Separation plant for slurry wall applications

SP 600 C

EN

LIEBHERR

Characteristics

Modular separation plant for slurry wall applications

Features of the SP 600 C

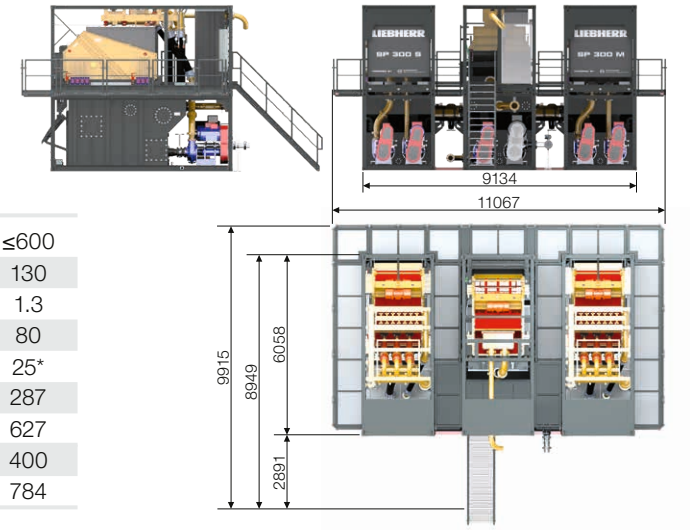
- Increased reliability thanks to highly flexible modular design for best possible adaptation to changing requirements.
- Extended walkways for easy access to all components.
- Integrated camera system on the screening machines.
- Common parts principle for easy spare parts stocking.
- Powerful, integrated transfer pump with a maximum capacity of ≤450m³/h to transport the suspension to the silos.
- Powerful, integrated, frequency-controlled transfer pump TPS III R 110 (kbkT) incl. remote control for returning the suspension to the trench (optional).

Configurations

Separation plant SP 600 C for slurry wall cutting

Modules

Quantity	Description
1	SP 300 M
1	SP 300 S



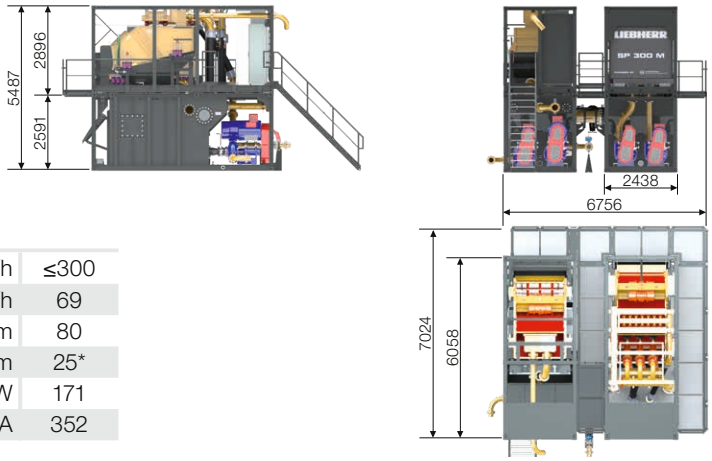
Technical data

Max. flow rate slurry wall cutter	m³/h	≤600
Max. solids capacity	t/h	130
Max. density	kg/dm³	1.3
Max. grain size	mm	80
Cut point	µm	25*
Total power requirement excl. TPS III R 110	kW	287
Total generator output excl. TPS III R 110	kVA	627
Total power requirement incl. TPS III R 110	kW	400
Total generator output incl. TPS III R 110	kVA	784

Separation plant SP 300 M (with pre-screen) for slurry wall grab in cohesive soils with a high loam content

Modules

Quantity	Description
1	CM 20 DS 1630 II M
1	CM 20 UT
1	CM 20 PS 1625
1	CM 20 ST



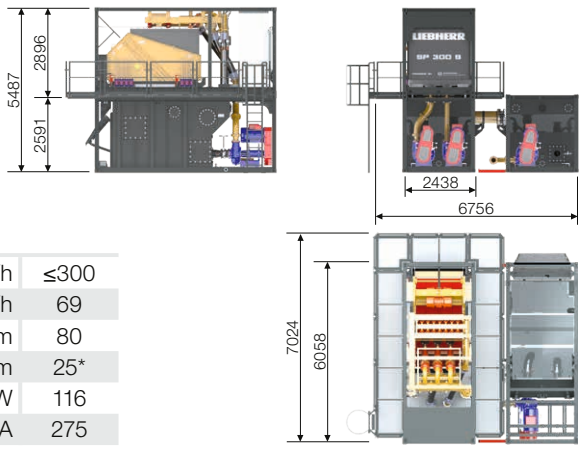
Technical data

Max. flow rate slurry wall grab	m³/h	≤300
Max. solids capacity	t/h	69
Max. grain size	mm	80
Cut point	µm	25*
Total power requirement	kW	171
Total generator output	kVA	352

Separation plant SP 300 S for slurry wall grab

Modules

Quantity	Description
1	CM 20 DS 1630 II S
1	CM 20 UT
1	CM 20 PS 1625
1	CM 20 ST



Technical data

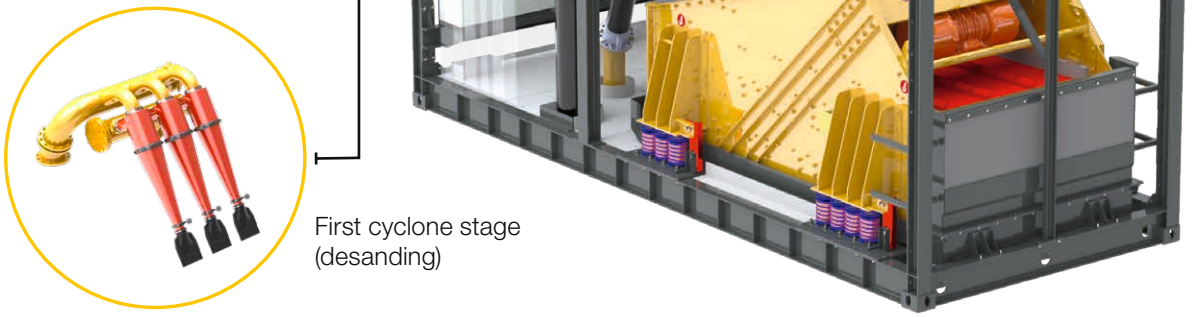
Max. flow rate slurry wall grab	m³/h	≤300
Max. solids capacity	t/h	69
Max. grain size	mm	80
Cut point	µm	25*
Total power requirement	kW	116
Total generator output	kVA	275

* Depending on the composition and loading of the feed slurry, the values given may vary.

Separation plant module

CM 20 DS 1630 II M / CM 20 DS 1630 II S

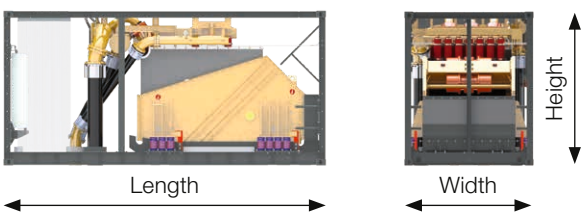
- CM 20 DS 1630 II M and CM 20 DS 1630 II S are compact and powerful modules for the treatment of flush fluid in slurry wall applications.
- Easy transport and assembly thanks to container design.
- The CM 20 UT modules are required for the operation of the CM 20 DS 1630 II M and CM 20 DS 1630 II S modules in operation with slurry wall grabs.
- For slurry wall cutters requiring large volume flows, SP 300 M and SP 300 S can be combined to form the SP 600 C separation plant.



Specification

Supporting structure	20 ft container with open steel frame
Screening machine	Double deck screening machine type 1630 II (width 1.6 m, length 3.0 m), designed for dewatering on both screening decks, driven by 2 vibration motors with 7.5 kW each
Hydrocyclone stage 1	Hydrocyclone type 3 x PC 250 (Cut point nominal d_{50}, ~63µm)
Hydrocyclone stage 2	Multicyclone type 14 x PC 100 - N (Cut point nominal d_{50}, ~25µm)
Electrical system	Electrical equipment including wiring according to VDE
Control	SP 300 M (pre-screen): Control cabinet with master control system, PLC, touch panel, connections for sensors, transfer pump SP 300 S: Control cabinet for connection to the master module, without touch panel, connections for sensors or transfer pump. The pre-screen module PS 1625 can be controlled by the SP 300 S

Transport dimensions and weight



CM 20 DS 1630 II M/S

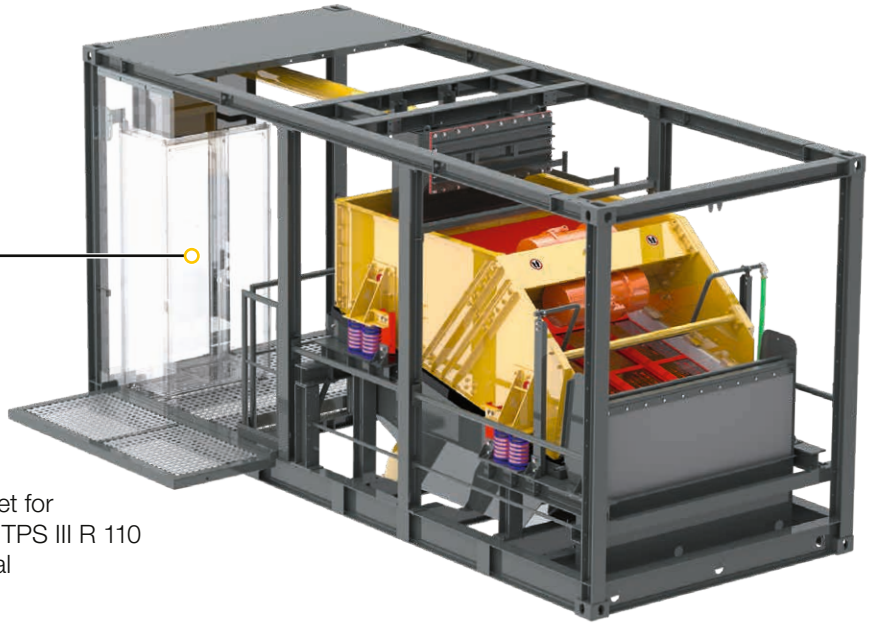
Length:	mm	6058
Width:	mm	2438
Height:	mm	2896
Weight:	kg	~ 9000

Pre-screen module

CM 20 PS 1625 (TPS III R 110)

- CM 20 PS 1625 is a compact pre-screen module for flushing from slurry wall applications.
- Easy transport and assembly thanks to container design.
- The CM 20 ST module is required for operating the CM 20 PS 1625.
- For slurry wall cutters requiring large volume flows, the CM 20 PS 1625 can be combined with the SP 300 M and SP 300 S to form the SP 600 C separation plant.

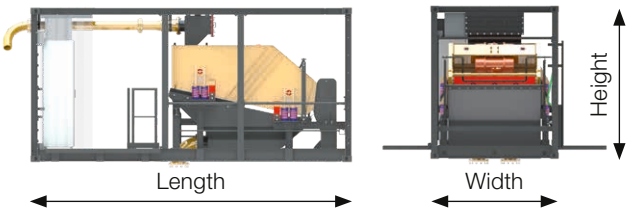
Control cabinet for operating the TPS III R 110 (kbkT) optional



Specification

Supporting structure	20 ft container with open steel frame
Slurry input box	DN 200 with reduction to DN 150 | additional connection DN 150
Screening machine	Pre-screening machine type 1625 (width 1.6 m, length 2.5 m), designed for classification, driven by 2 vibration motors with 3.8 kW each
Drop	Type 1625
Underflow collector	Type 1625 S, designed as an input box with two flanges and DN 250 distribution pipes
Electrical system	Electrical equipment including wiring according to VDE The pre-screening unit can be controlled by SP 300 M or SP 300 S Air-conditioned additional control cabinet for operating the TPS III R 110 (kbkT) (optional), connected load 117 kW, generator output 165 kVA

Transport dimensions and weight

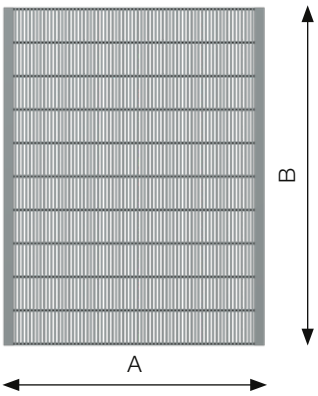


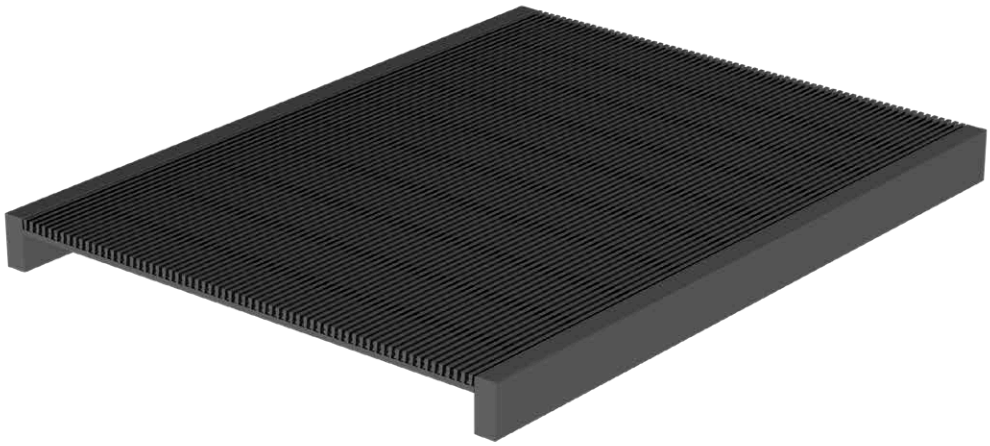
CM 20 PS 1625 I

Length:	mm	6058
Width:	mm	2438
Height:	mm	2896
Weight with TPS control cabinet:	kg	~ 7800
Weight without TPS control cabinet:	kg	~ 7350

Available screening surfaces

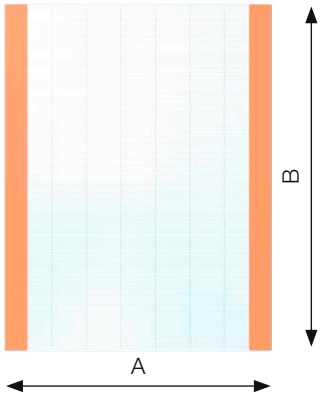
for the separation plant SP 600

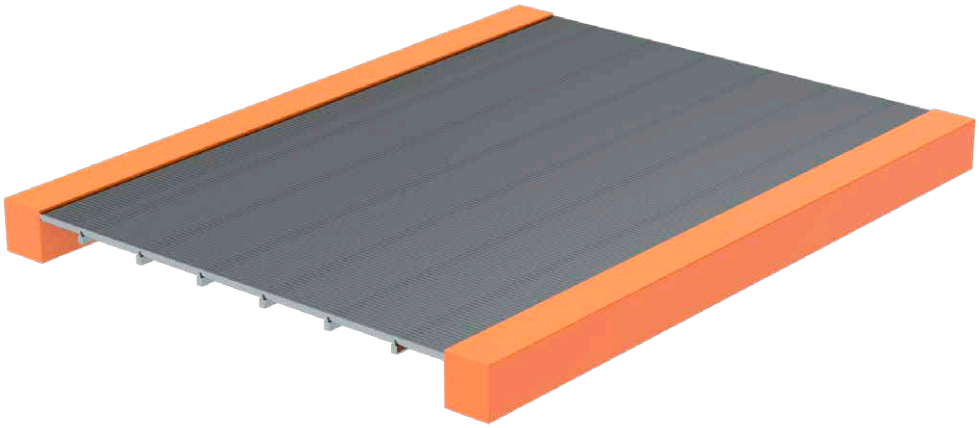




Stainless steel screening surfaces

Pos.	Description	Width (A)	Length (B)	Gap width	Gap alignment	Intended use
1	Stainless steel surface	385 mm	500 mm	2.5 mm	lengthwise	Classification/pre-screening
2	Stainless steel surface	385 mm	500 mm	4.5 mm	lengthwise	Classification/pre-screening
3	Stainless steel surface	385 mm	500 mm	5.0 mm	lengthwise	Classification/pre-screening
4	Stainless steel surface	385 mm	500 mm	10.0 mm	lengthwise	Classification/pre-screening

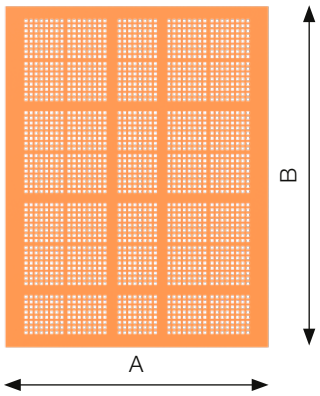


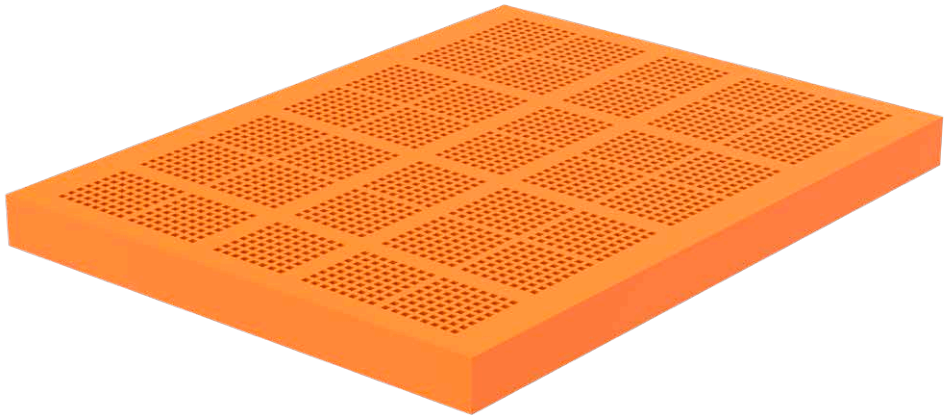


Stainless steel screening surfaces

Pos.	Description	Width (A)	Length (B)	Gap width	Gap alignment	Intended use
5	Stainless steel surface	385 mm	500 mm	0.3 mm	crosswise	Dewatering
6	Stainless steel surface	385 mm	500 mm	0.5 mm	crosswise	Dewatering
7	Stainless steel surface	385 mm	500 mm	1.0 mm	crosswise	Dewatering

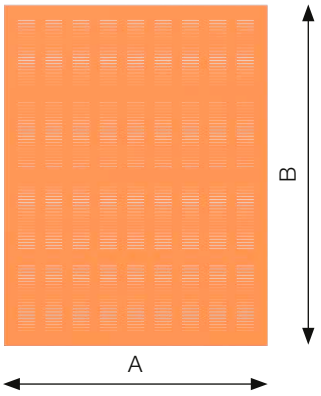
The preselected layout of the SP600 provides for a combination of 2.5 mm screening surfaces lengthwise and PU false bottoms for the 1625 I pre-screening unit. The 1630 II vibrating dewaterers are equipped with a combination of 0.3 mm and 0.5 mm screening surfaces in the top and bottom deck. Many other combinations are possible and should be adapted to your expected soil conditions.

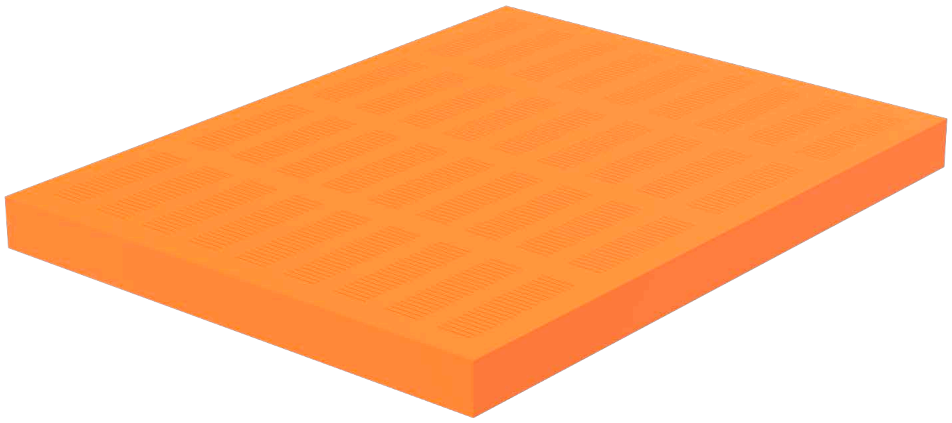




PU flat screening surfaces

Pos.	Description	Width (A)	Length (B)	Gap width	Gap alignment	Intended use
1	PU flat screening surface	385 mm	500 mm	2.75 mm	square	Classification/pre-screening
2	PU flat screening surface	385 mm	500 mm	4.5 mm	square	Classification/pre-screening
3	PU flat screening surface	385 mm	500 mm	7.5 mm	square	Classification/pre-screening
4	PU flat screening surface	385 mm	500 mm	10.5 mm	square	Classification/pre-screening



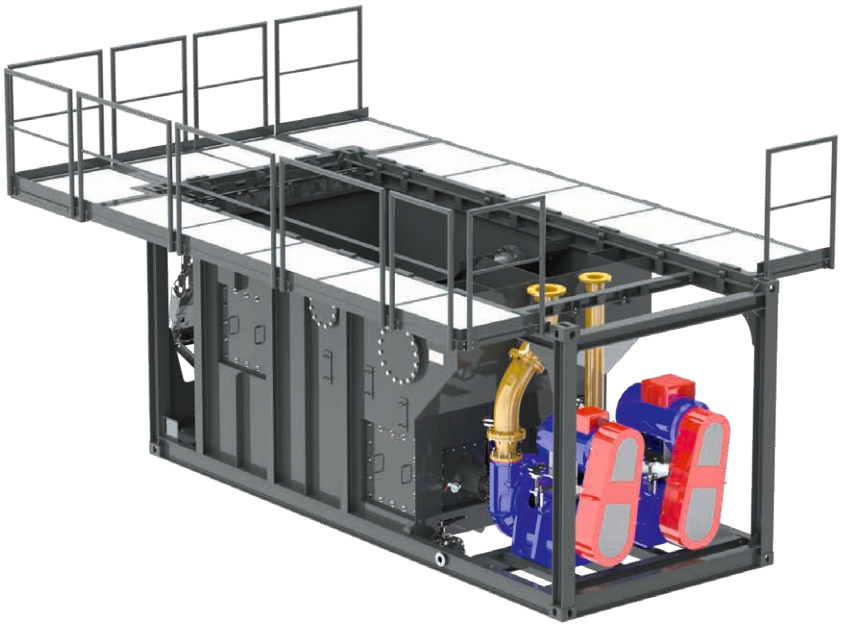


PU flat screening surfaces

Pos.	Description	Width (A)	Length (B)	Gap width	Gap alignment	Intended use
5	PU flat screening surface	385 mm	500 mm	0.25 x 16 mm	crosswise	Dewatering
6	PU flat screening surface	385 mm	500 mm	0.4 x 25 mm	crosswise	Dewatering
7	PU flat screening surface	385 mm	500 mm	0.5 x 25 mm	crosswise	Dewatering
8	PU flat screening surface	385 mm	500 mm	0.75 x 25 mm	crosswise	Dewatering
9	PU flat screening surface	385 mm	500 mm	1.0 x 25 mm	crosswise	Dewatering
10	PU flat screening surface	385 mm	500 mm	Blind	N/A	N/A

Tank and pump module

CM 20 UT

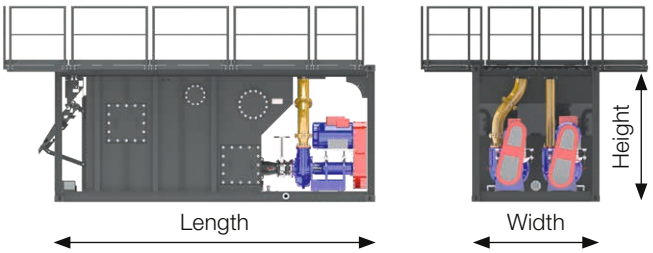


- Compact module, to be combined with the separation modules CM 20 OS 1630 II M or S.
- Easy transport and assembly thanks to container design.
- Connection sockets for easy connection.
- Equipped with two pumps 200/150.
- For slurry wall cutters requiring large volume flows, two modules can be used. CM 20 UT with the separation modules CM 20 OS 1630 II M or S, the pre-screening module CM 20 PS 1625 and the tank and pump module CM 20 ST can be combined to form the separation plant SP 600 C.

Specification

Supporting structure	20 ft container with open steel frame
Tank	Storage volume 15 m^3
Walkways	Folding walkways on 3 sides for easy access to all components
Pump #1	Centrifugal pump size 200/150 type D with dry seal and motor 37 kW, 1500 rpm, 400 V, 50 Hz
Pump #2	Centrifugal pump size 200/150 type D with dry seal and motor 55 kW, 1500 rpm, 400 V, 50 Hz
Electrical system	Electrical equipment including wiring according to VDE, with connections for the master control system

Transport dimensions and weight



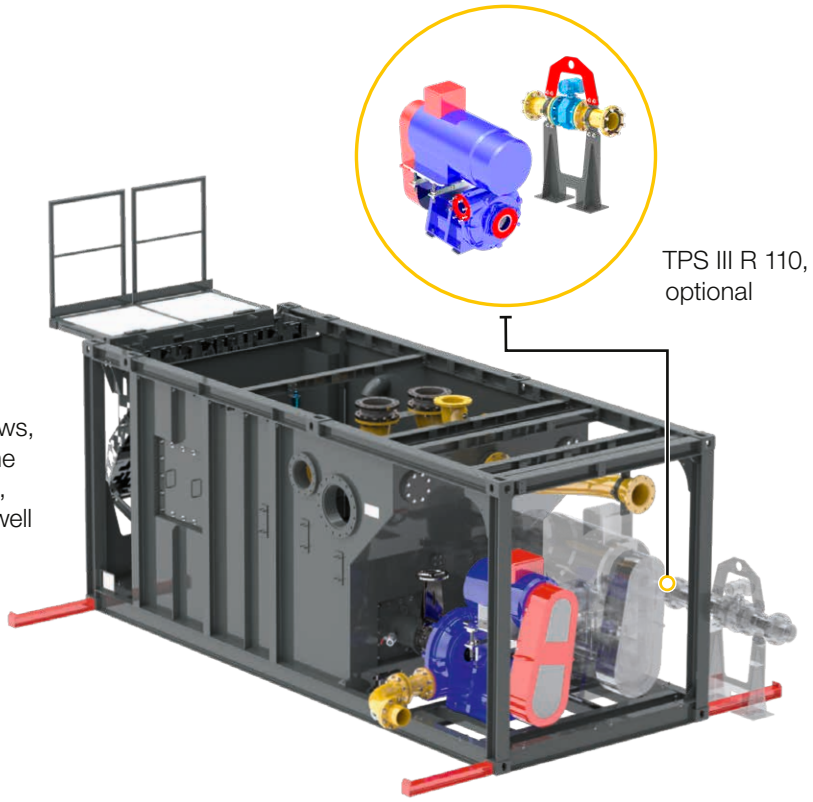
CM 20 UT

Length:	mm	6058
Width:	mm	2438
Height:	mm	2591
Weight:	kg	~ 9300

Tank and pump module

CM 20 ST (TPS III R 110)

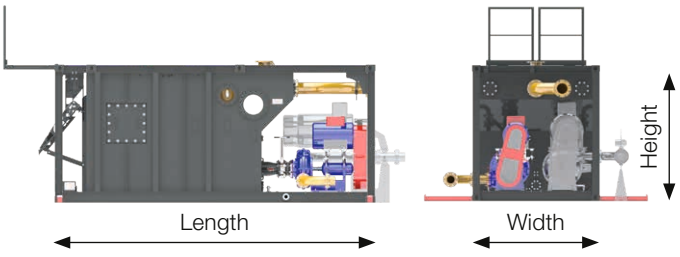
- Compact module for combination with CM 20 PS 1625 pre-screening module.
- Easy transport and assembly thanks to container design.
- Connection sockets for easy connection.
- Equipped with 55 kW transfer pump 200/150.
- For slurry wall cutters requiring large volume flows, the CM 20 ST module can be combined with the separating modules CM 20 DS 1630 II M and S, the pre-screening module CM 20 PS 1625, as well as two tank and pump modules CM 20 UTS to form an SP 600 C separation plant.
- Powerful, frequency-controlled pump enables return transport to the trench:
  – integrated dry-running protection
  – incl. flowmeter



Specification

Supporting structure	20 ft container with open steel frame
Tank	Storage volume 15 m^3
Walkways	Supplied with CM 20 UT module
Transfer pump 1, transport of the suspension to the silos	Centrifugal pump size 200/150 type D with dry seal and motor 55 kW, 1500 rpm, 400 V, 50 Hz
Transfer pump 2 (optional), return of the suspension to the trench	Frequency controlled centrifugal pump size 200/150 type D with dry seal and motor 110 kW, 1500 rpm, 400 V, 50 Hz
Electrical system	Electrical equipment including wiring according to VDE, with connections for the master control system

Transport dimensions and weight

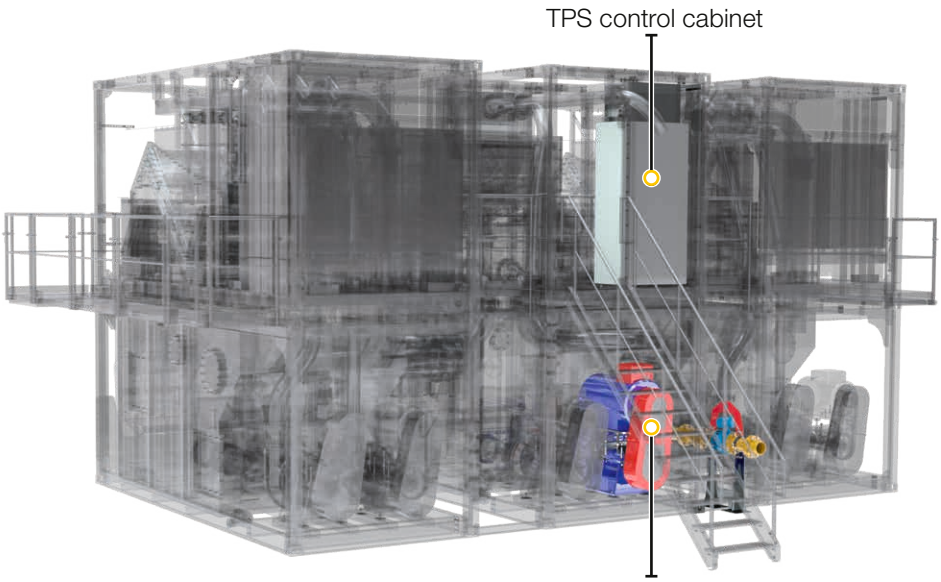


CM 20 ST

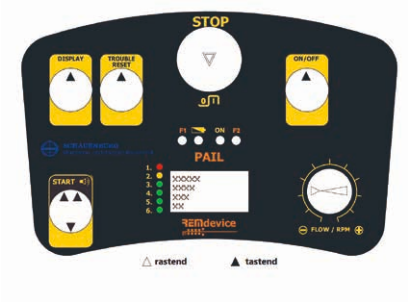
Length:	mm	6058
Width:	mm	2438
Height:	mm	2591
Weight with TPS III R110 pump:	kg	~ 9500
Weight without TPS III R110 pump:	kg	~ 7200

TPS III R110

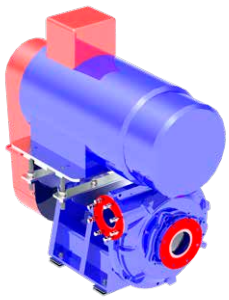
Transfer pump system III R110 (optional)



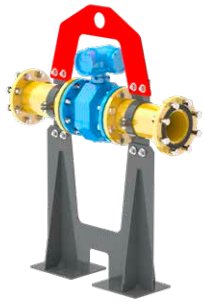
- powerful frequency-controlled pumping system for pumping suspensions containing solids such as bentonite.
- increased service life due to:
  - » wear protection (Linatex)
  - » air-conditioned control cabinet
- increased flexibility due to four control options:
  - » from your own control cabinet
  - » by radio remote control
  - » connection to the separation plant
  - » directly from the Liebherr milling carrier unit
- parameters:
  - » real-time measurement of the
    - – flow rate
    - – pressure
    - – speed



Remote control



TPS pump



TPS flowmeter

Specification

Motor power:	110 kW
Total output TPS incl. air-conditioning:	117 kW
Total generator output:	165 kVA
Max. grain size:	50 mm
Max. flow rate:	450 m^3
Special feature:	Integrated remote control with a range of up to 100 m from the receiver. This can be extended up to 200 m with the aid of a cable • Frequency range: 433/869 MHz (dual band) • Other frequencies on request • Protection class: IP65 • Permanently integrated battery, incl. charging station

Transport dimensions and weight

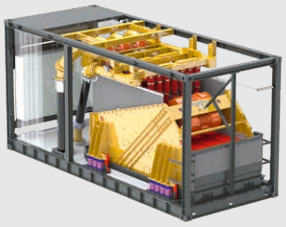
Integrated in the two modules CM 20 ST (TPS III R 110) and CM 20 PS 1625 (TPS III R 110)

Flow diagram

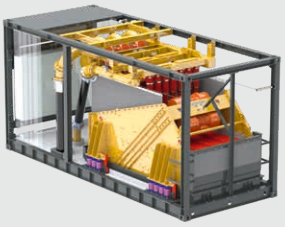
Separation plant SP 600 C

CM 20 PS 1625
Pre-screen module

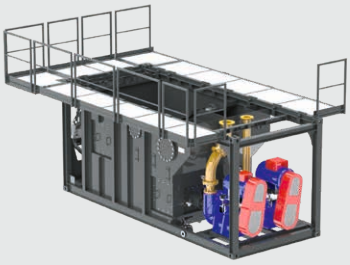
CM 20 DS 1630 II S
Separation plant module



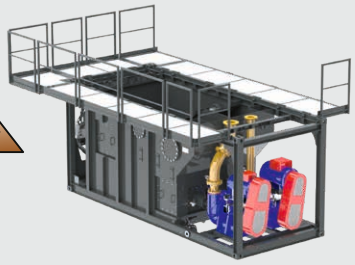
CM 20 DS 1630 II M
Separation plant module



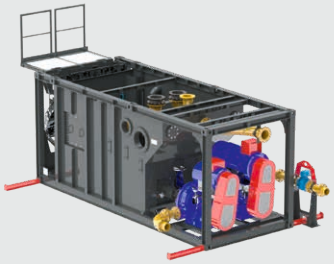
CM 20 UT
Tank and pump module



CM 20 UT
Tank and pump module



CM 20 ST
Tank and pump module



1	Input box	8	Discharge screening machine 1630
2	Pre-screening machine 1625	9	Underflow tank CM 20 UT
3	Discharge pre-screening unit 1625	10	Centrifugal pump 200/150 with 55 kW motor
4	Underflow collector 1625 S	11	Centrifugal pump 200/150 with 37 kW motor
5	Multicyclone type 14 x PC 100 - N	12	Underflow tank CM 20 ST
6	Hydrocyclone type 3 x PC 250	13	Transfer pump 200/150 with 55 kW motor
7	Double-deck screening machine type 1630 II	14	TPS III R 110 (kbkT pump)

Optional equipment

Bentonite Silo

**Sheet steel silo
in factory-welded design
with tubular feet,
made of S 235 JR+AR**

- bulk material: bentonite powder
- bulk density: max. 1.2 t/m³

Including:

- pocket filter
- pressure sensor
- empty message
- full message
- signal tower with horn
- control box
- vibrator
- set of anchor bolts

AVAILABLE IN THE FOLLOWING SIZES

70 m³/h
other sizes on request

Storage tank

Bolted and sealed design, segmentally constructed thus saving enormous transport costs.

AVAILABLE IN THE FOLLOWING SIZES

Volume	Diameter	Height
150 m³	6.11 m	6.00 m
250 m³	7.64 m	6.00 m
350 m³	9.17 m	6.00 m
500 m³	10.69 m	6.00 m
750 m³	12.99 m	6.00 m
1000 m³	15.28 m	6.00 m

FARMS

Fully Automated Rheological Measurement System

Continuous measurement of the suspension properties gives you a good overview of their quality. This is exactly why we have developed this measuring unit. It gives you a continuous overview about values such as:

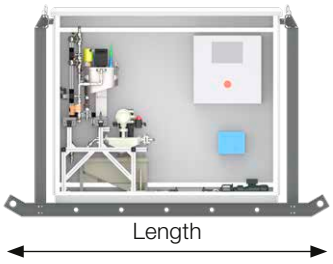
- temperature
- density
- pH value
- elastic conductivity

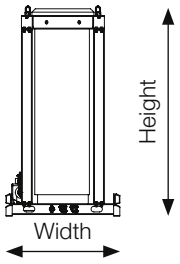
Values such as:

- plastic viscosity
- elastic viscosity
- gel strength

are only available every 15 minutes due to the process. The values are displayed on the touch panel, but can also be transmitted to the SP600 or another control station.

Transport dimensions and weight





FARMS

Length:	mm	2880
Width:	mm	1110
Height:	mm	1838
Weight:	kg	~ 850

Optional equipment

Centrifuge

High operational safety - ease of use

The Raccoon centrifuge product family is characterised by high operational reliability, ease of use, low residual moisture and high solids throughput.

High-performance centrifuges for the preparation of suspensions containing solids in:

- slurry wall applications
- micro-tunnelling
- Horizontal Directional Drilling (HDD)
- tunnelling

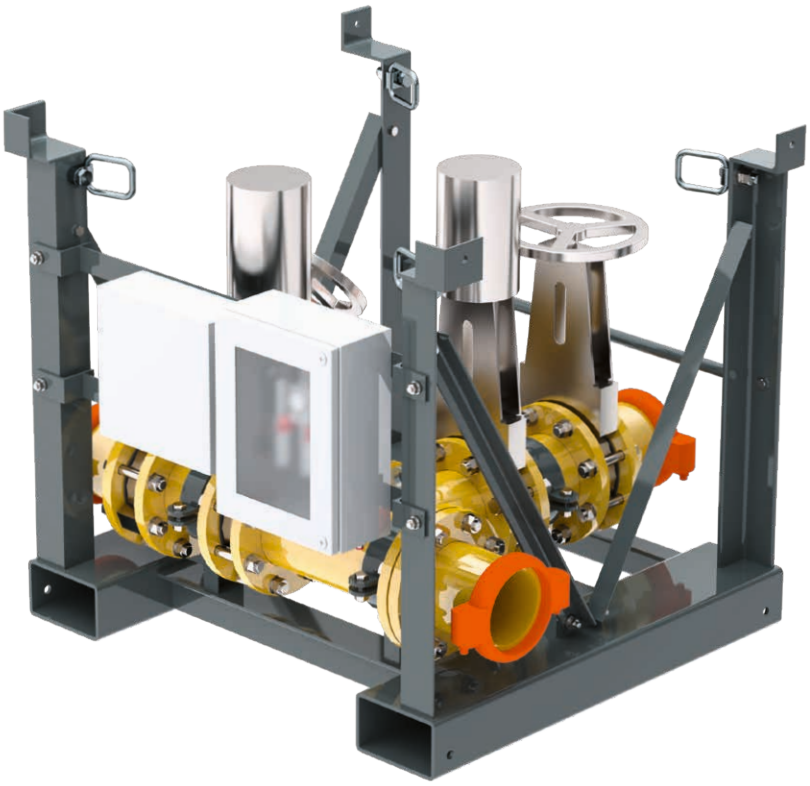
Product data

	MAB 18-4T	MAB 21-4T	MAB 26-4T	MAB 30-4T
Amount of solids (t/h)	3–6	6 – 10	12 – 18	20 – 25
Throughput quantity (m^3/h)	10 – 20	20 – 40	30 – 60	60 – 100
Inner diameter drum (mm)	450	530	660	760
Max. centrifugal acceleration (g)	3,100	3,040	3,000	3,040
Diameter/ length ratio	1 : 4.0	1 : 4.3	1 : 4.3	1 : 4.2
Maximum torque auger drive (Nm)	8,800	14,000	25,000	40,000
Installed power drum drive (kW)	30	45	90	110
Speed change during operation	yes	yes	yes	yes
Differential speed relative to the torque	yes	yes	yes	yes
Wear protection plates	yes	yes	yes	yes
Input chamber	interchangeable	interchangeable	interchangeable	interchangeable
Wear protection auger	HM segments over the entire length	HM segments over the entire length	HM segments over the entire length	HM segments over the entire length

Automatic valves

Pneumatically controlled valves for your slurry management system

- centrally controllable
- nominal width: DN 150
- coupling type: Victaulic (groove/spring)
- redundant design: if an automatic gate valve fails, it can still be operated via a separate handwheel-driven gate valve.
- easy and quick to assemble, stackable.



Bentonite mixer

Specially developed for construction site operation

The compact, continuously operating suspension mixers are particularly suitable for mixing bentonite suspensions.

AVAILABLE IN THE FOLLOWING SIZES

Mixing capacity	10-30 m³/h
Mixing capacity	30-60 m³/h

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