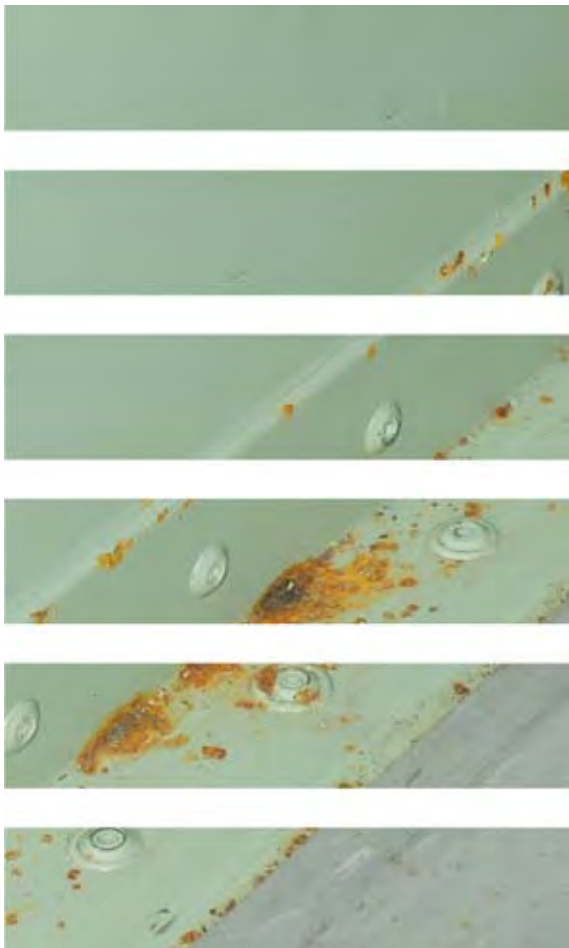


DEHUMIDIFICATION: Defence

Controlled Humidity Environment Protecting the Protectors



In peacetime, humidity is the biggest enemy of defence equipment



The time that defence equipment is actually used is very limited, compared with non-use time. This is logical for equipment in storage, but even “active status” equipment is not used most of its time and stands parked somewhere. Deployed equipment that is parked or on “Stand By” might have to be made available immediately, without the hassle of solving malfunctions first.

During times that the equipment is not being used, it suffers from the high ambient Relative Humidity (RH). The average RH in many places around the world is approx. 80%. Corrosion, electronic malfunctions, fungus, chemical decomposition, etc. are all a result of humidity that is present in ambient air by nature.

Munters, the Humidity Expert

Munters has solutions which take excess humidity out of the air. The result: less corrosion, fewer malfunctions, better availability, longer inspection and maintenance intervals, more time for training and over the total lifetime of the equipment significantly lower “Life Cycle Costs”.

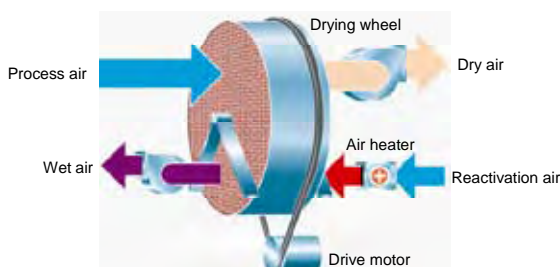
With more than 20,000 dehumidifiers in use on defence applications worldwide, Munters has a proven track record in effective partnering to solve humidity related problems.

Dehumidification is not a strictly military affair.... Many well known civilian companies use our technologies to protect their production processes, stocks and logistics. We count companies like Nestlé, Intel, Daimler-Chrysler, Siemens, Pfizer and Wallmart among our customers.

The sorption rotor, invented by Munters

Carl Munters is the inventor of the sorption rotor or Honeycombe® desiccant wheel. The working principle is very simple:

- Process air passes through the drying wheel and leaves the dehumidifier as dry air.
- Heated reactivation air collects the moisture absorbed by the drying wheel and leaves the dehumidifier as wet air.



Because a sorption rotor is not temperature dependent, the moisture removal capacity is superior under various climatic conditions that should occur the whole year round, or even through one 24 hour cycle.

Many Defence Forces around the world have put their trust in this effective technology..... Simple Magic.

Saving money by lowering the Relative Humidity



In a military environment much cost can be avoided by lowering the Relative Humidity (RH). A lower RH than what nature offers us will dramatically influence the amount of damage occurring.

Corrosion

Research done by Vernon back in the 1920's has shown that there is a direct and exponential relation between corrosion on steel and the level of RH. Further investigations have shown that this also applies to other metals and combinations of metals. A recent USAF study shows that 20% of all electronic malfunctions are caused by corrosion.



Electronic malfunctions

Along with corrosion, the RH also has a clear influence on resistance values of insulation materials. This leads to frequent malfunctions during the start-up of electronics that disappear later, when the component is tested in a workshop. These "No Fault Found" (NFF) or "Could Not Duplicate" (CND) phenomena reduce the "Mean Time Between Failure" (MTBF) unnecessarily and are a burden to the logistic system.

In extreme cases a high RH can lead to arcing. In those cases electronic components are often damaged beyond repair, potentially becoming a fire hazard.



Fungus

The development of fungus depends on humidity and temperature. At ambient RH conditions fungus development is considerable. By lowering the RH, current fungus growth can be destroyed and future fungus growth prevented completely.

Chemical decomposition

Humidity in the air can also be a component in a chemical reaction, often with undesirable consequences. For example, due to humidity, ammunition can turn unstable and therefore become very dangerous. By lowering the RH in the storage environment the safe shelf life of the ammunition can be prolonged.



Experiences

Experience by the Swedish Defence Materiel Administration (FMV) has shown that up to 25% can be saved on maintenance costs when the "Dry Air Method" is used. These findings are supported by recent studies of the "General Accounting Office" (GAO) in the United States. Also the Australian Defence Science and Technology Organisation (DSTO) supports the use of the "Dry Air Method".

With assistance from Munters, many nations have similar experiences on a wide variety of equipment: aircraft (fixed and rotary wing), armoured vehicles, truck mounted shelters, radar systems, ships, ammunition, logistic supplies, etc.



Application examples

Vehicles and equipment stored in Controlled Humidity Environment (CHE). The storage building does not require heating and the equipment is kept at high quality while inspection intervals are prolonged. Many allied forces use this storage technique as it is proven to be most effective.



Ammunition is typically stored in magazines which are partly earth covered. Usually, ammunition magazines have a high humidity inside, resulting in corrosion damage and the quick decomposition of chemical compounds. Munters sorption dehumidifiers create an environment where corrosion is slowed down and the safe life of the ammunition is extended.



By using portable Munters equipment, ammunition stocks as well as heavy equipment can be protected during Out of Area Operations. Our equipment has seen operation in most peace keeping missions and Out of Area Operations of recent years. The picture on the left shows Swedish ammunition containers in Liberia.



Several Munters dehumidifiers are suited for demanding applications where the dehumidifier is built into a system. These dehumidifiers are shock and vibration proof and meet the high standards that are normally set for these applications. Munters can also advise on how to use this equipment in combination with RFI/EMP or NBC protective requirements.



Especially in a corrosive naval environment, dehumidification can be very rewarding. Munters is a world leader in the protection of platform systems, such as gearboxes and shafts, as well as weapon and sensor systems. Latest "state of the art" technology, such as the Thales APAR radar is protected with Munters equipment.



Aircraft and helicopters benefit very much from dehumidification. In many cases, electronic malfunctions are reduced by 50% or more. Also the structure and the engine benefit from dry air, because the low humidity stops corrosion. With transport aircraft, condensation is a common phenomenon during high altitude flight. Munters dehumidifiers dry the insulation blankets whenever the aircraft are connected.



The Humidity Expert

INTERNATIONAL DEFENCE MARKETING
Munters Defence Marketing Office
P.O. Box 229
NL-2400 AE Alphen aan den Rijn
The Netherlands
Tel +31 172 43 32 31
Fax +31 172 44 29 60
Email:
defence@munters.nl
The Munters Defence Marketing Office is serving our local Munters sales offices worldwide

AUSTRIA
Munters Ges.m.b.H
Tel +43 1 616 42 98
Fax +43 1 616 42 98 98
Email:
info@munters.co.at

BELGIUM
Munters N.V
Tel +32 3 458 24 34
Fax +32 3 458 24 33
Email:
sales.info@munters.nv.be

DENMARK
Munters A/S
Tel +45 44 95 33 55
Fax +45 44 95 39 55
Email:
info@munters.dk

FINLAND
Munters OY
Tel +358 9 8386 0330
Fax +358 9 8386 0336
Email:
info@munters.fi

FRANCE
Munters France SAS
Tel +33 1 34 11 57 57
Fax +33 1 34 11 57 58
Email:
dh@munters.fr

GERMANY
Munters GmbH
Tel +49 40 73416-01
Fax +49 40 73416-111
Email:
mgd@munters-mail.de

ITALY
Munters S.R.L
Tel +39 02 488 6781
Fax +39 02 488 1171
Email:
info@munters.it

THE NETHERLANDS
Munters Vochtbeheersing
Tel +31 172 43 32 31
Fax +31 172 44 29 60
Email:
defensie@munters.nl

POLAND
Munters Poland Sp zoo
Tel +48 58 305 35 17
Fax +48 58 346 34 53
Email:
dh@munters.pl

SPAIN
Munters Spain SA
Tel +34 91 640 09 02
Fax +34 91 640 11 32
Email:
marketing@munters.es

SWEDEN
Munters Europe AB
Tel +46 8 626 6300
Fax +46 8 754 8594
Email:
avuktning@munters.se

SWITZERLAND
Munters AG
Tel +41 1 271 1013
Fax +41 1 271 1019
Email:
munters.gl@gmx.ch

UNITED KINGDOM
Munters UK Ltd
Tel +44 1480 432 243
Fax +44 1480 413 147
Email:
info@munters.co.uk

South Africa, United Arab Emirates, Saudi Arabia, South Korea, China, Japan, Vietnam, Taiwan, Thailand, Singapore, Australia, New Zealand, Canada, United States, Mexico, Brazil, Argentina