CRAWL SPACE DEHUMIDIFICATION FOR HEALTHY INDOOR AIR

ENERGY EFFICIENT
ADSORPTION DEHUMIDIFIERS
WITH LONG SERVICE LIFE

CorroVenta®

CORROVENTA'S SOLUTION FOR PROBLEMS WITH MOISTURE IN THE CRAWL SPACE.

Moisture and water damage are one of the most common problems that affect a house holder. Moisture is present in the form of steam, water or ice. All air contains a greater or lesser degree of moisture. We can't see it with the naked eye before it appears in the form of small water drops against a cold surface of metal or glass. Moisture, in itself, is completely harmless, but moisture together with organic materials, such as for example in a crawl space often causes problems in the form of mould, fungus and odours.

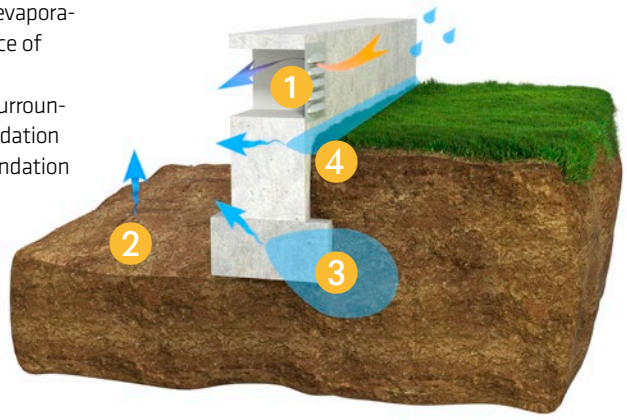
There are house structures with crawl spaces that are unventilated, indoor air ventilated or outdoor air ventilated. The latter type of crawl space, i.e. the outdoor air ventilated type, is usually extremely sensitive to damp.

THIS IS HOW DAMP IN CRAWL SPACES OCCURS

Damp, in itself, is completely harmless, but damp together with organic materials, such as for example in a crawlspace, often causes problems in the form of mould, fungus and odours. That moisture level in a crawlspace becomes so great that it becomes a problem can depend on one or several causes, such as:

- When hot outdoor air enters the cold crawlspace via vents or cracks, it cools down, at which point the air humidity increases. In extreme cases condensation and water drops are created that hang from the ceiling above 1.
- Addition of damp through evaporation from the ground surface of the crawl space 2.
- Moisture enters from the surrounding area through the foundation wall and leakage in the foundation construction 3.
- Water that penetrates the crawl space through the foundation walls all around 4.

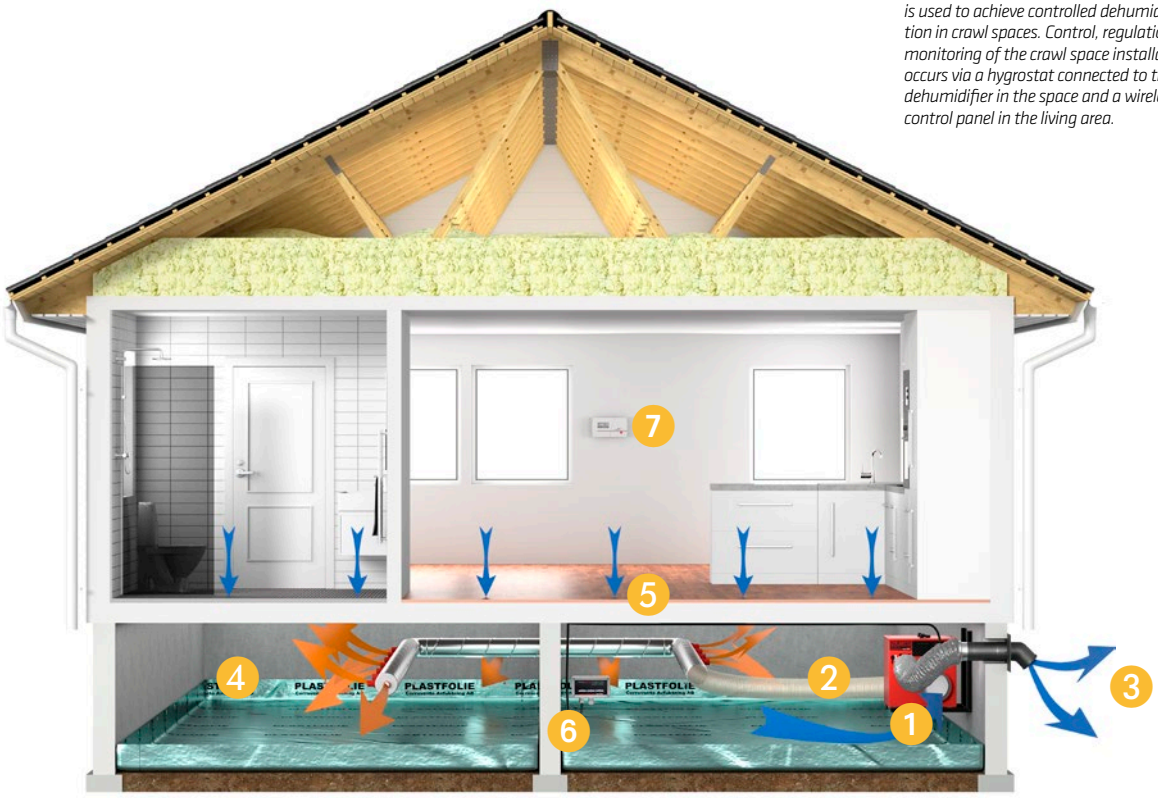
Problems with moisture in the crawl space can occur in many different ways. The outdoor air ventilated crawl space construction is usually extremely sensitive to moisture.



EASY MONITORING WITH HOMEVISION®

The HomeVision® control system is used to achieve controlled dehumidification in crawl spaces. Control, regulation and monitoring of the crawl space installation occurs via a hygrostat connected to the dehumidifier in the space and a wireless control panel in the living area.

THE HOMEVISION® CONTROL SYSTEM *is used to achieve controlled dehumidification in crawl spaces. Control, regulation and monitoring of the crawl space installation occurs via a hygrostat connected to the dehumidifier in the space and a wireless control panel in the living area.*



PRINCIPLE FOR DEHUMIDIFYING CRAWL SPACES

When outdoor air, particularly during the warm times of year, enters the crawl space 4 under the house it is cooled by the cool environment and the relative moisture increases and, therewith, the risk of mould attack and odours. By drying the air, so that the relative humidity remains below 60-65%, mould can be prevented.

The air in the crawl space is sucked into the dehumidifier 1. The dry air 2 must be distributed in such a way that the crawl space remains dry.

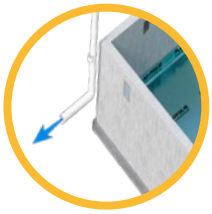
At the same time as the dehumidifier dries all the air it removes all moisture 3 from the crawl space to the surroundings. The dehumidifier is designed so that it does not just dry the air, but that the air volume 3 that leaves the crawl space together with all moisture can be varied (without the dehumidifier capacity or operating cost being affected).

In this way, the negative pressure in the crawl space 4 is controlled so that any odours 5 are slowly sucked down into the crawl space and, via the dehumidifier, out to the surrounding area.

Control, regulation and monitoring of the crawl space installation occurs via a hygrostat 6 connected to the dehumidifier in the space and a wireless control panel 7 in the residential environment.

HOW THE PROBLEM IS SOLVED BY DEHUMIDIFYING THE CRAWLSPACE

- *Route the water away from down pipes and similar that exit next to the foundation wall.*
- *Cover the ground in the crawlspace with a plastic sheet to prevent moisture evaporation.*



- *Block and seal all vents and cracks in the crawlspace so that no outside air enters.*
- *Permanently install a crawlspace drier that maintains humidity at such a low level that mould, fungus etc. is prevented.*

CRAWL SPACE DEHUMIDIFIER WITH THE LOWEST ENERGY CONSUMPTION ON THE MARKET

Adsorption dehumidifier CTR 300TT2 has been part of our range for 15 years and is one of our faithful servants. It is specially designed for use in crawl spaces where the requirements are for robustness, operational safety and long service life. It is also suitable for air and radon remediation.

DEHUMIDIFICATION PROCESS WITH A ROTATING ADSORPTION DEHUMIDIFIER.

A crawl space requres a dehumidifier that keeps moisture below critical levels. The dehumidifier is not dependent of the air temperature, so the air can be effectively dehumidified even far below freezing point.

The fixed desiccant that is used is silica gel, which can be regenerated an almost unlimited number of times. Silica gel can absorb a lot of moisture, up to 40% of its own weight.

Silica gel is a crystal with many small microscopic pores giving the crystal's walls a massive surface area. A gram of this substance has a moisture absorption areas of 500–700 m^2.

ADSORPTION ROTOR

The rotor has axially directed air ducts and consists of a highly active desiccant bonded in a ceramic structure. The desiccant is not water soluble and therefore cannot be washed away or blown out with exiting airflows. The axially directed air ducts in the rotor give laminar flow with minimal pressure drop.

THE DEHUMIDIFICATION PROCESS

The desiccant is placed in a rotor 3. The air to be dried is sucked in through the inlet 1 by means of a process air fan 6. The air passes a filter and then the drying rotor, after which the dehumidified air goes through the dry air outlet 2 to the area to be kept dry. The rotor rotates by means of a drive motor 4 and a drive belt 5. The moisture that is adsorbed in the rotor is driven out by a small portion of the process air being heated by the heater 7 and then passing a smaller part of the rotor, which is thus regenerated and also cleaned by the countercurrent principle. The wet air is removed via the outlet 8 to the surroundings.

Crawl space dehumidifier CTR STD-TT has the market's lowest energy consumption and is therefore superbly energy efficient.

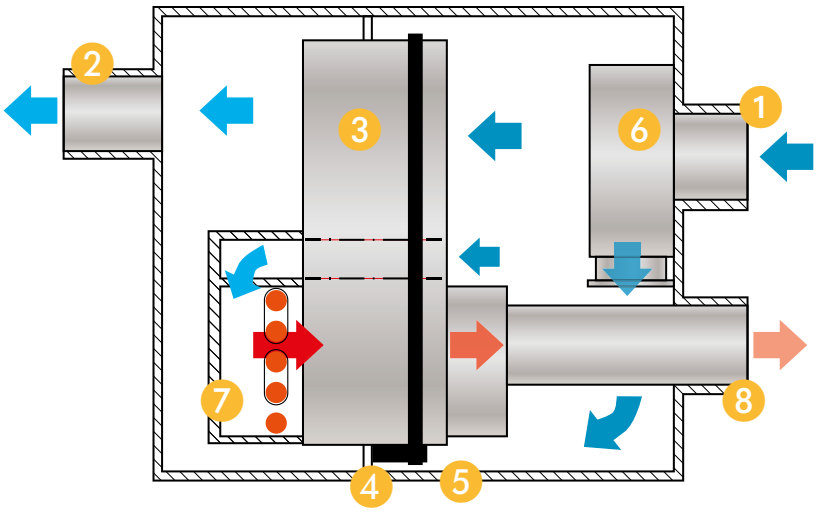
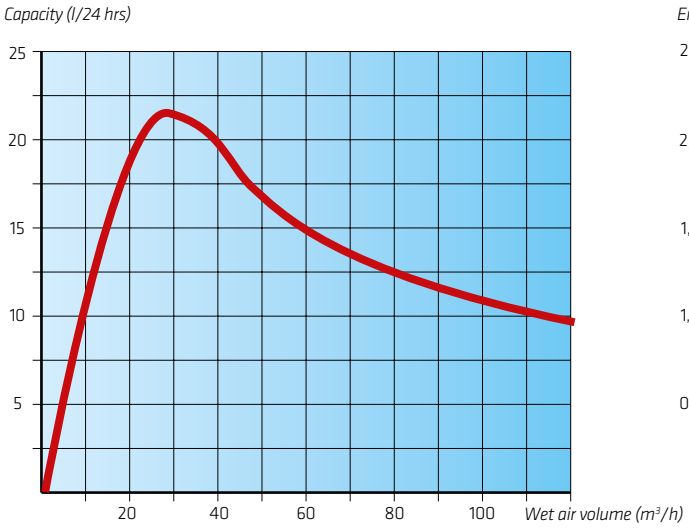
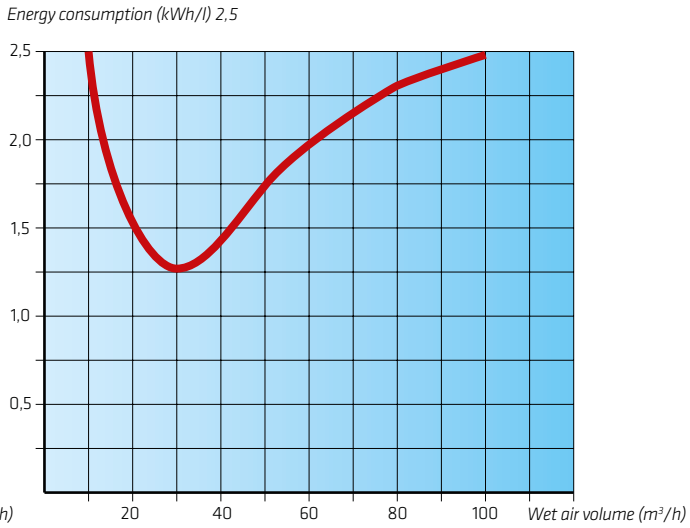


Illustration of the dehumidification process in a rotating adsorption dehumidifier.





HOW NEGATIVE PRESSURE IS CREATED IN THE CRAWL SPACE

Any smells can be eliminated by creating sufficient negative pressure in the air space under the ground floor so that air is sucked down into the air space and out into the environment via the dehumidifier. The negative pressure is created by increasing the quantity of wet air being expelled from the foundation.

When one increases quantity of wet air passing through the rotor in a "normal standard dehumidifier for drying water damage" to more than the optimal quantity, water removal capacity is reduced. This means that energy consumption and operating costs increase correspondingly in order to achieve a certain climate in the foundation. The curves above show roughly how it looks for a dehumidifier with a dry air quantity of 200-300 m3/h and a regeneration effect of 1000 W. The example applies at 20C, 60% RH.

It can be deduced from the diagrams above that a wet air flow of 25-35 m3/h, achieves maximum capacity and lowest energy consumption/running costs. With a wet air quantity of 100 m3/h the capacity is halved and running costs are doubled compared with the optimum wet air flow. Where a high negative pressure is required in the foundation, one should therefore choose a dehumidifier that is constructed so that the dehumidifier's capacity/running costs are not affected when a higher negative pressure is used to remove smells.

Thanks to the patented technology CTR 300TT2 is also effective for radon decontamination.

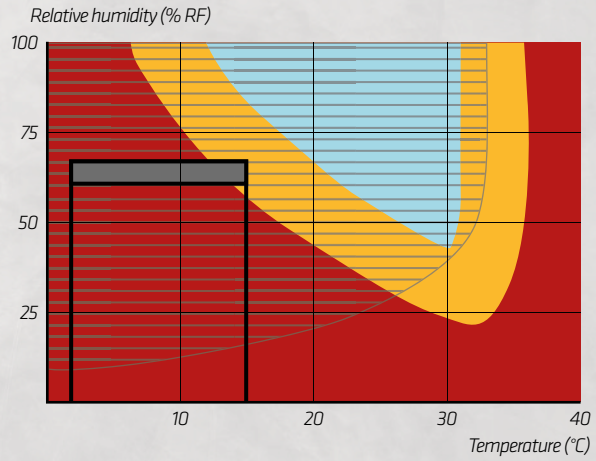
PATENTED SOLUTION

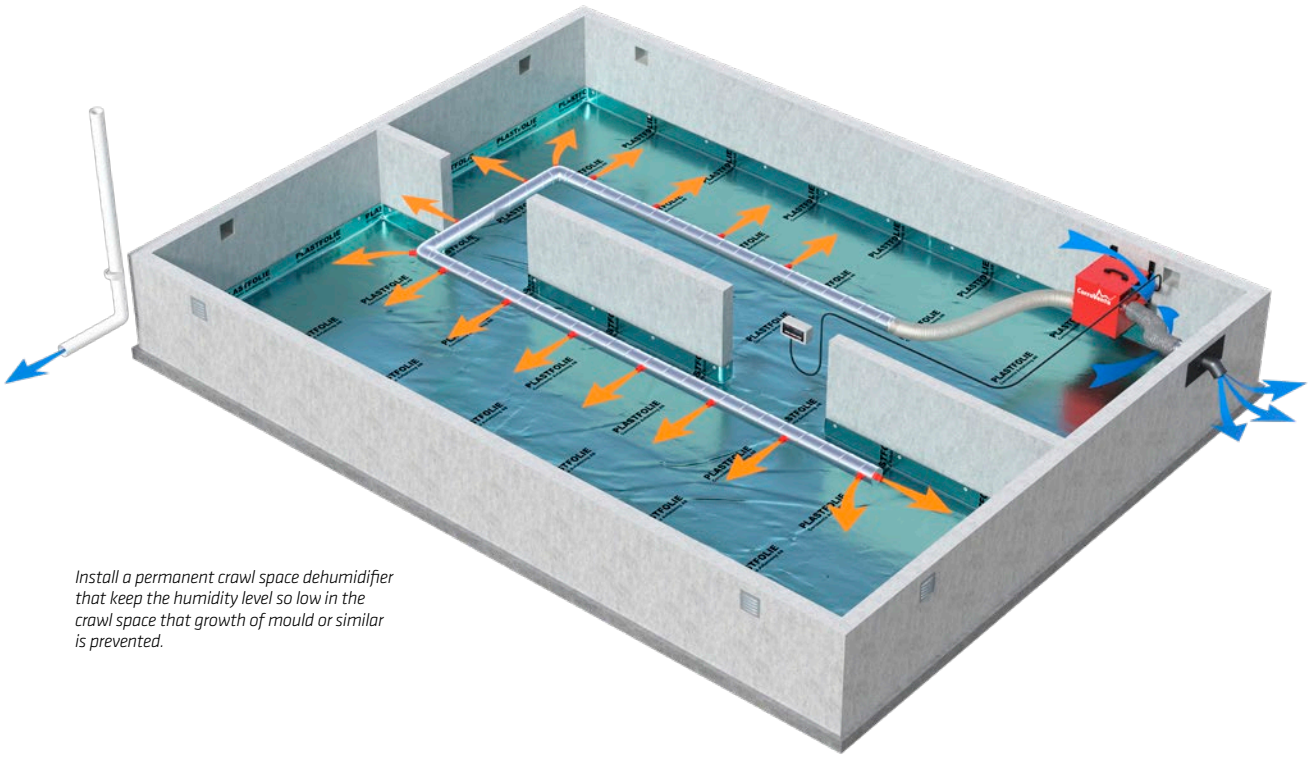
CTR 300TT2 has a patented solution for increasing the negative pressure in the crawl space without needing to reduce the efficiency of the dehumidifier. In CTR 300TT2 the humid airflow through the rotor is kept optimal and constant by a special patented design. The additional air volume that is obtained when the airflow from the space varies between 45 and 130 m3/h is taken from the input process air. Operating costs are kept low, regardless of how great the air volume out of the space is.

ADSORPTION DEHUMIDIFIER - RIGHT TECHNIQUE FOR CRAWL SPACES

The temperature in the crawl space varies between 4 and 15 °C through the year and the relative humidity should be around 65-70 %. The diagram shows which type of dehumidifier works best in different climates. Since the climate in a crawlspace is within the red area during all seasons, an adsorption dehumidifier is the best technology for crawl space dehumidification. Condensing dryers are superb for climwarmerates. temperatures but work badly or not at all for crawl space

- ***Adsorption dehumidifier*** *– Superior technology in the red area, also functions in the yellow and blue areas.*
- ***Adsorption dehumidifier with a condenser*** *– works in the linear area (L4 machines).*
- ***Condensing dehumidifier*** *– Superior technology in the blue area. Functions in the yellow area.Functions poorly or not at all in the red area.*
- ***Borderline zone***
- ***Climate in a crawl space***





Install a permanent crawl space dehumidifier that keep the humidity level so low in the crawl space that growth of mould or similar is prevented.

PERMANENT INSTALLATION OF CRAWL SPACE DEHUMIDIFIER.

The foundation dehumidifier with control unit is intended for permanent installation in the foundation to be dehumidified and is connected to an earthed electrical socket.

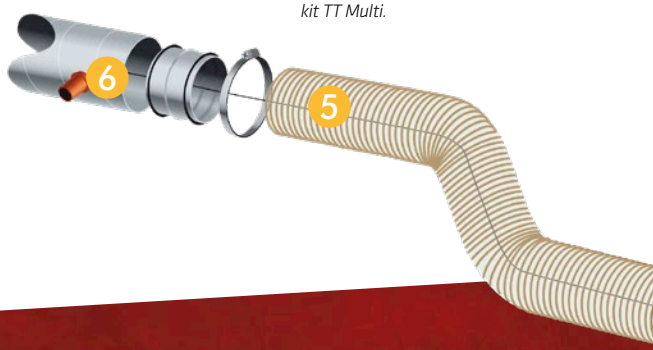
It is essential, in order for an installation to be satisfactory, that the ground surface in the air space is covered in plastic sheeting and valves and cracks in the house foundation are sealed. The planning and construction of a dehumidifying system includes the following:

- The placing and connection of the dehumidifier.
- The design of the channel system.
- The distribution of the right air quantities.
- The positioning of the hygrostat.

EFFECTIVE CHANNEL SYSTEM

Ingoing process air can be channelled or work through free suction. In order to achieve efficient distribution of the dry air, a channel system (spiro-pipe system) should be constructed that is provided with nozzles, in order to get the right quantities of air to the various parts of the foundation and thereby achieve the lowest possible running costs.

The illustration shows mounting of crawl space dehumidifier CTR 300TT2 together with Mounting kit TT Multi.



FAST AND EASY MOUNTING WITH CORROVENTA'S MOUNTING KIT.

Mounting kit for fast and easy installation and optimal energy consumption. Corroventa has a complete range of mounting kits for mounting and suspending crawl space dehumidifiers.

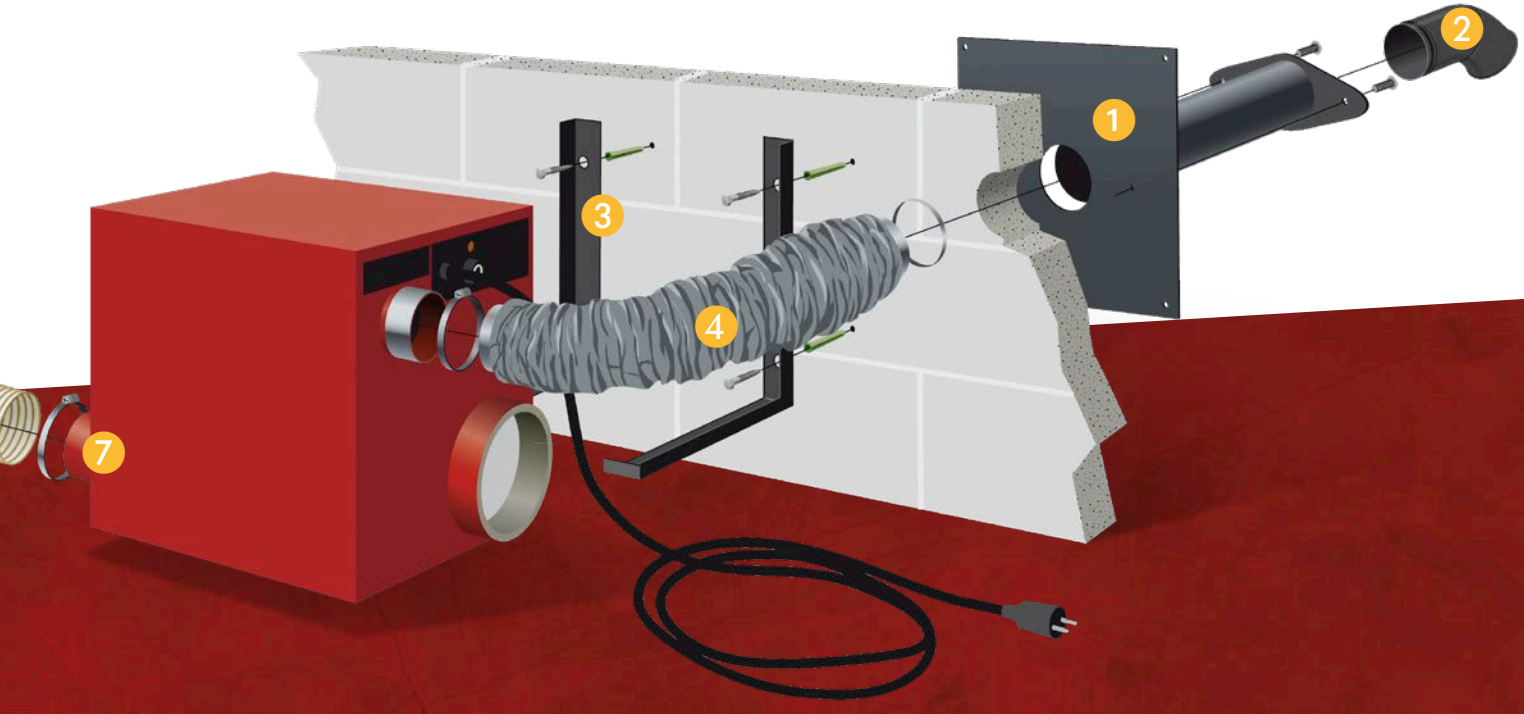
OUTSIDE FOUNDATION
Secure the wall plate 1 on the wall with the Ø80 pipe in through the outer wall. Press the aluminium connector 45° 2 onto the dehumidifier wet air connector with the groove (the slit) downward.

DOWN IN THE CRAWL SPACE
Decide where the dehumidifier should be positioned. Use a hole template to mark out the positions (4x) of the two wall mountings on the wall. Drill 4 holes Ø12 mm and install the green plugs supplied. Screw in the wall mountings 3 with four hex head screws M10x60. Lift the dehumidifier onto the wall mountings. The silencer hose 4 is installed with gentle bends using two hose clamps on the previously installed aluminium connector on the dehumidifier's wet air connector and the Ø80 pipe that comes through the outer wall from the wall plate. The hose must not be compressed. Make a drainage hole in the lowest point of the wet air hose.

ON THE DRY AIR SIDE
Insert the nipple in the dry air hose 5 and tighten with a hose clamp. Press in the spiral duct Ø100 6 that you installed in the crawl space. Install the other end of the hose on the dry air outlet 7 on the dehumidifier using a hose clamp. Place the hygrostat section so it is not affected by the dry air from the machine, or radiation from hot or cold surfaces.

MOUNTING KIT TT MULTI
Complete mounting kit for mounting and suspension of crawl space dehumidifier STD-TT and 300TT2.

MOUNTING KIT 500TT UNIVERSAL
Complete mounting kit for mounting and suspension of crawl space dehumidifier 500TT.



CRAWL SPACE DEHUMIDIFIER CTR 300TT2

Adsorption dehumidifier for fixed installation in crawl spaces, with a dry air volume of up to 300 m3/h. CTR 300TT2 has one of the lowest energy consumptions on the market.

CTR 300TT2 is specially designed for use in crawl spaces where the requirements are for robustness, operational safety and long service life. Thanks to our patented damper solution which creates negative pressure in the crawl space, CTR 300TT2 is also suitable for air and radon decontamination. CTR 300TT2 has been part of our range for 15 years and is one of our faithful servants.

ADVANTAGES WITH CTR 300TT2

- Controlled and monitored with HomeVision®
- Designed for foundations up to 200 m^3
- Effective for air and radon decontamination.
- High quality and long service life
- Energy efficient and has low operating costs

EASY MONITORING WITH HOMEVISION®
The dehumidifier is controlled and monitored by our HomeVision® system, which consists of a hygrostat placed in the crawl space and a wireless, digital control panel inside the accommodation.

TECHNICAL DATA

Dry air volume	200-300 m^3/h
Wet air volume	45-130 m^3/h
Power supply	230 V, 50 Hz
Power consumption	1015 W
Real consumption	ca 850 W
Process sir inlet	Ø 160 mm
Wet air outlet	Ø 75 mm
Dry air outlet	1x Ø 100 + 2 x Ø 50 mm
Noise level (3m)	ca 56 dB
Weight	16 kg
Dimensions (L x B x H)	420 x 325 x 360 mm
Overheating protection x3	80°C + 90°C + 130°C
Dehumidification capacity at: 20°C, 60% RH	21 l/day
Dehumidification capacity at: 10°C, 60% RH	14 l/day
Dehumidification capacity at: 5°C, 60% RH	12 l/day
Article number	02900

Crawl space dehumidifier CTR 300TT2

CRAWL SPACE DEHUMIDIFIER CTR 500TT

CTR 500TT is our largest dehumidifier for fixed installation in crawl spaces, with a dry air volume of up to 500 m3/h.

The crawl space dehumidifier is a superbly energy efficient machine and has a high capacity in relation to its size. CTR 500TT is specially designed for use in crawl spaces, where the requirements are for robustness, operational safety and long service life. The machine is used in spaces with only damp problems.

SOME ADVANTAGES WITH CTR 500TT

- Designed for foundations up to 350m³
- Effective against damp problems
- High quality and long service life
- Energy efficient and has low operating costs

EASY MONITORING WITH CONTROL PANEL

The crawl space dehumidifier is controlled using a hygrostat that is positioned in the crawl space where the conditions are considered appropriate or particularly critical and the drying can be monitored via a control panel inside the residence.

TECHNICAL DATA

Dry air volume	500 m³/h
Wet air volume	60-80 m³/h
Process air inlet	Ø 2x125 mm
Dry air outlet	Ø 3x50 mm + 2x100 mm
Wet air outlet	Ø 75 mm
Power supply	230 V / 50 Hz
Power consumption	1780 W
Real consumption	ca 1500 W
Noise level (3m)	62 dB
Weight	21 kg
Dimensions (D x B x H)	480 x 385 x 400 mm
Dehumidification capacity at: 20°C, 60% RH	35 l/dygn
Dehumidification capacity at: 10°C, 60% RH	24 l/dygn
Dehumidification capacity at: 5°C, 60% RH	21 l/dygn
Article number	20701

Crawl space dehumidifier CTR 500TT

CRAWL SPACE DEHUMIDIFIER CTR STD-TT

CTR STD-TT is our smallest adsorption dehumidifier for fixed installation in crawl spaces, with a dry air volume of 200 m3/h.

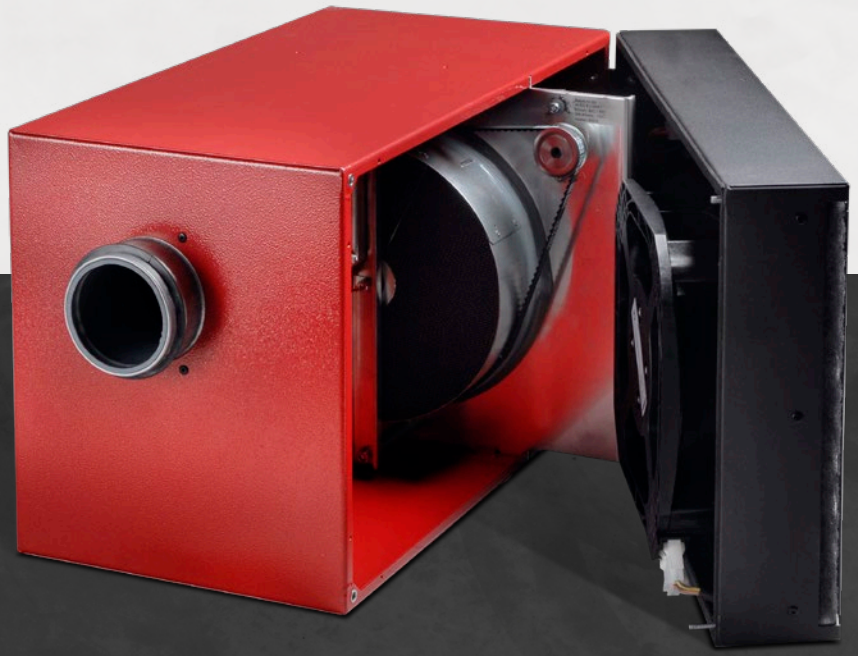
Crawl space dehumidifier CTR STD-TT is specially designed for foundations with only damp problems. It has the market's lowest energy consumption and is therefore superbly energy efficient. CTR STD-TT is specially designed for use in crawl spaces, where the requirements are for robustness, operational safety and long service life.

SOME ADVANTAGES

- Can be controlled and monitored with HomeVision®
- Designed for foundations up to 180 m³
- High quality and long service life
- Extremely energy efficient and has low operating costs

TECHNICAL DATA

Dry air volume	230 m³/h
Wet air volume	35 m³/h
Power supply	230 V, 50 Hz
Power consumption	860 W
Real consumption	775 W
Wet air outlet	Ø 80 mm
Dry air outlet	Ø 100 mm
Noise level (3m)	56 dB
Weight	15 kg
Dimensions (L x B x H)	455 x 326 x 285mm
Overheating protection x3	80°C + 90°C + 130°C
Dehumidification capacity at: 20°C, 60% RH	14 l/day
Dehumidification capacity at: 10°C, 60% RH	13 l/day
Dehumidification capacity at: 5°C, 60% RH	11 l/day
Article number	02700



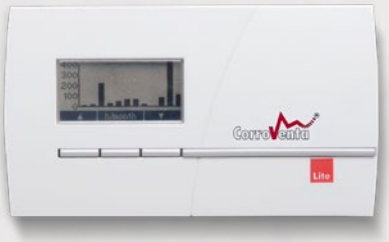
EASY MONITORING WITH HOMEVISION®

The dehumidifier is controlled and monitored by our HomeVision® system, which consists of a hygrostat placed in the crawl space and a wireless, digital control panel inside the accommodation.

CONTROL SYSTEM HOMEVISION LITE/PRO

The HomeVision control system is used to achieve controlled dehumidification in crawl spaces. Control, regulation and monitoring of the crawl space installation occurs via a hygrostat connected to the dehumidifier in the space and a wireless control panel in the living area.

The control panel displays the prevailing temperature and humidity in the crawl space, the values that come from the hygrostat. The control panel also displays the operating status and permits the user to change settings if required. Prevailing temperature and humidity and the settings are saved in a log file in a USB memory which makes it possible to follow up the installation. The user is alerted to any operational interruptions through integrated alarm functions and the system also automatically gives a reminder that the annual service is due, all to ensure that function is maintained and that damage to the building is avoided.



TWO VERSIONS

HomeVision is available in two versions, Lite and Pro. In addition to basic functionality in Lite, the Pro version includes the possibility of controlling the dehumidifier with reference to a fungus index, which can reduce the energy consumption in certain installations and conditions. The users of Pro can also control the fan operation and in addition study the graphic presentation of the last twelve months' operating time, average temperature and average humidity.

SYSTEM SOLUTION

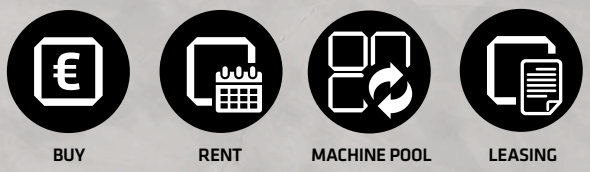
Control system HomeVision is used together with Corroventa's crawl space dehumidifiers CTR 300TT2 and CTR STD-TT.

TECHNICAL DATA

% RH setpoint	Pro / Lite
Δ % RH hysteresis upper	Pro / Lite
Δ % RH hysteresis lower	Pro / Lite
Δ % RH alarm level	Pro / Lite
Continuous fan operation, or fan only when dehumidifying	Pro
Control bt mold Index	Pro
Reset to factory settings	Lite / Pro
Information on display and log file	Lite / Pro
Displaying the current RH	Lite / Pro
Display of current temperature	Lite / Pro
Display fan status On or Off	Pro
Display dehumidification On or Off	Lite / Pro
Display radio signal level	Lite / Pro
Graphic presentation runtime past 12 months	Pro
Graphic presentation of average temperature last 12 months	Pro
Item number Pro	10360
Item number Lite	10370

CONTROL PANEL FOR CRAWL SPACE DEHUMIDIFIER CTR 500TT

The control system is used to achieve controlled dehumidification in crawl spaces. Control, regulation and monitoring of the crawl space installation occurs via a hygrostat connected to the dehumidifier in the space and a control panel in the living area. The crawl space dehumidifier is controlled by a hygrostat that is located in the crawl space where the conditions are considered suitable or particularly critical. For additional monitoring a control panel (indicator box) is positioned in the living area where the indicator lamps, for example, display if the relative humidity in the crawl space is OK or too high, if the installation is functioning or if there has been any interruptions to operation.



FOUR BUSINESS MODELS – FIND A SOLUTION THAT SUITS YOU

Being a partner to Corroventa opens the way for flexible collaboration. Our four business models are designed to create the best possible solution for our partners.

- *Purchasing the equipment with custom warranties, service and support agreements.*
- *Renting for a limited period, for example to get machines during a high load.*
- *Maskin Pool. The customer retains the machine for a long period, which makes work easier for both parties and the transport is reduced.*
- *Leasing*

DO YOU HAVE ANY QUESTIONS OR DO YOU NEED OUR SUPPORT?

Please visit www.corroventa.com or call us at +46 (0)36-37 12 00 and speak to an expert. We have the knowledge and the equipment to find a solution as efficiently as possible.

Corroventa develops, manufactures, sells and rents high quality products for dealing with water damage, moisture, odours and radon. We are one of the market leaders and specialists in innovation within the industry. Our products are compact, effective, ergonomic and energy efficient. In emergency situations and during flooding, Corroventa's customers have access to one of the largest rental parks in Europe. All our products are manufactured in Bankeryd, Sweden.

www.corroventa.com

CAREFULLY MADE IN SWEDEN • 100% CORROVENTA QUALITY •

Corroventa®

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