

VACKER GROUP

TEMPERATURE & HUMIDITY MANAGEMENT SOLUTIONS

- **Temperature & Humidity data loggers**
- **Temperature Mapping Study & Qualification**
- **Cold Chain Consultancy**
- **Real Time Temperature monitoring with Phone call, Email & SMS alerts**
- **Wireless & WiFi Monitoring solutions**
- **Temperature recorders with printer**
- **Temperature Monitoring system for vehicles**
- **Dehumidifiers & Humidifiers**
- **Thermal insulated Boxes (Active & Passive)**
- **Monitoring systems Incorporated into Building Automation**

TABLE OF CONTENTS

1. ABOUT US.....3

2. OUR ASSOCIATES FOR COLD CHAIN MANAGEMENT SOLUTIONS.....4

3. MAJOR CLIENTS6

4. OUR PRODUCTS AND SERVICES7

 A. TEMPERATURE & HUMIDITY MAPPING STUDY AND QUALIFICATION7

 B. REAL TIME TEMPERATURE & HUMIDITY MONITORING WITH ALERTS8

 C. TEMPERATURE & HUMIDITY DATA LOGGERS.....9

 i. *Single use USB temperature Data loggers*9

 ii. *iMini Series by Cryopak, USA*9

 D. MULTI CHANNEL DATA LOGGERS.....10

 E. DEHUMIDIFIERS & HUMIDIFIERS11

 i. *Desiccant and condensation dehumidifiers*11

 ii. *Warehouse dehumidifiers*11

 iii. *Cold Room De-humidifiers*11

 iv. *Cold Room Steam Humidifiers*11

 F. TEMPERATURE & HUMIDITY MONITORING AS PART OF BUILDING AUTOMATION.....12

 G. PASSIVE THERMAL INSULATED BOXES (EPS).....13

 H. COLD CHAIN CONSULTANCY SERVICE.....14

 I. COLD CHAIN PROCESS MONITORING, VALIDATION & QUALIFICATION15



1. About us

Vacker LLC is part of Vacker Group of companies involved in multiple field of activities.

Our divisions:

- a. Cold Chain Management
- b. Automation & Sensors Division
- c. Engineering Services Division
- d. Contracting Division
- e. IT Division

Our Offices:

- a. United States of America
- b. Dubai, United Arab Emirates
- c. Kuwait
- d. Oman
- e. India

Cryopak, part of TCP reliable Group, USA is a world leader and is involved in all aspects of Cold Chain Management Solutions for life sciences industry and food industry. Cryopak operates all around the world through its offices and manufacturing divisions at USA, Canada & France. Vacker Group is headquartered in Dubai, United Arab Emirates and has offices in UAE, India, Kuwait, Oman & USA. Vacker Group is the authorized regional partner of Cryopak, USA for offering entire range of Cold Chain Management Solutions in the Middle East countries. Various divisions of TCP Group are:



EPS Polymer Manufacturer for Packaging Solutions



Testing Organization for Thermal testing, Qualification etc.



Data Loggers & Real Time Monitoring Solutions



Insulated Packaging Solutions, Refrigerants, Insulated Shipping containers

Various products and services being offered in the Middle East are the following:

- Temperature & Humidity Mapping Study & Qualification
- Temperature & Humidity Data Loggers
- Real Time monitoring of Temperature & Humidity monitoring with alert systems for warehouses, cold rooms, vehicles etc.
- Thermal insulated Packaging solutions
- Dehumidifiers for Warehouses & Cold Rooms
- Cold Chain consultancy

2. Our Associates for Cold Chain Management Solutions

Cryopak, USA



Temperature & Humidity Data Loggers
Real Time monitoring Systems
Packaging Solutions
Temperature Mapping, Validation & Qualification

HW Group, Prague



IP Based sensor systems
Temperature & Humidity sensors

MSR, Switzerland



Multi Channel Data Loggers
Wireless Data Loggers

Accsense, USA



Voltage, Current & Solar data loggers
Versalog Multichannel data loggers
Temperature & Humidity monitoring systems

Trotec, Germany



Dehumidifiers
Thermal imaging camera
Measuring instruments


Simplicity For Safety
Pressure sensors
by **PSIDAC, Sweden**


Multichannel monitoring systems
including GPRS transmission
by **Next, Italy**

GRAPHTEC
Multichannel monitoring systems
by **Graphtec, Japan**


Building Automation
by **GFR, Germany**

BECKHOFF
Industrial Automation, Process Automation
& Building Automation
by **Beckhoff, Germany**

3. Major Clients

Few of our esteemed international and regional clients for various services are listed:

- **Julphar Pharmaceuticals**
- **Roche Diagnostics**
- **Cleveland Hospital, UAE**
- **Pharmatrade UAE**
- **Al Danah Pharmacy, Qatar**
- **Bahwan Group Pharmacy, Oman**
- **Emirates Aquatech**
- **Novartis, Dubai**
- **LifeLine Hospital**
- **Lifecare hospitals**
- **Bahwan Pharmaceuticals, Oman**
- **Qatar Airways**
- **Glaxo SmithKline**
- **Alghanim Healthcare, Kuwait**
- **Dupharm UAE**
- **Deal Distribution, UAE**
- **Monos Pharma, Mongolia**
- **Kuwait Airways**
- **Emirates Airways**
- **Taiba Medicines, UAE**
- **Burjeel Hospitals**
- **Advanced Cure Hospitals**
- **Quest Vitamins**
- **Al Zahra Hospital**

4. Our Products and Services

a. Temperature & Humidity Mapping Study and Qualification

In brief temperature mapping is the process of analyzing the uniform distribution of temperature and humidity across the controlled area under various practical conditions. Temperature mapping and validation is carried out to analyze and ensure the uniformity of distribution across all areas of the controlled areas under real life conditions. The Typical applications are:

- Ware house
- Cold Room
- Walk in Chillers
- Refrigerators, Freezers
- Cold Storage
- Autoclaves
- Vehicle, Van & Reefers
- Reefers
- Passive and Active boxes

In a cold room, warehouse or reefer, the cooling units and corresponding sensors are placed at certain locations of the enclosed area. For storage of temperature sensitive products such as medicines or food, the temperature & humidity should be uniformly distributed so that all the goods are safely stored. There are lot of operations also involved such as opening of doors, presence of human beings which affect the temperature distribution. It is possible that certain areas such as near to a door, near to a wall etc. are at a higher temperature than desired temperature.

This study will analyze temperature and Humidity distribution across the entire area of the asset under various operational conditions and will certify that the asset is suitable for storage of the temperature sensitive products under the specified conditions.

Qualification / Validation

We are the only company based in the Middle East carrying out qualification of assets in line with European standards and American standards.

In order to qualify the asset, further tests and verifications are carried out on the asset and various installed equipment to certify that the entire asset is qualified for storage or transportation of the goods at the specified temperature. Qualification is carried out for Cold Room, Reefer, Vans etc. and is not applicable for warehouses. We recommend qualification for cold rooms & vans since most of the international companies are seeking qualification for these assets instead of temperature mapping study

Download our detailed guide on Temperature Mapping & Qualification

<http://bit.ly/1Ad4pIY>

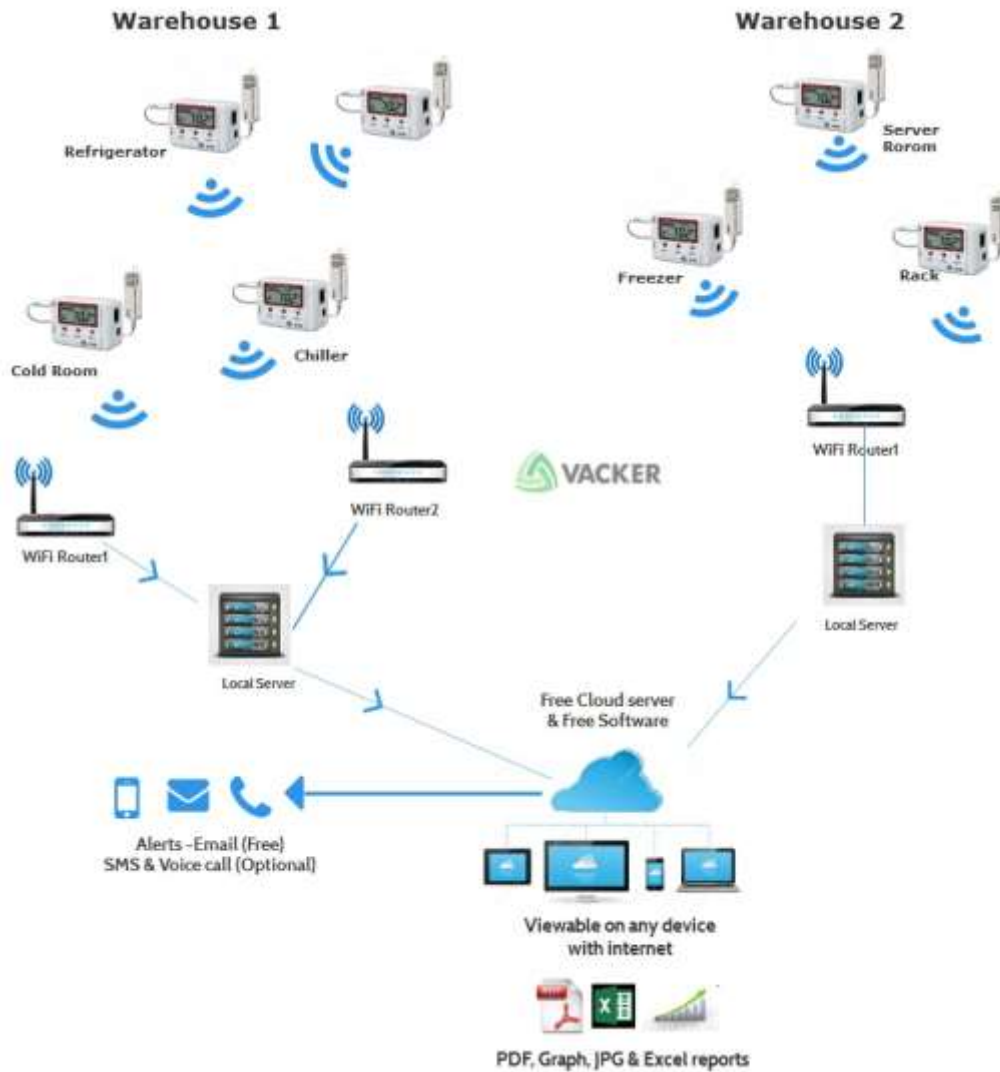
What is difference between a mapping study & qualification: <http://bit.ly/1tsLYmU>

Also please see our informative videos <http://bit.ly/1fd18bN> & <http://bit.ly/NArIH3>

b. Real Time Temperature & Humidity Monitoring with alerts

Main Features

- Complete standalone system. Even if computer/network does not operate the recording system will continue to record without any interruption.
- Recording of data on the device and on our free web server
- Data can be viewed from any web browser without need of any software installation.
- Recorded Data will be sent to 4 emails every day / every week if required.
- Email & SMS call alert for each data logger indicating the exact values of temperature & humidity
- Data can be viewed remotely either on your computer or smart phones
- Free software. No other annual fee for the system

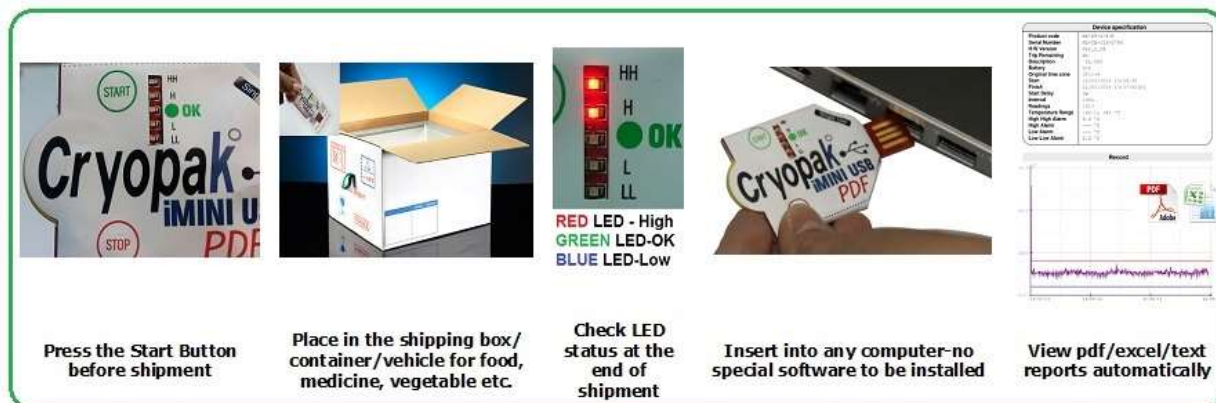


Video of the equipment at <http://bit.ly/1A0caKC>

c. Temperature & Humidity Data Loggers

We supply various types of Temperature & Humidity data loggers

i. Single use USB temperature Data loggers



Press the Start Button before shipment

Place in the shipping box/container/vehicle for food, medicine, vegetable etc.

Check LED status at the end of shipment
RED LED - High
GREEN LED-OK
BLUE LED-Low

Insert into any computer-no special software to be installed

View pdf/excel/text reports automatically

Technical Features:

1. 7928 readings (55 days of recording if reading is taken every 10 minutes – reprogrammable from 5 seconds to 17 hours)
2. 5 LEDs to indicate high or Low alarms
3. Plug & Play operation
4. No software required for taking readings. Simply insert into USB port and pdf, excel & text reports will be automatically generated
5. Free software for programming sampling rate, alert level etc.

Manufacturer : **Cryopak, USA**

See more details: <http://bit.ly/16TFdG0>

Sample reports:

pdf report: <http://bit.ly/1ICDCnB> ,Excel report: <http://bit.ly/1kj9LkB>

ii. iMini Series by Cryopak, USA

- Records Temperature (Separate model available for Temperature & Humidity)
- Models from 8000 to 128,000 readings (8000 reading means 55 days of recording if reading is taken every 10 minutes)
- 4 LEDs to indicate high or Low alarms
- Automatic generation of pdf, excel & text reports
- Free software for programming sampling rate, alert level etc.
- Manufacturer : Cryopak, USA
- Warranty : 2 Years



Product details & videos: <http://bit.ly/1omuOtY>

Technical Data sheet: <http://bit.ly/1l8QFB9>

Sample reports:

pdf: <http://bit.ly/1oECNxU> , Excel: <http://bit.ly/1rVY8Yt>, Text: <http://bit.ly/1sAfIN>



d. Multi Channel Data Loggers

The measuring tasks undertaken by the user define the way in which the MSR255 is configured: There is a choice of temperature, humidity, air pressure and light sensors (fitted internally within the case or externally on a cable)

Housing: Anodized Aluminium industrial case with top-hat rail snapper (TS35)

Size & weight: 78 x 62 x 38 mm, approx. 222 g

Memory capacity: Over 2 000 000 measurement parameters

Operation: Two keys for selecting functions and controlling data recording



Display: Four row LCD matrix display

LED: 3 colour LED to indicate data recording, alarm and charge condition

Integrated sensors: Selection of different sensors for temperature, relative humidity, pressure, light and 3-axis acceleration/position

Measurement rate (MR): 1 /s to every 12 h (acceleration up to 3200 /s)

Storage rate (SR): 1 /s to every 12 h (acceleration up to 50 /s)

Please see more: <http://bit.ly/13JdRAj>

e. Dehumidifiers & Humidifiers

Dehumidifiers are used for decreasing humidity levels of homes, offices, museums, warehouses, cold rooms etc. The operational principle of different type of dehumidifiers is by absorbing the moisture from the air and thus reducing the levels. We are representing Trotec, Germany for their numerous dehumidifiers for industrial, commercial and residential applications. These are typically used for hotels, swimming pools, offices, warehouses, cold rooms, apartments, villa etc.



i. Desiccant and condensation dehumidifiers

Desiccant dehumidifiers use adsorbent material such as silica gel to absorb the moisture from the air. Condensation type models condense the moisture into water and the water has to be removed from the dehumidifier



ii. Warehouse dehumidifiers

For warehouses, normally we provide condensation dehumidifiers. We have wide range of dehumidifiers starting from 10 liter per day to 485 liter per day. Please see details of our condensation dehumidifiers at : <http://bit.ly/condensation-dehumidifiers>

iii. Cold Room De-humidifiers

For temperature below 10°C, desiccant type dehumidifiers are used. We are supplying dehumidifiers with a maximum capacity of up to 1400 liters per day. Please check the details at: <http://bit.ly/desiccant-dehumidifier>

iv. Cold Room Steam Humidifiers

We are supplying steam dehumidifiers manufactured by Devatec, France. These convert water into steam using electrodes and are sprayed into the cold room through nozzles. Please see details at : <http://bit.ly/vacker-humidifiers>



Please see more: <http://bit.ly/14c5G0s>

f. Temperature & Humidity monitoring as part of Building Automation

We have tied up with Beckhoff, Germany and GFR Germany to provide monitoring solutions as part of Building Automation.

A typical building automation systems will have thousands of components which need to communicate each other. Prominent protocols are BACnet, Modbus, KNX, Lonworks etc. Different manufacturers of components use different protocols for their components. For any addition of systems at a later stage, components of same protocol need to be used. However interface components are available to use components of other protocols. KNX is an open protocol for which any manufacturer can develop new components.

We can connect various temperature & humidity monitoring sensors into the existing Building Automation through any of the above protocols. We will be using suitable interface systems to connect to your existing BMS systems.



HACCP Management through BACNet Protocol

For hotels and restaurants, there might be an existing BMS system generally through BACNet Protocol. We can provide sensors through BACNet

Various sensors being connected through BACNet are typically the following:

- a. Temperature & Humidity of warehouse
- b. Temperature & Humidity of cold rooms
- c. Temperature of refrigerators & Freezers
- d. Temperature from various cooking processes for HACCP compliance

g. Passive Thermal Insulated Boxes (EPS)

Cooling Boxes are used for transportation and logistics of any temperature sensitive products such as Medicine, Vaccines, Blood, Tissues, Samples, Biotech payload etc.

Passive boxes are boxes with insulated walls. The temperature sensitive product has to be kept inside these boxes as per the manufacturer's recommendations.

Various boxes manufactured by Cryopak, USA are being supplied:

- -20 Deg C rated boxes suitable for a duration of 24 to 96 hours
- 2 to 8 Deg C rated boxes suitable for a duration of 24 to 96 hours
- Insulated box with Phase Change material
- Insulated Pallet shippers for duration of up to 120 hours



Any of the above boxes can be supplied after qualification so that the customer can meet all regulatory requirements.

Boxes of varying sizes up to 5 Cubic feet can be readily supplied and custom sizes can be supplied against orders.

The insulating material are EPS, Urethane, PIR & PUR

h. Cold Chain Consultancy service

Cold Chain is generally referred to the entire chain of manufacture, transportation, storage and distribution of goods which are to be kept at controlled temperature. The services being offered by Cryopak include:

- **Risk analysis of environmental conditions**

Studying and analyzing the risks in environmental conditions and in enclosed areas such as cold room, ware house, refrigerator, freezer etc.

- **Qualification and validation of equipment and processes and temperature mapping study**

This is the process of studying the equipment and enclosed areas involved in the entire chain and certifying that they are suitable for the applications. This also covers temperature & humidity mapping study. Also compliance with CFR Part 11 is verified



- **Continuous monitoring and control**

The temperature controlled storage and transportation facilities are studied and necessary monitoring and control solutions are recommended. This will involve real time alerts such as email, phone call, SMS etc.

- **Cold Chain Design**

This involves suitable design of all elements of the cold chain such as cold rooms, ware houses, packaging solutions etc.

- **Cold Chain auditing**

Entire cold chain processes from manufacture to distribution is studied and any weak links are analyzed and reported.

- **GMP/GDP Compliance**

Existing systems are analyzed and recommendations are issued for compliance with Good Manufacturing Practice (GMP) & Good Distribution Practice (GDP)



- **Cold Chain Training**

Training is imparted to individuals and companies on all aspects of Cold Chain Management

- **Regulatory Compliance**

Customers are given necessary support and recommendations for meeting regulatory requirements in various countries in the Middle East

i. Cold Chain Process Monitoring, Validation & Qualification

Cold Chain Process monitoring involves monitoring of temperature throughout the entire chain of activities from Manufacture to distribution of Temperature sensitive products such as Medicines, Vaccines & Food items. This is extremely important in Pharmaceutical and food segments.

This involves monitoring and recording the temperature during entire process of transportation and storage of these items. This is achieved by various data loggers and real time monitoring systems.



Cold Chain validation & qualification involves validating the data collection methods of the entire process. This involves temperature mapping study of the storage and transportation system including qualification of the boxes, vehicles, cold rooms, ware houses etc. which are used for storage and transportation of the medicines & food.

This procedure is a certification process carried out to ensure that all the storage facilities utilized are adequate and efficient for maintaining the temperature within the range. This is especially important for the medicines which are to be stored within the temperature range of 2-8 Deg Centigrade.