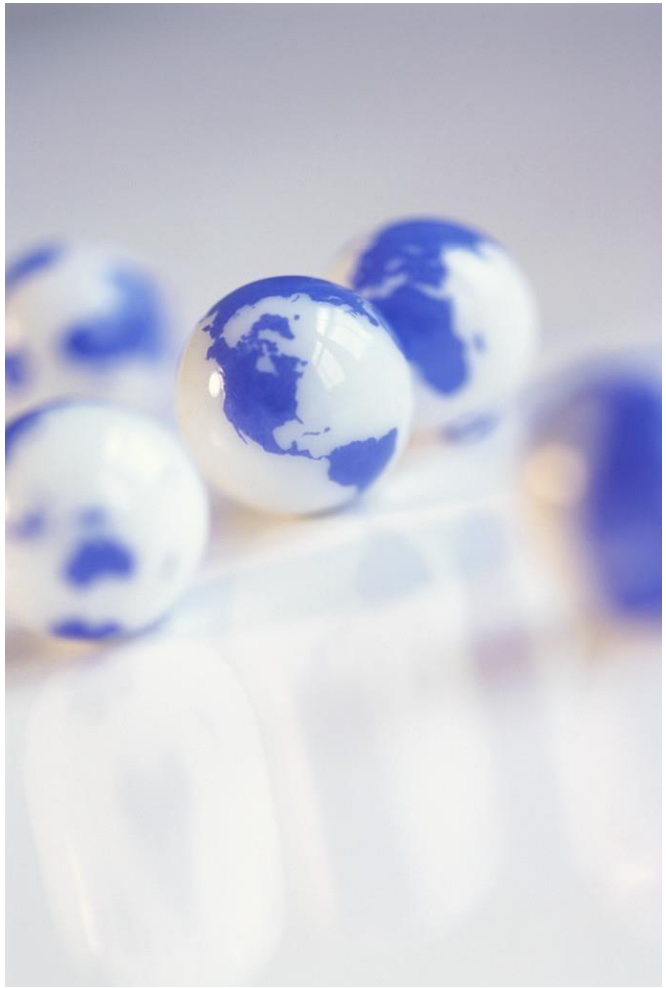


Introduction of T-COIL

Heat Exchanger for Heat Recovery

Heat Pipes-Type

株式会社SDAT
Sales Dept.

Content

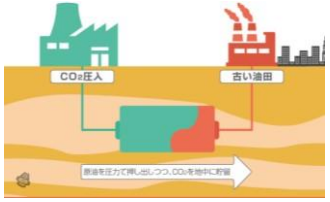
1. Rgarding Decarbonization and Energy saving

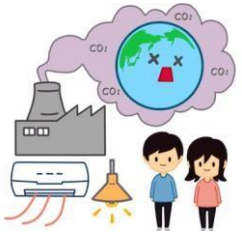
Greenhouse Gas Reduction Target

	【2030】	【2050】
Japan	-46% Compared with 2013	Virtually Zero
EU	-60% Compared with 1990	Virtually Zero
China	-65% Compared with 2005	Virtually Zero

3 Approaches to Decarbonization

Introduction of Non-fossil Energy （Green Energy etc.,）	Establishment and Introduction of CO2 Treatment （CCUS etc.,）	Energy-saving





It is easiest for us to work on Energy-saving of these three approaches.

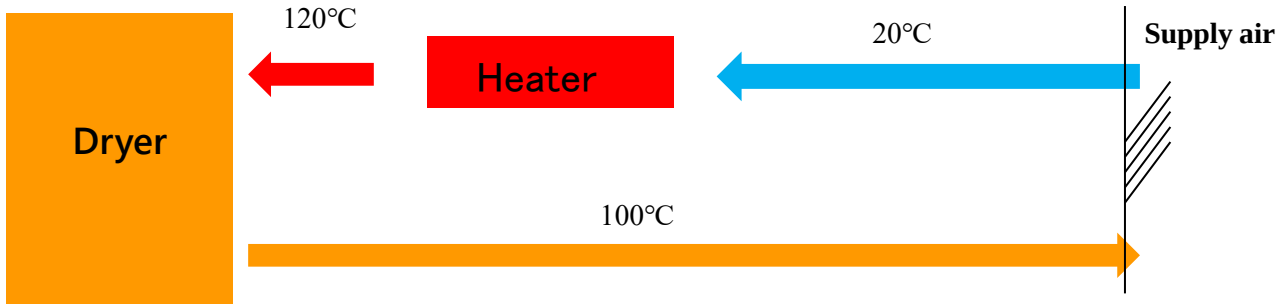
Energy Saving is getting more important in the world now.

2. About T-COIL

How to use T-COIL

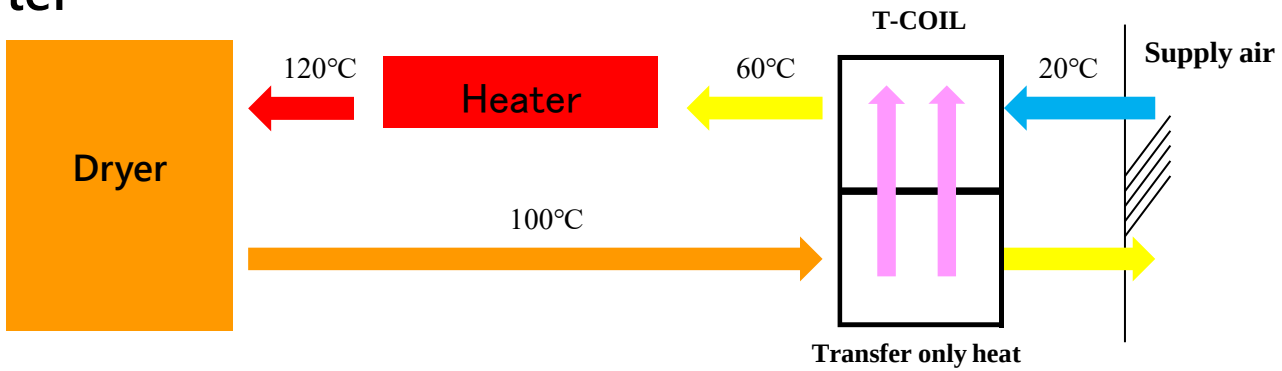
T-COIL can reuse energy that is used once again!

Before



Exhaust air goes outside with the heat
⇒ Loss of heat

After



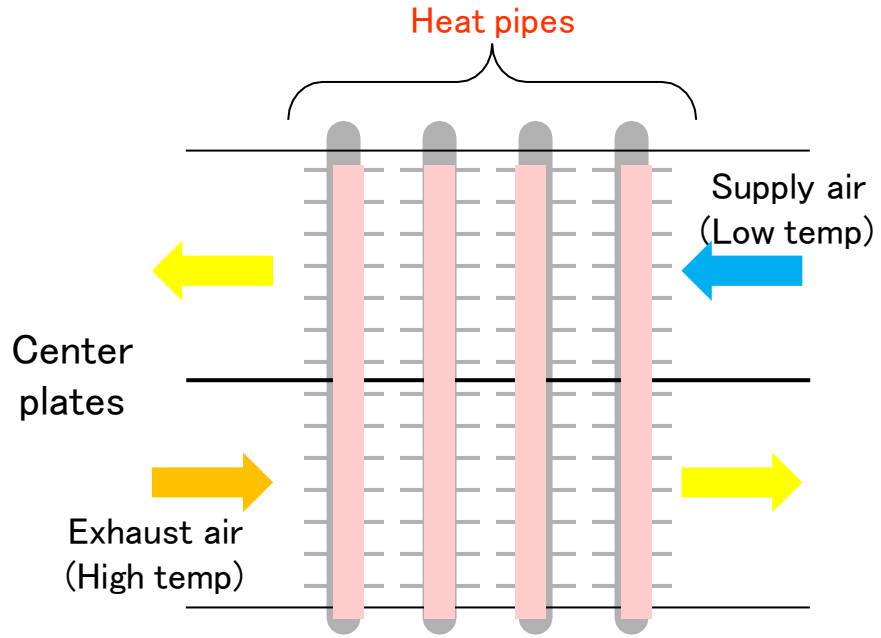
Heat of exhaust air is reused in Supply air again by T-COIL
⇒Heat Recovery

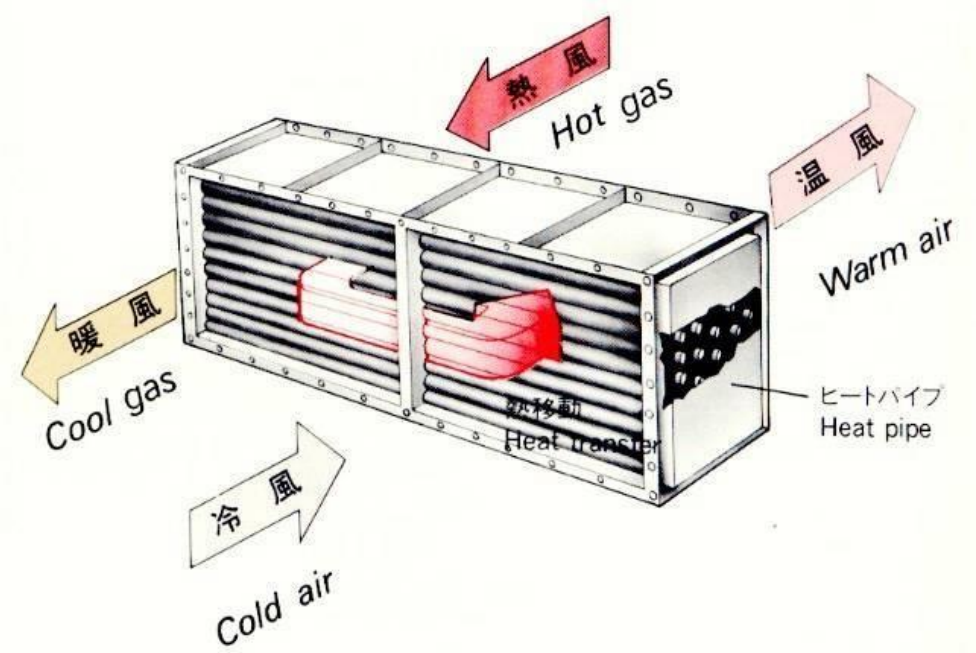
2. About T-COIL ： What is T-coil?

T-COIL is an air to air heat exchanger using Heat Pipes.

T-COIL has a lot of fined Heat pipes and is separated by plates around the center of it.

Once exhaust(high temp) air and supply air (low temp)flow into T-coil in the opposite direction each other , it can transfers the heat efficiently.

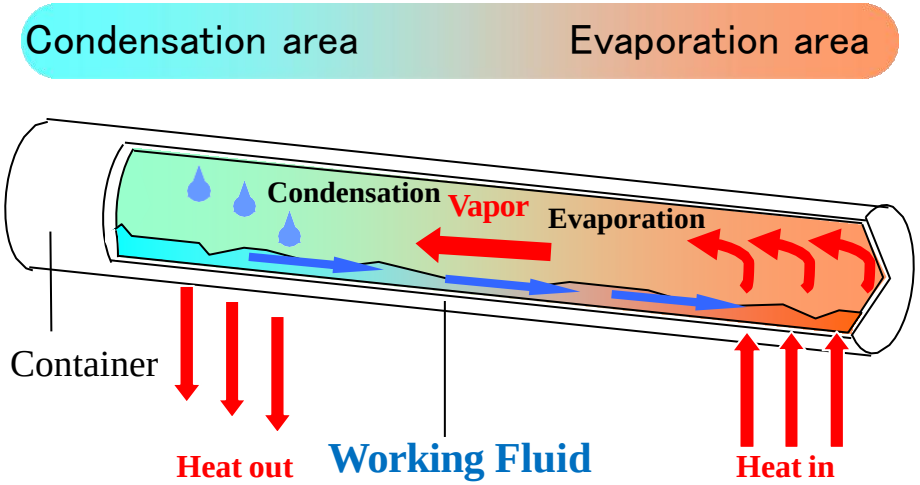




2. About T-COIL : What is Heat Pipe?

It is a function of heat carrier.

Heat pipe is a thermal conductive element that can transfer heat to a far area.



＜Bubbled up Video＞

Fluid is enclosed in an air tight container.
Once one side of heat pipe is heated, the fluid evaporates and absorbs the heat. And then, the fluid transfers the heat to the other side and releases the heat and condenses , then the liquid fluid returns to one side by gravity.
Repeating this cycle causes efficient heat transportation.

Heat pipe works like this ,
because inside of heat pipe is kind of vacuous.

⇒It is the same phenomenon that water boils under 100℃ on high mountains.

3. Features of T-COIL : Three Main features

T-COIL has 3 major strong points.

① High Efficiency and Compact

② Long Life and Maintenance saving

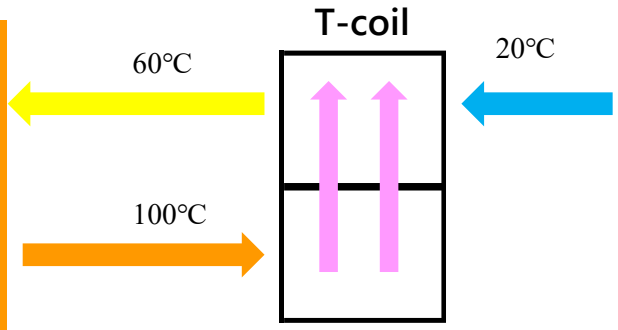
③ Clean supply air

3. Feature of T-COIL -① High Efficiency and Compact

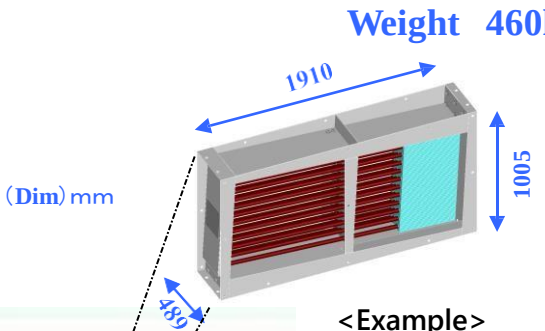
T-COIL recovers exhaust heat efficiently with using heat pipes as conductive elements.

Temp Efficiency rate
Is usually over 50%

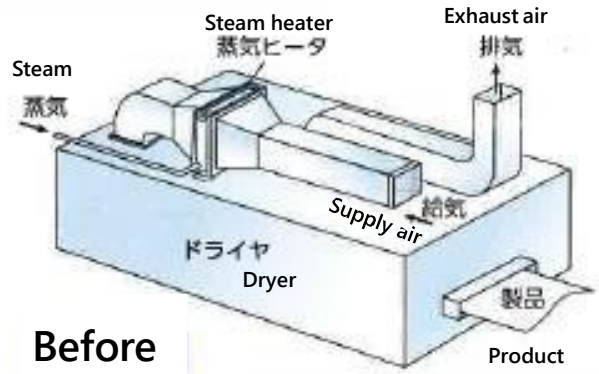
（100℃-20℃）x50%=40℃
20℃＋40℃=60℃（supply air temp）



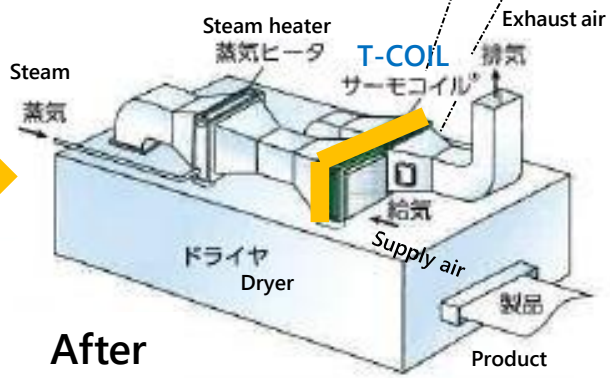
High Efficiency and Compact



Air preheating of dryer



Before



After

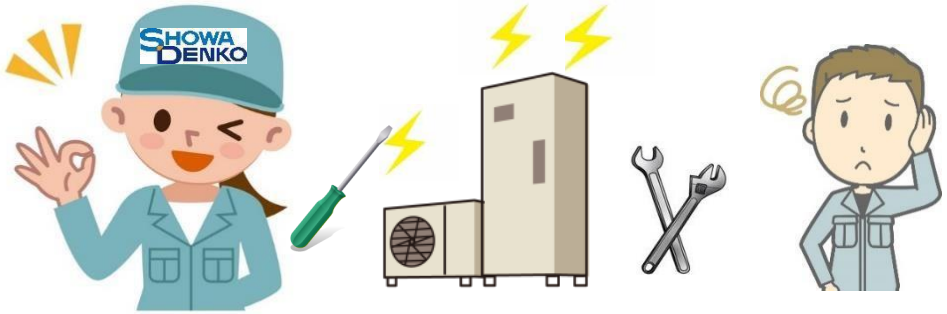
<Example>

	Supply Air	Exhaust Air
Flow Rate (Nm3/min)	100	100
Inlet Temp. (℃)	20	100
Efficiency (%)	50	50

It does not takes much money to install T-COIL.

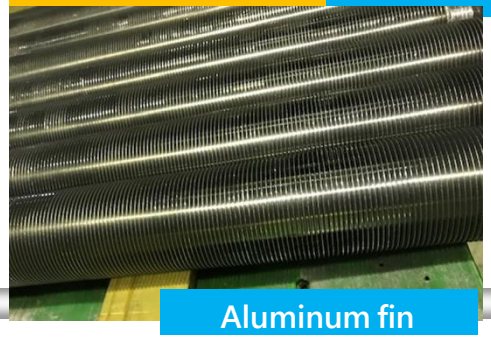
3. Feature of T-COIL -② Long life and Maintenance saving

The mechanical trouble does not occur and the parts replacement is unnecessary.



T-COIL can be used for a long time because it is made of best materials that depend on the air property.

Materials	Fins・Tubes	Aluminum , Copper , Steal ,Stainless steal
	Frame	Steal ・Stainless steal



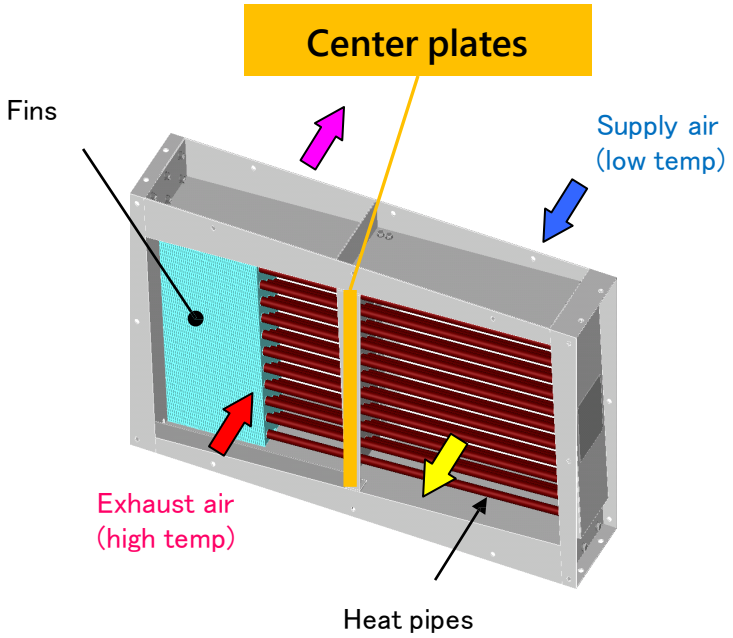
Aluminum fin

Stainless steal

Steal tubes and Steal flame

3. Feature of T-COIL -③ Clean supply air

Because T-COIL is partitioned off into two parts(supply air part and exhaust air part) by center plates, exhaust air leaks to supply air very little.



Rate of Leakage between supply air and exhaust air
0.052%～0.328%
（VTC type approx. rate）

The supply air that is heated by T-COIL goes to a dryer with keeping air clean.

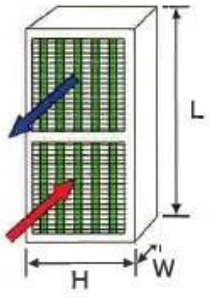
3. Features of T-COIL - Other features

- T-COIL does not produces much loss of pressure（About 200～300Pascals).
  So you might continue to use your existing blower without replacing it.

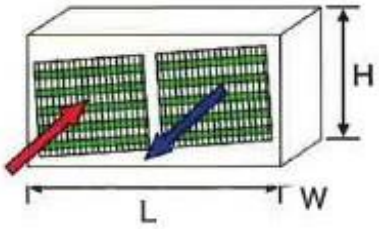
■ Running cost of T-COIL is not required
  because T-COIL does not use any enegy to work.

- T-COIL can be installed in various way depending on the site of the factory.

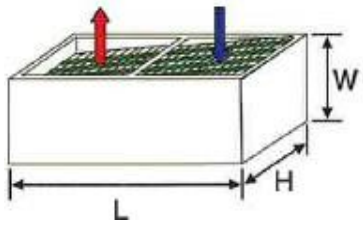
Vertical way



Horizontal way



UP and Down way



4. Type of T-COIL

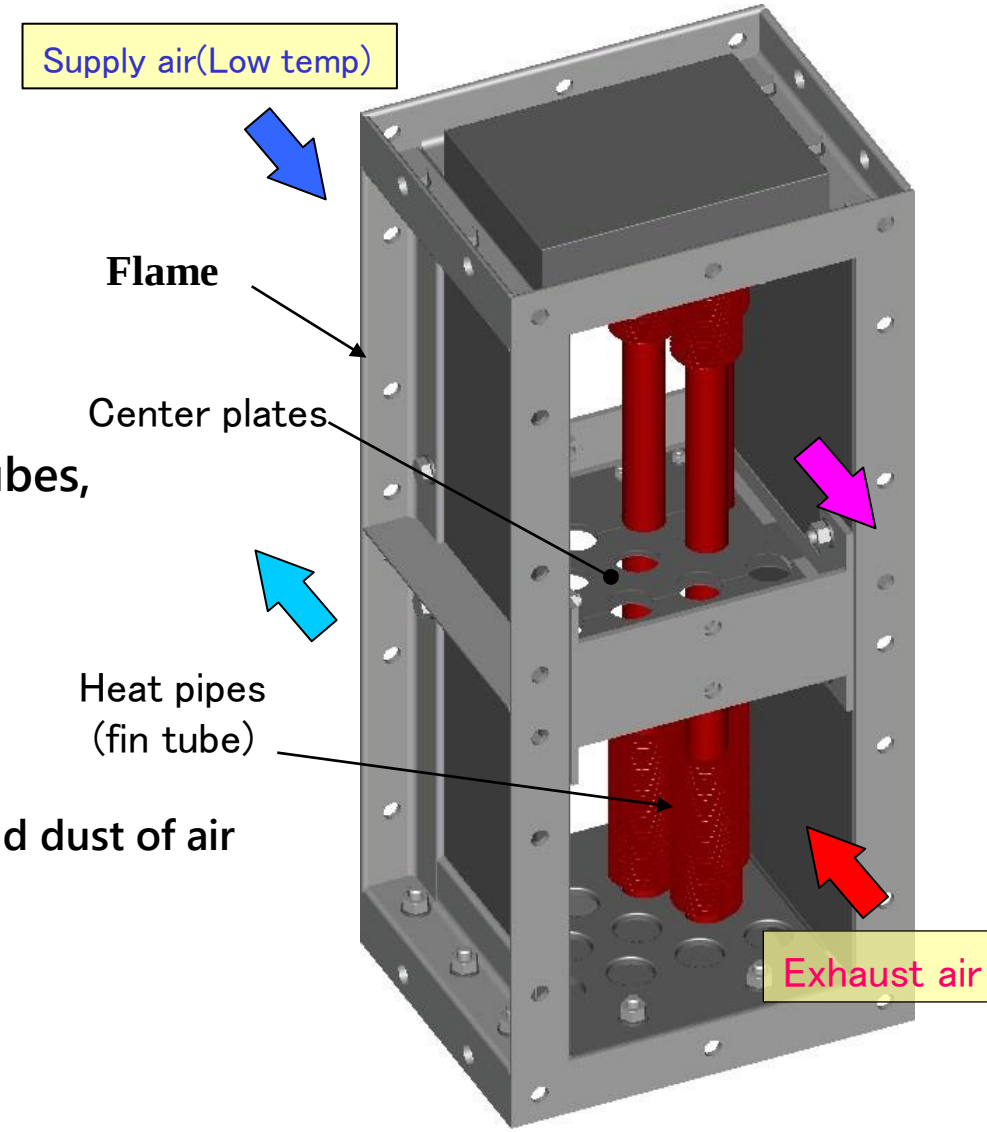
ITC type

(1) Outline of product

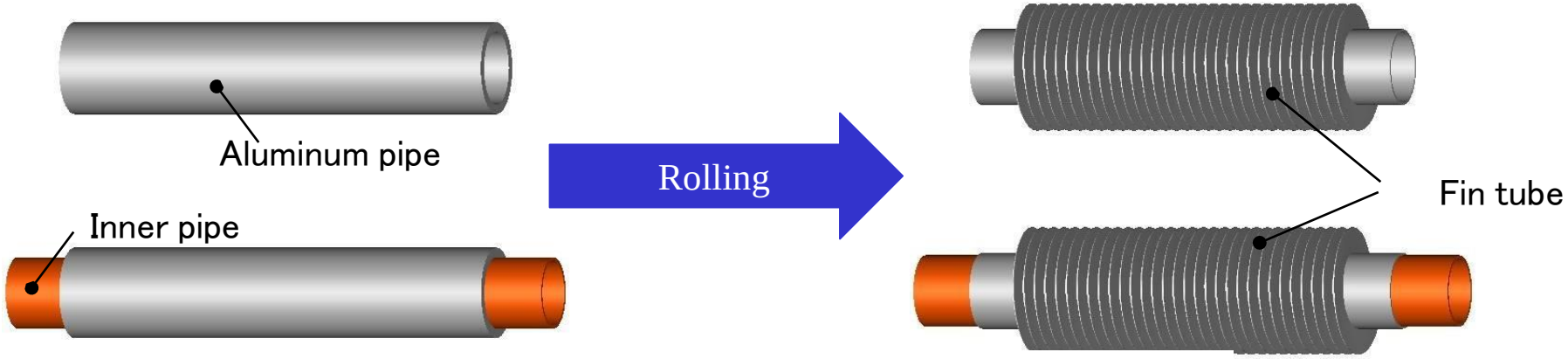
- After Heat pipes are made of Individual fin tubes, they are put up in the frame.

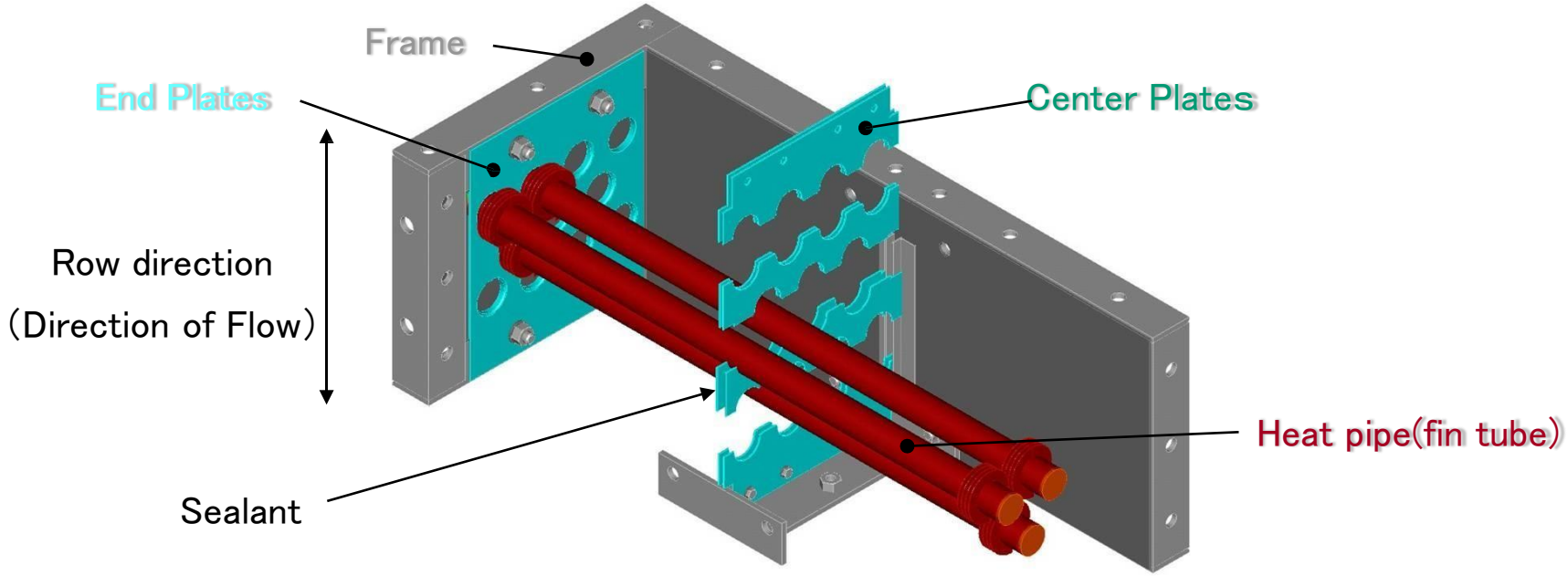
ITC type can apply to various temperature of air and dust of air since we have different pitch fin tubes.

.



(2)Structure of ITC type

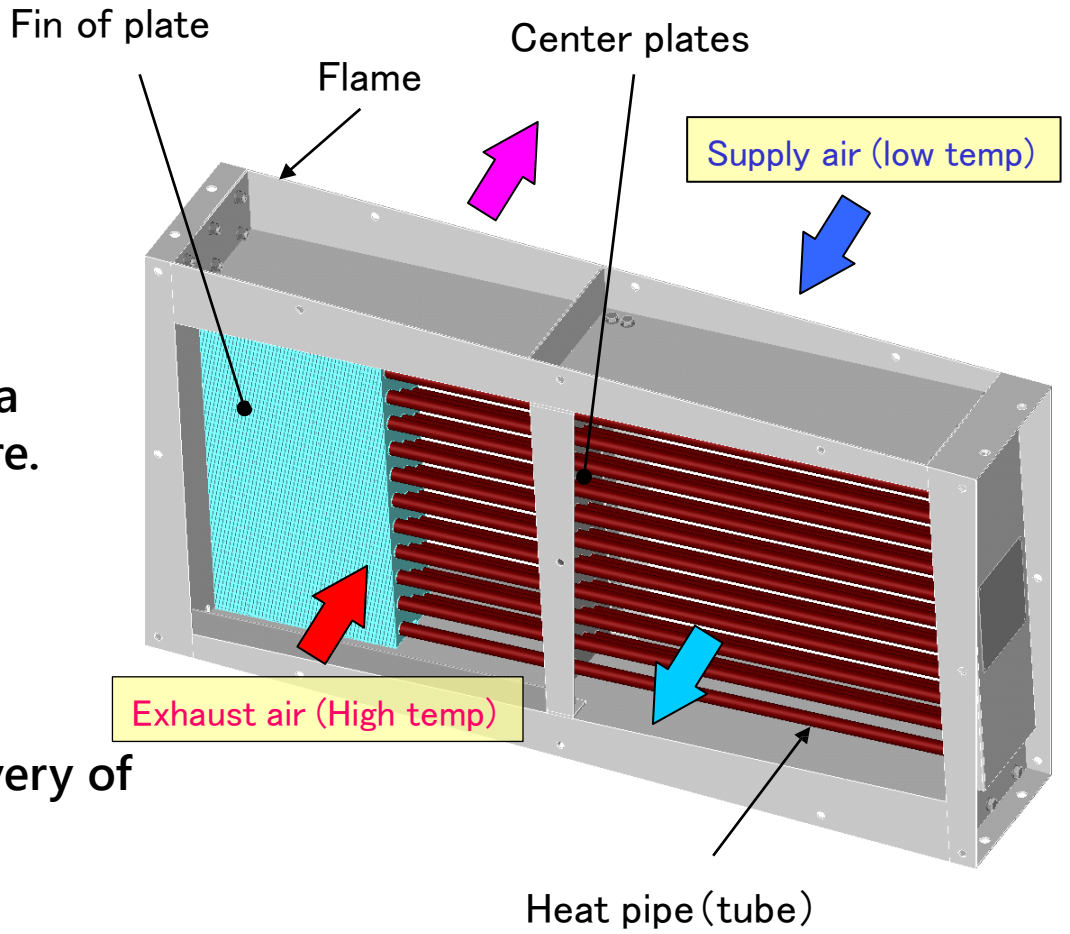




VTC type

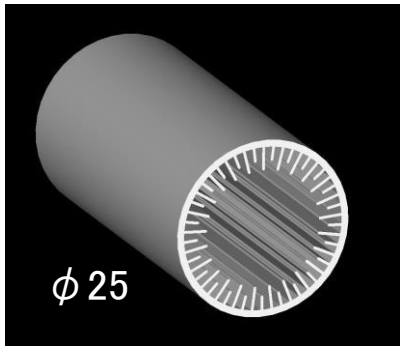
(1)Outline of product

The pipes are put into plates
that have large heating surface area
and are expanded by liquid pressure.
After that they are processed to
Heat pipes

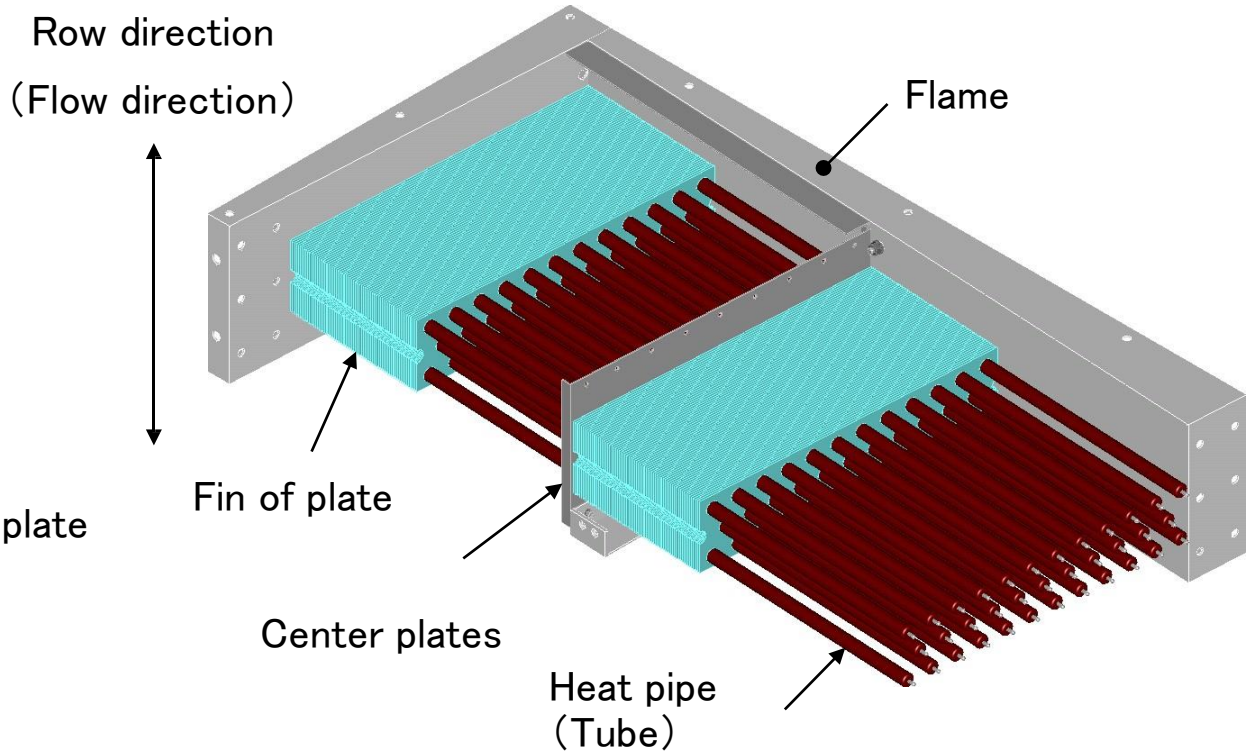


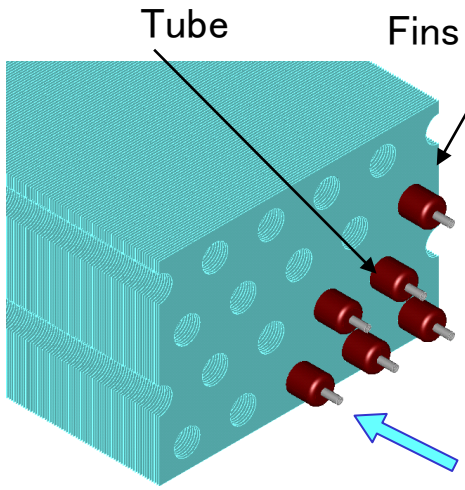
VTC type can apply to heart recovery of
ventilation for air conditioning

(2)Structure of VTC type



Cross sectional shape of tube
(fined inner of tube)





5. Application and History : Application

T-coil have been applied to various industrial fields.

Industrial Furnace

Naphtha cracking furnace, Heating furnace VOC treatment furnace

Industrial dryer

Film

Film production line(OPP,PET,PA),Film coating line , Film laminate processing line

Paper

Paper machine line, Paper coating line

Printing

Gravure , Flexographic

Fiber

Synthetic fiber, Elastic fiber, Non-Woven fabric

Others

Food ,Coating ,Powder dryer , Pre-heat and cold for dehumidifier

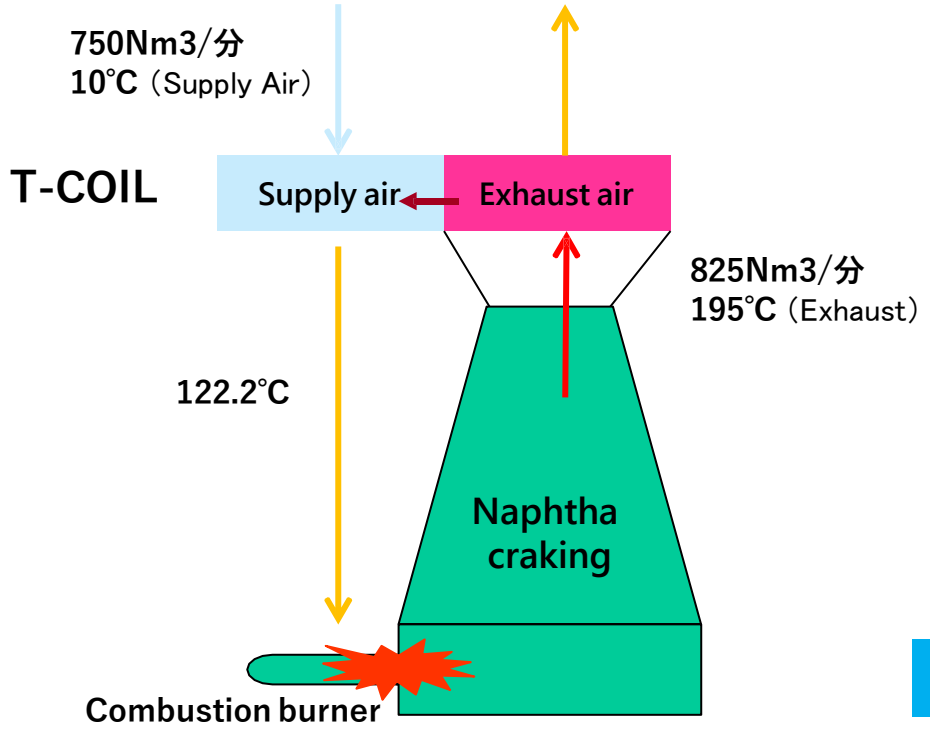
Coverage of temp
-20℃～430℃

Boiler

Preheating supply air for combustion

5. Application and History

Effect of Energy Saving ① Naphtha cracking



＜Condition＞

Heat Recovery： 1,573,000kcals / hr

LNG price： JPY65 / m3

Calorific value of LNG： 9,900kcals / m3

Operation time： 7,000hrs / yr

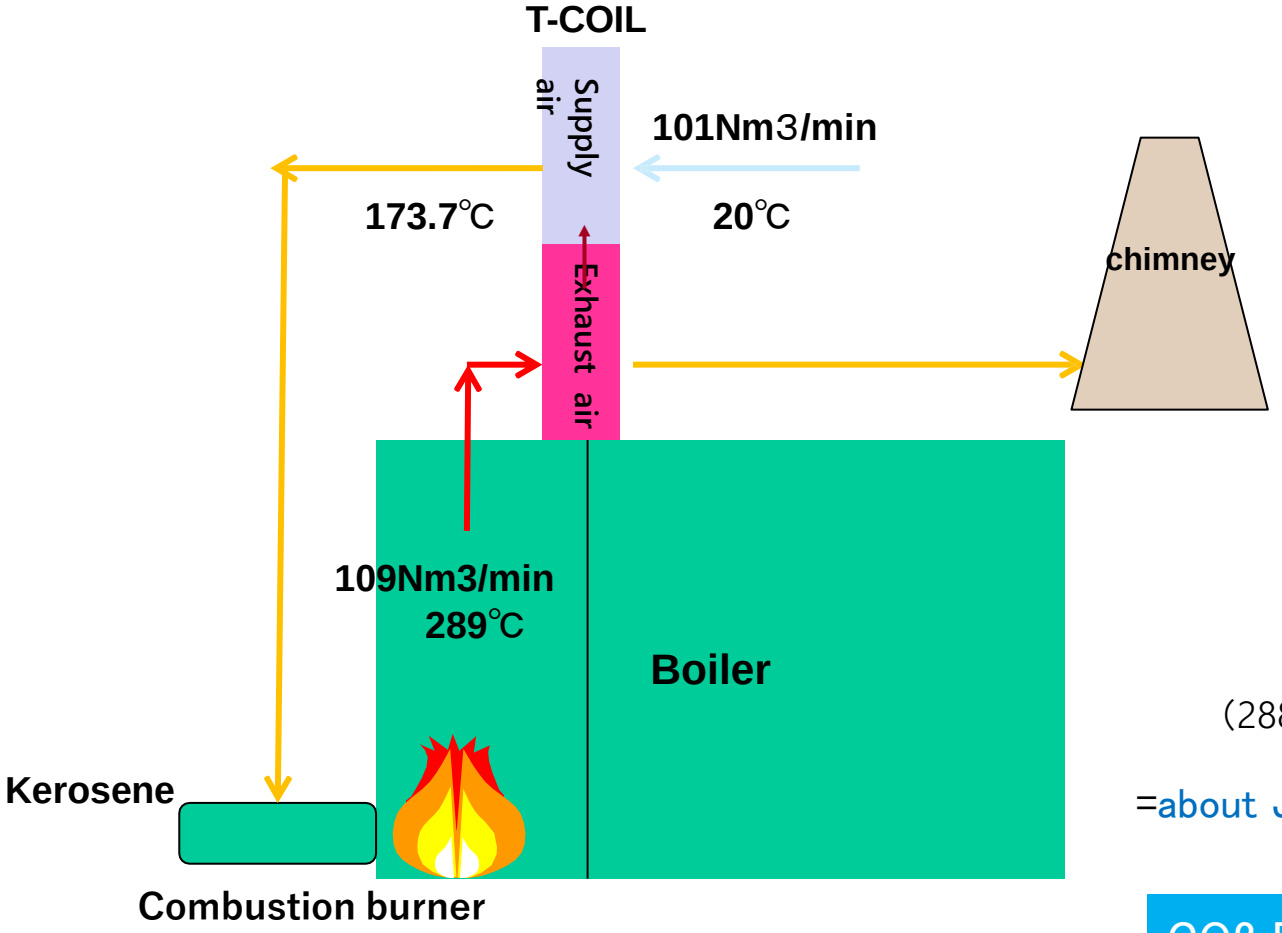
（1,573,000÷9,900） x JPY65/m3 x 7,000hrs

=about JPY73,000,000/yr （Energy saving cost）

CO2 Reduction about 2,281tons

5. Application and History

Effect of Energy Saving ② Boiler



＜Condition＞

Heat Recovery: 288,900kcal/hr

Kerosene price: JPY76/L

Calorific value: 8,350kcal/L

Operation time: 2,700hr/yr

(288,900÷8,350) x JPY76/L x 2,700hr

=about JPY7,100,000/yr Energy-saving cost

CO2 Reduction about 221tons/yr

5. Application and History : Achievement and History

Various customers have introduced and used T-COIL.

Industrial furnace

Mitsubishi Chemical Corporation, Mitsui Chemicals, Inc ,
Maruzen Petrochemical Co ., LTD , Showa Denko K.K. etc.,

Industrial dryer

Toppan Printing Co ., LTD, LINTEC Corporation,
Nakamoto Packs Co ., LTD, TERAOKA SEISAKUSHO CO.,LTD.,
Maxell, LTD.

Our history

1977 Showa Aluminum Corp., launched T-COIL.

2001 Showa Denko K.K. Merged with Showa Aluminum Corp.,

2017 Showa Denko Aluminum Trading K.K. took over T-COIL from Showa Denko K.K.

Aug.2021 Showa Denko Aluminum Trading changed its name to SDAT CO.,LTD

S: Showa D: Dynamic A: Aluminum solution T:Trading

5. Application and History : Overseas Expansion

We have provided T-COIL for not only companies in Japan but also Asian locations.

Thailand , China, Taiwan, Korea etc.,

Many companies take advantage of T-COIL for their energy-saving over the world.

Export package

6. T-COIL and Energy-saving

T-COIL achieves energy-saving efficiently

for a long time

in spite of saving maintenance and running-cost.

T-COIL helps you promote Sustainable Development Goals by saving energy.

7. Steps to consider to introduce T-COIL

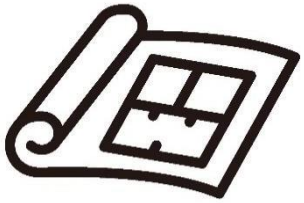
①Showing your condition

② Our proposal and your check about the effect

③Decision on specification and delivery date

You show us your condition. Flow rate and inlet temp are required at least to consider T-COIL.

We turn in our proposal to you. You take a look at it and confirm the expected effect.



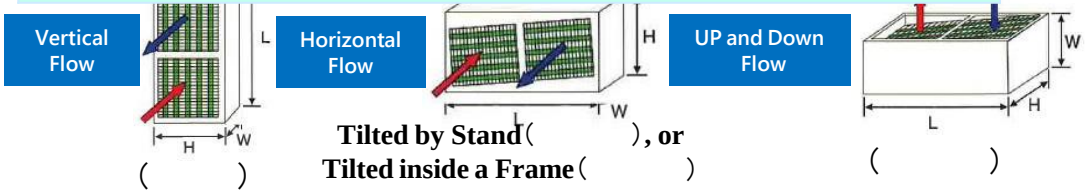
We decide the specification to consider your site where T-coil will be installed.
And, you and we decide the delivery date.

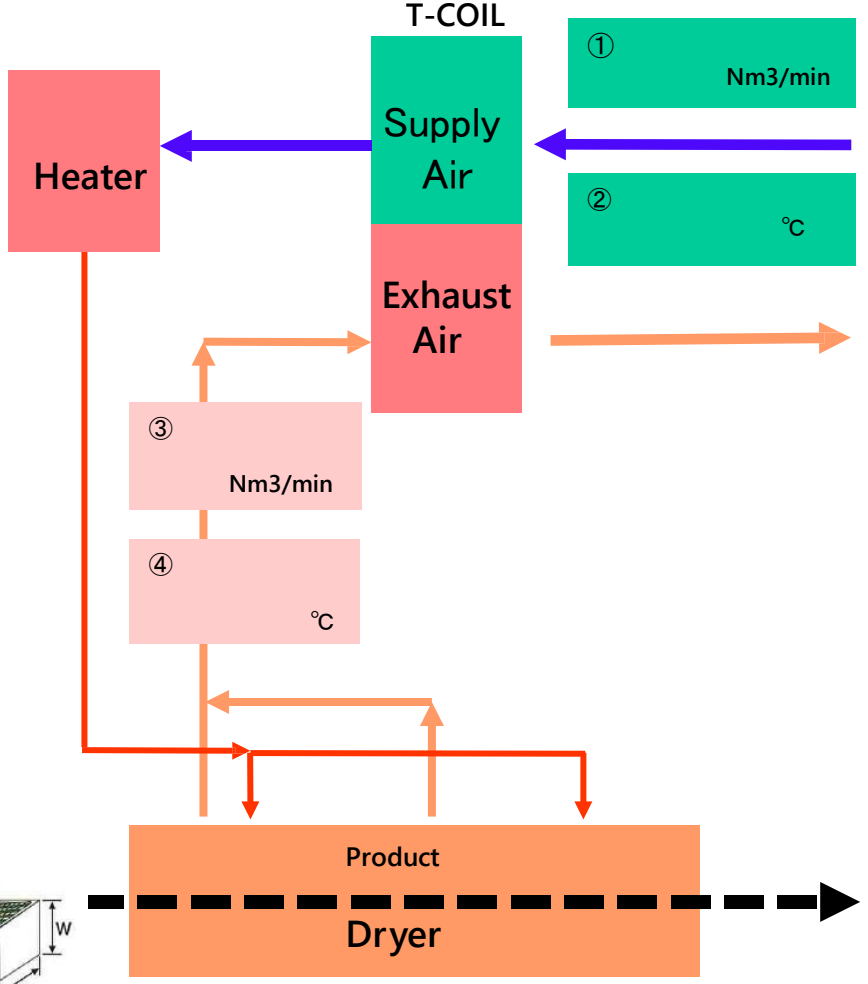
Condition Entry form 【 ①、②、③、④ is required 】

DATE:

Line		
Fuel	LNG , LPG , Kerosene , Heavy oil , Electricity , Other ( )	
	Price (/)	
Operating Time	hr / yr	
Necessary to fill in	Supply Air	Exhaust Air
Flow Rate (Nm3/min)	①	③
Inlet Temp. (℃)	②	④
Humidity (kg/kg')		
Outlet Temp. (℃) * if you have any request		
Pressure Drop(Pa) * if you have any request		
Limit of Frame Out Line	H x L x W mm	

＊Others（Properties of Supply and Exhaust Air etc.,）





Thank you very much for your listening.

Contct

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（＋81）90－4054－8851／ kazumasa_ishikawa@sdat.co.jp
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