

siccum

PRODUCT SHEET

SICCUM FREEZE DEWATERING UNIT

FDWU

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SICCUM FREEZE DEWATERING UNIT

The Siccum Freeze DeWatering Units (FDWU) are intended for the dewatering of various types of sludge and sediment. Designed for industrial environments, they can be supplied as a whole stationary processing facility, part, or as a mobile installation. The FDWU can also be complemented with the Siccum THAW COLLECTOR (TC) and climate shell.



Applications

The FDWU is developed to separate bound water from solids. It is well suited for dewatering of sludge and sediment where the viscosity allows for the material to be pumped. Examples of industries where the FDWU can be used include:

- Mining industry
- Municipal and industrial wastewater treatment plants
- Remediation and restoration projects
- Oil and gas industry
- Pulp and paper industry
- Chemical and pharmaceutical industry
- Research applications and laboratory use
- Metallurgy and materials science
- Energy/nuclear industry

Advantages of FDWU

Siccum's Freeze DeWatering Units (FDWU) offer a number of advantages compared to other traditional oil-/coal-based dewatering methods. FDWU provides better energy efficiency and environmental performance per dewatered cubic meter.

- Reduce volumes of incoming material by more than ~80%
- Increase the dry matter content of incoming material to over ~80%
- Potential to eliminate intermediate steps in purification/dewatering processes
- Uses no polymers or added chemicals
- Operating temperature from -5°C to 46°C, low risk of fire
- ~90% less energy than corresponding oil-/coal-based dewatering methods
- Low maintenance costs
- Effects of freeze dewatering
 - Release of bound water
 - Bacterial death due to dehydration and mechanical forces
 - Contamination remains with the solids

Delivery and Installation

The installation parameters are determined through Siccum's material evaluation process, in which the client together with Siccum examines the properties of the incoming material. This is done to configure the FDWU for the intended application area. The material evaluation process includes bench tests, laboratory sampling of reject water and solids, and performance tests on how well the current material responds to Siccum's dewatering method with FDWU.

Siccum AB delivers and installs the FDWU according to the customer's wishes throughout the EU.

Delivery and installation are always preceded by a coordination meeting with the customer to establish the purchase contract, installation parameters, and schedules. After the unit is installed, commissioning takes place, and the unit is handed over to the customer along with all documentation. When installing the first facility for a customer, Siccum always recommends that the customer also opts for operator training offered by Siccum.

The delivery time for a new FDWU is approximately 3 months from the time the purchase contract and installation parameters are established.

Technical Specifications

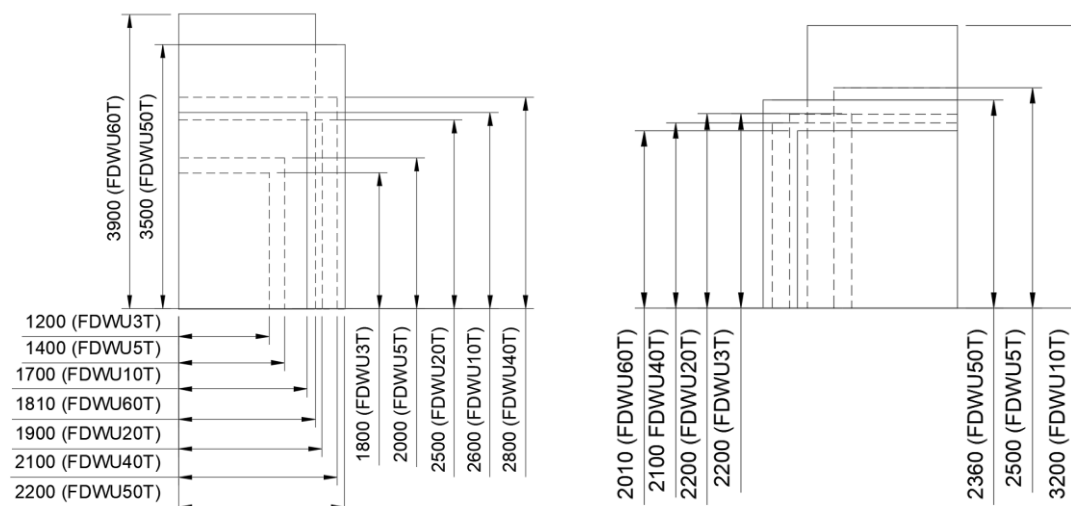
The FDWU is available in various capacity configurations. Siccum FDWU units are available in configurations per unit of 3T, 5T, 10T, 20T, 30T, 40T, 50T, and 60T. These can be combined to achieve the desired plant capacity.

PARAMETER	FDWU3T	FDWU5T	FDWU10T	FDWU20T	FDWU40T	FDWU50T	FDWU60T
CAPACITY [M ³ /H]	0,13	0,21	0,42	0,83	1,25	2,08	2,50
COOLING CAPACITY [KW]	24,9	45	82,2	140,9	300,1	401	525,3
POWER [KW]	11,89	20,95	40,35	71,8	119,4	95,4	86,2
COMPRESSOR POWER [KW]	9,77	17,3	32,6	59,7	105,2	151,7	202,8
ICE CUTTER POWER [KW]	0,37	0,75	0,75	1,5	1,1	1,5	1,5
PUMP POWER [KW]	0,55	1,1	1,5	2,2	1,85	3	3
WEIGHT [KG]	1 150	1 600	2 750	4 800	7 200	8 400	9 600
DIMENSIONS [M]	1,8 x 1,2 x 2,2	2,0 x 1,4 x 2,5	2,6 x 1,7 x 3,2	2,5 x 1,9 x 2,2	2,8 x 2,1 x 2,1	3,5 x 2,2 x 2,36	3,9 x 1,81 x 2,01

Dimensions

Footprint of FDWU cooling tower

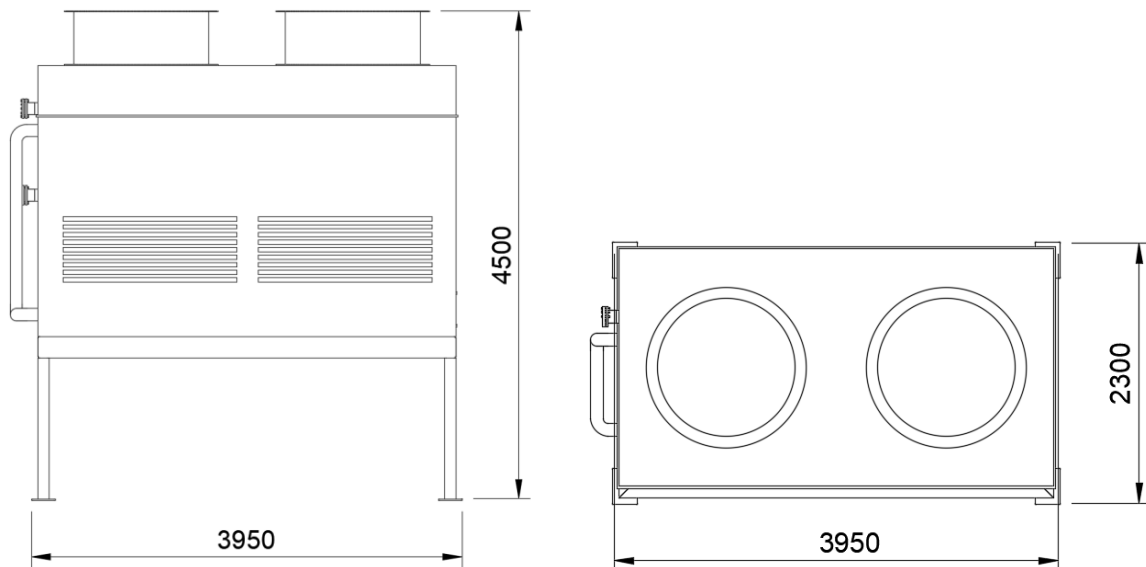
FDWU models from FDWU3T to FDWU60T are as follows.



Footprint of Condenser

The condenser is sized based on the FDWU capacity configuration. Its dimension and shape can vary depending on the requirements for airflows and purpose. The condenser is flexible in design and placement.

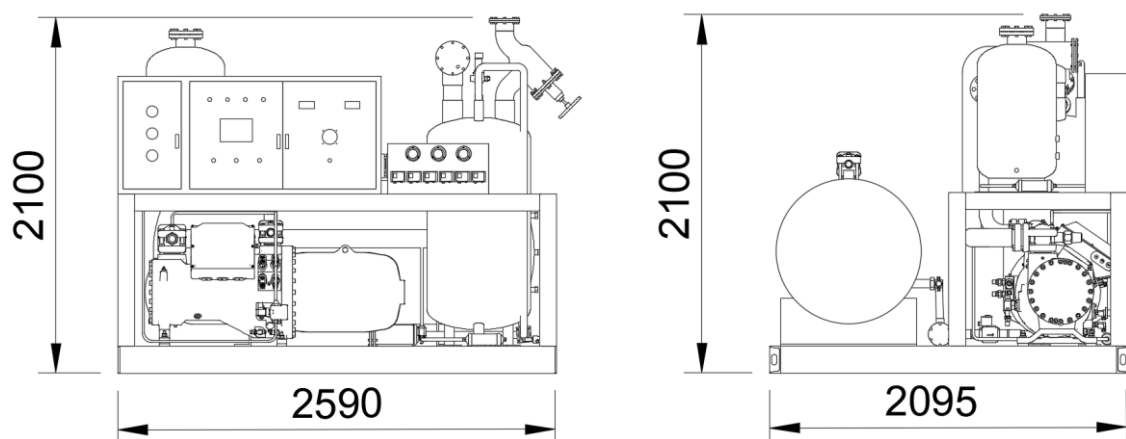
Below is an example of a condenser unit for FDWU30T, in a vertical configuration.



Footprint of Cooling and Control Unit

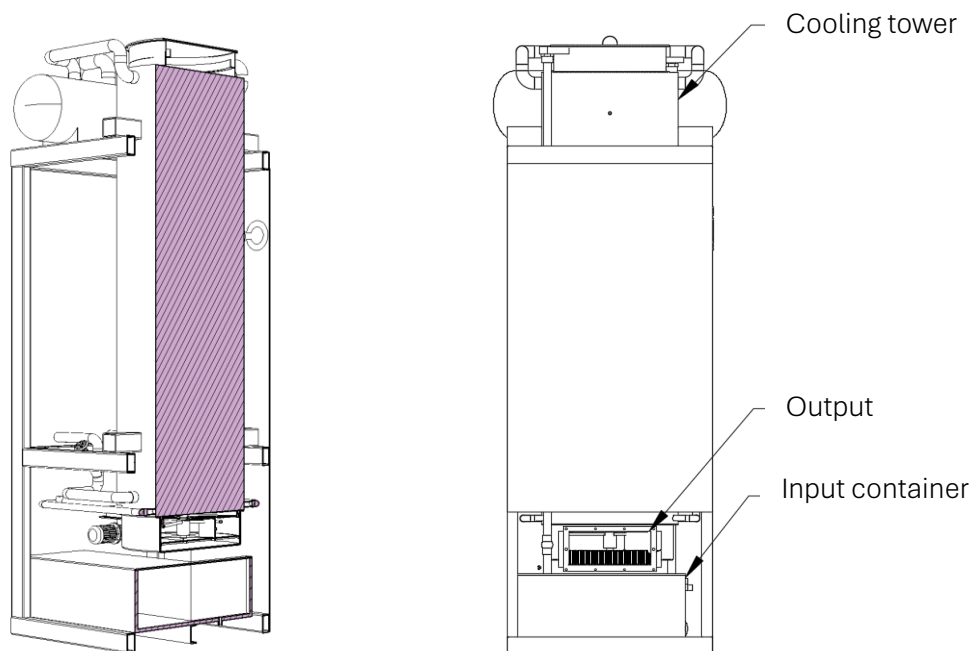
For models up to FDWU10T, the cooling and control unit is integrated with the freeze tower. From FDWU20T and above, the cooling and control unit is separate from the freeze tower. The size of the separate control and cooling unit varies with the size of the FDWU.

Below is an example of a control and cooling unit for FDWU30T.



Cross-Section

Cross-section of an example machine, FDWU30T.



Images



Outgoing Sludge Sediment after the Freeze Dewatering Process with FDWU.
Incoming sediment dry solids (TS) content 4-6%.

Outgoing TS content > 80%



Sediment Sludge in the Thawing/Drying Stage on a THAW COLLECTOR Connected to FDWU



Exiting from the FDWU to an elevator that lifts the frozen sediment up to the THAW COLLECTOR



Control System Process Overview for FDWU

Service och underhåll

Service for the Siccum FDWU is performed by Siccum AB. To schedule service and maintenance for your FDWU unit, please contact Siccum AB. Accessories, spare parts, as well as service and operational training are sold separately through Siccum AB.

Contact

For more information and quotes, contact Siccum AB.

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