

## Dry Cooling Tower

**DCT**  
*Series*



**WORLD**  
CLASS  
COOLING TOWERS



**Range: 120 to 2000 kVA Diesel Generator  
1 to 10 MW Diesel Power Plant**



## INTRODUCTION

DRY COOLING TOWER is an equipment which is used to cool and maintain the temperature of process hot water at a particular level. This operates on the principle of heat transfer by a heat exchanger with extended fins. The fan is driven by an Electric motor.



## TECHNICAL SPECIFICATION

**Copper Tubes** The best quality imported (5/8") OD copper tubes in Level Wound Coils are used. This ensures coils with the minimum number of joints by forming hair pin bends as well as to form a uniform wall thickness that eliminates embarrassing and expensive leaks after installation. Tubes are staggered in the path of airflow for better heat transfer efficiency.

**Return Bends** They are die-formed from thick walled tubing that is heavier than the standard tubing used in the rest of the coils. This provides the toughness and durability required in the most vital parts of the coils.

**Headers** Inlet and outlet headers are constructed of heavy wall steel pipes with shoulders formed at each brazed connection to the 5/8" tube in the coil. This shoulder intruded with special tooling provides the strength to the brazed joint that eliminates another source of leak during transit and installation.

**Mechanical Tube Expansion** Tubes are Mechanically expanded for an optimum bond between tube and fin. This positive and controlled expansion procedure provides a clean, smooth inner tube surface for low water pressure drop and guarantees uniform heat transfer between tube.

### Heat Transfer Coils

**Improved Circuiting** The GEM Cooling Tower Design of water circuiting provides flexibility in selection and unequalled performance optimization. All inlet and outlet connections are provided on the same end thus reducing expensive piping and installation costs.

**Rigid Construction** A die formed galvanized steel frame provides stacking and shipping support and protection against tube damage during expansion and installation.

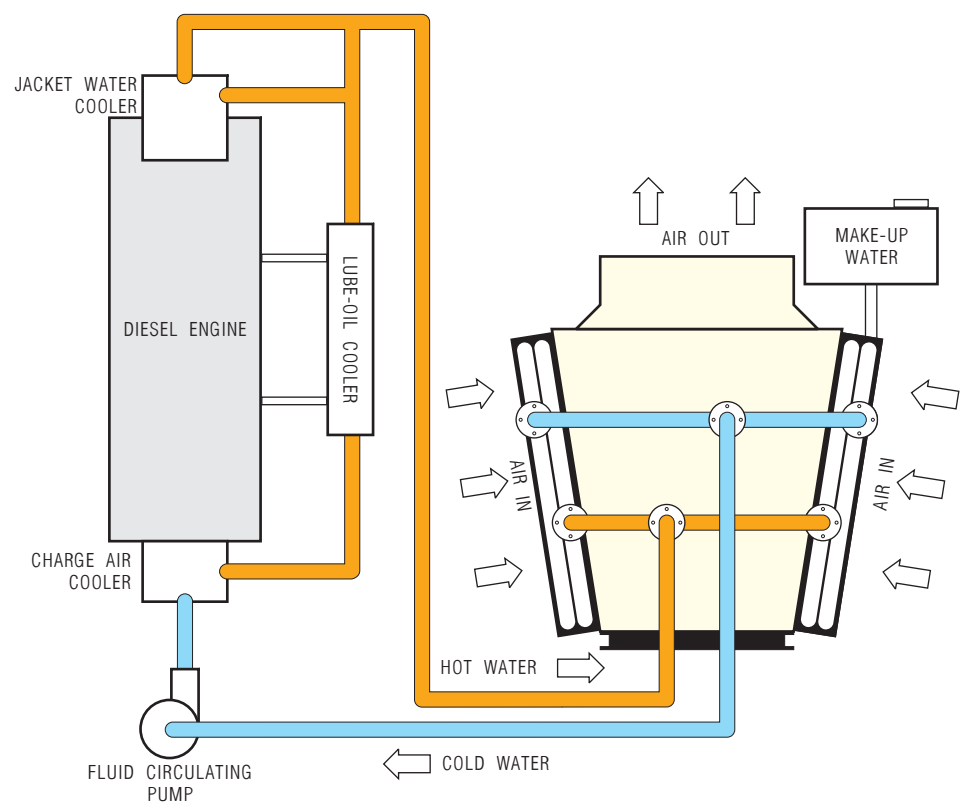
**Venting, Draining and Expansion Tank** Each water duty coil is provided with a convenient vent connection at the highest point and a drain connection at the lowest point apart from a small expansion tank.

**Pressure Testing** Each coil is pressure tested after manufacture, by air under water at 300 psi for water application.

**Computerized Selection** Speeds up and simplifies the selection of right coil for your specific requirement.

Quick Selection Chart for Diesel Gensets

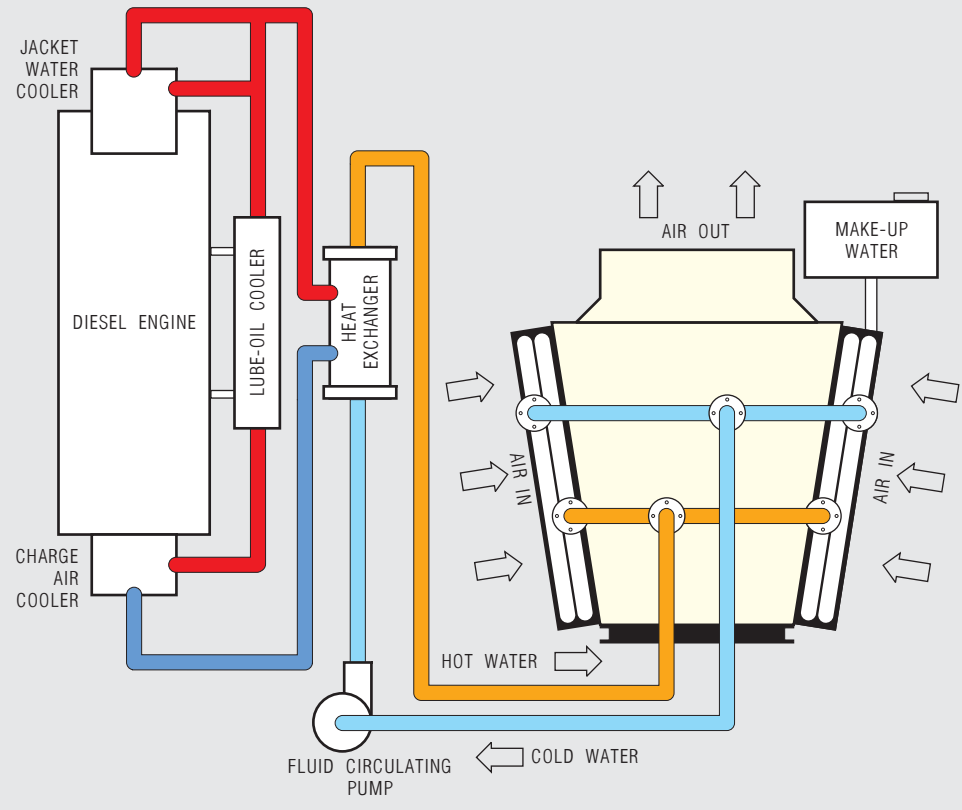
PRIMARY CIRCUIT



Engine Capacity kVA	Heat Load kcal / h	Model Suggested	Motor	
			Power HP	Quantity
150	81,000	DCT-020	2	2
300	1,50,000	DCT-030	2	2
380	2,70,000	DCT-040	3	2
500	3,30,000	DCT-050	5	2
600	3,30,000	DCT-060	5	2
750	4,20,000	DCT-080	5	2
1000	5,40,000	DCT-100	7.5	2
1250	6,50,000	DCT-120	7.5	2
1500	7,50,000	DCT-140	7.5	2

Water Temperature Inlet = 80°C    Outlet = 70°C

SECONDARY CIRCUIT

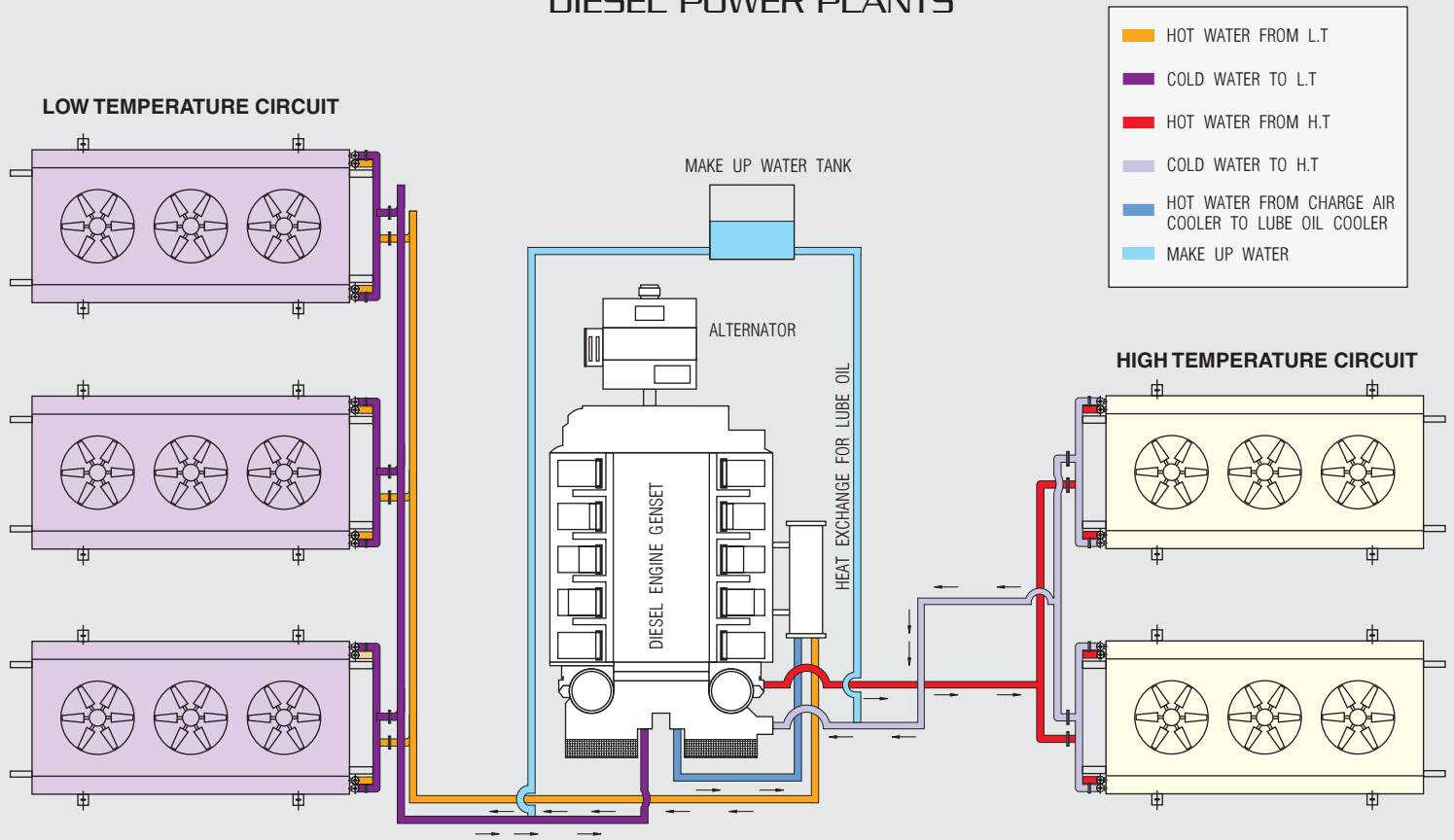


Engine Capacity kVA	Heat Load kcal / h	Model Suggested	Motor	
			Power HP	Quantity
150	81,000	DCT-020	2	2
300	1,50,000	DCT-040	3	2
380	2,70,000	DCT-050	5	2
500	3,30,000	DCT-060	5	2
600	3,30,000	DCT-080	5	2
750	4,20,000	DCT-100	7.5	2
1000	5,40,000	DCT-120	7.5	2
1250	6,50,000	DCT-140	7.5	2
1500	7,50,000	DCT-160	7.5	3

Water Temperature Inlet = 66°C    Outlet = 56°C

For other models and applications, contact factory

# QUICK SELECTION CHART FOR DIESEL POWER PLANTS



Engine Capacity MW	LT CIRCUIT				HT CIRCUIT			
	Heat Load kcal / h	Model Suggested	Motor		Heat Load kcal / h	Model Suggested	Motor	
			Power HP	Quantity			Power HP	Quantity
1.0	4,50,000	DCT-200	10	3	2,50,000	DCT-060	5	2
2.0	9,00,000	DCT-160 x 2	7.5	6	5,10,000	DCT-080	5	2
3.0	13,50,000	DCT-240 x 2	7.5	8	7,50,000	DCT-100	7.5	2
4.0	17,50,000	DCT-200 x 3	10	9	10,00,000	DCT-160	7.5	3
5.0	24,00,000	DCT-240 x 3	7.5	12	13,50,000	DCT-180	10	3
Air Temperature = 40°C Water Temperature Inlet = 66°C Outlet = 56°C					Air Temperature = 40°C Water Temperature Inlet = 80°C Outlet = 70°C			

***For other models and applications, contact factory***



## WATER LOSS IN EVAPORATIVE COOLING TOWERS

Capacity	Approx. Water Circulated lpm	Loss of Water/Day * Litres	Cost of Water Conserved / Day # INR
1.0 MW	1100	31,680	<b>1,584.00</b>
2.0 MW	2200	62,400	<b>3,120.00</b>
3.0 MW	3250	93,600	<b>4,680.00</b>
4.0 MW	4400	1,26,720	<b>6,336.00</b>
5.0 MW	5500	1,58,400	<b>7,920.00</b>

\* Maximum of 2% due to:

- Evaporation
- Drift
- Spillage
- Blow Down

# Assuming the cost of water 5 paise per litre



## OUR ESTEEMED CUSTOMERS

M/s. Cummins India Ltd., Pune, MH  
 M/s. Powerica Ltd., Blr, Karnataka  
 M/s. Clarke Energy India Pvt. Ltd., Pune, MH  
 M/s. Triveni Engineering Industries Ltd., Blr, Karnataka  
 M/s. Guascor Gas Engines Pvt. Ltd., Mumbai, MH  
 M/s. BR Agro Industries Ltd., Kalam, HP  
 M/s Hindustan Syringes Ltd., Delhi  
 M/s. Showa Munjal Ltd., Manessar  
 M/s. SAP India Ltd., Blr, Karnataka  
 M/s. Karpagambal Mills Ltd, Rajapalayam, TN  
 M/s. Premier Fine Yarns Ltd, Udumalpet, TN  
 M/s. Ramalinga Mills Ltd, Arupukottai, TN  
 M/s. P.K.P.N Spinning Mills (P) Ltd, Erode, TN  
 M/s. Tnupathi Spinning Mills, Avinashi, TN  
 M/s. Quipo Infrastructure Equipment Ltd., Gujarat  
 M/s. Mani Spinning Mills (P) Ltd, Vedsandur, TN  
 M/s. Jayajothi Textiles Mills Ltd, Rajapalayam, TN  
 M/s. Coimbatore Poly Tex Ltd., Coimbatore, TN  
 M/s. Indo Shell Cast Pvt. Ltd., Coimbatore, TN  
 M/s. Craftsman Automation, Coimbatore, TN  
 M/s. Govindaraja Spinning Mills, Aruppukkottai, TN  
 M/s. Thiagarajar Mills Ltd., Madurai, TN  
 M/s. Virudhunagar Textiles Ltd, Virudhunagar, TN  
 M/s. Saravana Spinning Mills, Dindigul, TN  
 M/s. Nithin Textiles, Dindigul, TN  
 M/s. V.R. Textiles, Puliampatti, TN  
 M/s. Ram E&I System, TN  
 M/s. Shivatex Yarn Ltd., TN

M/s. R.H. Agro Ltd., Sonapat,  
 M/s. Viking Textiles, Tiruppur, TN  
 M/s. Lakshmi Machine Works, Coimbatore, TN  
 M/s. Aswinram Spinning Mills, Coimbatore, TN  
 M/s. Jailakshmi Spinning Mills, Arupukottai, TN  
 M/s. Spectrum Dyes And Chemicals, Surat, Gujarat  
 M/s. Ascent Circuits Ltd. Hosur, TN  
 M/s. Wheels India Ltd, Chennai, TN  
 M/s. Globalpolybags Industries, Virudhunagar, TN  
 M/s. Sandfit Foundries, Coimbatore, TN  
 M/s. Amarjothi Spinning Mills, Nambiyur, TN  
 M/s. Nachiar Health Care, Rajapalayam, TN  
 M/s, Nav Bharat Exports, Rampur, UP  
 M/s. Ferro Links, Coimbatore, TN  
 M/s. Hindustan Lever Limited, Pondicherry  
 M/s. Premier Polyweaves P Limited, Perundurai, TN  
 M/s. Shanmuagvel Mills Group, Vedsandur, TN  
 M/s. Magnus Power Pvt. Ltd, Kutch, Gujarat  
 M/s. Super Auto Forge, Chennai, TN  
 M/s. Integra Automation (P) Ltd, Coimbatore, TN  
 M/s. S.J.L.T. Textiles, Namakal, TN  
 M/s. Sambandam Spinning Mills, Salem, TN  
 M/s. Mehala Carona Textiles, Gobi, TN  
 M/s. Saint Gobin Glass Ltd., Bangalore, Karnataka  
 M/s. CRI Pumps Pvt. Ltd., Coimbatore, TN  
 M/s. V.H. Engineers, Mumbai, MH  
 M/s. TIL Limited, Delhi



## CONSTRUCTION AND OPERATION

Dry Cooling Tower is mounted on a heavy duty channel base frame.

Non corrosive fibre glass / GI panels are used for enclosure.

Aero dynamically balanced high efficiency axial flow fans with low noise are used.

The motors are IP 55 class with extended SS shaft. The low speed of the motor minimises noise and increases efficiency. Motors are specially designed to withstand moisture, rain and dust.

*The hot water from the diesel engine is sent to the inlet of the Dry Cooling Tower. This hot water is cooled and cold water from the outlet of the cooling tower is connected to a pump which pumps the water to the diesel engine (or any other load) to pick up the heat from the generator.*



## COMPARISON CHART

Dry Cooling Tower	Evaporative Cooling Tower and Heat Exchanger
1. No water consumption.	1. Huge loss of water due to evaporation, drift, spray loss and blow down.
2. No preparation is required for atmospheric air is available in plenty.	2. Water is scarce. Bringing water to site is expensive. Water has to be treated before use.
3. No scale formation. No cleaning of Heat Exchanger.	3. Scale formation is unavoidable. Frequent cleaning is required leading to high down time and expensive labour.
4. No moving parts except fan and motors - negligible maintenance.	4. Maintenance is required on a day to day basis. V belts, bearings blocks, Pump couplings, Sprinkler nozzles has to be cleaned.
5. No mixing of dust, dirt, fly ash or living organisms with process water.	5. Water exposed to dust and dirt will be contaminated. Fungus formation and living organisms will foul heat exchanger which require cleaning.
6. No restriction on plant location.	6. Water source decides the location of large plants.
7. No corrossions due to air.	7. Steel parts in contact with water are corroded.



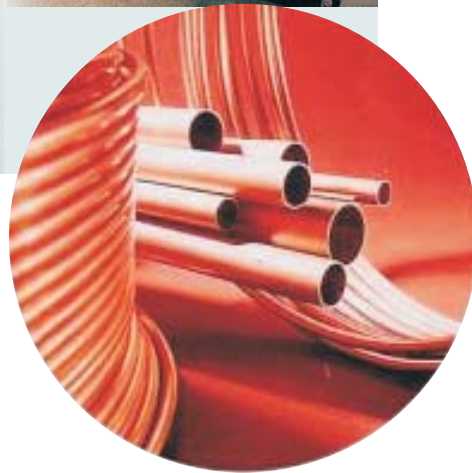


## MANUFACTURING



State of the art machines installed and operated by skilled work force. Careful selection of components and proper planning of process with trained staff help to produce World Class DryCooling Towers.

Standardisation of parts and flexibility in computer aided manufacturing facilitate faster deliveries, better productivity and lower cost.



## TECHNOLOGY



Technically qualified team of engineers with computer aided design facility and software to meet specific application needs.

GEM Equipments Limited is experienced in designing industrial cooling towers for the past two decades to cater to the demanding applications of numerous customers.



## SHIPPING DATA

DCT Model	Overall Dimension L x W x H mm	Header Pipe & Flange Size	Fan Diameter mm	Quantity	Motor Power HP	Dry Weight kg	Wet Weight kg
DCT-040	3290x1450x1370	3"/3"NB	1060	2	3	400	480
DCT-050	3450x1450x1370	3"/3"NB	1060	2	5	500	600
DCT-060	3290x1450x1650	3"/3"NB	1060	2	5	600	720
DCT-080	3290x1450x1975	3"/3"NB	1200	2	5	800	960
DCT-100	3450x1450x2425	3"/3"NB	1200	2	7.5	1000	1200
DCT-120	3750x1450x2425	3"/3"NB	1200	2	7.5	1200	1420
DCT-140	4200x1450x2425	3"/3"NB	1200	2	7.5	1400	1680
DCT-160	4800x1450x2425	4"/4"NB	1200	3	7.5	1600	1920
DCT-180	5290x1450x2425	4"/4"NB	1200	3	7.5	1800	2160
DCT-200	5795x1450x2425	4"/4"NB	1200	3	7.5	2000	2400
DCT-220	6350x1450x2425	4"/4"NB	1200	4	7.5	2200	2640
DCT-240	6800x1450x2425	4"/4"NB	1200	4	7.5	2400	2880
DCT-280	7800x1450x2425	4"/4"NB	1200	4	10	2800	3360
DCT-320	8935x1450x2425	4"/4"NB	1200	5	10	3200	3840

Motor make: SIEMENS

## TYPICAL APPLICATION

Automobile Industry  
Chemical Industry  
Electronics Industry  
Food & Beverage Industry  
Glass Industry  
Pharmaceutical Industry  
Textile Industry

Cement Plants  
Distilleries / Breweries  
Health Care / Hospitals  
Paper Mills  
PET - Stretch Blow Moulding  
Power Plants  
Sand Blasting  
Spinning / Knitting / Hosiery Mills  
Sugar Mills

## SALES & CUSTOMER CARE



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