



**CIG**  
EMPOWER WITH CARE

**EMPOWER**  
WITH **CARE**

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# C.I. Group Public Company Limited

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Bangkoowad, Amphoe Muang  
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## Teparak Plant :

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Samutprakan 10270 Thailand

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ISO  
9001:2008  
REGISTERED



CRN



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# CORPORATE OVERVIEW

<b>Name</b>	<b>Established</b>
C. I. Group Public Company Limited	1983

<b>Registered Capital</b>	<b>Entered Stock Market (MAI)</b>
~ \$ 14.7 Million	2005

**Market Cap (as of Dec 2014)**  
~ \$32 Million.

<b>Factory Area</b>	<b>Employees:</b>
Factory 1 - 13,500 sq.m.	1,000 Persons
Factory 2 - 11,000 sq.m.	
Factory 3 - 4,160 sq.m.	

CORPORATE OVERVIEW

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# EXPERTISE

Manufacture and Engineering Design of:  
Evaporator and Condenser Coils for Heating  
Air-Conditioning and Refrigeration (HVAC/R)  
Equipment

# "Passionate Heart with Capable Hands"

The term most accurately defines who we are. Entering the forth decade in the sector, we are determined to strive to even further height and stand our ground in our chosen role of the greatest support. This is our way of making a difference.

## Stand Our Ground

- A proud fellow in building comfortable air condition
- A professional friend in solving any business challenges with our partners worldwide
- A prideful firm who supports more than 1,000 families and passively creates thousands of jobs both domestically and worldwide.

## The Greatest Support

- Engineering design challenges:  
customized and specific stuff is our forte
- Manufacturing challenges:  
any kind, any size, any materials, and surprisingly, any quantity: from a unit or two up to 5,000 a day
- Time challenges:  
we hold the record of 24 hours from pencil sketch to installation

## Certified Standards

- The first and only coil manufacturer in Thailand to receive product standard certificate from CSA (Canadian Standards Association, Canada)
- Also the first and only coil manufacturer in Thailand to receive product standard certificate from UL (Underwriters Laboratories Inc., USA)
- Accredited the ISO 9001 : 2008



CIG  
EMPOWER WITH CARE

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# EMPOWER WITH CARE

Delicate work done by dedicated team is the reason behind our "passionate hearts with capable hands" motto. Realizing our contribution to better living of people, we put our hearts and capabilities of CIG into what we do to empower our partners and help us get closer to our shared goal of empowering people.

# ENGINEERING

SOLUTION

No matter what, how, or when, your challenges are our inspirations. If you are there to dream of a better future, we are here side by side to deliver it into reality.



DESIGN BY EXPERT

# DESIGN BY EXPERT

Making it happen is one thing. Making it efficiently effective is another. At CIG, we go for the latter. People call that commitment, we call it procedure.

HAPPINESS INSIDE OUT

# HAPPINESS INSIDE OUT

Happy inputs come happy results. At CIG, it all starts from the so called happiness-sharing attitudes cultivated in every corners of the company - thoroughly from top executives to temporary personnel.

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# GLOBAL REACH

by Country:

AUSTRALIA  
BAHRAIN  
BRUNEI  
CAMBODIA  
CANADA  
CHINA

EGYPT  
GERMANY  
HONG KONG  
INDIA  
INDONESIA  
IRELAND

ISRAEL  
ITALY  
JAPAN  
MALAYSIA  
MEXICO  
NETHERLAND

NEW CALEDONIA  
NEW ZEALAND  
PAKISTAN  
PHILIPPINES  
POLAND  
RUSSIA

SAUDI ARABIA  
SINGAPORE  
SOUTH KOREA  
SPAIN  
SRI LANKA  
SWEDEN

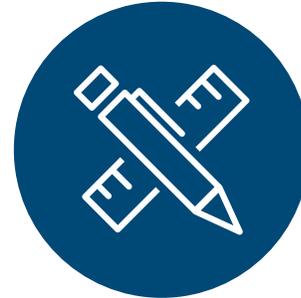
TUNISIA  
TURKEY  
UAE  
UK  
USA  
VIETNAM

GLOBAL REACH



GLOBAL REACH

# EXPERTISE & EXPERIENCE



## Design Challenges and Customization

*The primary service we take pride in*

At CIG, it is an everyday event to welcome challenges in designing and manufacturing custom-made coils. The majority of our clients from around the world seek our assistance in this specific field. Most of which came empty-handed, however, none ever left unanswered.

- ***Oral ideas & pencil sketches are welcome***
- ***Consultancy from Scratch to Installation***
- ***As fast as 24 hours from none to done***
- ***Any kind, any size, any quantity***

It might seem exaggerated in a way but if asked what things we can help our partners with are, the answer will be "pretty much everything."

The followings are examples of our past experiences and fields of expertise.

We are also willing to take up any new challenges as we believe that it always takes us closer to making the world a better place. Please do not hesitate to contact us and give us a chance so we can overcome it together.





EXPERTISE & EXPERIENCE  
HARSH ENVIRONMENT & HEAVY DUTY



# Harsh Environment and Heavy Duty

- **Up to 5-year warranty**  
*Recorded 8 years continual usage*
- **Special coating and materials available**
- **Replacement also available**

## **Transportation Market**

- *Trains*
- *Buses and Coaches*
- *Trucks*
- *Ambulances*
- *Freight Trucks*
- *Refrigerated Containers*
- *Heavy-Duty Vehicles*
- *Military Vehicles*
- *Off-Road Vehicles*

## **Marine Equipment**

- *Ships*
- *Submarines*
- *Off-Shore Oil and Gas Rigs*
- *General Marine Environment*

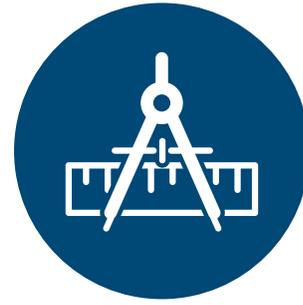
## **Energy Industry**

- *Oil and Gas Rigs*
- *Mining Equipment*

## **Military Market**

- *Land Combat*
- *Transportation Vehicles*
- *Field Hospitals*
- *Mobile Technical Shelters*

EXPERTISE & EXPERIENCE  
HARSH ENVIRONMENT & HEAVY DUTY



# Precision Oriented & Specific Systems

- *Specific design consultancy available*
- *Up to 5-year warranty*
- *Special coating and materials available*
- *Replacement also available*

## ***Equipment***

- *Electronic and Computer Components*
- *Laser*
- *MRI*
- *CAT Scans*
- *Medical Equipment*
- *Military Sensitive Technology*

## ***Facilities***

- *Data Centers*
- *Telecommunication Switching Stations*
- *ISP Facilities (Internet Service Providers)*
- *Computer Rooms*
- *Clean Rooms*
- *Laboratories*
- *Medical Operating Theatres*



# Industrial & Commercial Purpose

- ***Unlimited dimension***

*Recorded 7 meters in height & 14 meters long*

- ***Up to 5-year warranty***

- ***Special coating and materials available***

- ***Replacement also available***

## ***Indoor Climate Control***

- *Residential Complexes and Office Buildings*

- *Commercial and Public Facilities*

- *Chilled Beams*

- *HVAC Chillers*

- *Large Water Coils*

- *Air Curtains*

- *Air Handling Units (AHU)*

## ***Industrial Equipment & Processes***

- *Heat Pumps*

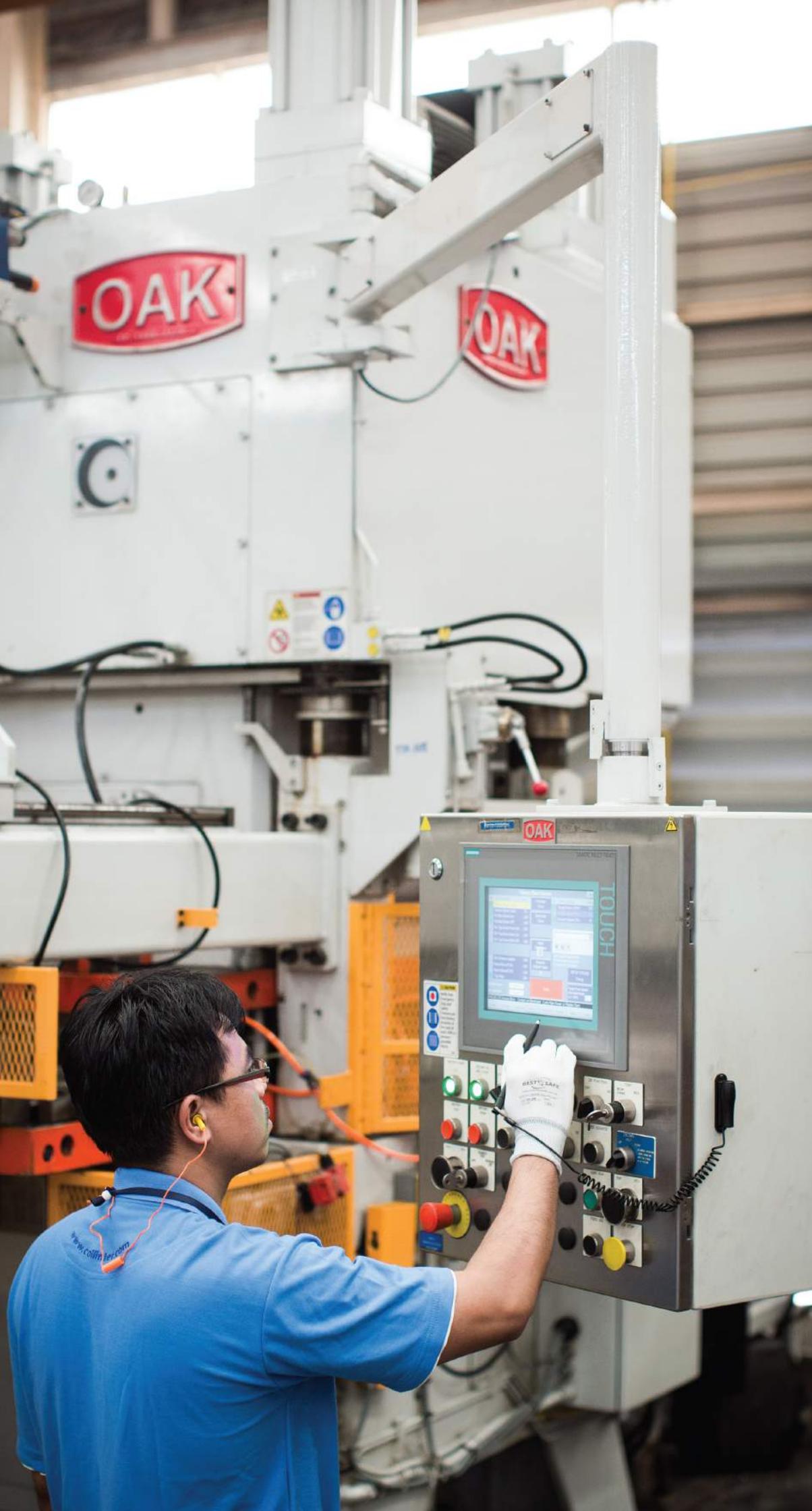
- *Cooling Towers*

- *Refrigeration Units*

- *Oil Coolers*

- *Exhaust Gas Cooling*





OAK

OAK

OAK TOUCH

www.colinlee.com

BEST SAFE





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CIG

**FACTORY  
OVERVIEW**

**COMMITMENT**

**BEYOND  
STANDARDS**

**AVAILABLE  
COILS**

**SPECIAL  
COILS**

**OUR  
SERVICES**



**CIG**  
EMPOWER WITH CARE

# SERVICE CATALOGUE

**RESEARCH  
& DEVELOPMENT**

**COIL SELECTION  
PROGRAM**

**COILEXPRESSTM  
PROGRAM**

**COATING**

**PRODUCTION  
AVAILABILITY TABLE**

**TUBE & FIN  
CONSTRUCTION**

**FIN SURFACE**

**ACCESSORIES**

# FACTORY OVERVIEW

Factory Area	Capacity	Employees
Factory 1 - 13,500 sq.m.	5,000 Units / Day*	~1,000 Persons
Factory 2 - 11,000 sq.m.		
Factory 3 - 4,160 sq.m.		

## Fastest Customization Record

24 hours from Scratch to Installation

## Largest Unit Production Record

7 Meters in Height & 14 Meters in Length

## Quality Control Procedures

- 100% Leak Test
- Helium Vacuum Chamber Leak Test and Sniffer Available

## Design Capability

- Own coil selection software certified with AHRI
- R&D Engineering Team to help increase product efficiency
- Conversion to all-aluminum coils or hybrid coils assistance

## International Standards

- ISO 9001: 2008
- Canada's CSA Product Standard Certificate\*\*
- USA's UL Product Standard Certificate\*\*

\* Varied upon sizes

\*\* Available for some fin geometries, please contact our team for more details

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# COMMITMENT

## a glance on why we do what we do and how we do it

Having been in the business for over 30 years, we are confident in what we do - the standards, the quality, the procedures, everything. Those are basic attributes that you can be sure of.

We would like to take this opportunity to share about what's beyond the tangibles.

### **Friendship within Partnership**

We believe every challenge can be overcome - and it is far better when you overcome it together with friends. At CIG, our clients are our friends. We enjoy getting to know new friends, listening to their challenges, giving them solutions, then face them together - of course, with the best of everything we can offer.

### **Fairness within Business**

Not only the clients, but also all stakeholders are our friends - suppliers and employees are included as well. We employ fair share principles in every business touch points. We believe that there is nothing wrong with profit seeking principles. What's not right is when the profit is not distributed to those who contribute.

### **Enjoyment within Employment**

Not everyone is so lucky to get to do what they love so, we figured at least we can help create a workplace that people love what they do and actually live at work - not just work in order to live.



# BEYOND STANDARDS

BEYOND STANDARDS

At CIG, production standards and quality are the very core of everything. However, they are seen as rather fundamental than important topics. Since we are aiming far beyond the points of mere standards and quality, it should not be surprising that meeting standards and maintaining the best quality are nothing more than an everyday routine. The challenge here is how to efficiently go beyond them.

## CIG Production Machinery



CNC Machines



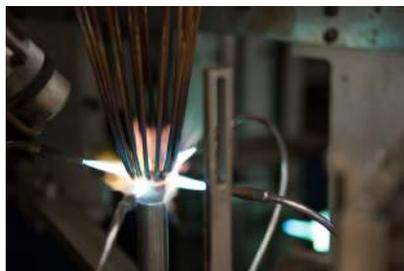
Fin Press Machines



Vertical Tube Expanders

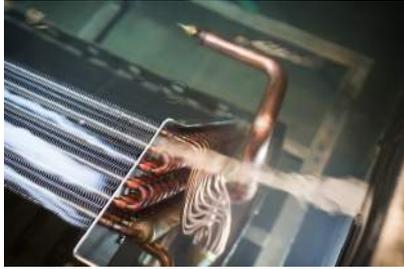


Hairpin Benders Machines



Auto Brazing Machines

# CIG Testing Procedures



Water Leak Test



Helium Sniffing



Helium Vacuum Chamber



Internal Cleanliness



Burst Test



## CIG Personnel Training

"Delicate quality by dedicated hands" is the reason to our success. At CIG, we not only train our teams for skills, but also cultivate the so called dedication.

BEYOND STANDARDS

## CIG Research & Development

At CIG, we provide the best technology along with the best team to keep up the good work as well as the pace of the world.



# AVAILABLE COILS



## Condenser Coils

Condenser Coils can be designed to match heat transfer volume requirements and coil face area can be split to your particular requirements.

- *Commercial or Residential Air Conditioning Coils*
- *Split coils and Intertwined Coils*
- *Made-to-Fit and Customs Coils*



## Evaporator Coils

We make evaporator coils for a wide range of temperatures from HVAC/R to subzero freezing applications.

- *OEM Evaporator Coils*
- *Commercial Refrigerator Coils*
- *Direct Expansion (DX) Coils*



## Water Coils

Water is the most abundant medium for heating and cooling applications. Fortunately, there's a water coil from CIG for just about any hot or cold water application. Coils are designed to withstand 250 psi maximum operating pressures and a maximum fluid temperature of 300°F for standard duty copper tube coils. Higher limits are available depending on coil construction and/or materials used.

- *Chilled Water Coils*

Pure water cooling coils or glycol solution coils. We can help with a variety of chilled water systems, whether constant volume, variable volume or variable primary flow chilled water systems (VPF). We can duplicate an old coil, redesign obsolete coils or provide custom design for new applications.

- *Hot Water Coils*

Applications include booster heat, reheat, waste heat reclamation, pre-heat, fluid process heat & more. We can start from scratch or can duplicate an obsolete design and match existing dimensions and performance; and size, capacity shape or circuit.



## Truck and Bus Air Conditioning

CIG Serves the growing automotive industry worldwide by producing condenser and evaporator coils for some of the world's leading truck companies. We make OEM, ODM and aftermarket products for truck & bus air conditioning.



## Replacement Coils

We only need to know the coil type, rows, fin surface, height and length, and can provide a firm quotation. We can even quote multiple options for materials, tube size and fin per inch etc.



## All Aluminum Coils

Aluminum tubes and fins are an alternative materials for coil design.

- *Condenser and Evaporator Coil*
- *Chilled and Hot water coil (<148C)*
- *30% less cost and weight*
- *7 mm, 5/16", 3/8", 1/2", 5/8" Aluminum OD tube*
- *All application as well as copper tube plus Ammonia refrigerant*
- *Brazing between Aluminum & Copper tube available*
- *Environmental Friendly*



## 5 mm OD Copper Tube

Small copper tube is economical and eco-friendly.

- *5 mm OD Copper Tube*
- *Smaller size, Lighter Weight*
- *MoneySaving, EnergySaving*
- *Higher heat transfer coefficients, Less refrigerant*
- *Suitable for R410 a Small copper tube is economical and eco-friendly*

## SPECIAL COILS

Coil Expert's Pride

We offer customization and selection of any specific coils tailored responding to any needs and purposes.

If you're looking for customization and specific solutions, please contact our representative.





# OUR SERVICES

OUR SERVICES

CIG has been manufacturing coils for the residential air-conditioning application since the beginning of our business 30 years back. We are entrusted by many global brands of air-conditioners in the manufacturing and research and development of new products to improve energy efficiency.

## Applications



Residential Coils



Industrial Coils



Refrigeration Coils



Transportation Coils



Commercial Coils / Replacement Coils



# RESEARCH & DEVELOPMENT

## Caring in Every Detail

We strive to provide the best possible solutions for you. With our highly-experienced team's innovative designs and advanced technology, our products are sure to be efficient as well as economical.

## New Product Development

Turn your ideas into real-life prototypes. Our "New Product Introduction Department" is always eager to accept new challenges. Remember, your ideas are our inspiration.

## Efficiency Enhancement

With the special know-how we acquire through 30 years experience, it is possible to reach the new height in terms of performance with even lower cost.

- ***Design & Production Technology***
- ***Alternative Materials***
- ***Higher Efficiency, Lower Cost***

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# COIL SELECTION PROGRAM

CIG has engineering team to advice on product design using computerized calculation which was designed only for CIG. The program calculates the proper size of coil based on the standard of ARI 410 from the U.S. for the most appropriate size and components.



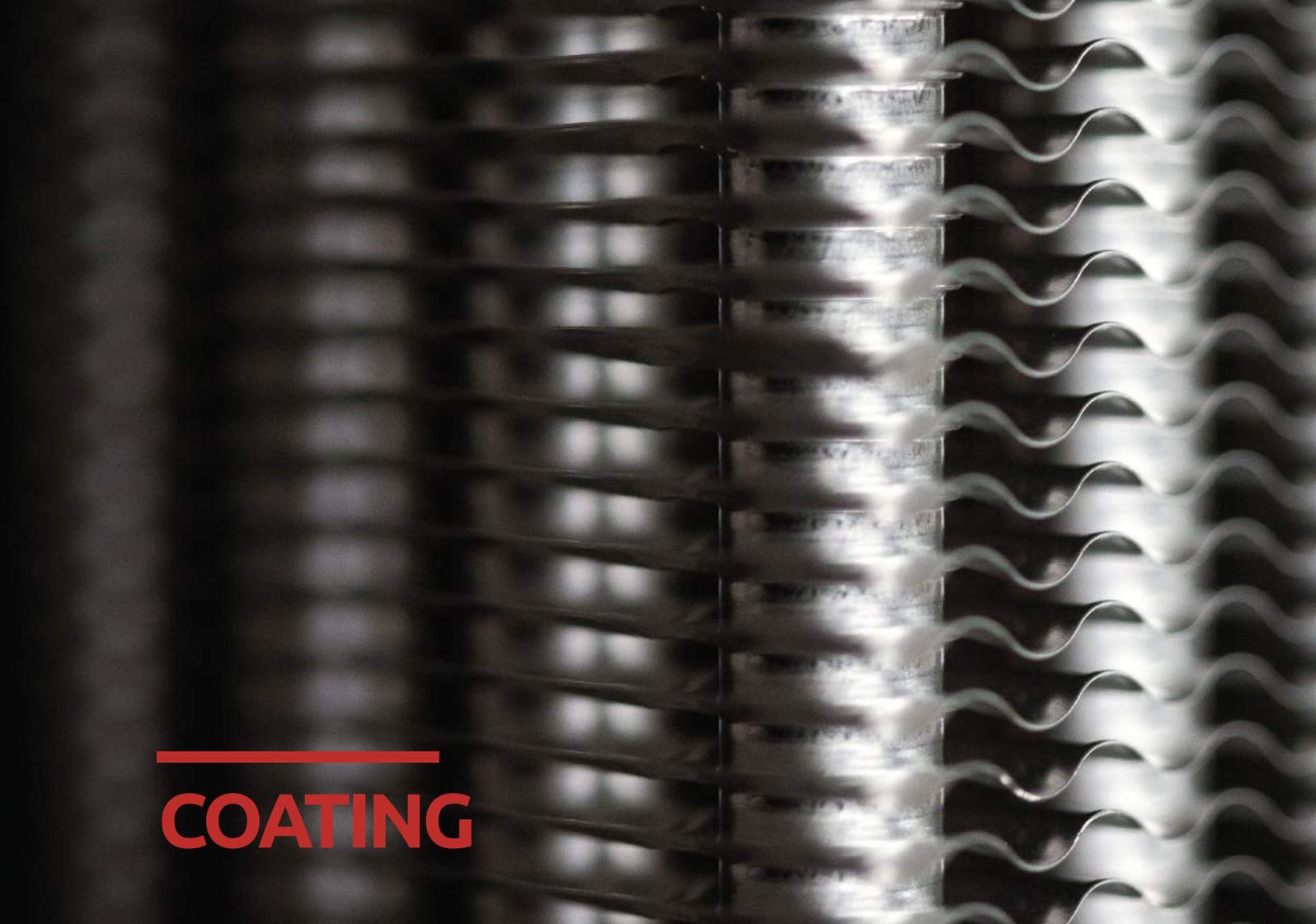
# COILEXPRESS™ PROGRAM

OUR SERVICES  
COILEXPRESS PROGRAM

Although our standard lead time ranges from 2-4 weeks, we can serve your urgent needs for coils through our CoilExpress Programs.

<b>CoilExpress 3™</b>	Significantly decrease the time taken to ship the products! With a premium you can receive your products within 3 working days!
<b>CoilExpress 5™</b>	Hastened the process to 5 working days for less than CoilExpress 3™
<b>CoilExpress 10™</b>	Shortened the delivery time to 10 working days for a premium less than CoilExpress 5™

\*Subject to coil models and availability of materials, please contact our sales representative



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## COATING

### **MAKE YOUR COILS LAST LONGER!**

Extreme environmental conditions can reduce the lifetime of your coils. You can select among our anti-corrosion solutions below to ensure that your coils would last longer in those circumstances.

#### **Epoxy Coating**

Epoxy is our standard coating which grants some protections against salty and acidic environments. Showing satisfying results in many industrial application, this type of coating is considered a very effective and economical coating.

#### **D-Coat™**

Our own D-Coat™ technology can effectively reduce water residuals and stop oxidation altogether which in turn prevents corrosion.

D-Coat™ also offers protection against a majority of aggressive environment and resistance to fumes from various sources of acid.

#### **D-Coat UV™**

Our latest technology which includes all of the amazing characteristics of our classic D-Coat™ plus an additional UV Protection! D-Coat UV™ extends the life of your coils.

Other types of coatings and long-lasting materials are also available, contact our sales representative for more information.

# PRODUCTION AVAILABILITY TABLE

## CIG MATERIAL STANDARD

update: 26/12/2014

Standard Tube											
Tube(OD)	Material				Type		Thickness	Standard			
	CU	Cu/Ni	AL	Hybrid	P	G		JISH3300	JISC12200	AA3003	C 70600(CU/Ni)
5mm	•					•	0.25	•	•		
	•					•	0.30	•	•		
7mm	•					•	0.325	•	•		
			•			•	0.60			•	
			•			•	0.75			•	
				•		•	0.48				
5/16	•					•	0.30	•	•		
			•			•	0.60			•	
				•		•	0.53				
3/8	•					•	0.30	•	•		
	•					•	0.35	•	•		
			•	•		•	0.60			•	
			•			•	0.80			•	
				•		•	0.53				
1/2	•					•	0.32	•	•		
	•					•	0.34	•	•		
	•					•	0.38	•	•		
	•					•	0.41	•	•		
				•		•	0.60				
5/8	•					•	0.41	•	•		
	•					•	0.71	•	•		
		•				•	0.60				•

Note: For hybrid tube, the material is AA3003 clad by copper 1100 aluminum groove tube thickness is bottom wall plug groove height

Standard FIN				
Material	Standard			Note
AL-Bare	8011, 8006, 1100*			*please ask for confirmation
AL-PRECOAT	8011, 8006			Coating with VW61
CU	C1220			

Standard Coating				
Material	Based			Color
Epoxy	Thinner			Black
Super Hydro	Water			Blue

Standard HEADER				
Nominal or Standard Size, inches	OD	Standard		
		ASTM B88(CU)	ASTM A53(ST)	C 70600(CU/Ni)
1/4"	3/8"	•	•	
3/8"	1/2"	•	•	
1/2"	5/8"	•	•	•
5/8"	3/4"	•	•	
3/4"	7/8"	•	•	
1"	1-1/8"	•	•	
1-1/4"	1-3/8"	•	•	
1-1/2"	1-5/8"	•	•	
2"	2-1/8"	•	•	
2-1/2"	2-5/8"	•	•	
3"	3-1/8"	•	•	
4"	4-1/8"	•	•	
5"	5-1/8"	•	•	
6"	6-1/8"	•	•	

Standard Fitting	
Material	Standard
Aluminium	JIS A7N01 BE-T6, JIS H4040 A7
Brass	JIS H3250-C 3604, JIS C2600 BE-F, C2700 BE-F

NOTE: For aluminum header, please contact CIG Engineering team for further information

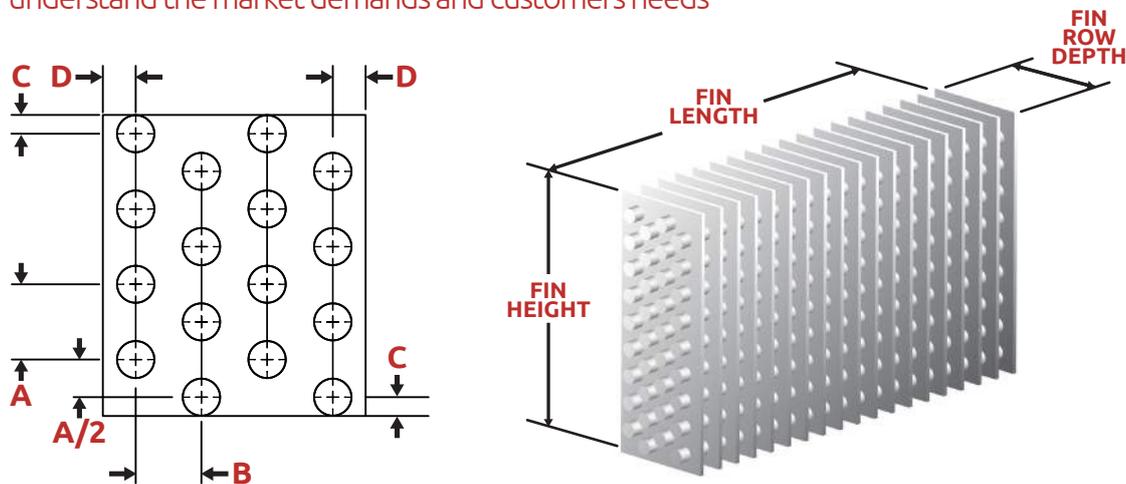
Standard Plate				
Material	Thickness		Standard	Note
GAL	#20,18,16,14		STD	RoHS SGCC-Z27(Special)
AL	#20,18,16,14		1100,5052(2,3mm)	
SS	#16		304,316	
CU	#18,16		C12200	

NOTE: \* The record has to be tested, please ask before order.

\*\* Machine has to have big change with long time, please ask before order

# TUBE & FIN CONSTRUCTION

At CIG we provide a variety of tube sizes and fin patterns as we understand the market demands and customers needs



## CIG Pattern Specification

TUBE SIZE (INCH)	PATTERN A x B	FIN MAT'L	FIN SURFACE	FIN THK. (mm)	EDGE	FPI		ROW MAX	FIN HEIGHT (inch)	
						MIN	MAX		MIN	MAX
5 mm.	0.768"x0.441" (19.50mmx11.2mm)	AL/ PRECOATED	R	0.097-0.100	S	17	24	74	4.6	30.7
1/4" (6.35 mm)	0.866"x0.325" (22mmx8.25mm)	AL/ PRECOATED	C	0.115	2R RIPPLE 3R STRAIGHT	14	18	18	3.5	34.6
7 mm.	0.827"x0.5" (21mmx12.7mm)	AL/ PRECOATED	P/L/R/ SW/WS	0.097-0.115	S/R	12	26	60	3.3	40
5/16" (7.94 mm)	0.823"x0.695" (20.4mmx17.667mm)	AL/ PRECOATED	P/L	0.115-0.125	S/R	10	18	12	3.2	33
5/16" (7.94 mm) (OAK)	1.000"x0.472" (25.4mmx12mm)	AL/ PRECOATED	C	0.115-200	R	8	16	24	4	32
5/16" (7.94 mm)	1.000"x0.625" (25.4mmx15.875)	AL/ PRECOATED	C/SW/WS	0.115-0.150	S/R	7	18	24	8	36
5/16" (7.94 mm)	1.00"x0.75 (25.4mmx19.05mm)	AL/ PRECOATED	C/P	0.115	S/R	11	20	24	8	44
3/8" (9.52 mm)	1.000"x0.625" (25.4mmx15.875mm)	AL/ PRECOATED	P/C/WS	0.115-0.150	S/R	7	18	24	4	36
3/8" (9.52 mm)	1.00"x0.75" (25.4mmx19.05mm)	AL/CU/ PRECOATED	SLIT/C/P/ L/SW	0.105-0.250	S/R	5	22	24	6	48
3/8" (9.52 mm)	1.00"x0.866" (25.4mmx21.997mm)	AL/ PRECOATED	SLIT/C/P/ SW/WS	0.115-0.150	S/R	6	20	36	6	60
3/8" (9.52 mm)	1.00"x1.00" (25.4mmx25.4mm) Inline	AL	C	0.120-0.300	R	4	15	12	6	32
1/2" (12.7 mm)	1.25"x1.08" (31.7mmx27.432mm)	AL/CU/ PRECOATED	C	0.115-0.150	S/R	7	16	12	7.5	60
5/8" (15.875 mm)	1.50"x1.299 (38.1mmx32.995mm)	AL/CU/ PRE-COATED	C	0.115-0.150	S/R	8	16	12	9	50

**NOTE:** Please contact us for other specifications exceeding to the above

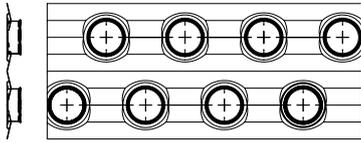
### Fin Surface

**P** : Plain  
**L** : Louver  
**R** : Raise Lance  
**SW** : Sine Wave

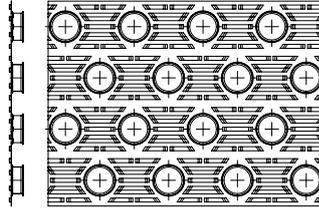
### Fin Edge

**WS** : Sine Wave Slit  
**C** : Corrugate  
**S** : Super Slit  
**S** : Straight  
**R** : Ripple

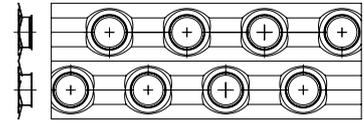
# FIN SURFACE



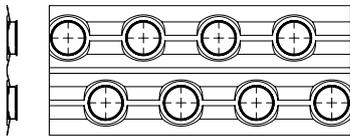
**FIN LAYOUT 1/2" (31.75mm.x27.5mm.)  
CORRUGATED/RIPPLED EDGES.**



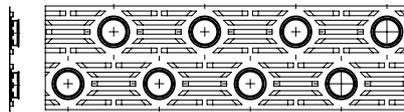
**FIN LAYOUT 3/8" (1"x0.75")  
SLIT/STRAIGHT EDGES.**



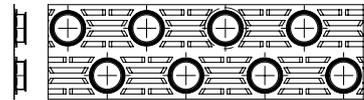
**FIN LAYOUT 3/8" (1"x0.75")  
CORRUGATED/STRAIGHT-RIPPLED EDGES.**



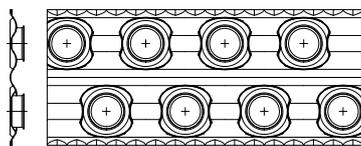
**FIN LAYOUT 5/8" (38.1mm.x33mm.)  
CORRUGATED/RIPPLED EDGES.**



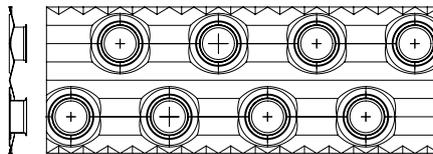
**FIN LAYOUT 5mm. (19.5mm.x11.2mm.)  
RAISED LANCE/STRAIGH EDGES.**



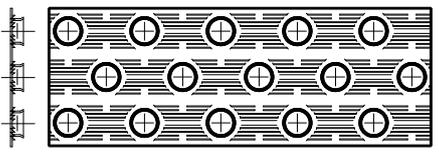
**FIN LAYOUT 7mm. (21mm.x12.7mm.)  
RAISED LANCE/STRAIGHT EDGES.**



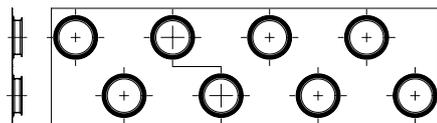
**FIN LAYOUT Ø3/8 (1 "x0.866")  
SINE WAVE RIPPLED EDGES**



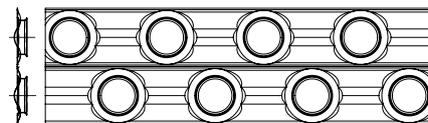
**FIN LAYOUT 5/16" (1"x0.75")  
CORRUGATED/RIPPLED EDGES.**



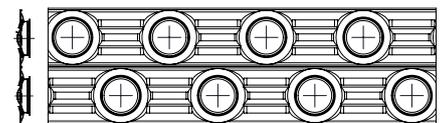
**FIN LAYOUT Ø7mm. (21mm. x 12.7mm.)  
LOUVERED SURFACE / STRAIGHT EDGE**



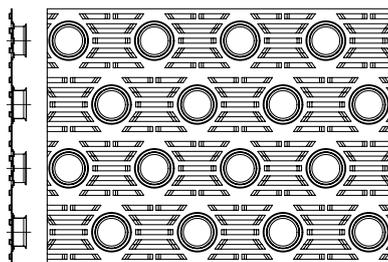
**FIN LAYOUT 7mm. (21mm.x12.7mm.)  
FLAT/STRAIGHT EDGES.**



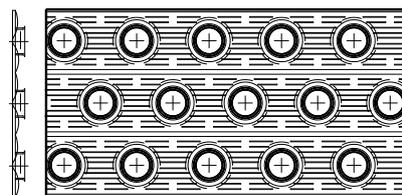
**FIN LAYOUT 7mm. (21mm.x12.7mm.)  
SINE WAVE/STRAIGHT EDGES.**



**FIN LAYOUT 7mm. (21mm.x12.7mm.)  
WAVE SLIT/STRAIGHT EDGES**



**FIN LAYOUT 5/16" (1"x0.75")  
SLIT/STRAIGHT EDGES.**



**FIN LAYOUT Ø3/8"x0.866" (Ø9.525mm. x 21.996mm)  
WAVE SLIT SURFACE / STRAIGHT EDGE**

# ACCESSORIES



## Distributor Inlets

3/8"1-1/8" ID.3/16-1/4"(2ways-48ways)

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Ø16mm.	Ø38.1mm.	Ø76.2mm.
Ø19.05mm.	Ø44.5mm.	Ø88.9mm.
Ø25.4mm.	Ø50.8mm.	Ø102mm.
Ø28.575mm.	Ø63.5mm.	Ø127mm.



## Brass Connectors

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Ø1/4"	Ø3/4"	Ø1-1/4"
Ø1/2"	Ø1"	Ø1-1/2"



## Brass Plugs

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Ø1/4"	Ø3/4"	Ø1-1/4"
Ø1/2"	Ø1"	Ø1-1/2"



## Steel Plugs

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Ø1/4"  
Ø1/2"



## Male Adaptors

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1/2"x1/2" MPT,BSPP	3/4"x3/4" BSPT,BSPP
1/2"x1/2" BSPT,BSPP	7/8"x3/4" BSPT,BSPP
5/8"x3/4" BSPT,BSPP	7/8"x1" BSPT,BSPP
3/4"x5/8" BSPT,BSPP	1-1/8"x1-1/4" 11 BSPF,BSPP



## Return Bends

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Ø7mm.*21*0.41 mm.	Ø3/8"*1"*0.51mm.
Ø5/16"*0.9"*0.51mm.	Ø1/2"*1.25"*0.61mm.
Ø5/16"*1"*0.51mm.	Ø5/8"*1.5"*0.71mm.
Ø5/16"*1"*0.41mm.	Ø5/16"*0.9"*3ways*0.41mm.
Ø5/16"*0.9"*0.41mm.	Ø3/8"*1"*0.61mm.
Ø3/8"*1"*0.41mm.	



## Copper Caps (ID.)

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Ø3/4"	Ø1-5/8"	Ø4-1/8"	Ø1-1/3"(Flared)
Ø7/8"	Ø2-1/8"	Ø5-1/8"	Ø5/8"
Ø1-1/8"	Ø2-5/8"	Ø6-1/8"	
Ø1-3/8"	Ø3-1/8"	Ø1-1/8"(Flared)	



## Butterflies

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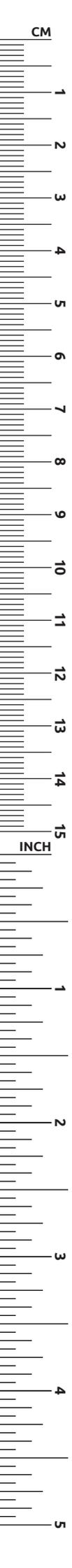
1/2"*5/16"*2ways*50mm.	3/8"*3/8"*2ways
3/8"*5/16"*2ways*50mm.	3/8"*3/8"*2ways*50mm
5/16"*5/16"*2ways*50mm.	5/16"*7mm.*2ways
1/2"*3/8"*2ways*50mm.	3/8"*7mm.*2ways
3/8"*1/4"*2ways	



## Crossovers

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5/8"*0.71mm.	3/8"*0.51mm.*2R
1/2"*0.61mm. Curved	3/8"*0.51mm.*3R
1/2"*0.61mm. Cornered	3/8"*.75*25mm.*38.1
3/8"*0.51mm.*.866*2R	5/16"*0.50mm.*2R
3/8"*44*0.51mm.	



# Conversion Table

## LENGTH

1 inch (1") = 25.4  
1 foot (1') = 12 inches = 304.8  
1 yard = 3 feet = 0.914, 914.4mm

## AREA

1 square foot = 0.09290 square meter  
1 square meter = 10.76 square feet

## VOLUME

1 cubic foot = .2832 cubicmeter, 1 cubic meter = 35.31 cubic feet  
1 US gallon = 3.7854

## FLOW RATE

1 GPM, Gallon per Minute = .2273 CBM/H, Cubic meter per hour = 1/4.4  
1 CFM, Cubic Feet Per Minute = 1.7 CBM/H

## VELOCITY

1 FPM, Foot per minute = 1/197 meter per second

## MASS

1 lb, pound = 16oz, ounce = 0.4536 kg  
1 oz, ounce = 28.35 gram

## TEMPERATURE

Deg. C =  $\frac{\text{deg. F} - 32}{1.8}$  ; Deg. F = Deg. C x 1.8 + 32

## THERMAL CAPACITY

1 Btu/h = .2926 Watt  
1 Kcal/h = 1.163 Watt  
1 TR, Ton Refrigeration = 3.515 kW

## PRESSURE

1 PSI = 6.89 kPa  
1 Bar = 100 kpa  
1" WG = 25.4 mm WG = 248x8 Pa  
1' WG = 0.434 PSI = 304.8 mm WG = 2.888 KPa

