Military Cooling Systems MCS

Company Profile

- Established 1942
- Family Owned Company, 4th generation
- State of the art engineering & technology
- Using European High Quality Brands Components
- Mil-Standards and ISO 9001:2008

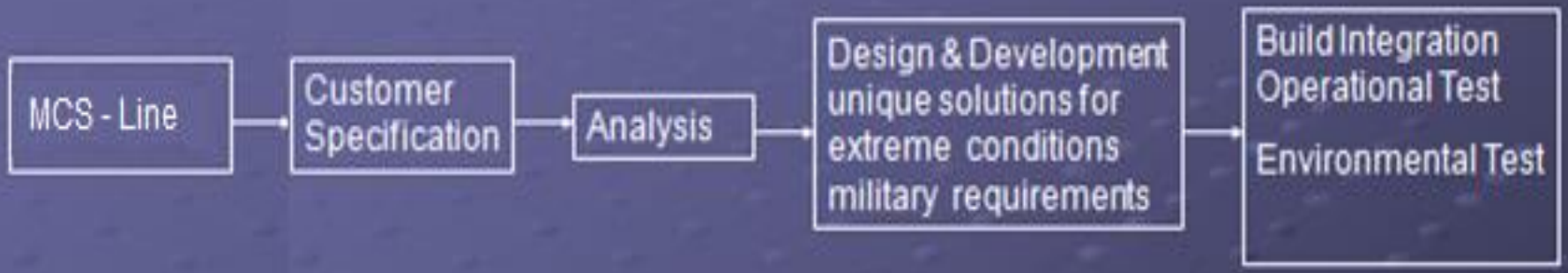
YOSEF OREN (obm),
second generation

Company Profile

OREN & CO Refrigeration Engineering LTD is a family enterprise managed by Mr. Eyal Oren.

The company is actively running since 1942 in planning, production & services of refrigeration products with special expertise in developing and production military refrigeration systems for land sea applications Including the cooling system for the “Iron Dom” project and other missile guide and radar applications.

Military Cooling Systems Capabilities



- Line (Family) of Military Cooling System
- Unique Expertise with Excellent Records
- Professional Solutions for Extreme Military Needs
- Tailor Made to Customer Special Requirements
- Complete Analysis in Site Conditions

Smart Control Systems

- Smart Control System
- Audio and Visual Alarms
- PLC Technology
- Wire and Wireless Communication
- Remote Control
- Advance Sensor and Gauges Technologies
- Human Engineering and Simple Operation

HIGH EFFICIENCY MILITARY COOLING SYSTEMS

Military Mobile Cooling System

150KW PLC controlled Unit

MCS-150– Transported for extreme conditions

MCS-150

MCS-150 is a liquid to refrigerant cooling unit with a nominal cooling capacity of 150 kW.

- The unit is able of operating at ambient temperature of 43^0C, with maximum supply coolant temperature of 25^0C
- The unit uses refrigerant and an aqueous solution of Ethylene-Glycol as a coolant.
- A control system allows controlling and monitoring the unit operation and to send warnings to alert the consumer.
- The unit is designed as a transportable system to be transported on wheeled truck on paved and country roads.
- For its purpose, the whole system is designed for quick deployment and operation.
- The unit is design for operation of 24 hours per day 7 days a week.

MCS-150

PHYSICAL CHARACTERISTICS:

PARAMETER	UNIT		NOTES
WIDTH	mm	3250	
HEIGHT	mm	1500	
DEPTH	mm	1700	
WEIGHT	Kg.	2700	Cooling loaded
ACOUSTIC NOISE (max.)	db	75	At 5 meters

Military Mobile Cooling System

60/120KW PLC controlled Unit

(The cooling unit of the successful Iron-Dome rocket defense system)

MCS-60/120

MCS-60/120

MCS-60/120

The MCS-60 is a liquid to Refrigerant Cooling Unit, capable of dissipating a consumer net heat load of 60kW. The unit can be modified to 120kw.

- The cooling unit designed and built for transportation on vehicle at variable roads and terrains.
- The coolant in use is an aqueous solution of Ethylene-Glycol substance as a refrigerant, suitable for operation at the specified environmental conditions.
- UNIT MAJOR SUBSYSTEM

a. Power subsystem
b. Hydraulic subsystem
c. Refrigerant subsystem.
d. Control subsystem – including all the sensors and a PLC
e. Data and alarms interfaces

MCS-60/120

PHYSICAL CHARACTERISTICS:

PARAMETER	UNIT		NOTES
WIDTH	mm	2170	
HEIGHT	mm	1420	
DEPTH	mm	1180	
WEIGHT	Kg.	1300	Cooling loaded
ACOUSTIC NOISE (max.)	db	75	At 5 meters

Military Mobile Cooling System

12KW PLC controlled Unit

MCS-12– light weight with double smart cooling units for normal and extreme conditions

MCS-12

MCS-12 is a Military Transportable 12KW capacity cooling unit that is stationed in the field before operation.

- The cooling unit operates with an Inhibited Ethylene-Glycol solution at sever ambient temperature or with inhibited De-Ionized water when the ambient temperature is above the freezing point.
- A liquid to refrigerant cooling unit supplies cold coolant to the consumer for dissipating the excessive heat load generated during operation.
- The unit incorporates refrigerant loop (include compressor, condenser, evaporator, valve, etc.) and hydraulic loop (include pump, reservoir, heaters, filter, valves, sensors, etc.).

MCS-12

- The unit is transferred from site to site by a vehicle and operates at rough sea shore outdoor conditions. A smart controller operates and monitors the unit. Data is sent to the unit PLC and then to the local and remote posts.
- The control system allows the operators and the maintenance personnel to control and monitor the unit operation from the unit control panel or from a remote post.
- The unit operates year round with minimum maintenance periods.
- The two coolant lines, supply and return connect the cooling unit to the consumer. The flexible hoses are equipped with quick couplings which allow easy maintenance.
- The unit is equipped with two air adjustable louvers.
- The unit has control interfaces including RS-422, RS232 and Ethernet.

MCS-12

PHYSICAL CHARACTERISTICS:

PARAMETER	UNIT		NOTES
WIDTH	mm	1180	
HEIGHT	mm	1730	
DEPTH	mm	1440	
WEIGHT	Kg.	750	Cooling loaded
ACOUSTIC NOISE (max.)	db	75	At 5 meters

Military Marine Cooling System (MMCS)

COOLING UNIT FOR BATTLESHIPS
2.5KW PLC controlled Unit

MMCS-3 for extreme sea conditions

MMCS-3

- A rack mounts Drawer liquid to refrigerant & liquid to liquid cooling unit. Cooling capacity is up to 2.5kw at ambient temperature up to 47°C.
- The unit supplies cold coolant for dissipating the excessive heat load generated by the battleship electronic systems operation.
- The unit incorporates refrigerant loop (include compressor, condenser, evaporator, valves, etc.), hydraulic inner loop (include pump, reservoir, heaters, filter, valves, sensors, etc.) and hydraulic outer loop from facility (include valves, sensors, etc.)
- The unit can operate year around in harsh sea conditions with minimum requirements for maintenance.
- The unit is equipped with programmable logic control unit (PLC) that allows controlling and monitoring the unit operation.

MMCS-3

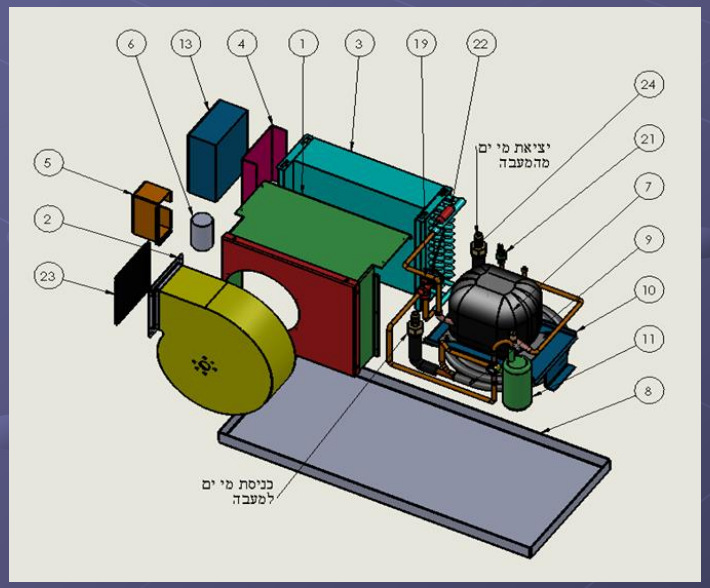
Unit dimensions and weight:

- Width- 560 mm
- Height- 185-350 mm
- Depth- 890 mm
- Weight- Max weight 70kg full with coolant and refrigerant
- Max noise level is 70db at distance of 5 meters

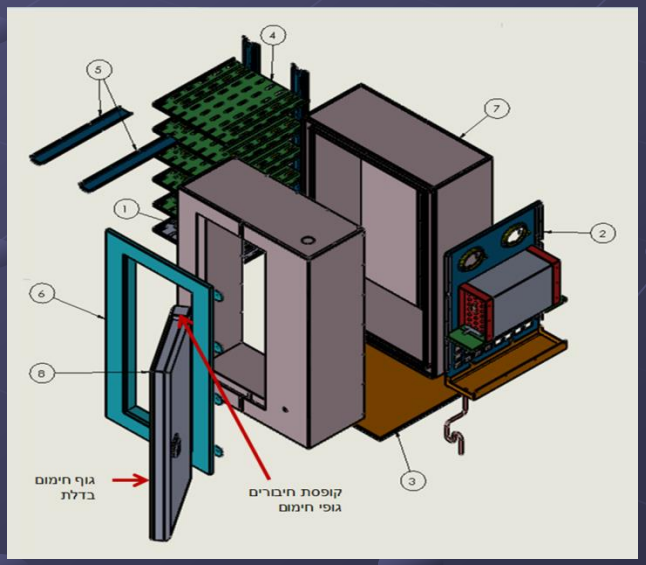
WATER DEIONIZED AND ANALYZING CIRCULATING SYSTEM FOR BATTLESHIPS TRANSMITTER

Israel Oceanographic & Limnological Research

Marine Sea-Water Air-condition



Two -20ºC to +4ºC Sea Water Refrigerators (Each assembled from two parts on the ship)



MCS-General Information

MAINTAINABILITY AND TESTABILITY

- The unit is designed and built to meet the military requirements of minimum maintenance activities at field conditions carried by O- level and /or I-level technicians.

- Fault detection devices for the level of 98%. The unit is equipped with sufficient number of temperature/ pressure test points, to enable easy troubleshooting at the liquid and refrigerant loops.

RELIABILITY

- Life Expectancy – not less than 30 years.
- MTBF- not less than 12000 operating hours.
- MTBCF- not less than 20,000 operating hours.
- MTTR- less than 60 minutes.

ENVIRONMENTAL CONDITIONS

The MCS systems are designed and built to meet any applicable combination of the environmental conditions specified herein without any degradation in performance in accordance to MIL-STD 810F.

Environment	**Operating**	**Non-Operating/Storage/Transit**
Altitude from Sea level	up to 10000 ft	Up to 30000 ft
Ambient Temperature	-20^{O}C ÷ +45 ^{O}C	-20^{O}C ÷ +70 ^{O}C
Wind	Up to 80 Km/h	Survival 120 km/h
Humidity	98 % RH	
Salt-fog	sea shore atmosphere	

All others environmental parameters stand MIL-STD-810F:
Shock, vibration, blowing sand, dust, acceleration, solar-radiation, slope, fungus, rain and blowing-rain.

DATA UNIT INTERFACES

a. RS-422 or RS-485 for On/Off command & status report.
b. RS232 for transmitting data.
c. D-Type 9 pins for connecting to computer with HMI software.
d. PC interface via ETHERNET - S7-1200 SIEMENS
e. Available for any other communication methods

MCS & MMCS -STANDARDS

- All military systems designed and produced according all required military standards.
- The company has ISO 9001-2008 certification.
- All military systems can be adapted for other military cooling applications and power in accordance with the customer requirements and specifications and required standards.
- The Oren & Co. gain a vast experience in custom-made military standards products.

Quality Policy

We are committed to deliver zero defected products & services to our customers at the right time and are committed to continuous improvement.

THANK YOU

And much more:

Special solutions for extreme environmental condition:

- Extreme Temperatures: -40^0C - + 70^0C
- Extreme Humidity including humidity sensors and protections
- Special solutions for corrosive environment – acid rain
- Special solutions for EMI, RFI, PMI

Your Needs are Our Challenges

Further Information

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