



MOVAX

Total Piling Solutions

MULTI-TOOL
PILING LEADERS,
MPL-400

TECHNICAL SPECIFICATION



VALID FROM JAN 2023



HIGHER PRODUCTIVITY – SIGNIFICANT SAVINGS

Efficient. Fast. Versatile. Accurate. Safe. Reliable.

MOVAX WAY-OF-PILING

INTRODUCTION

Movax Oy, established in 1993, is a Finnish-based, privately-owned world-leading innovator, developer and manufacturer of excavator-mounted piling and foundation equipment with highly advanced automatic control systems and information management solutions.

A TOTAL SOLUTION

Movax Oy focuses solely on solutions for the piling & foundation industry. The comprehensive range of excavator-mounted piling & foundation equipment and customized solutions cover a complete range of piling technologies - including both driven and bored piles.

UNIQUE, VALUE-ADDING TECHNOLOGY

Movax Oy's piling and foundation equipment provide the optimum way-of-working - **MOVAX WAY-OF-PILING™** - when constructing foundations, building retaining walls, both temporary and permanent, cofferdams and when performing trenching and excavation work and soil stabilisation in a wide range of applications.

QUALITY BUILT-TO-LAST

MOVAX is made with high-class materials, equipment and components – and modern, state-of-the-art production technologies and machinery ensuring the highest possible quality of manufacture. Movax Oy's Quality Management Systems is certified in accordance with ISO 9001:2015.

GLOBALLY PROVEN

With almost **30 years of experience** and more than **3000 units delivered** to all over the world and with a clear focus on the piling and foundation industry, MOVAX has a deep understanding and know-how of varying site and soil conditions - and of all kinds of different type of excavators and rail roaders. Movax Oy's experience also covers a wide range of applications ranging from Rail, Road and Civil to Waterways & Piers, Utilities and Environmental & Energy.

GLOBALLY LOCAL CUSTOMER CARE

Movax Oy focuses on superior customer service and support together with a world-wide network of local partners, established in more than 30 countries all over the world, performing trenching and excavation work in a wide range of applications from civil/structural, rail and road to waterways & piers, utilities and environmental.



INNOVATION & CONTINUOUS DEVELOPMENT

Movax Oy is the inventor of the modular, vibratory side grip pile driver technology. Movax Oy's inventions have resulted in numerous patents (50+) and its trademark, MOVAX®, is registered and well known for the quality it represents all over the world.

Movax Oy is strongly committed to continuously develop its products and services in close cooperation with its customers and local partners.



TOTAL SOLUTION

PILING, FOUNDATION & SOIL STABILISATION

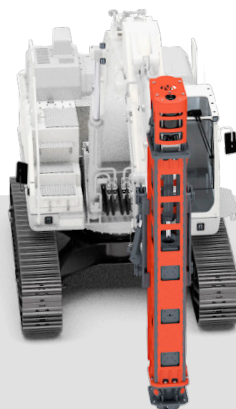
MOVAX excavator mounted piling equipment and customised solutions are available for different piling technologies, including both driven and bored piles, and for varying site and soil conditions and requirements.

The MOVAX Control System links the excavator with the MOVAX piling equipment and customised solutions whereas the MOVAX Information Management System (MIMS) provides essential information about the piling process and the pile installation - and about the MOVAX piling equipment.



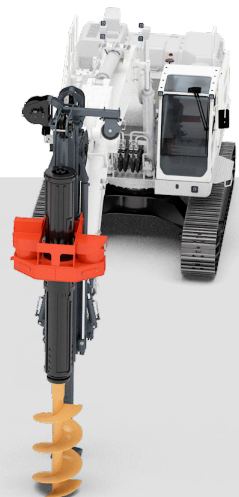
PILE DRIVERS

Side grip vibratory-type pile driver for handling, pitching, driving & extracting a complete range of driven piles, including sheet piles, H-beams, tubular steel piles and timber piles.



PILING HAMMERS

Hydraulic, double-acting impact-type piling hammers for driving load-bearing piles or assisting in sheet pile driving in even the most difficult soil conditions.



PILING DRILLS

Telescopic/kelly bar-type piling drills for bored, cast-in-situ (concrete) piles.



MOVAX CONTROL SYSTEM

The **MOVAX Control System (mControl+)** controls all MOVAX piling equipment and customised solutions. The system controls the auxiliary hydraulics of the excavator and all the functions of MOVAX's piling equipment.



MULTI-TOOL PILING LEADERS

Customised multi-purpose piling leaders with tooling including vibratory pile driver, piling hammer and rotary drives for pre-augering and CFA piling.



COLUMN STABILISATION LEADERS

Customised column stabilisation leader for increasing strength, improving deformation properties and to increase stiffness of soft soil.



INFORMATION MANAGEMENT

The **MOVAX Information Management System (MIMS)** provides essential information about the piling process and the pile installation – mLogbook – as well as about the MOVAX piling equipment itself – mFleet Management.



CUSTOMIZED SOLUTIONS

MULTI-TOOL PILING LEADERS

The excavator-mounted MOVAX multi-tool piling leader provides a versatile, multi-tool solution for a wide range of piling requirements in a variety of site and soil conditions, and for different types of piles and piling technologies.

MOVAX MPL multi-tool piling leaders are available with a wide range of tooling for different piling and foundation applications ranging from driven piles to CFA and pre-augering. The leader and its tooling are designed to work on a standard excavator with normal auxiliary hydraulics and are controlled with the MOVAX Control System. An optional stability monitoring system is available upon request.

The MOVAX Information Management System (MIMS) provides essential information about the piling process and the pile installation as well as about the MOVAX piling equipment itself.

MOVAX MPL multi-tool piling leaders are based on a modular concept and always customised to meet customer-specific requirements. MOVAX customises and manufactures three (3) different size MPL multi-tool piling leaders to provide the solution for a wide range of carriers and applications.

| Multi-tool piling leader model | MPL-400 | MPL-300 | MPL-200 |
|--|--|--|---|
| Type | Heavy duty, multi-purpose piling leader | Multi-purpose piling leader | Micropiling multi-tool leader (incl. solar piling) |
| Effective piling length/drilling depth | 12 m | 12 m | 6 m |
| Tools | Vibratory pile driver Impact-type piling hammer Rotary drive for pre-augers CFA | Vibratory pile driver Impact-type piling hammer Rotary drives for pre-augers CFA DTH | Hydraulic hammer Rotary drive for pre-auger Vibratory pile driver |
| Mounting (excavator class) | Boom (35-50 ton) | Boom (30-50 ton) Stick (35-50 ton) | Chassis (8-20 ton) Boom (16-30) Stick (23-35) |
| Control | mControl+ Pro | mControl+ Pro | mControl+ Pro |
| Information management | mFleetManagement mLogbook | mFleetManagement mLogbook | - |

NOTE!

In addition to the multi-tool piling leaders with a standardised effective length/depth, tailor-made leaders are available for vibratory pile driver operation up to a maximum effective pile length of 16 meters. The maximum leader length is dependent on the excavator size and stability.

Multi-tool piling leaders with tooling for MULTIPLE PILING TASKS



MULTI-TOOL PILING LEADERS

MPL-400

FEATURES

- Excavator boom-mounted, heavy duty Multi-tool piling leader
- Tooling alternatives include vibratory pile driver, hydraulic double-acting impact-type piling hammer and rotary drives for pre-augering and CFA
- Suitable for a wide range of piling applications, including driven piles (sheet piles, tubular steel piles, H-beams and precast concrete piles) and bored piles (CFA)
- Multi-tool piling leader and tooling designed to work on a standard excavator with normal auxiliary and bucket hydraulics. All leader related hydraulics are integrated onto the leader itself
- Equipped with a fully integrated service winch for handling of piles and tooling
- Scalable to effective pile lengths/CFA & pre-augering depths between 6 and 12 meters by optional leader section and corresponding augers, pile/auger guides, etc.
- Tooling can be easily changed and the leader can also be attached and detached enabling other usage of the excavator
- Multi-tool piling leader and tooling controlled and operated with the MOVAX Control System, mControl+ Pro
- Stability Monitoring System available as an option
- MOVAX Information Management System for reporting piling works (mLogbook) and monitoring equipment (mFleetManagement)

DISCLAIMER

MPL Multi-tool piling leaders are customised solutions. Hence the features and technical data of a specific MPL delivery might differ from the data presented in this catalogue.



Multi-tool piling leaders for DRIVEN, BORED AND DRILLED PILES



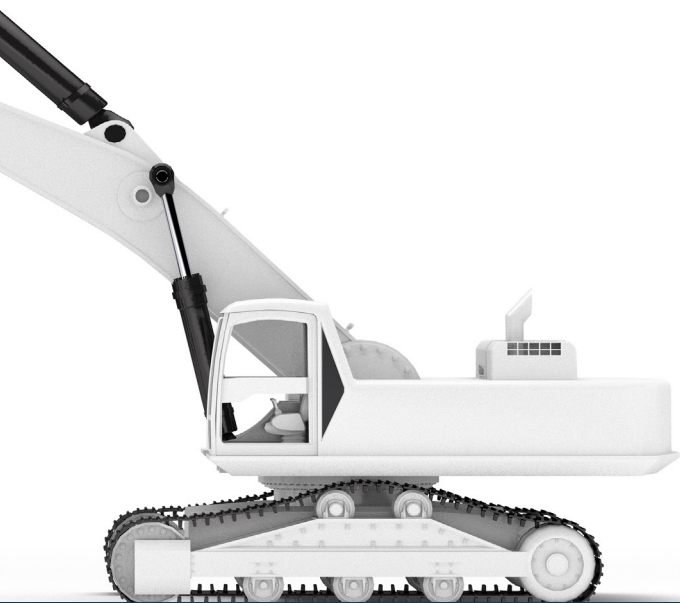
MULTI-TOOL PILING LEADERS, MPL-400

TECHNICAL DATA

| Model | | MPL-400 |
|---------------------------------|----|-----------|
| Weight (without adapter & tool) | kg | 7000-8000 |
| Height | m | 15 |
| Forward inclination | ° | 20 |
| Backward inclination | ° | 20 |
| Tilt | ° | 8 |
| Rotation (optional) | ° | 60 |
| Winches | | |
| Main winch line pull | kN | 120 |
| Aux winch line pull | kN | 57 |
| Crowd system | | |
| Pull down force | kN | 120 |
| Extraction force | kN | 120/360 |
| Transport (w/o excavator) | | |
| Length | mm | 8700 |
| Width | mm | 2900 |
| Height | mm | 2900 |
| Weight (w/o tool) | kg | 7000-8000 |
| Excavator class* | t | 35-50 |

NOTE!

* depending on tooling; additional counterweight might be required depending on excavator brand & model.



MULTI-TOOL PILING LEADERS, MPL-400 Tooling

TECHNICAL DATA

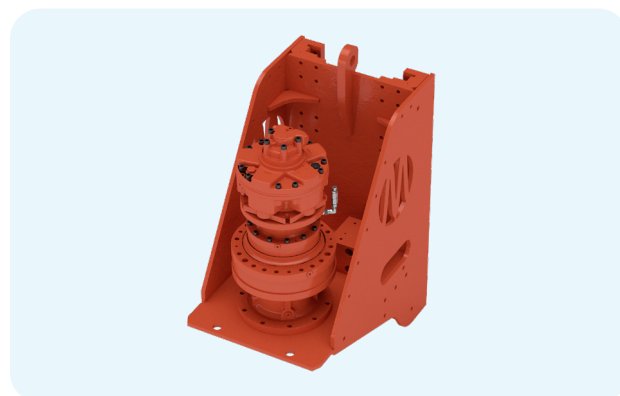
Piling hammer

| Model | | DH-35 | DH-45 |
|--------------------------|-----------------------------------|--------|--------|
| Total weight | kg | 4900 | 5850 |
| Ram weight | kg | 3100 | 4000 |
| Blows per minute | 1/min | 0-100 | 0-100 |
| Impact energy | kNm | 0-35 | 0-45 |
| Drop height | m | 0-1,2 | 0-1,2 |
| Total height | mm | 4460 | 4930 |
| Frame width | mm | 650 | 650 |
| Transport width | mm | 1200 | 1200 |
| Transport depth | mm | 1870 | 1870 |
| Oil flow | l/min | 80-120 | 80-120 |
| Operating pressure | bar | 250 | 280 |
| Pressure relief set, max | bar | 350 | 350 |
| Suitable piles | | | |
| Sheet piles | U and Z, max length 12 m | | |
| H-beams | up to HEB500, max length 12 m | | |
| Tubular steel piles | up to Ø 508 mm, 12 m | | |
| | up to Ø 762 mm, 12 m | | |
| Precast concrete | up to 250x250 mm, max length 12 m | | |



Rotary drive for pre-augering

| Model | | PD-100 |
|---------------------------|------|---------|
| Total weight | kg | 1000 |
| Torque, max | kNm | 100 |
| Drilling speed | rpm | 0-40 |
| Connecting pin, hexagonal | mm | 130 |
| Oil flow | l/mm | 240 |
| Maximum pressure | bar | 350 |
| Pre-augering | | |
| Depth | m | 12 |
| Hole diameter | mm | 300-800 |



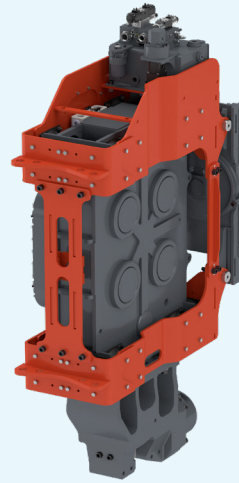
Vibratory pile drivers

| Model | | TG-120 | TG-160 |
|------------------------------|-------------------------------|-----------|------------|
| Total weight (transport) | kg | 2460 | 2775 |
| Total weight (operating) | kg | 2385 | 2700 |
| Dynamic weight | kg | 1810 | 2100 |
| Dynamic weight (excl. clamp) | kg | 1230 | 1280 |
| Height | mm | 2500 | 2500 |
| Depth | mm | 1330 | 1330 |
| Width | mm | 460/410* | 460/410* |
| Eccentric moment | kgm | 12,6 | 16 |
| Frequency | 1/s | 2300 | 2300 |
| Line pull, max | kN | 200 | 200 |
| Amplitude | mm | 14,5/20** | 15,2 /25** |
| Centrifugal force | kN | 718 | 912 |
| Oil flow | l/min | 240 | 300 |
| Operating pressure, max | bar | 350 | 350 |
| Excavator class | ton | 35-50 | 42-50 |
| Suitable piles | | | |
| Sheet piles | U and Z, max length 12 m | | |
| H-beams | up to HEB500, max length 12 m | | |
| Tubular steel piles | up to Ø 508 mm, 12 m | | |
| | up to Ø 762 mm, 8 m | | |

NOTE!

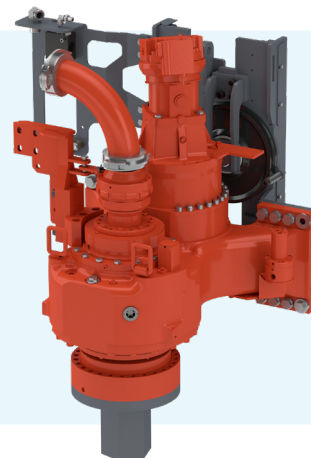
* total/along piling line

** with/without bottom clamp



Rotary drive for CFA

| Model | | RHP-10 |
|---------------------------|------|---------|
| Total weight | kg | 1800 |
| Torque, max | kNm | 100 |
| Drilling speed | rpm | 0-50 |
| Connecting pin, hexagonal | mm | N/A |
| Oil flow | l/mm | 250 |
| Maximum pressure | bar | 320 |
| CFA | | |
| Depth | m | 12 |
| Hole diameter | mm | 300-800 |

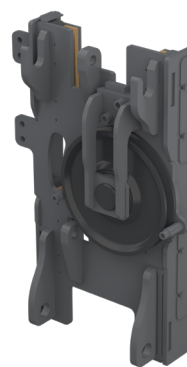


MULTI-TOOL PILING LEADERS, MPL-400

TOOLING & OPTIONS

The MOVAX Multi-tool piling leader MPL-400 is of a modular design and thus suitable for a wide range of applications and piling technologies, including driven piles, pre-augering and CFA. The tooling can be easily and quickly changed and the leader can be modified for any given pile length or pre-augering/CFA depth between 6 and 12 meters to allow for low head room operation.

Tool mounting bracket
for fast and easy change
of tooling.



Piling hammers

MOVAX DH-35 or DH-45
0-35/0-45 kNm
0-100 blows/min
0-1,2 m drop height



Vibratory pile driver

MOVAX TG-120
718 kN | 12,6 kgm
2300 1/s | 14,5/20 mm
MOVAX TG-160
912kN | 16 kgm
2300 1/s | 15,2/25 mm



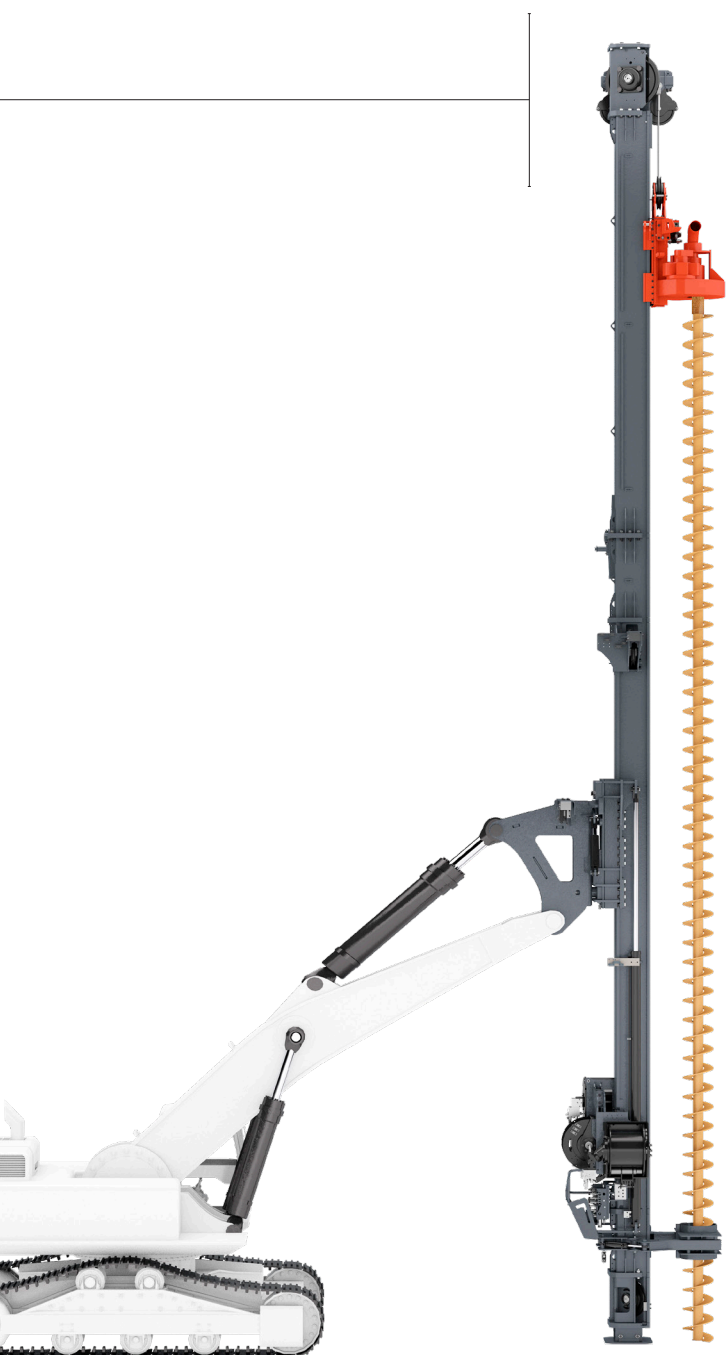
Pre-auger

PD-100
100 kNm
0-40 rpm



CFA Rotary drive

RHP-10
100 kNm
0-50 rpm



The MOVAX MPL-400 is always customised to meet customer-specific requirements. Technical parameters can be tailored and accessories are available for various tooling and applications.



Main winch 120 kN, available with 12 or 36 ton lifting force (*1x or 3x winch line pull*).

Available with optional 5,7 ton service winch for lifting piles, augers and reinforcements.

Mounted directly onto excavator, stick or onto main boom (*depending on excavator class*).
Excavator- and mounting-specific adapter included in the delivery.



Available with tool specific accessories; for example CFA auger star cleaner

Available with pile or auger guide for accurate positioning and verticality.
Pile clamps either mechanical or hydraulic.



Lead augers and augers are available for different soil conditions and with different diameters.

CFA PILE REPORT

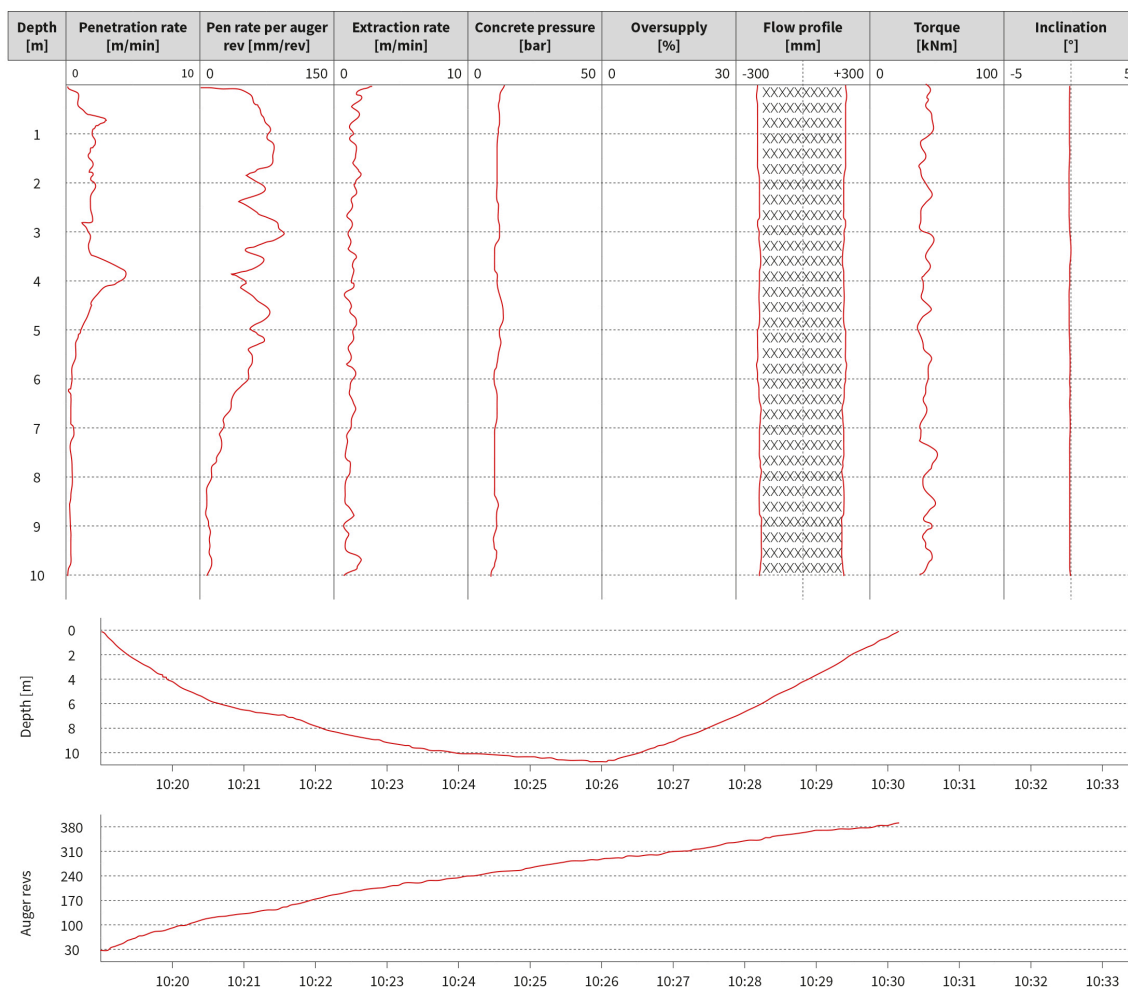
Based on the project report it is possible to generate pile specific reports for each individual pile; and for each individual MOVAX piling equipment.

mLOGBOOK

PILE REPORT CFA

Pile# **12**

| | | | | | |
|-----------------|-----------------------|--------------|-------------|------------------------|----------------------|
| Main project | Bridge construction | Operator | Tom Jackson | MOVAX piling equipment | MPL-400/CFA, sn 1255 |
| Sub project | SE Exit | Date | 2020-05-12 | | |
| Location | Islington, London | Start time | 12:50:00 | Pile type | CFA |
| Customer | Road constructors ltd | End time | 12:53:10 | Auger rev's | 384 |
| Contract number | 923000-A1 | Elapsed time | 03:10 | Pile dimensions/depth | dia 400 mm / 10 m |
| Note! | | | | Concrete volume | 6 m ³ |
| | | | | Oversupply | 25% |



The individual, pile specific reports for MOVAX MPL CFA include the following information:

Position data, Pile type, Pile dimensions, Pile depth, Angle, Torque, Concrete volume, Concrete pressure, Start time, End time, Elapsed time, Date

CFA PROJECT REPORT

The mLogbook '**project report**' includes all the information related to the piling or foundation project including pile type & dimensions, the depth to which the pile has been driven with the various tools and for instance in the case of load bearing piles also information related to the pile set.

Different parameters are reported for the different MOVAX piling equipment.

mLOGBOOK

PROJECT REPORT

| | | | | | |
|------------------------|-----------------------|-------------------------------|----------------------|-------------------|-------------|
| Main project | Bridge construction | MOVAX piling equipment | MPL-400/CFA, sn 1255 | Operator | Tom Jackson |
| Sub project | SE Exit | | | Start date | 2020-05-12 |
| Location | Islington, London | Pile type | CFA | End date | 2020-05-31 |
| Customer | Road constructors ltd | Note! | | | |
| Contract number | 923000-A1 | | | | |

| Pile# | Position data | Pile type | Pile dimensions [mm] | Pile depth [m] | Angle [°] | Torque (average) [kNm] | Concrete volume [m³] | Concrete pressure (average) [bar] | Start time | End time | Elapsed time | Date |
|-------|---------------------------------|-----------|----------------------|----------------|-----------|------------------------|----------------------|-----------------------------------|------------|----------|--------------|------------|
| 1 | 53°26'54.036"N 2°12'47.012"W | CFA | 400 | 10 | 0,1 | 41,1 | 5,39 | 68 | 12:04:40 | 12:45:34 | 0:40:54 | 2020-05-12 |
| 2 | 53°26'54.037"N 2°12'47.012"W | CFA | 400 | 10 | -0,3 | 36,2 | 5,55 | 37 | 8:42:24 | 8:55:55 | 0:13:31 | 2020-05-13 |
| 3 | 53°26'54.038"N 2°12'47.012"W | CFA | 400 | 10 | -0,4 | 36,4 | 5,33 | 21 | 9:44:22 | 9:59:20 | 0:14:58 | 2020-05-13 |
| 4 | 53°26'54.039"N 2°12'47.012"W | CFA | 400 | 10 | 0,1 | 35,5 | 5,72 | 48 | 10:55:33 | 11:34:22 | 0:38:49 | 2020-05-13 |
| 5 | 53°26'54.040"N 2°12'47.012"W | CFA | 400 | 10 | -0,1 | 38,9 | 5,11 | 24 | 12:04:40 | 12:45:34 | 0:40:54 | 2020-05-13 |
| 6 | 53°26'54.041"N 2°12'47.012"W | CFA | 400 | 10 | 0,2 | 39,7 | 5,64 | 28 | 13:07:22 | 13:30:22 | 0:23:00 | 2020-05-13 |
| 7 | 53°26'54.038"N 2°12'47.012"W | CFA | 400 | 10 | 0,4 | 36,8 | 5,21 | 79 | 13:45:55 | 13:59:22 | 0:13:27 | 2020-05-13 |
| 8 | 53°26'54.041"N 2°12'47.012"W | CFA | 400 | 10 | -0,2 | 36,3 | 5,03 | 27 | 14:15:00 | 14:26:22 | 0:11:22 | 2020-05-13 |
| 9 | 53°26'54.038"N 2°12'47.012"W | CFA | 400 | 10 | 0,0 | 39,9 | 5,20 | 73 | 14:47:44 | 15:13:20 | 0:25:36 | 2020-05-13 |
| 10 | 53°26'54.041"N 2°12'47.012"W | CFA | 400 | 10 | 0,0 | 37,6 | 5,79 | 64 | 14:15:00 | 14:26:22 | 0:11:22 | 2020-05-14 |
| 11 | 53°26'54.038"N 2°12'47.012"W | CFA | 400 | 10 | -0,3 | 36,5 | 5,87 | 33 | 13:07:22 | 13:30:22 | 0:23:00 | 2020-05-15 |
| 12 | 53°26'54.041"N 2°12'47.012"W | CFA | 400 | 10 | 0,1 | 37,4 | 5,73 | 60 | 12:04:40 | 12:45:34 | 0:40:54 | 2020-05-16 |
| 13 | 53°26'54.038"N 2°12'47.012"W | CFA | 400 | 10 | -0,3 | 39,3 | 5,24 | 59 | 8:42:24 | 8:55:55 | 0:13:31 | 2020-05-17 |
| 14 | 53°26'54.041"N 2°12'47.012"W | CFA | 400 | 10 | -0,1 | 41,0 | 5,91 | 76 | 9:44:22 | 9:59:20 | 0:14:58 | 2020-05-18 |
| 15 | 53°26'54.038"N 2°12'47.012"W | CFA | 400 | 10 | -0,3 | 41,6 | 5,44 | 58 | 10:55:33 | 11:34:22 | 0:38:49 | 2020-05-18 |
| 16 | 53°26'54.041"N 2°12'47.012"W | CFA | 400 | 10 | -0,1 | 40,1 | 5,44 | 78 | 12:04:40 | 12:45:34 | 0:40:54 | 2020-05-25 |
| 17 | 53°26'54.038"N 2°12'47.012"W | CFA | 400 | 10 | -0,1 | 38,2 | 5,67 | 75 | 8:42:24 | 8:55:55 | 0:13:31 | 2020-05-26 |
| 18 | 53°26'54.041"N 2°12'47.012"W | CFA | 400 | 10 | 0,1 | 37,4 | 5,41 | 30 | 9:44:22 | 9:59:20 | 0:14:58 | 2020-05-26 |
| 19 | 53°26'54.038"N 2°12'47.012"W | CFA | 400 | 10 | -0,1 | 37,6 | 5,07 | 35 | 10:55:33 | 11:34:22 | 0:38:49 | 2020-05-26 |
| 20 | 53°26'54.041"N 2°12'47.012"W | CFA | 400 | 10 | 0,0 | 37,7 | 5,86 | 42 | 12:04:40 | 12:45:34 | 0:40:54 | 2020-05-26 |

The individual, pile specific reports for the MOVAX MPL CFA include the following information:

Position data, Pile type, Pile dimensions, Pile depth, Angle, Torque, Concrete volume, Concrete pressure, Start time, End time, Elapsed time, Date



HIGHER PRODUCTIVITY - SIGNIFICANT SAVINGS
fast. efficient. versatile. accurate. safe. reliable.

Movax Oy

Tölkkiäentie 10
FI-13130 Hämeenlinna, Finland

Tel. +358 3 628 070
Fax +358 3 616 1641

marketing@movax.fi | movax.com

*Please refer to www.movax.com
for worldwide, certified partners.*

