

VACKER GROUP

COLD CHAIN 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 for cold rooms**
- **Thermal insulated Boxes (Active & Passive)**
- **Customized automation solutions**

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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


a TCP Company
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


Simple and Reliable

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

Trotec, Germany



Dehumidifiers
Thermal imaging camera
Measuring instruments

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**
- **Glaxo SmithKline**
- **Alghanim Healthcare, Kuwait**
- **Dupharm UAE**
- **Deal Distribution, UAE**
- **Monos Pharma, Mongolia**
- **Kuwait Airways**
- **Emirates Airways**
- **Taiba Medicines, UAE**

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>

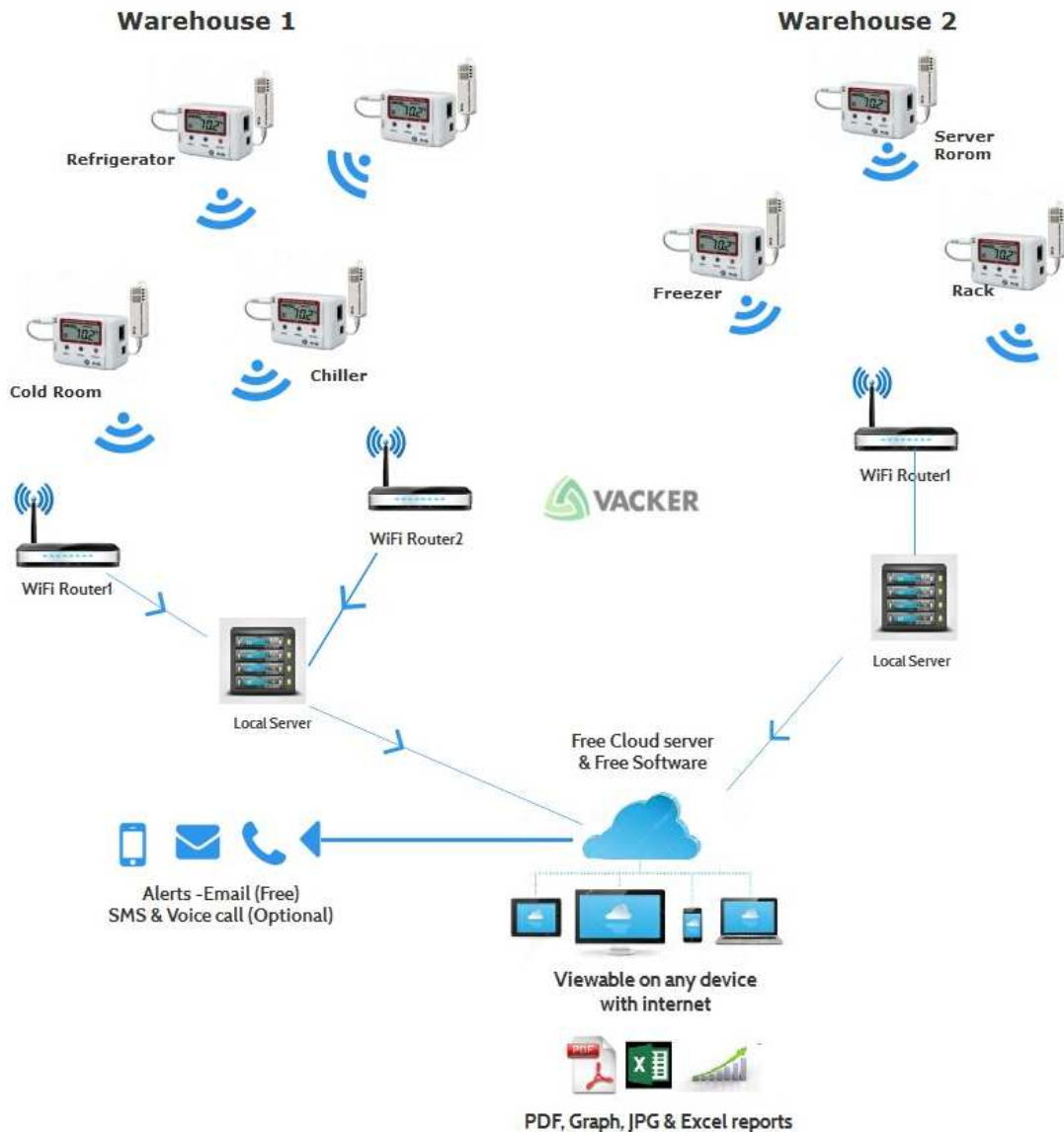
What is difference between a mapping study & qualification: <http://bit.ly/1tsLYmU>

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



Technical Details:

The technical details of the offered items are enclosed herewith
Also please see our videos:
Video of Viewing and downloading data online: <http://bit.ly/1xpPBy0>
Video of entire software: <http://bit.ly/1srWvh8>

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

Measure and Record Temperature and Humidity Readings Using External Sensor

- 0°C to 55°C (Temperature) and 10 to 95% RH (Humidity) Measurement Recording Range
- Configure, Setup and Manage Data Loggers over an Internet Connection and Browser
- T&D Web Storage Service, Web Viewer and Current Readings Monitor Software Included
- Stores up to 8,000 Temperature and Humidity Readings onto Internal Non-Volatile Memory
- User-Configurable Sampling Rate: 1 Second to 1 Hour
- Email Alarm Notifications and Optional External Contact Terminal for Electromagnetic Contactor
- AC Powered with Battery Backup for Power Failures and Emergency Use Only
- Automatic Sending of Measured Readings via FTP or E-mail

Sample Graph



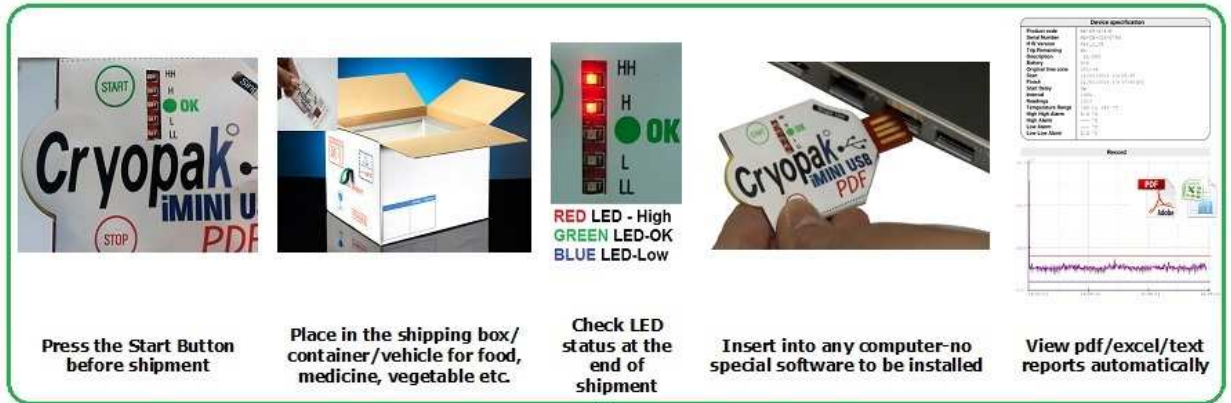
- Hover the mouse over the graph which will indicate details as above
- Data can be downloaded as image, pdf & Excel
- Data can be downloaded from any web browser without need of any software installation.

Video of Viewing and downloading data online: <http://bit.ly/1xpPBy0>

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/18QFB9>

Sample reports:

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

iii. Multichannel Data Loggers by MSR, Switzerland

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>

iv. WiFi Data Loggers by Lascar, UK

- WiFi capability and integrated display
- Wireless connectivity to PC via WiFi
- Measurement range from -20 to +60°C (-4 to +140°F)
- Temperature accuracy ±0.2°C (0 to +60°C)
- Humidity accuracy ±1.8% (10 to +90%RH)
- Calibration certificate available



The EL-WiFi-TH+ sensor measures the temperature and humidity of the environment in which it is situated. This high accuracy version is accurate to ±0.2 °C and ±1.8% RH humidity. Data is streamed wirelessly over any WiFi network and can be viewed on a PC using free software package or on the EL-WiFi-Cloud*. During configuration, the sensor will search for an existing wireless network whilst physically connected to the PC. It can then be placed anywhere within range of the network. If the sensor temporarily loses connectivity with the network, it will log readings until it is able to communicate again with the PC application or cloud service (max 120 days at 10 second sample interval). Although the EL-WiFi sensors have an impressive range this can be increased by using WiFi extenders.

The EL-WiFi-TH+ is a low powered battery device. When configured using typical transmission periods (e.g. once every 5 minutes) the sensor will operate for over one year (at room temperature). The battery can then be recharged via a PC or USB +5V wall adapter using the USB lead provided or can be permanently powered by the USB wall adapter.

v. Electronic Temperature Indicators by Cryopak, USA

Cryopak, USA has developed the world's first accurate Electronic Temperature indicator which has an operational range of -40 °C to +80°C (-40 °F to +176 °F). This is single use disposable type indicator.

The device has to be simply started using the Start button and to be placed inside the box which contains the sensitive products. As an example the device will be pre-programmed for a temperature range of 2 to 8 Deg Centigrade. The Green LED will be blinking as long as the temperature is within 2 and 8 Degree. If these thresh hold levels are exceeded, the Red LED will start blinking. While receiving the consignment at the end of transportation, you can simply look at the device to check whether the LED is Green or Red.



Electronic Temperature Indicator, Cryopak

Applications

- Storage and Transportation of blood from blood banks or laboratories, hospitals etc.
- Storage and Transportation of tissues to and between hospitals, laboratories etc.
- Storage and Transportation of vaccines, medicines etc.
- Storage and Transportation of food items

Advantages of Electronic Temperature Indicators

- More accurate compared to chemical indicators
- LED bulbs to show whether the temperature exceeded threshold levels of temperature
- Start button to commence monitoring of temperature
- Shelf life is not a problem as with chemical indicators
- No health hazard even if the same comes in contact with food items
- Two different alarm levels can be programmed in the same device (model K2)



See more: <http://bit.ly/1BISGPZ>

d. Dehumidifier

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.



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

Desiccant type are ideal for low temperature and condensation type are more suitable for room temperature

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

e. Temperature recorder with Printer for vehicle

This Recorder is for printing regular reports of the temperature inside a vehicle compartment. This device has display of the current readings, alerts as well as in built recording. There is a small display in which the current recordings and alerts are displayed. There are two sensors which can be connected to the refrigerated compartment and the device can be mounted in the driver's cabin. Minimum and Maximum temperature limits can be programmed in the device. Upon reaching these limits, alerts will be displayed on the device with a beep sound.

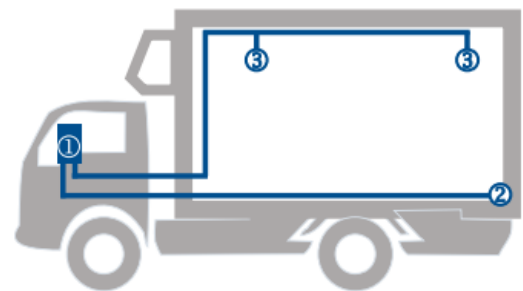
This is basically an electronic temperature data logger additionally fitted with a printer. It offers all the features of a normal temperature data logger including alarms, indications, a large memory capacity, etc.



Digital temperature recorder with printer and alarm

Apart from the facilities of a data logger, it also can record the door opening through another set of sensor.

The measurement data are stored in non-volatile memory of the recorder. The frequency of the data memory can be programmed in the range of 30 seconds to 20 hours. The memory capacity is 30 000 readings, which will be equivalent to 625 days if reading is taken every 30 minutes. Once the memory is full, the recorder continues to record the latest readings, while the oldest readings are automatically erased. The stored data can be erased through the password-protected menu. The recorder is equipped with a printer from which the driver can print data for any period of time. The vehicle details also can be initially programmed in the device so that the report indicates the vehicle details. The report will include the temperature Vs time details, alert events etc. The sensors can be placed at a distance of 5 meter from the device. The device will operate on 12 V / 24 V DC. Also same can be connected to regular AC power supply through a DC adapter.



- ① Recorder
- ② Door opening sensor
- ③ Temperature sensor

Also the stored data can be downloaded using a USB cable

See more: <http://bit.ly/1tkjrjn>

f. SMS Temperature tracking for Trucks & Vans

The temperature monitoring of vans and trucks is carried out by GPRS system by using a SIM card within the monitoring system mounted in the vehicle. The temperature data is collected at the programmed frequency and transmitted through data packets using your mobile carrier services. This is similar to an internet connection on a mobile device which uses similar technology for transmitting data.

Difference between GPRS and GPS for temperature monitoring for vehicles

It may be specifically noticed that monitoring of temperature is not done through a GPS system. GPS (Global Positioning System) is only for tracking the position of the vehicle and continuous data such as temperature cannot be transmitted. In a GPS system, there is no data transmitted from the vehicle to a server. For continuous data transmission of variable parameters, a SIM card based communication device is required.



VacTrack™ is a SIM card based device for monitoring temperature of vans, reefers etc. The main features are:

Customer will receive SMS every hour (can be reprogrammed) indicating the temperature of the insulated vehicle.

Customer will receive SMS alert if temperature goes above limits

Customer can send a SMS to the vehicle and will receive an automatic reply indicating the current temperature

Other prominent features are:

- i. An SMS indicating the current temperature will be automatically sent from the vehicle to 3 mobile numbers.
- ii. The frequency of the SMS can be programmed eg. one SMS will be sent every hour indicating the current temperature
- iii. Two temperature sensors can be connected to one device. Hence for reefer trucks two sensors can be placed at two ends of the insulated chamber.
- iv. In case of an alarm event (eg. Temperature above limits), SMS alerts will be sent to three mobile devices.
- v. The periodic SMS can be disabled and only alert can be programmed. In such cases the vehicle will send only an SMS in case of a temperature alert.
- vi. A SIM card with roaming facility can be inserted so that SMS will be sent from any country in which the network operator provides connectivity.

See more: <http://bit.ly/1zXb7ey>

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. Active Thermal Insulated Boxes

Active cooling boxes are boxes with insulated walls and fitted with a cooling unit. The cooling unit can be connected to normal power supply of 230 V / 110 V AC as well as 12 V / 24V DC supply of vehicles.

While at the warehouse the box can be connected to AC supply and can be cooled and medicine will be loaded inside. Then the box is loaded into the van or truck and will be connected to the 12 V / 24 V DC power supply the vehicle. At the delivery point, the box is disconnected and carried to the customer and will be unloaded to a cold room /refrigerator. So the box is working on power continuously except during loading and unloading.



The advantage is that transportation of a small payload can be effectively carried out for longer duration.

Qualification of the above boxes also can be carried out. Alternatively we can supply pre-qualified boxes

i. LED Temperature & Humidity display panel with external sensor

For warehouses, cold rooms, walk in freezers etc. the operators prefer to see the current temperature and humidity from a distance far away from the control panel. This will require a big sized LED display which can indicate the current temperature and humidity. We are offering our LED temperature display panel / Temperature & Humidity panel for this purpose

- Range of measurement :-20 to 70°C & 10 to 99% RH
- Accuracy : Temperature : $\pm 1.5^{\circ}\text{C}$, Humidity $\pm 2.0\%$
- Power : 24 VDC, through an AC adapter
- Dimensions: 18 in L x 10 in W x 2 in H
- Alarm type : audible alarm when the temperature or humidity exceeds the programmed limits
- Mounting type : Wall mounted
- Sensor type: Internal or external sensor (different models). If you want to install outside a cold storage room, the display has to be mounted outside the cold room and the external sensor has to be inserted into the cold room.
- The display is visible from a distance of up to 50 meters
- The display panel can be simply installed on a wall using the brackets provided at the back side.



j. 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

k. 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.

5. Quality Policy

Quality Policy

Vacker Group is committed to achieving topmost quality in all their services in every country of operation. We will ensure to provide products and services of excellent quality on time to the customers. This shall be achieved through our operations based on written procedures in line with ISO 9001:2008 and latest relevant standards.

The key areas of focus are:

- **Customer Satisfaction** –Customer satisfaction is the most important factor for our success and we will offer only high quality products and services to our customers.
- **Employee Responsibility** - All of our employees will take their best possible efforts to achieve highest quality standards in all the products and services offered by us.
- **Continuous Improvement** - We will constantly collect feedback from our customers and suppliers based on which will take our best efforts to continuously improve the quality of our products and services.
- **Employee performance** – We will provide safe and healthy working conditions to all our employees and continuous training in the right areas will be imparted to enhance their performance.

This policy is communicated to all employees of **Vacker Group**



Dileep P.S.
General Manager

Dated: 1 July 2011

6. Vision & Mission

Vision

Our customers demand extremely great products and services for Cold Chain Management. We are committed to exceed their expectations without compromise, thus becoming the most preferred supplier for complete range of integrated Cold Chain Management Products & Services.

Mission

Vacker will become the single biggest & complete Cold Chain Management solutions company in the Asian continent.

- We provide complete range of products & services for any industry which has controlled temperature environment including Pharmaceutical, Healthcare, Food & logistics industries
- This being a critical quality conscious customer segment, we will supply only products of greatest quality.
- The core values of the company are ethical business practices, customer satisfaction and employee satisfaction