

DANTHERMGROUP



INTRODUCTORY GUIDE

BUG AND PEST CONTROL

USING HEAT

MASTER
CLIMATE SOLUTIONS

TROTEC
CLIMATE SOLUTIONS



About the Dantherm Group

Dantherm Group is a European leader in portable and installed climate control solutions for a wide range of industries and uses. Based on the heritage of the variety of brands we own, our climate control experts build and manufacture hundreds of thousands of exceptional heating, cooling, dehumidification, air cleaning and ventilation units in our own factories in Europe every year.

All of them are designed to create healthy and comfortable climate surroundings in a sustainable, energy-efficient and cost-effective way.

Why partner with us

- ✓ European design quality
- ✓ Experts in climate control
- ✓ Extensive range of solutions



INDEX

Insect bug pest control methods	04
Most common insects and bugs	05
Pest control methods	07
Applications	12
Master EKO 3	16
Master EKO 9	17
Heylo DE 20 SH	18
Trotec TAC XT 18-27	19
Master BV 77-110-170-290	20
Remote climate control	22



Discover our
climate solutions
danthermgroup.com



INSECT BUG PEST CONTROL METHODS

In this ever-increasing drive to use environmentally friendly methods it is important to highlight the ecological potential of bug extermination by using heat. In this brochure we look at different types of bug infestations and how our heat treatments resolve them better than anything else.

In recent years we have witnessed an increasingly rapid growth of people moving between continents and a growing number of traffic in goods. This has led to the unwanted spread of insects and parasites.

Insects can attack people, the food we eat, lurk in hotel rooms, restaurant kitchens, bakeries and warehouses.

Insects are unpleasant in sight and dangerous for our health. So far, we have tried to control the spread of these unwanted insects with the use of chemicals.

Chemicals have many side effects. This is why other methods have needed to be developed which are easy-to use for cleaning professionals and not harmful to the them and the surrounding environment.

To get a sense of what solution we needed to provide to solve this problem we asked Prof. Luciano Suss, Past Professor at the University of Milan, to do a study on this subject and help us to develop this introductory brochure.

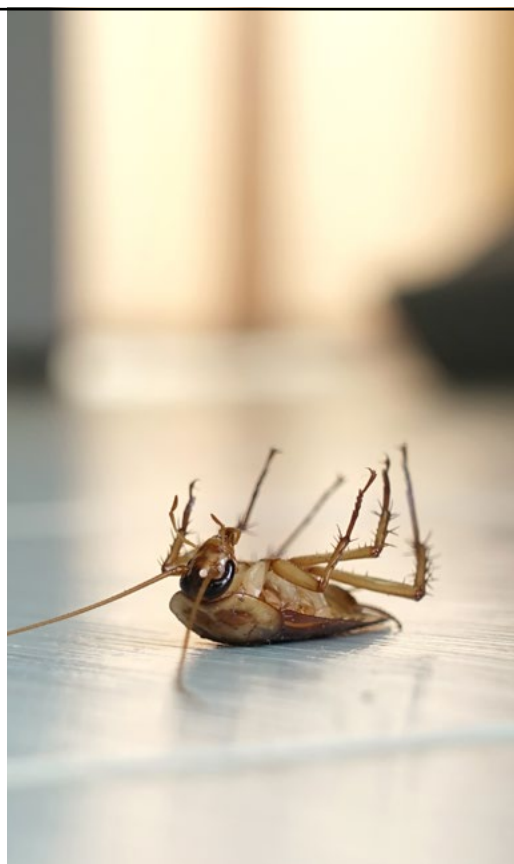
INTRODUCTION

Insects can nestle and create serious problems in artificially created environments where people live, produce or sell foodstuff.

Modern man has put at their disposal incredible amounts of settings which are favourable to their development. The use of powerful poisons can help to eliminate such insects, but they present many risks:

- Risks to the surrounding area, when these poisons leak out from the treated space
- Contaminated insects that are eaten by predators, or to people who come in contact with the poisons themselves
- Risk of not solving the problem completely when the poisons kill the insects, but not the actual larvae or eggs

Thanks to the development of technology, it is today possible to defend against these insects without using poisons at all.



2 MOST COMMON INSECTS AND BUGS

There are many unwanted insects in this world with some of the most common ones cited below.

BED BUGS (*Cimex lectularius*)

In recent years bed bugs (*Cimex lectularius*) have become more and more widespread with environments that were previously free from infestation such as hotel rooms, rail carriages and airplane cabins now suffering from this surge.

These are species that can withstand fasting for many months. In the daytime they hide in mattresses, baseboards and at night they come out of hiding places and feed on the blood of people and animals. After mating, females lay white, oval eggs (1/16" long) into cracks and crevices. An individual bed bug can lay 200 to 250 eggs in her lifetime. The eggs hatch in 6 to 10 days and the newly emerged nymphs seek for blood.

The main carrier of these bugs are travellers' suitcases. The bug in fact 'gets on board' a suitcase and travels with the passenger. The transition can take place during a stay in an infested hotel or in the luggage compartment of an airplane. They are found in hotel rooms, suitcases, train carriages, airplanes, ambulances and hospital beds.

Being only 3.5mm in diameter they can flatten themselves to get through very small spaces. The optimal temperature for killing insects, larvae and eggs is about 50°C. The bugs need to be exposed to the temperature for a minimum of one hour, preferably longer.



FLOUR BEETLE (*Tribolium castaneum*) (*Coleoptera*)

The Flour Beetle is from the Coleoptera family.

They feed on various plant substances, in particular of the powdery kind such as flour and bran. They are found in food stores and bakeries and are widespread throughout the world due to global trade.

Adult Flour Beetles measure 2.5-4.5mm.

They deposit up to 500 eggs and are able to sometimes resist treatments that use toxic gases. Adults can even survive for a long time in an airless environment.

The optimal temperature for killing insects, larvae and eggs is about 50°C. The bugs need to be exposed to the temperature for a minimum of one hour, preferably longer.



GRAIN BEETLE (*Oryzaephilus surinamensis* e *Oryzaephilus mercator*) (Coleoptera)

The Grain Beetle feeds on foods such as dried fruits, meats, cereals and rice. They are primarily found where these dry foodstuffs are stored and are widespread due to global trade. They deposit up to 500 eggs four times a year.

The adult Grain Beetle measures about 3.5mm. The optimal temperature for killing insects, larvae and eggs is about 50°C. The bugs need to be exposed to the temperature for a minimum of one hour, preferably longer.



CIGARETTE & DRUGSTORE BEETLE (*Stegobium paniceum*) (Coleoptera)

The beetles and their larvae feed on a variety of pet foods, including dried and processed foods such as grains, pasta, raisins, rice, seeds and even cockroach poison.

They are found in food stores, bakeries and restaurants. The adult beetles are small in size, around 4mm. A female beetle can lay up to 100 eggs on the food products from which the larvae will feed.

The optimal temperature for killing insects, larvae and eggs is about 50°C. The bugs need to be exposed to the temperature for a minimum of one hour, preferably longer.



MEAL MOTH (*Ephestia kuehniella*) (Lepidoptera)

The larvae of the meal moth are responsible for the most common infestations of any foodstuff. They are found in food stores, bakeries and restaurants. They feed on dried fruit, tobacco, flour, spices, chamomile, fabrics, dried fish and horsehair. As fully formed butterflies they move quickly, infesting foodstuffs.

The larvae of this species have the ability to bite through plastic and cardboard; thus, even sealed containers may be infested with eggs. The distal of two thirds of their fore-wings are generally reddish brown in colour with a copper luster. The more proximal parts of the wings are yellow-grey or white-grey, with a dark band at the intersection between the proximal and distal regions. Adults are 8-10mm in length with 16-20mm wingspans. The butterflies lay between 100 and 300 eggs and are 0.5-0.6mm long and difficult to see with the naked eye. The optimal temperature for killing insects, larvae and eggs is about 50°C. The bugs need to be exposed to the temperature for one hour.



DUST MITES (*Dermatophagoides pteronyssinus*) (Pyroglyphidae)

House dust mites, due to their very small size and translucent bodies, are barely visible to the unaided eye. A typical house dust mite measures 0.2–0.3mm (0.008–0.012in) in length. They feed on skin flakes and on some mould. A mated female house dust mite can live up to 70 days, laying 60 to 100 eggs in the last five weeks of her life. In a 10-week life span, a house dust mite will produce approximately 2,000 faecal particles and an even larger number of partially digested enzyme-covered dust particles.

The mite's gut contains potent digestive that persist in their faeces and are major inducers of allergic reactions such as wheezing. The optimal temperature for killing insects, larvae and eggs is about 50°C. The mites need to be exposed to the temperature for one hour. The bugs need to be exposed to the temperature for one hour.



BUG PEST CONTROL USING CHEMICALS IS DANGEROUS AND POISONS THE ENVIRONMENT

Chemicals are the traditional way of getting rid of bugs and insects. There are several poisons on the market used for bug killing but the drawback being that they are not good for the environment or the people using them.

In fact, in living spaces or in businesses that produce and market foodstuffs, pesticides cannot be used due to high toxicity levels and the poison being in the air for long periods of time.

Products available on the market are not strong enough to get rid of all the bugs, eggs and larvae, even with repeated treatments which are extremely costly. Furthermore, chemicals are powerful poisons for other living things, including humans and pets.

They therefore require skilled individuals with the qualifications for use and storage. When using chemicals in any liquid or gas form, all contaminative objects must be removed beforehand. After chemical treatments, the environment must be thoroughly cleaned to remove any chemical residues. Very long application times are needed to try and eliminate larvae hatching from eggs, sometimes even days.



BUG PEST CONTROL USING HEAT IS SAFE AND RESPECTS THE ENVIRONMENT

In this ever increasing drive to use environmentally friendly methods it is important to highlight the ecological potential of extermination by the use of heat.

The optimal temperature for rapid development of insects range from 27-33°C, depending on the species.

It is also known that the insects, in every stage of development, including egg, die within minutes if a temperature in the environment of around 50-60°C is reached. Between 40-50°C total mortality occurs in one day as insects die from dehydration. It is therefore evident that if the room temperature is raised above 50°C, insects, larvae and eggs can be totally killed.

It is essential that this temperature is achieved in every nook and cranny and as fast as possible. Killing the bugs via heat requires heaters that distribute a **large flow of hot air to carry out a total eradication (eggs, larvae and insects) within a few hours.**

Environments are made up of diverse structures and materials, often with variable temperatures. For instance consider different types of flooring, windows, walls and installed systems.

The thermal conductivity varies greatly but the required temperature must be reached at every point, otherwise the insects and bugs will simply leave their normal shelter and move to a location with temperatures more suitable for their survival. Rapid heating works best within metal structures but is slower on tiled floors and on wooden materials.

To reach temperatures around 50-55°C the most favourable period is usually during the summer months where environments and structures are already hot.

The heaters must be able to maintain the temperature above 50°C, without exceeding 70°C.

During the treatment either regular inspections using a 'pointing' thermometer or applying temperature sensing probes with remote control are required at critical points eg under mattresses or on the floor.



It is possible that, in particular, mobile adult insects tend to escape to reach more favourable environments.

Therefore, it is advisable to plug any holes, cracks or gaps in the tiled floor or doors that will prevent the insects from escaping.

Biotests can also be used to gauge the success of the operation. The biotests are small boxes containing insects, larvae and eggs that can be placed inside the room. Their death will be proof of the effectiveness of the treatment.

At present, both in Europe and in other parts of the world, exterminations are carried out with heating the entire building, particularly in mills and food factories. It is useful to verify the results by placing numerous "biotests" on-site, containing the species to be destroyed, at different stages of development.

For this eradication technique different machines are able to produce large quantities of hot air to obtain the required result in the shortest possible time.

This technique can also be used in lesser environments, in shorter times, thanks to the use of smaller sized machines. For example in hotel rooms, railway carriages, artisan bakeries, restaurant kitchens, ambulances and first aid premises.

ADVANTAGES OF ERADICATION WITH HEAT

- It is not necessary to empty the rooms which are to be treated. It is in fact sufficient to remove only objects or foods that can not tolerate 60°C – plastic film (type: Domopak), chocolate, flowers etc
- No specific cleaning is needed after the heating process, as no toxic residues remain in the air
- Gets rid of all insects, larvae and eggs and avoids risk of only partial eradication
- Acts quickly
- No protective clothing is required against chemicals
- No "chemical" licenses are required for the operators
- The premises are accessible immediately after treatment
- It is not necessary to store toxic materials
- It is possible to monitor the temperature and have the certainty that the treatment has been effective

BIOTESTS

Biotests are provided by specialized laboratories. They are small containers containing the infesting insects at various stages of development, ie eggs, larvae and adult insects.

These biotests will verify the effectiveness of the treatments by the mortality rate achieved.



PARASITE PREVENTION

There are several ways that you can prevent bug infestations. Firstly, all necessary steps should be taken to prevent an infestations including removing food debris, sealing up nesting cracks and keeping all living spaces perfectly clean.

It is advisable to carry out periodic preventive treatment of the rooms with the use of dry heat which will avoid the spread of bugs.

MONITORING

Despite all preventative measures, it is always possible that an infestation will occur due to their ability to fly or being transported by either people or objects. Therefore, it is good practice to monitor any bug problem by visual inspection or better with the use of food or pheromone traps especially in the case of Lepidoptera.

However it is important to realize that you will only be able to see the adult bugs as the eggs and newborn larvae cannot be seen with the naked eye.

THE USE OF TRAPS

There are many variations of traps on today's market. Some are suitable for catching the Lepidoptera which infest foodstuffs, others are able to monitor, catch in or out of flight the Coleoptera. These traps have long been used in the food industry, but it is also appropriate to use them in artisan production environments such as bakeries and pizzerias, to promptly eliminate the onset of an infestation. The same traps can be used in a preventative manner as well.

Pest	Trap	Image
Tribolium castaneum, Oryzaephilus surinamensis, Oryzaephilus mercator	3 way trap pherotrap multispecie	
	Shield trap (optional)	
Lasioderma serricorne Stegobium paniceum	Anoblidi	
Plodia interpunctella Ephestia kuehniella	Geopad verde	
	Moth hanger	
Cimex lectularius	Bed bug trap	



4 APPLICATIONS

HOTELS



The most common pest in hotels is *Cimex lectularius*. In the day time it nestles in the seams of mattresses, in door and window frames, carpets, skirting boards and picture frames as well as in wooden furniture joints.

At night the pest comes out of its hiding places to find a feed.

To monitor this, it is advisable to periodically install traps in the rooms to highlight the presence of bed bugs.

Among the prophylaxis practices it is very important that each individual hotel room is treated periodically with heat as you have to take into account escaping pests into other rooms. It is recommended that the affected room and all adjacent rooms above and below are treated. So effectively five rooms require treatment when one is affected.

Again sealing off any possible escape routes is essential with double-sided adhesive tape.

After the treatment, traps should be placed in the rooms to highlight the presence of surviving bugs.

HOSPITALS & HOSTELS



Like with the hotel rooms above the most common pest affecting hospitals and hostels is *Cimex lectularius*.

Monthly treatments are necessary with heat at 50-60°C in individual rooms as again you have to take into account escaping pests into other rooms. To help prevent this happening sealing off any possible escape routes is essential with double-sided adhesive tape.

After the heat treatment traps need to be installed to highlight the presence of surviving bugs.

AIRPLANES



More and more passengers are complaining that they were attacked by bed bugs on trains and airplanes. It is essential to eradicate these pests first-hand with periodic heat treatments.

TRAIN CARRIAGES



Train carriages or sleeping berths have frequently had bed bug infestation problems due to the high amount on travellers in this transportation mode. Periodic heat treatments are recommended.

PIG FARMS



Pig farms can suffer from bug infestations. With heat treatment it is possible to eliminate all bugs and eggs between one generation and the other without the danger of using poisons.

AMBULANCES



Cimex lectularius is again the most frequent pest in this application. Treatments with extended heat for two hours at 50-60°C are recommended.

POLICE CARS & VANS



Police cars and vans are often used to transport people with low hygienic levels. They can be easily contaminated by bugs. Heat can quickly clean cars or vans eliminating all bugs and eggs.

CHICKEN FARMS



Chicken farms are often infested from bugs. With heat it is possible to eliminate all bugs between one generation and the other. Heat penetrates deep into the farm structure killing bugs and eggs.

ANTIQUE CARPETS



Antique carpets can be severely damaged by bugs. Heat is a clean and deep way to eliminate insects, larvae and eggs and preserve the carpets over time.

WOOD TRANSPORT CONTAINERS

(Before or after loading)



Transporting wood often means to transport insects overseas which can be dangerous for the wood or for agriculture. With EKO heat it is possible to kill all the bugs in the wood and to eradicate the container from resident insects.

BOATS



Heat can be used for the in-depth extermination of bugs and parasites that have burrowed into the wood of the helm and other wooden parts of the boat.

FOOD TRANSPORT CONTAINERS

(Before or after loading)



Food containers carrying goods such as fruit and vegetables need to be completely free of bugs and insects. In this application the use of chemicals is banned as it would effect the food. With heat it is possible to kill all the bugs before loading the food.

ARMY BARRACKS AND DORMITORIES



New guests in dormitories might carry undesired bugs with them. The whole dormitory will quickly be infested. Heat is a fast and safe way to eradicate the dormitory or to prevent the development of bugs.

CELLS AND PRISONS



New inmates could bring unwanted bugs in with them. The whole dormitory will quickly be infested. Heat is a fast and safe way to eradicate the cells and prevent the further development of bugs.

ARTISAN BAKERIES, PROFESSIONAL KITCHENS, RESTAURANTS, PIZZERIAS, ICE CREAM PARLOURS



Moths belonging to the Lepidoptera family and the Flour Beetle thrive in environments such as flour mills, bakeries and storage areas in professional kitchens. They lay their eggs in the flour which are then invisible to the naked eye.

Businesses incur the risk of fines and closures from local authorities and health inspectors which can be very costly to them.

It is advisable to install permanent traps on the premises to highlight the presence of these insects and bugs. Even the careful cleaning of the production area and monitoring of the situation are unfortunately still not sufficient.



Using chemicals in environments where food is produced or stored, as previously stated, are not only harmful to the food and people but do not totally resolve the problem. It is also impossible to carry out treatments with 'toxic gases' as these rooms are generally installed in residential buildings and food should be removed in advance and each machine washed down afterwards.

The ideal solution is to use continual hot air as it can completely clean the production environment without interfering with the other materials and equipment present in the premises and in surrounding areas.

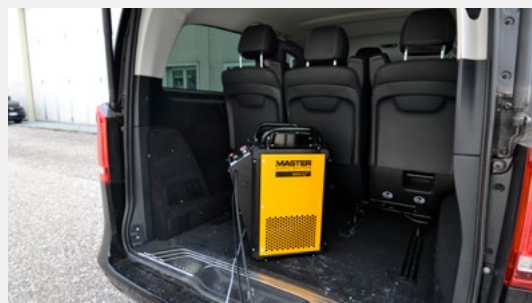
MASTER EKO 3 ELECTRIC HEATER



Included in the box



Remote thermostat
THK with probe
4150.137



- Compact and lightweight
- EKO 3 delivers 800 m³/h of hot air using only 2.8 kW at 240 V (single phase)
- Connection to the external digital remote thermostat THK, specific for this application, included in the package
- Overheat thermostat
- Motor with thermal protection and intervention
- The Master EKO is placed inside the room and recirculates the air, gradually increasing the temperature

SMOOTH TEMPERATURE INCREASE

The temperature of the air flowing through is increased in amounts of 15°C each time. 20°C->35°C ->50°C- 60°C. The big air flow allows a fast increase and an even temperature distribution. This solution avoids temperature shocks, which would let insects run away.

HIGH AIR FLOW

The high air flow quickly mixes the air in the room allowing to heat everywhere.

Specifications	Units	EKO 3
Heating power	kW	2.8
	Btu/h	11,260
	kcal/h	2,866
Air flow	m ³ /h	800
Power supply	V/Hz	230/1ph/50
Rated current	A	12.4
Remote thermostat		Digital
Product size (l x w x h)	mm	455 x 440 x 600
Weight	kg	19

MASTER EKO 9 ELECTRIC HEATER



Included in the box

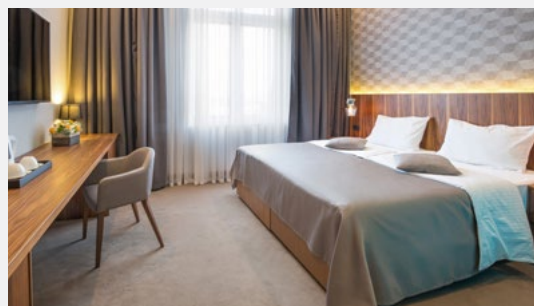


Remote thermostat THK with probe
4150.137



Extension cord for EKO 9
4515.331 - 16A, 5m
4515.332 - 16A, 10m

Optional accessories



- EKO 9 delivers 1400 m³/h of hot air using only 9 kW at 380 V (three phase)
- Connection to an external digital remote thermostat THK, specific for this application, included in the package
- Overheat thermostat
- Motor with thermal protection and intervention
- The Master EKO is placed inside the room and recirculates the air, gradually increasing the temperature

SMOOTH TEMPERATURE INCREASE

The temperature of the air flowing through is increased in amounts of 15°C each time. 20°C->35°C ->50°C- 60°C. The big air flow allows a fast increase and an even temperature distribution. This solution avoids temperature shocks, which would let insects run away.

HIGH AIR FLOW

The high air flow quickly mixes the air in the room allowing to heat everywhere.

Specifications	Units	EKO 9
Heating power	kW	9
	Btu/h	30,709
	kcal/h	7,740
Air flow	m ³ /h	1,400
Power supply	V/Hz	400/3ph/50
Rated current	A	13.8
Remote thermostat		Digital
Product size (l x w x h)	mm	550 x 606 x 921
Weight	kg	35

MASTER-HEYLO DE 20 SH ELECTRIC HEATER



Possible connection to the flex tube



You can adjust the temperature up to 120°C by changing the air flow

Optional accessories



High-temperature thermostat
0° to +120°C, IP 54, with 10 m cable -
1240102



High-temperature air hose
(up to 150°C) Ø 305 mm, 5 m, incl. fastening strap -
1250069



- Max. temperature 110 -120°C
- Temperature increase – variable
- Output temperature adjustable by changing the air flow
- Max. air input 60°C
- Compact and lightweight
- DE 20 SH delivers 1410 m³/h of hot air using only 18 kW 400 V (three phase)
- Adjustable fan speed
- Safety thermostat: automatic shutdown in case of more than 140°C in hose
- Spiral heating element for quick and even heat
- Built-in hour counter
- Stackable

Specifications	Units	DE 20 SH
Heating power	kW	18
	Btu/h	61,400
	kcal/h	15,480
Air flow	m³/h	1,410
Power supply	V/Hz	400/3ph/50-60
Rated current	A	32
Remote thermostat		Analogue or digital
Product size (l x w x h)	mm	730 x 414 x 482
Weight	kg	20.5

TROTEC TAC XT 18-27

MULTI AIR HANDLER



- Unique 4-in-1 device for fully automatic room heating, with or without HEPA air purification, thermal decontamination of rooms, surfaces and equipment, professional pest control and high-performance air purification and virus filtration
- Room or surface target temperature adjustable from 0 to max. 75°C (for room heating, decontamination or disinfection)
- Ideally balanced system components provide a solution for various applications

Specifications	Units	TAC XT 18	TAC XT 27
Heating power	kW	18	27
Max. air outlet temperature	°C	95	95
Fan		Radial, 2 stages	Radial, 2 stages
Sound values ISO 11203	dB	35-59	35-59
Air flow	m³/h	2,100	2,100
Power supply	V/Hz	2 x 380-480/50-60	2 x 380-480/50-60
Electric power	kW	18	27
Connection plug	A	2 x CEE 16 A	CEE 32 A, CEE 16 A
Rated current	A	32	32
Product size (l x w x h)	mm	690 x 630 x 1300	690 x 630 x 1300
Product size (FlowExtender) (l x w x h)	mm	690 x 630 x 2300	690 x 630 x 2300
Weight	kg	93.1	96

MASTER BV 77-110-170-290 OIL-FIRED INDIRECT HEATERS



BV 77 - Ø31cm



BV 110 - Ø34cm

BV 170 - Ø34cm

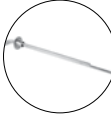
BV 290 - Ø41cm

Master indirect oil heaters are highly efficient and generate 100% clean, dry and fume-free warm air. They are ideal for places with limited ventilation like shops, event tents, food preparation areas or exhibition halls. They can be used with flex hoses to distribute the warm air.



- Clean hot air
- Optional connection to a flexible tube
- Flue gas exhaust
- Heat exchanger
- Overheat thermostat
- Post-ventilation
- Thermally protected motor
- Three oil filters: oil pump filter, suction filter and inlet filter
- External suction filter with transparent glass cup
- Electronic flame control with photocell
- Stainless steel combustion chamber
- Oil tank with level indicator
- Trolley included
- High quality brand fuel pump
- Fuel pump with access for easy maintenance
- Snorkel – breather for non-drip fuel tank
- Diagnostic LED
- These heaters can burn: biofuel HVO 100, diesel or kerosene

Optional accessories

	Analogue thermostat TH5 with cable 3m - 4150.109 10m - 4150.112		Digital thermostat THD with cable 5m - 4150.133 10m - 4150.134		Fuel preheater BV 77 - 4100.827 BV 110, BV 170, BV 290 - 4033.049		Adaptor ring BV 77 - Ø31cm - 4034.929 BV 110, BV 170 - Ø34cm - 4034.890 BV 290 - Ø41cm - 4034.895
	Fuel scoop BV 110, BV 170, BV 290 - 4515.510		2-way outlet BV 110, BV 170 - 2 x Ø31cm - 4034.898 BV 290 - 2 x Ø31cm - 4034.911		Quick connector for flex pipes to connect external tank BV 110, BV 170, BV 290 - 4034.880		Air inlet kit for recycling BV 110, BV 170 - 4100.826 BV 290 - 4100.825
	Rain cover BV 77 - 4514.652 BV 110, BV 170 - 4514.651 BV 290 - 4514.650		Stainless steel exhaust pipe 1m BV 77 - Ø120mm - 4013.260 BV 110, BV 170, BV 290 - Ø150mm - 4013.243		Stainless steel exhaust elbow 90° BV 77 - Ø120mm - 4013.261 BV 110, BV 170, BV 290 - Ø150mm - 4013.247		Stainless steel chimney pot BV 77 - Ø120mm - 4013.262 BV 110, BV 170, BV 290 - Ø150mm - 4013.249
	PVC flex tubes - 1-way outlet BV 77 - Ø31cm - 3m - 4515.572 BV 77 - Ø31cm - 7.6m - 4515.553 BV 110, BV 170 - Ø34cm - 7.6m - 4515.558 BV 110, BV 170 - Ø34cm - 3m - 4515.570 BV 290 - Ø41cm - 3m - 4515.571 BV 290 - Ø41cm - 7.6m - 4031.401			NYLON flex tubes with bag - 1-way outlet BV 77 - Ø31cm - 7.6m - 4515.360 BV 110, BV 170 - Ø34cm - 7.6m - 4515.367 BV 290 - Ø41cm - 7.6m - 4515.361 Flex tubes - 2-way outlet BV 110, BV 170, BV 290 - Ø31cm - 7.6m - 4515.360			Consumables packs BV 77 - 4519.002 BV 110 - 4519.003 BV 170 - 4519.004 BV 290 - 4519.005
PVC flex tubes - 2-way outlet BV 110, BV 170, BV 290 - Ø31cm - 7.6m - 4515.553 BV 110, BV 170, BV 290 - Ø31cm - 3m - 4515.572							

Specifications	Units	BV 77	BV 110	BV 170	BV 290
Heating power	kW	21	34	49	85
	Btu/h	71,700	116,000	167,200	290,000
	kcal/h	18,100	29,200	42,100	73,100
Air flow	m³/h	1,550	1,800	1,800	3,300
Fuel autonomy	h	19	21	14	13
Fuel consumption	l/h	2.0	3.2	4.7	8.1
Power supply	V/Hz	220-240/1ph/50	220-240/1ph/50	220-240/1ph/50	220-240/1ph/50-60
Electric power	kW	0.3	0.8	0.8	1.06
Rated current	A	1.5	3.5	3.5	4.6
Electric box protection		IP44	IP44	IP44	IP44
Tank capacity	l	36	65	65	105
Product size (l x w x h)	mm	1130 x 380 x 660	1235 x 575 x 1000	1350 x 575 x 1000	1600 x 700 x 1150
Box size (l x w x h)	mm	1200 x 400 x 530	1200 x 650 x 1000	1330 x 650 x 1000	1670 x 750 x 1180
Net/gross weight	kg	33/37	61/76	67/84	101/123

10 REMOTE CLIMATE CONTROL SIMPLIFY CLIMATE SOLUTIONS®

WHAT DOES SIMPLIFY CONSIST OF



Simplify App

The Simplify App is used to program the Simplify solution on-site within only two minutes. Available for iOS and Android.



Simplify Dashboard

The dashboard presents all of the Simplify data collected from the job site to the user. Data is presented in both a chart and tabular format showing temperature, relative humidity, vapor pressure, dewpoint, water content, power and energy consumption as well as indoor air quality from the Simplify Sensor Probes.



Simplify Control Unit

The Simplify Control Unit is the basic part of the Simplify solution connecting to GSM whenever available and communicating and controlling the network of sensors and equipment on-site programmed to it. It transmits data e.g. power consumption and alarms from sensors to the Simplify Dashboard in the reporting intervals set.



Simplify Sensor Box

The Simplify Sensor Box, powered by a regular 9V lithium battery, is used to transmit data from the connected Simplify Sensor Probe, back to the Simplify Control Unit. It can be controlled from the Simplify Dashboard, adjusting the data frequency to desired levels.



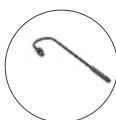
Simplify Sensor Probe - Relative Humidity/Temperature

The probe is a humidity and temperature sensor with a unique precision of $\pm 2.0\%$ in the range from 0-100% RH and $\pm 0.2^\circ\text{C}$ deviation on the temperature measurements. The probe comes with different lengths of cable – 24cm, 300cm, and 2000cm



Simplify Sensor Probe - Resistive

The probe is a resistive sensor measuring the moisture content in materials by measuring the resistivity i.e. between two pins using a range from 10kOhm-1GOhm translated in the dashboard to a moisture equivalent scale.



Simplify Sensor Probe - Indoor Air Quality

The probe is an indoor air quality (IAQ) sensor measuring a range of organic, volatile components in air (TVOC) and indoor air quality according to the Umwelt Bundesamt (German Federal Environmental Agency). Scale from 1-5. The probe also measures estimated carbon dioxide (eCO_2).



Simplify Relay Box

The Simplify Relay Box with three independently switchable 230V AC outlets and on-board MID approved kWh meter measures the total power consumption (kW and kWh) of all connected devices. The 230V AC outlets can be individually on/off controlled from the Simplify Dashboard thereby turning equipment on or off remotely.



Simplify CC4 Box

The Simplify CC 4 Box has four independently switchable 230V outlets and on-board MID approved kWh meter measures the total power consumption (kW and kWh) of all connected devices. It can be locked to fulfill MID requirements. The 230V AC outlets can be individually on/off controlled from the Simplify Dashboard thereby turning equipment on or off remotely.

SIMPLIFY BENEFITS

- **Reduce** your **costs of claims**: Fewer on-site visits because you can monitor everything remotely
- **Capture**, share and utilise climate process **data** such as temperature, humidity, equipment status and indoor air quality
- Use data to create reports that **document** the **efficiency** of your climate control jobs
- **Minimise** equipment **downtime**: Instant notification if a unit is switched off by mistake or if it malfunctions
- **Carry out** climate control jobs **faster**: Less downtime and realtime control of data eliminates idle and/or wasted time
- **Reduce** your **carbon** footprint: Faster project circles reduce **power** consumption. Fewer on-site visits reduce vehicle maintenance and **fuel** costs
- Handle **more claims**: Faster project circles enable you to handle more claims with the same pool of equipment
- **Detect** on-site **issues** instantly

HOW IT WORKS

In simple terms, Simplify remote monitoring uses wireless sensors on buildings and equipment that monitor the drying, heating or cooling process throughout your climate project, for instance in the construction or water damage restoration industry.

That way, Simplify lets you check the dehumidifying, heating or cooling status in real-time from almost any device anywhere. In addition, you can remotely monitor and control parameters such as power on/off, alarms, temperature and power consumption as well as

indoor air quality. In other words, remote monitoring in a climate process removes and reduces costs associated with the management of a claim or project and your assets.

Easy installation with the Simplify app

The Simplify App is your tool for installation and archiving of each claim, providing a fast, efficient, and simple to use method of installing the equipment on-site – within only two minutes.



DANTHERMGROUP

DENMARK

Dantherm A/S
DK-7800 Skive
+45 96 14 37 00
sales.dk@danthermgroup.com

GERMANY

Dantherm GmbH
22844 Norderstedt
+49 40 526 8790
sales.de@danthermgroup.com

ITALY

Dantherm S.p.A.
37010 Pastrengo (VR)
+39 045 6770533

62012 Civitanova Marche (MC)
+39 0733 714368
sales.it@danthermgroup.com

SPAIN

Dantherm SP S.A.
28108 Alcobendas, Madrid
+34 91 661 45 00

46980 Paterna, Valencia
+34 961 524 866
sales.es@danthermgroup.com

UNITED KINGDOM

Dantherm Ltd
Maldon CM9 4XD
+44 (0)1621 856611
sales.uk@danthermgroup.com

FRANCE

Dantherm SAS
69694 Vénissieux Cedex
+33 4 78 47 11 11
sales.fr@danthermgroup.com

POLAND

Dantherm Sp. z o.o.
62-023 Gądk
+48 61 65 44 000
sales.pl@danthermgroup.com

NORWAY

Dantherm AS
3138 Skallestad
+47 33 35 16 00
sales.no@danthermgroup.com

SWEDEN

Dantherm AB
602 13 Norrköping
+46 (0)11 19 30 40
sales.se@danthermgroup.com

RUSSIA

Dantherm LLC
142800, Stupino
Moscow
+7 (495) 642 444 8
sales.ru@danthermgroup.com

SWITZERLAND

AirCenter AG
CH-5405 Baden Dättwil
+41 43 500 00 50
info@aircenter.ch

CHINA

MCS China
Baoshang, Shanghai, 201906
+8621 61486668
sales.cn@danthermgroup.com

Dealer:

November 2023

KEEP UPDATED
FOLLOW US ON:



danthermgroup.com