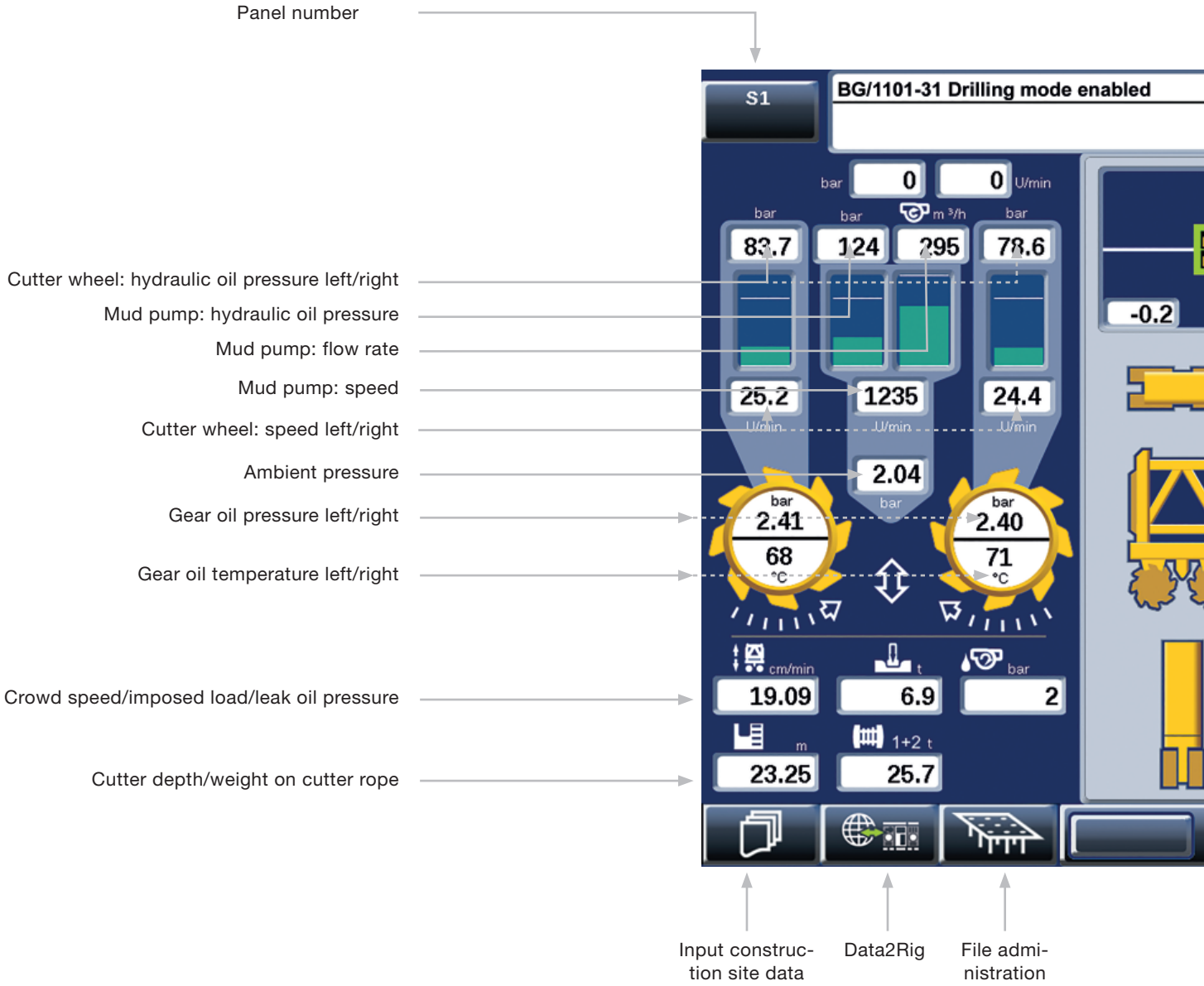
The rising concrete displaces the lighter support slurry, which is pumped out from the top of the trench, cleaned and then recycled for reuse in a new trench excavation. After hardening of the concrete, the secondary panel between the previously constructed primary panels is excavated and concreted.

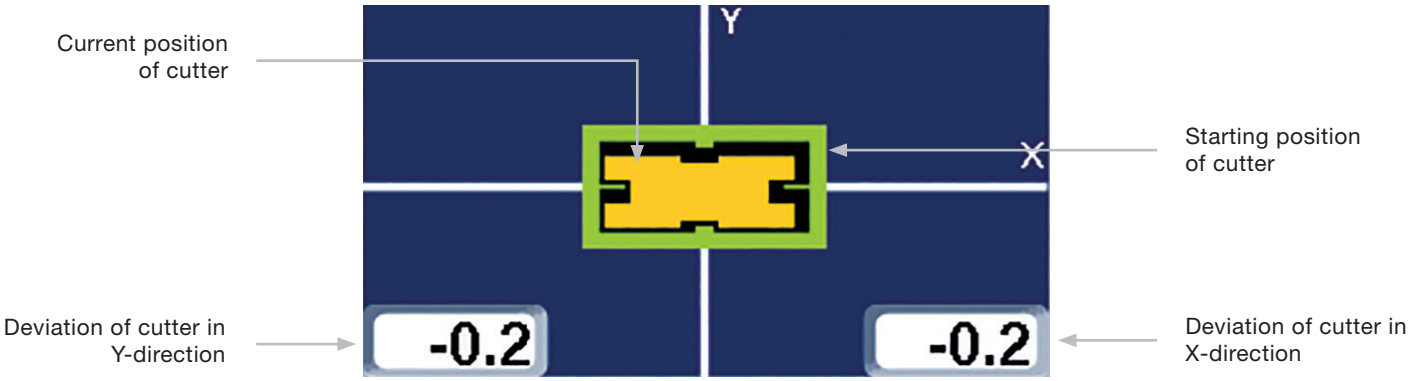
The visualization of the actual position of trench cutters (rotational direction and inclination) and the deviations in x- and y-axis enable the rig operator to take corrective action by activating the steering plates.

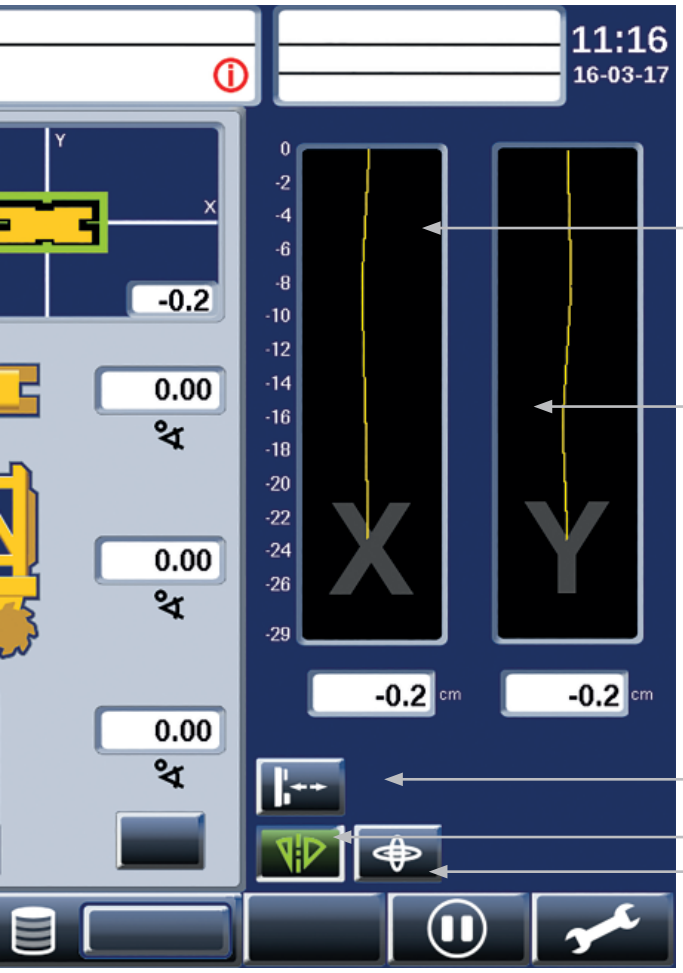


Available assistance systems:

- Surcharge control - cutter
- HDS (Hose Drum System) control


Panel number
Cutter wheel: hydraulic oil pressure left/right
Mud pump: hydraulic oil pressure
Mud pump: flow rate
Mud pump: speed
Cutter wheel: speed left/right
Ambient pressure
Gear oil pressure left/right
Gear oil temperature left/right
Crowd speed/imposed load/leak oil pressure
Cutter depth/weight on cutter rope
S1
BG/1101-31 Drilling mode enabled
bar
0
0
U/min
m ³/h
bar
bar
bar
83.7
124
295
78.6
-0.2
25.2
1235
24.4
U/min
U/min
U/min
2.04
bar
bar
2.41
68
°C
bar
2.40
71
°C
cm/min
t
bar
19.09
6.9
2
m
1+2 t
23.25
25.7
Input construc-
tion site data
Data2Rig
File admi-
nistration


Current position
of cutter
Y
X
Starting position
of cutter
Deviation of cutter in
Y-direction
-0.2
-0.2
Deviation of cutter in
X-direction



List of current messages

Deviation of cutter in X-direction

Deviation of cutter in Y-direction

Deviation of cutter in X- and Y-direction

Activate steering flap control panels

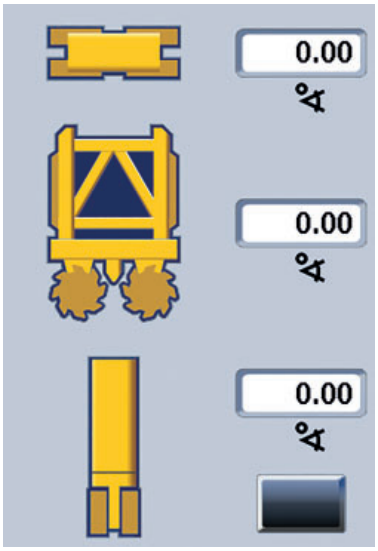
Activate cutting progress display

Activate gyroscope control panels

Storage space display

Interrupt input

Main menu



Rotation of cutter clockwise/ counter-clockwise

Current inclination in X-direction

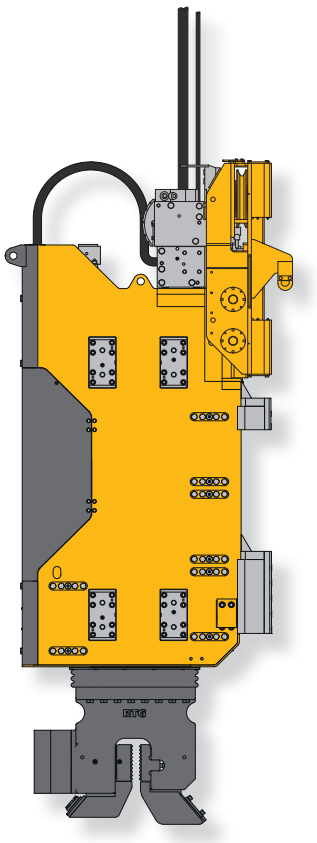
Current inclination in Y-direction

Recording cutting procedure

Vibratory Pile Driving

The principle of vibratory pile driving is to overcome the skin friction and point resistance between the pile element and the surrounding soil. A high-frequency vibrator generates vibrations which are transferred to the pile element. The vibrating pile section generates vibrations in the immediate vicinity of the surrounding soil. These lead to a rearrangement of the soil particles and thus to the reduction in the skin friction and point resistance. This effect is used to drive the pile section into the ground. When the pile section is driven into the ground by a vibrator mounted on a leader rig, an additional crowd force can be applied. This can significantly accelerate the pile driving process. A further advantage of the vibratory technique is the ability to both drive the pile element and extract it with the same equipment. By using high-frequency resonance-free starting and stopping vibratory pile drivers, start up and shutdown peaks or vibration velocity peaks can be avoided.

Advantages of Bauer vibratory equipment:
- Relatively quiet
- Adapting the vibration parameters to prevailing soil conditions
- No start-up peaks when adjusting the static moment
- Wide range of applications by taking additional measures (water-jetting, pre-drilling)
- Lower vibrations resulting from high frequency technology (> 38 Hz)

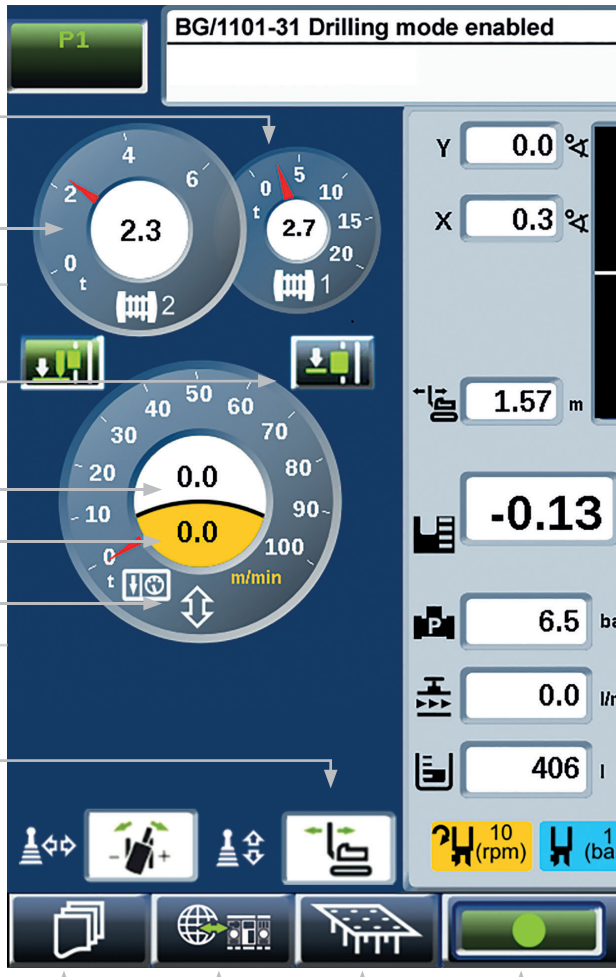


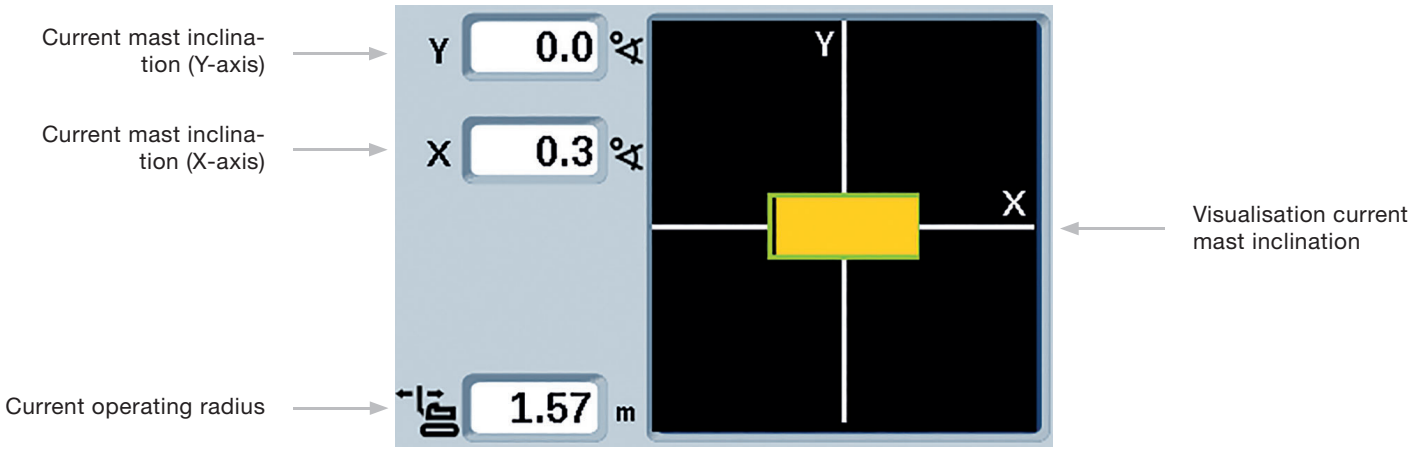
Available assistance systems:

- Automatic crowd control
- Active vibrator management (AVM)
- Automatic mast alignment

Winch

Crowd System





List of current messages

Type of vibrator

Load pressures, temperature
P1, P2, P3, P_{clamp}, $T_{lubricating\ oil}$

Available static moment

Prohibited static moment

Rpm limit value

Speed

Selection vibrator mode
(standard- amplitude- speed)

Functions right control lever
(left/right)

Functions right control lever
(forward/backwards)

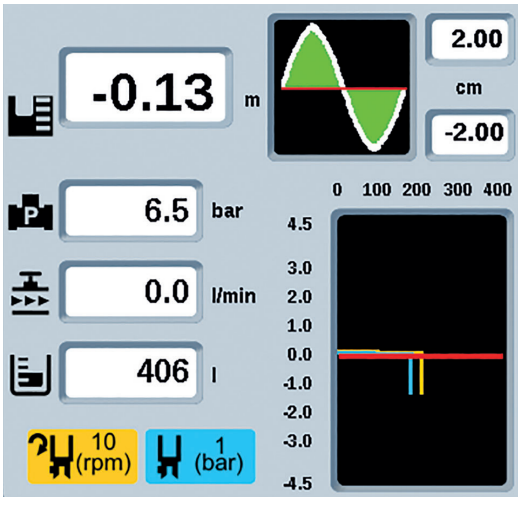
Storage space display

Stop recording of production data

Interrupt input

Main menu

Amplitude



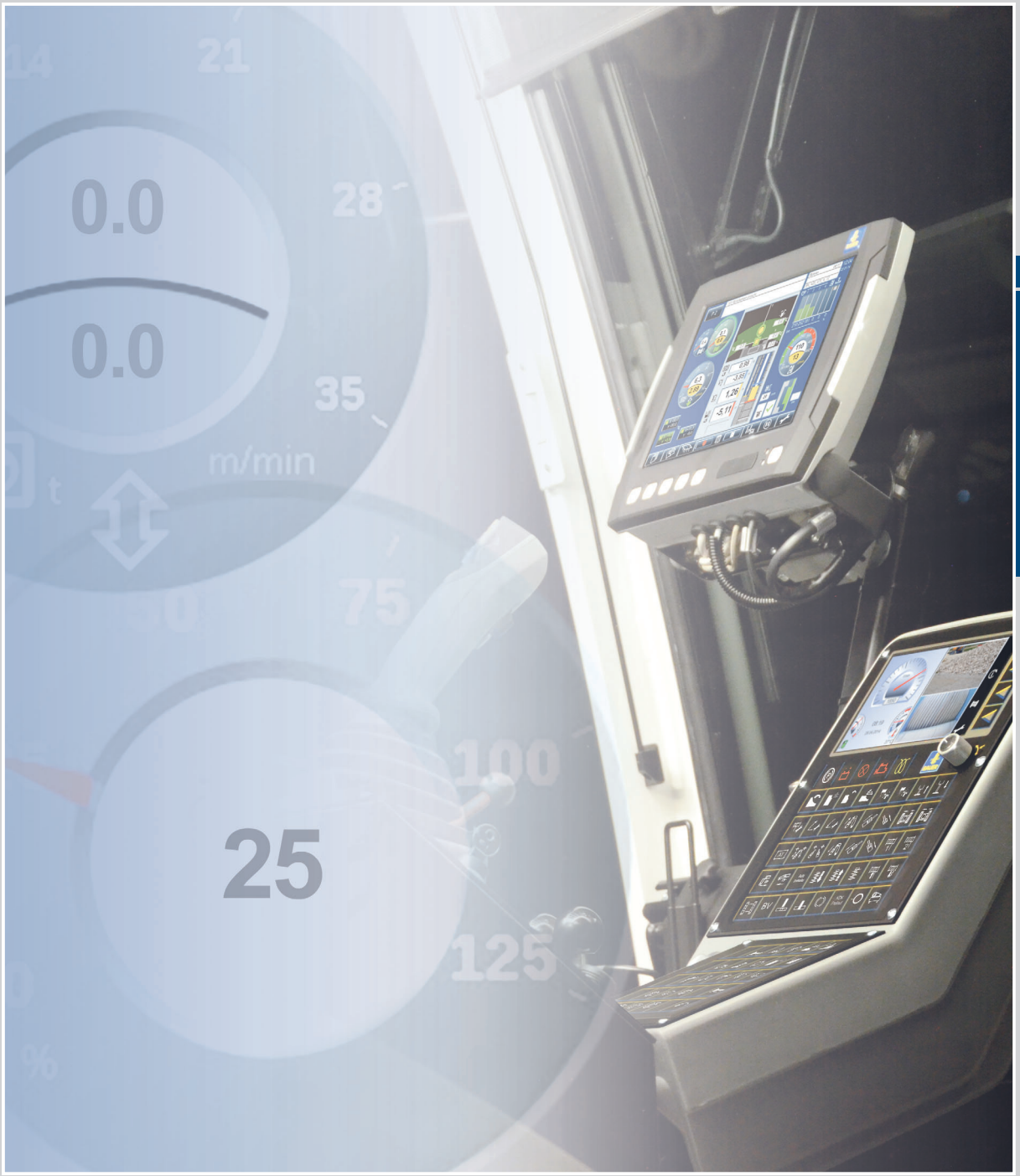
Current depth

Slurry pressure

Slurry flow rate

Slurry quantity

Vibrator speed (orange),
vibrator pressure (blue)



Technology

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