

**鑽石牌**  
**DHD除濕式污泥乾燥機**  
**DeHumidification Sludge Dryer**



Diamond DHD DRYER

# 污泥乾燥理論:

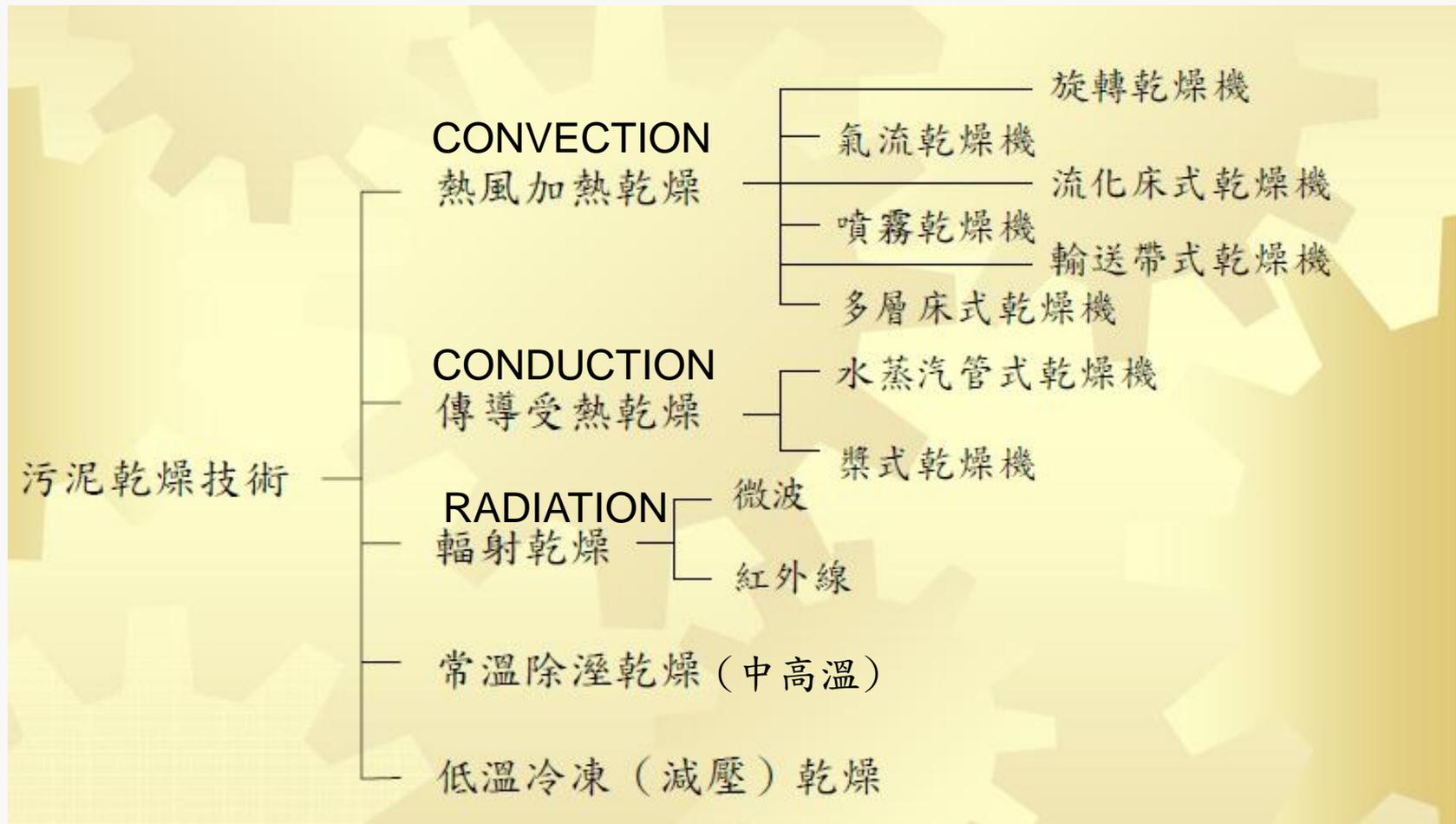
## 1. 乾燥原理:

利用環境與污泥的溫度差或濕度差, 以去除污泥中的水份, 乾燥通常是在一系列操作中最後的步驟.

## 2. 熱傳原理

- ◆ 熱傳發生之基本條件為存在溫度差異。
- ◆ 根據熱力學第二定律，熱傳之方向必須為溫度下降之方向
- ◆ 溫度差構成熱傳之推動力 (Driving Force)。
- ◆ 熱傳率與溫度梯度 (Temperature Gradient) 有關。

# 乾燥機分類:

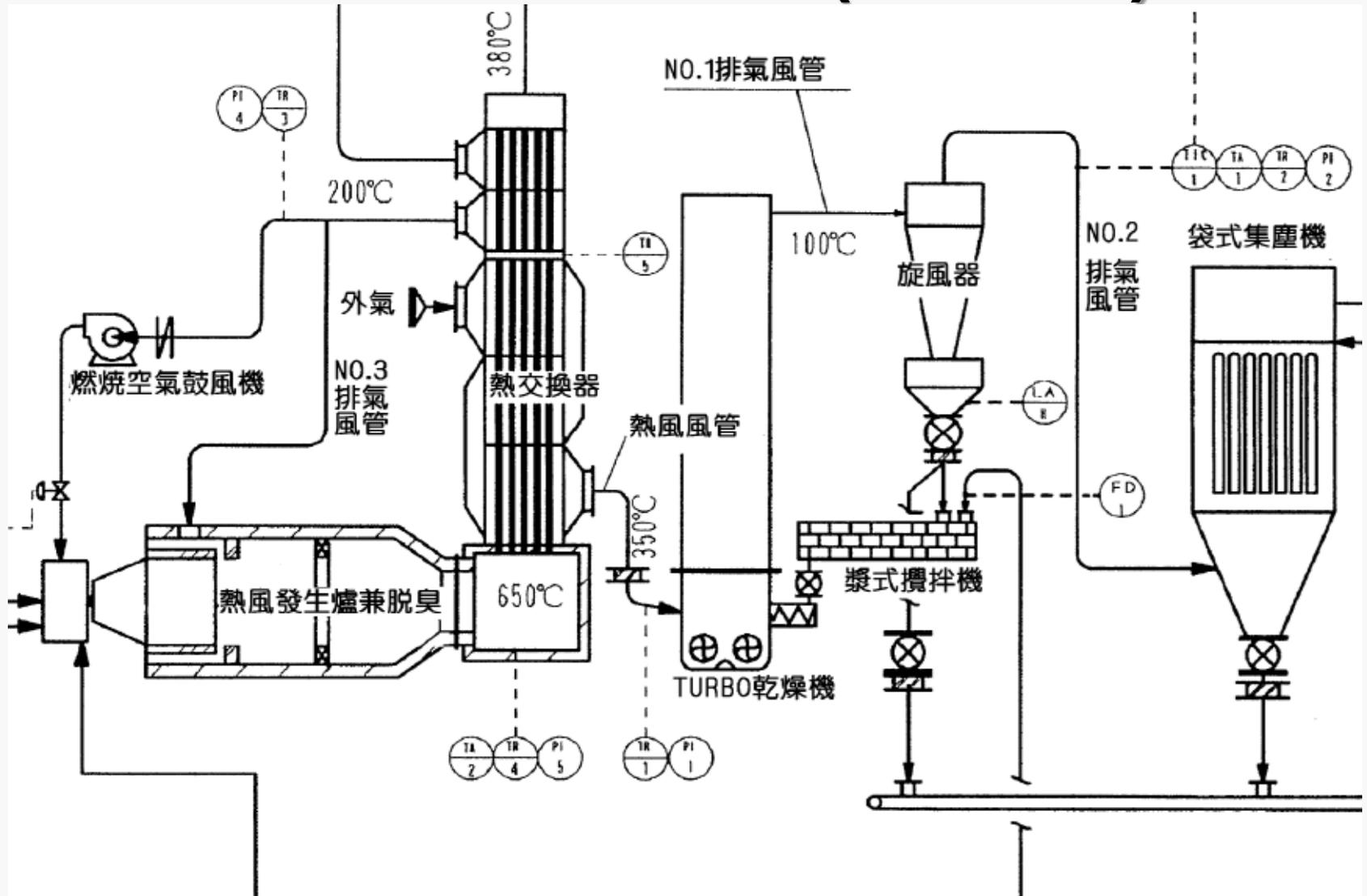


摘自工業局資料

# 乾燥機分類:直接對流式

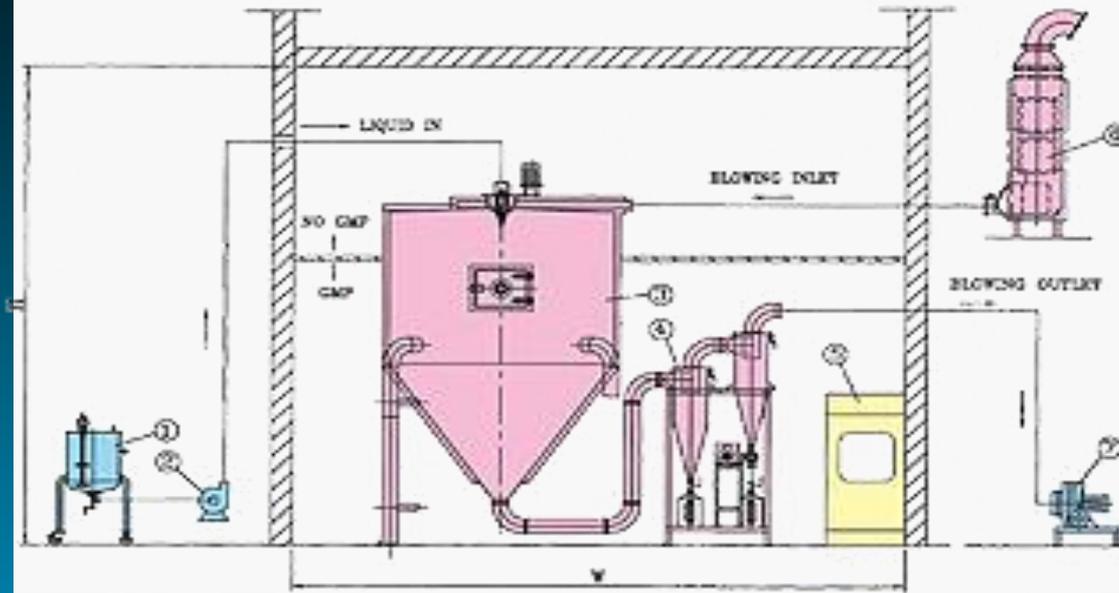


# 乾燥機分類:氣流式(TURBO)



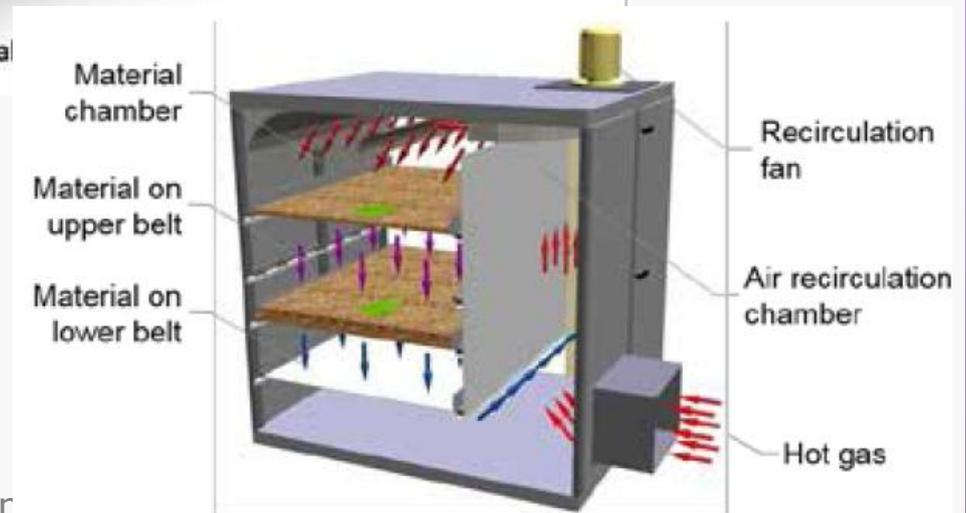
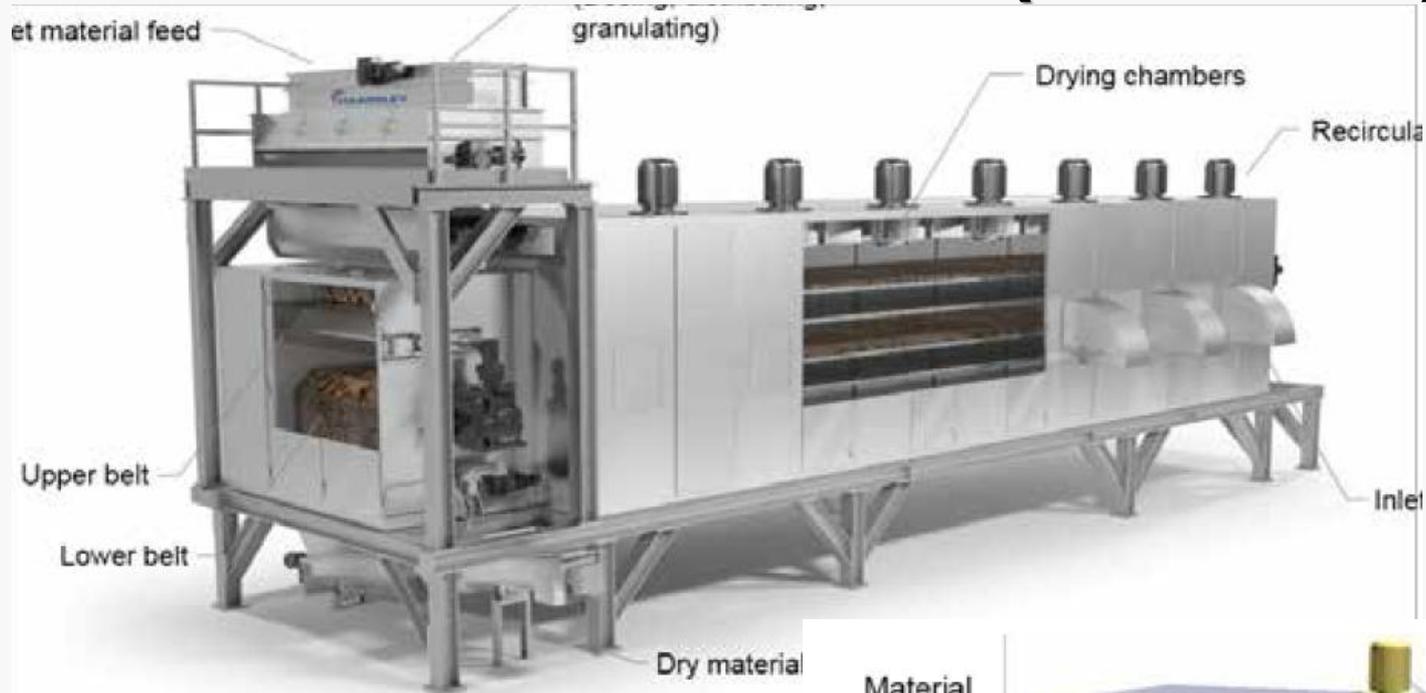
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# 乾燥機分類:噴霧乾燥機



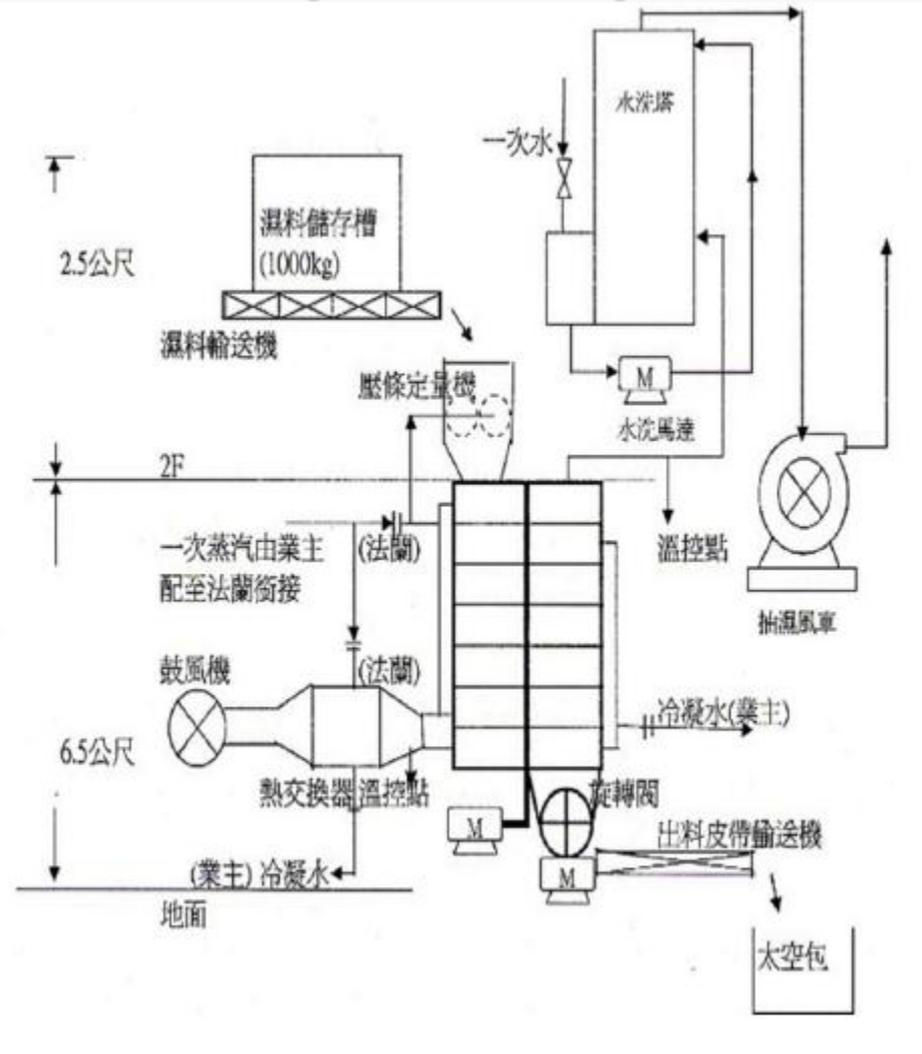
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# 乾燥機分類: 氣流式(輸送帶式)



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# 乾燥機分類:氣流式(多層床)



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# 乾燥機分類: 蒸汽攪拌式(真空)



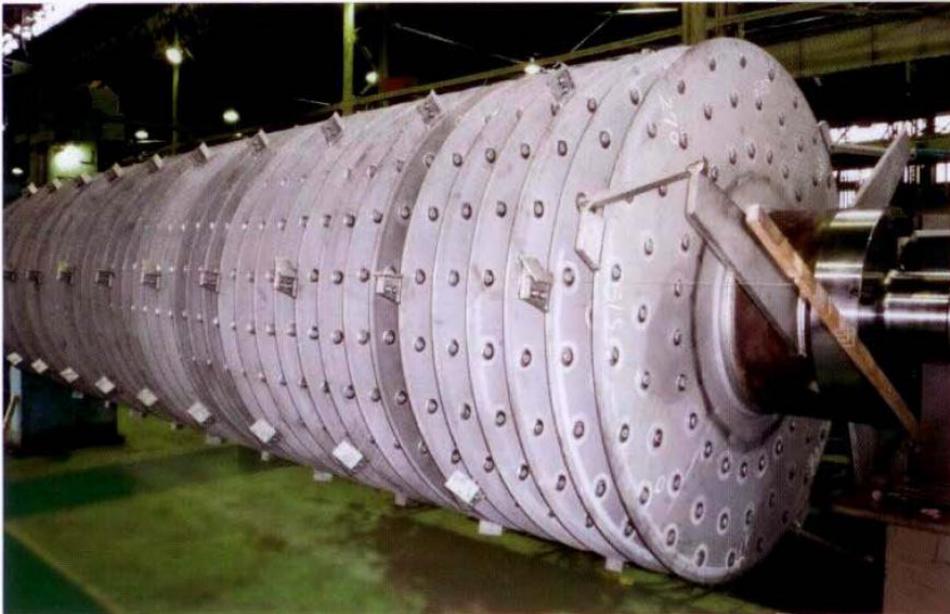
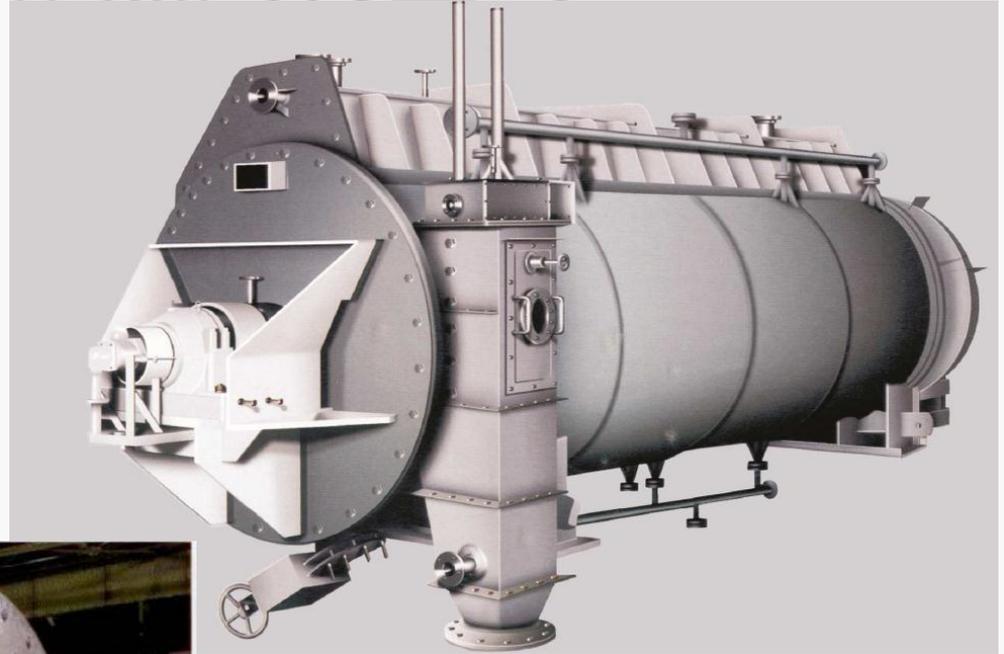
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# 乾燥機分類: 蒸汽滾筒式



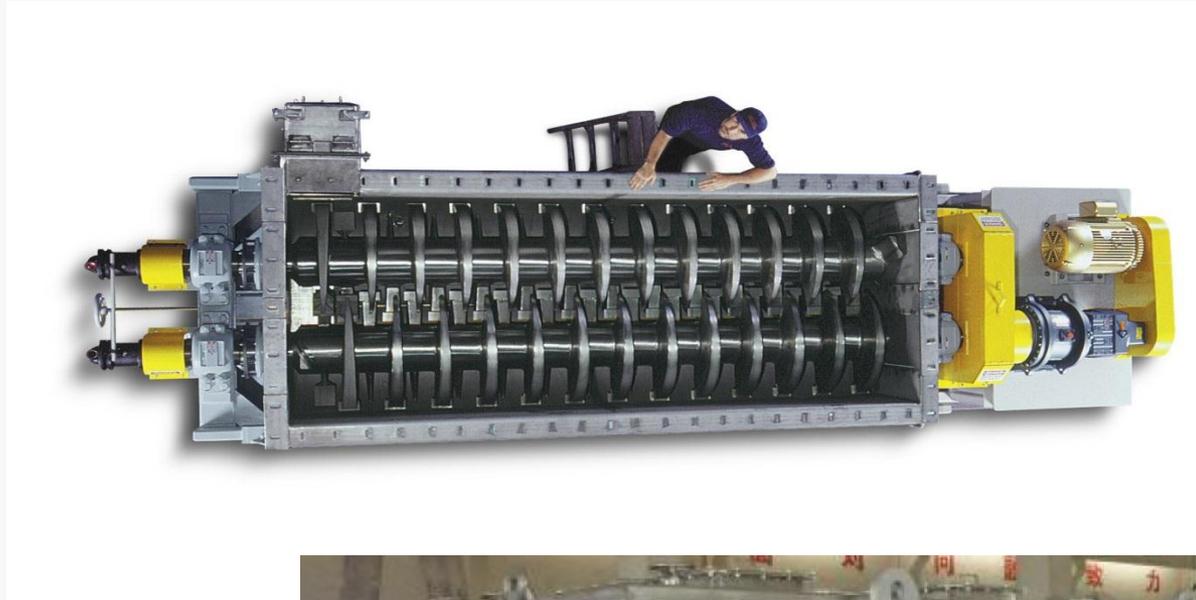
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# 乾燥機分類: 蒸汽轉盤式

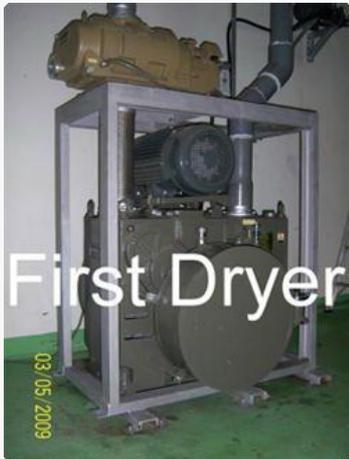
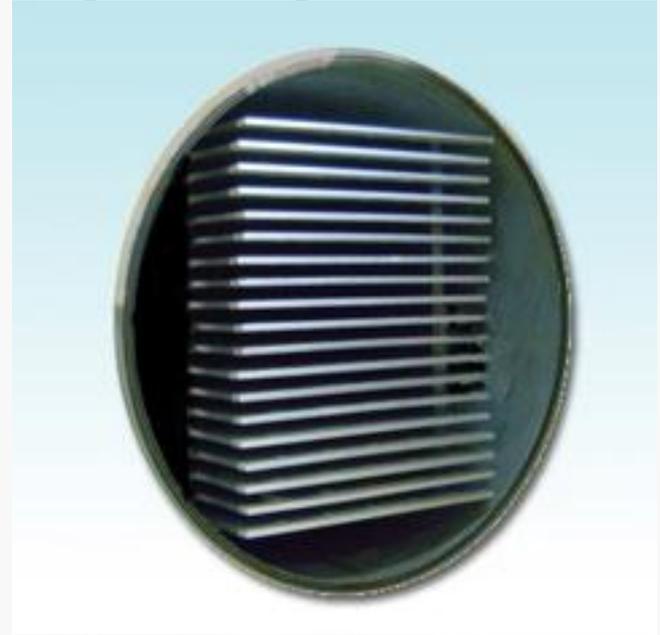


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# 乾燥機分類:蒸汽槳葉式(PADDLE)

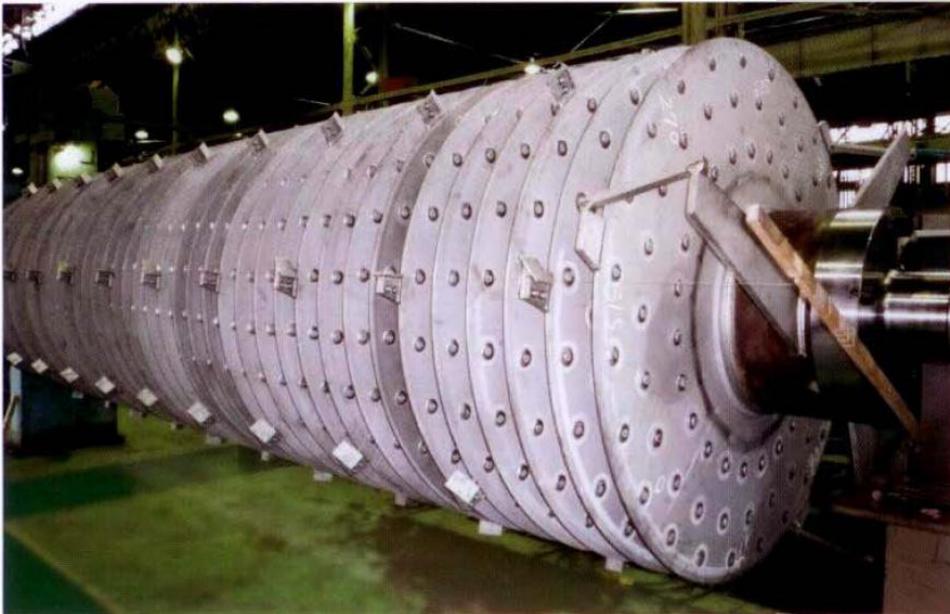
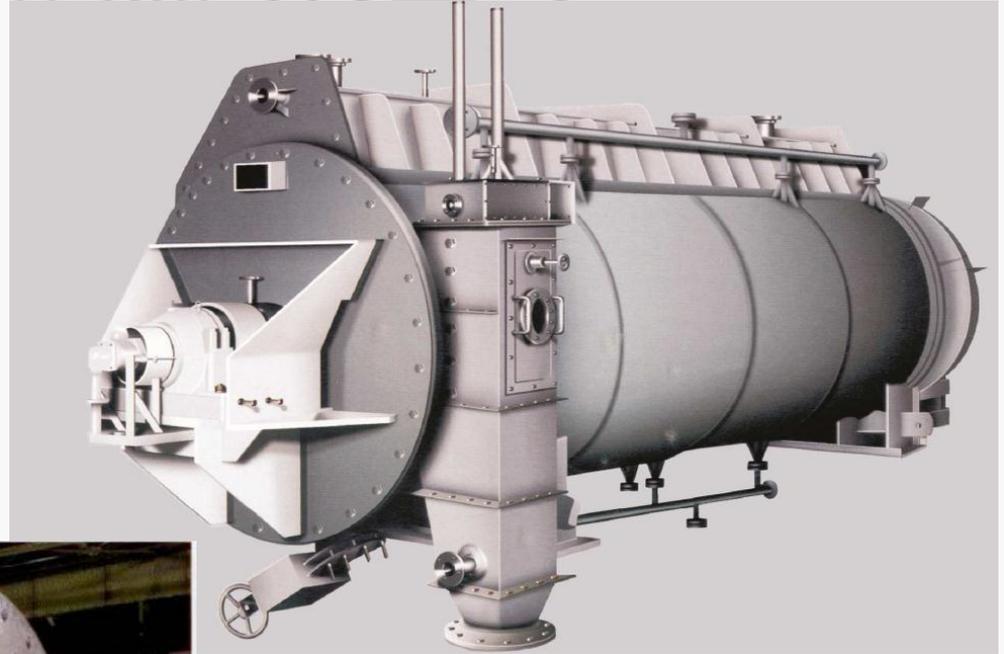


# 乾燥機分類:低溫冷凍(真空)式



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# 乾燥機分類: 蒸汽轉盤式

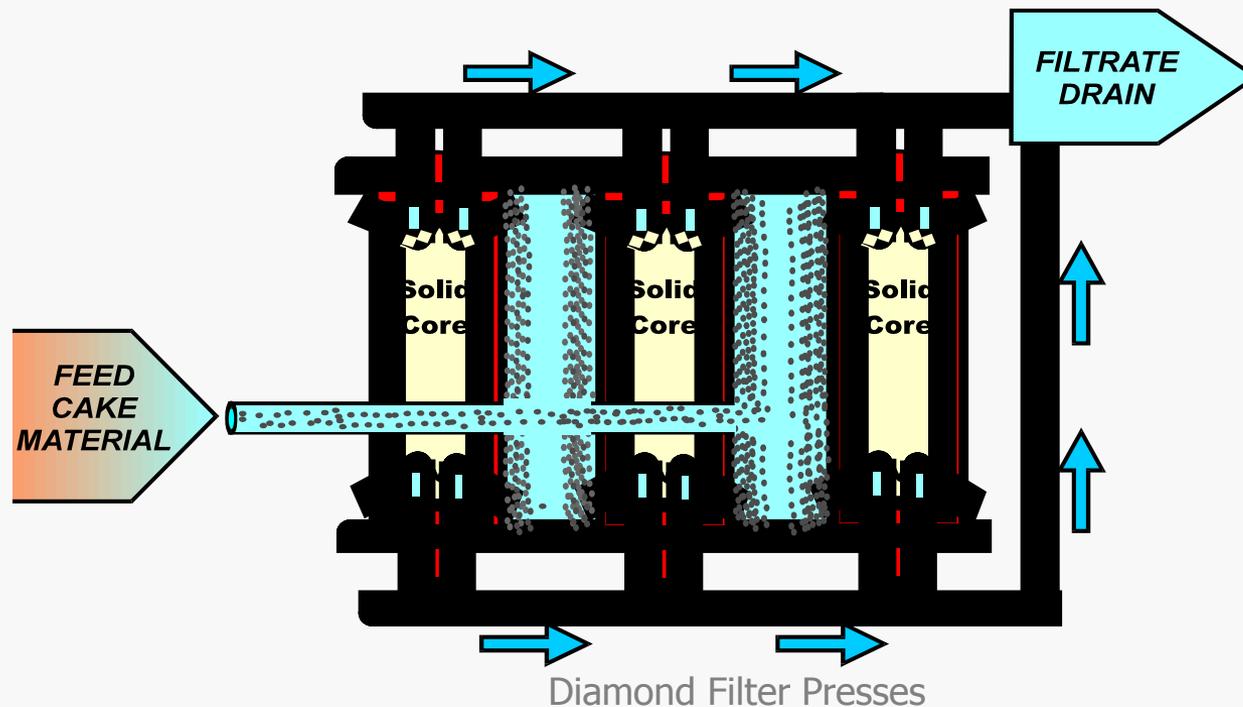


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# 真空乾燥型壓濾機

# 第一階段動作

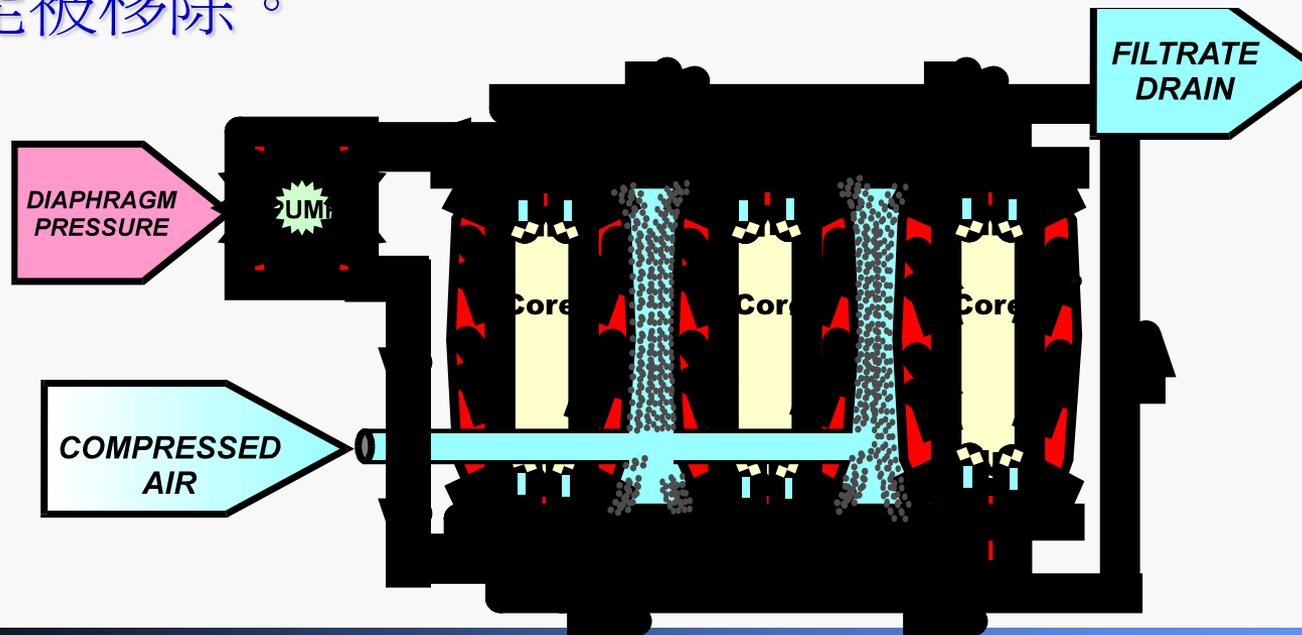
- 如同傳統壓濾機般，進料泵餵入漿料並對濾餅進行過濾和壓榨，最後仍有一些水份會殘存在濾餅顆粒內狹小無效的空隙中。



# HOW IT WORKS - Second Phase

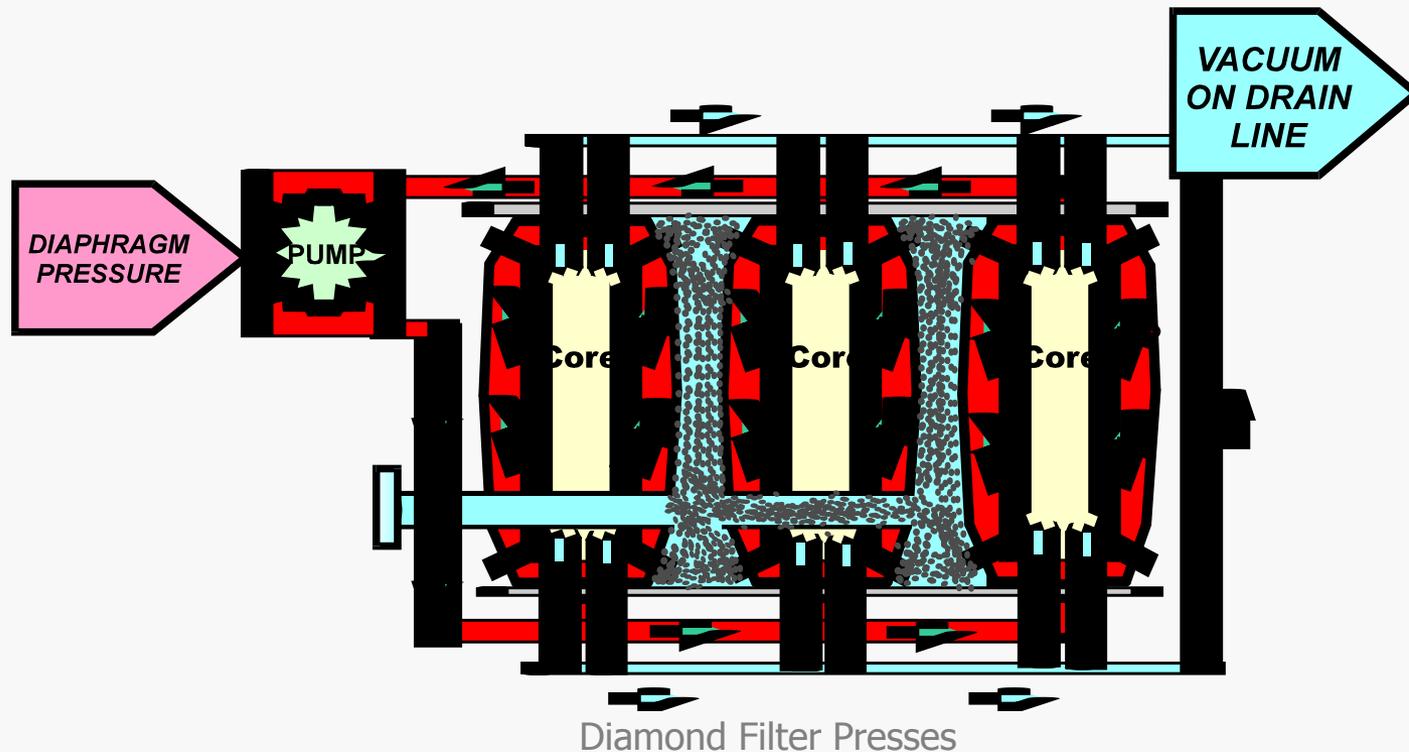
## 第二階段動作

- 膜片擠壓：膜片受到壓縮空氣或蒸汽鼓脹而進一步使濾餅的體積和水份減少。
- 經過這種標準型膜片式壓濾機後，大多數的自由水均能被移除。



# HOW IT WORKS - Third Phase 第三階段動作

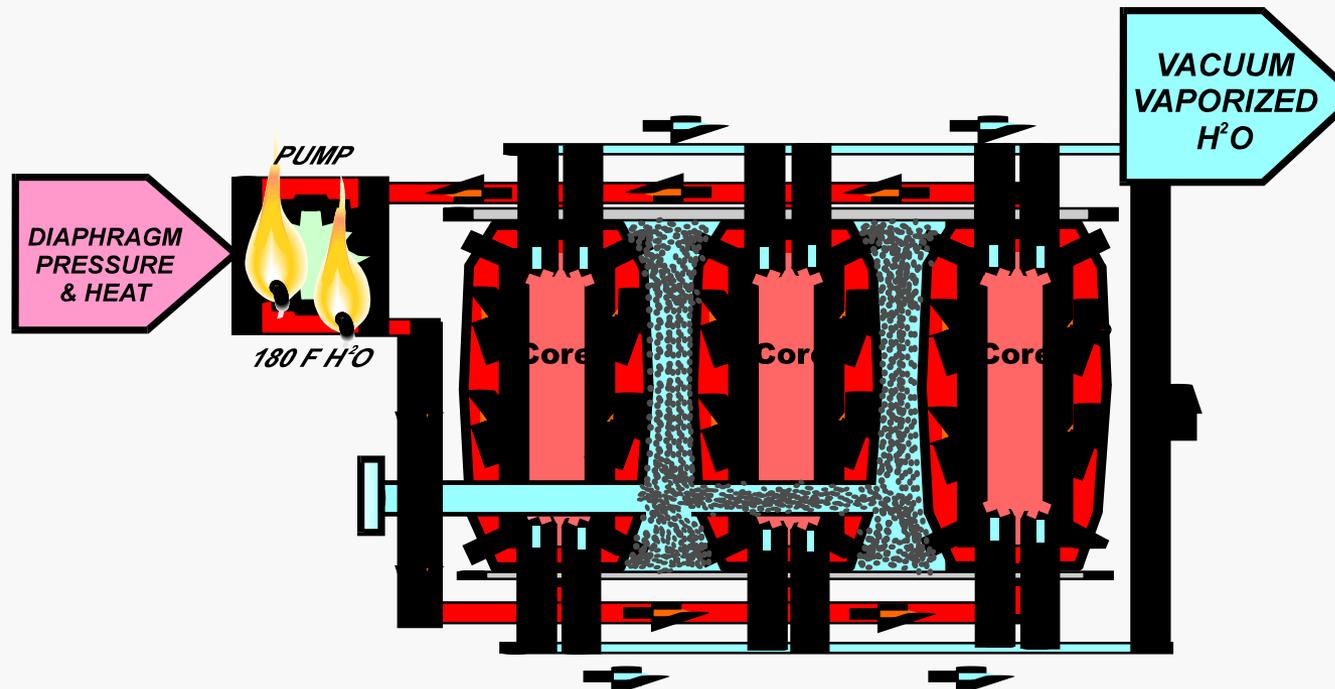
- 完成膜片擠壓並關閉進料管後乾燥程序於焉開始；此時濾餅仍保持於壓濾機中，在排放濾液的管線上抽真空。



# HOW IT WORKS - Third Phase (cont.)

## 第三階段動作(續)

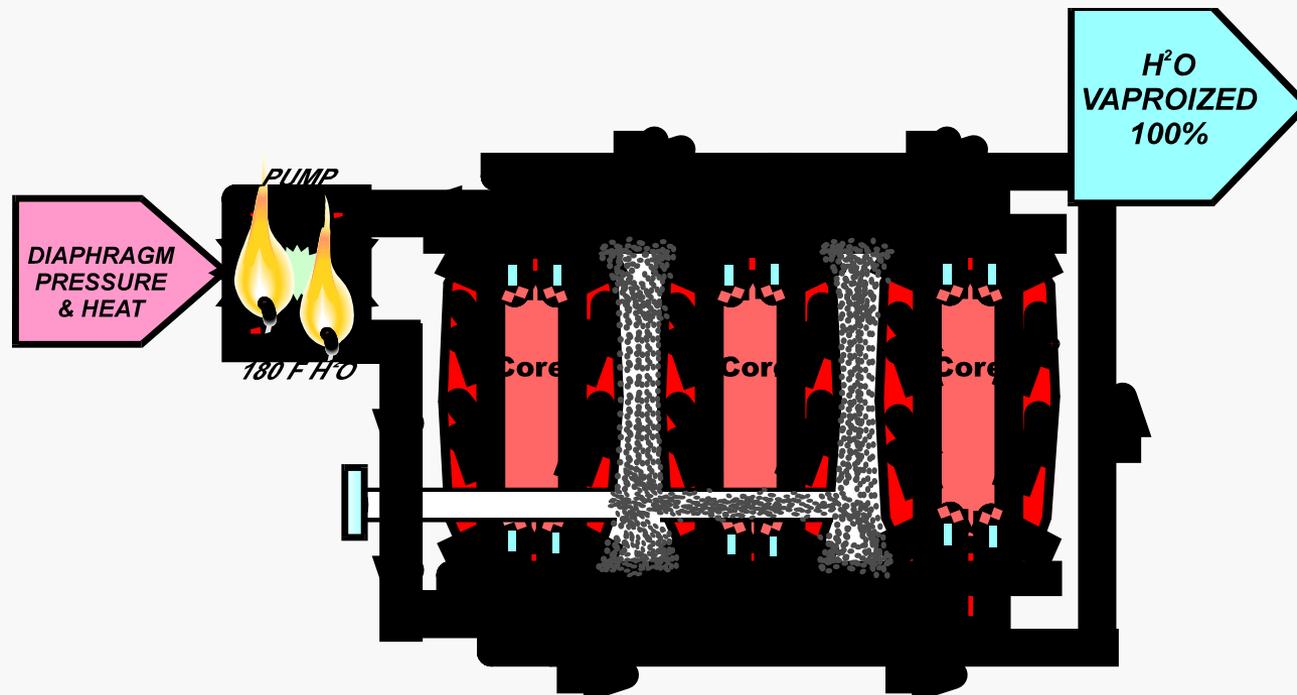
- 循環的蒸汽或熱水隔著膜片將熱量傳遞給濾餅；且真空作用使得水份容易地在較低的溫度中蒸發。



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# 99% MOISTURE REMOVED 水份移除

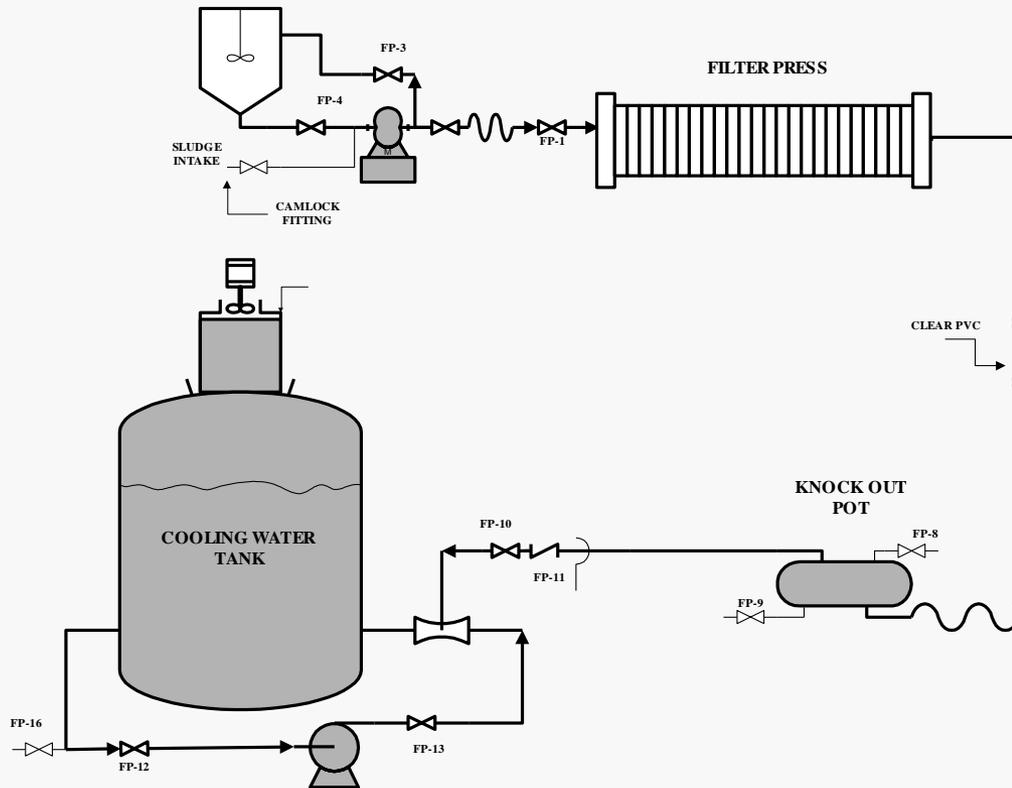
- 當濾餅乾燥並縮小體積後，有鼓脹構造的膜片式濾板仍可以全程持續的執行熱傳導而達完全乾燥。



Diamond Filter Presses

# FEED AND COOLING WATER SYSTEM

## 進料及冷卻水系統





# 真空蒸汽乾燥型壓濾機濾餅

Diamond Filter Presses

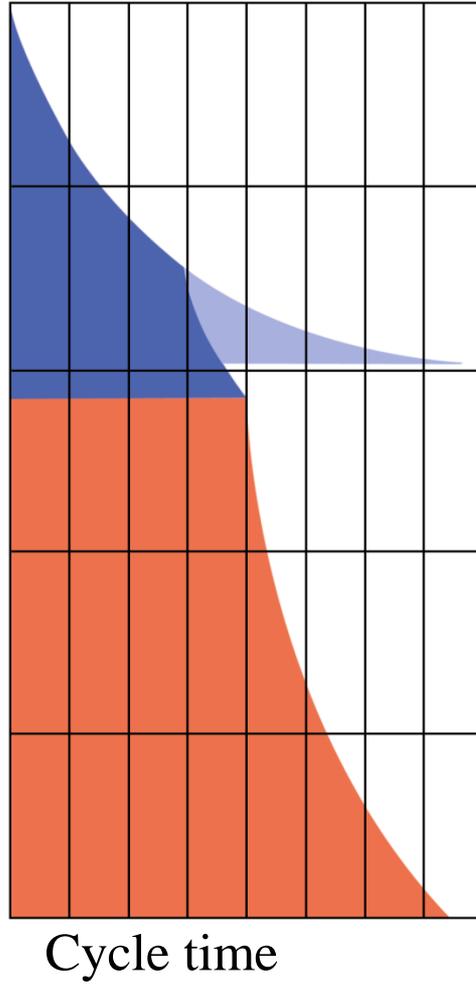
CHART  
DEWATERING  
AND DRYING  
EFFICIENCY

STANDARD  
PRESS

STANDARD  
PRESS WITH  
DIAPHRAM

DRYVAC  
PRESS

濾餅  
含水率  
%



# 一廠(桃園)



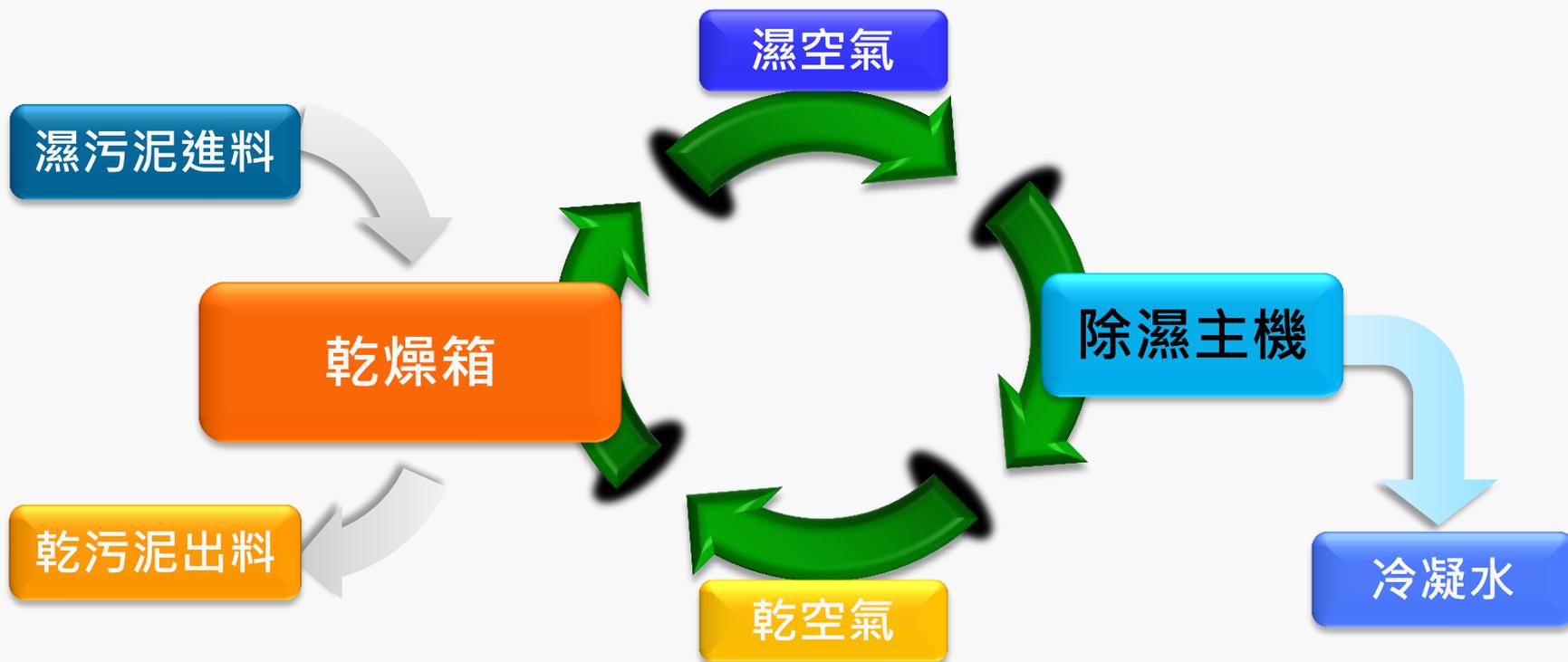
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# 二廠(雲科工業區)



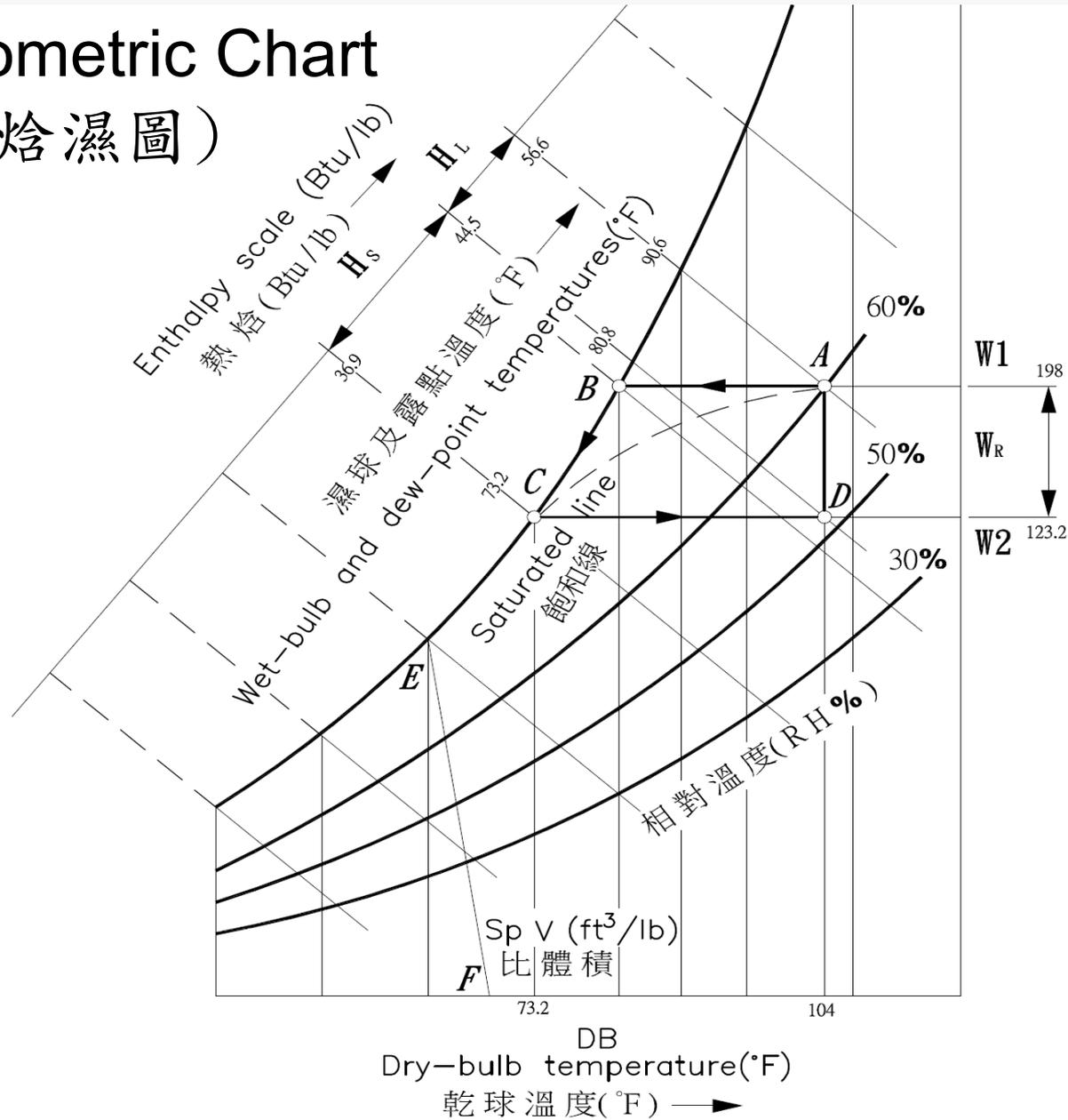
Diamond DHD Dryer

# DHD乾燥機—原理示意圖



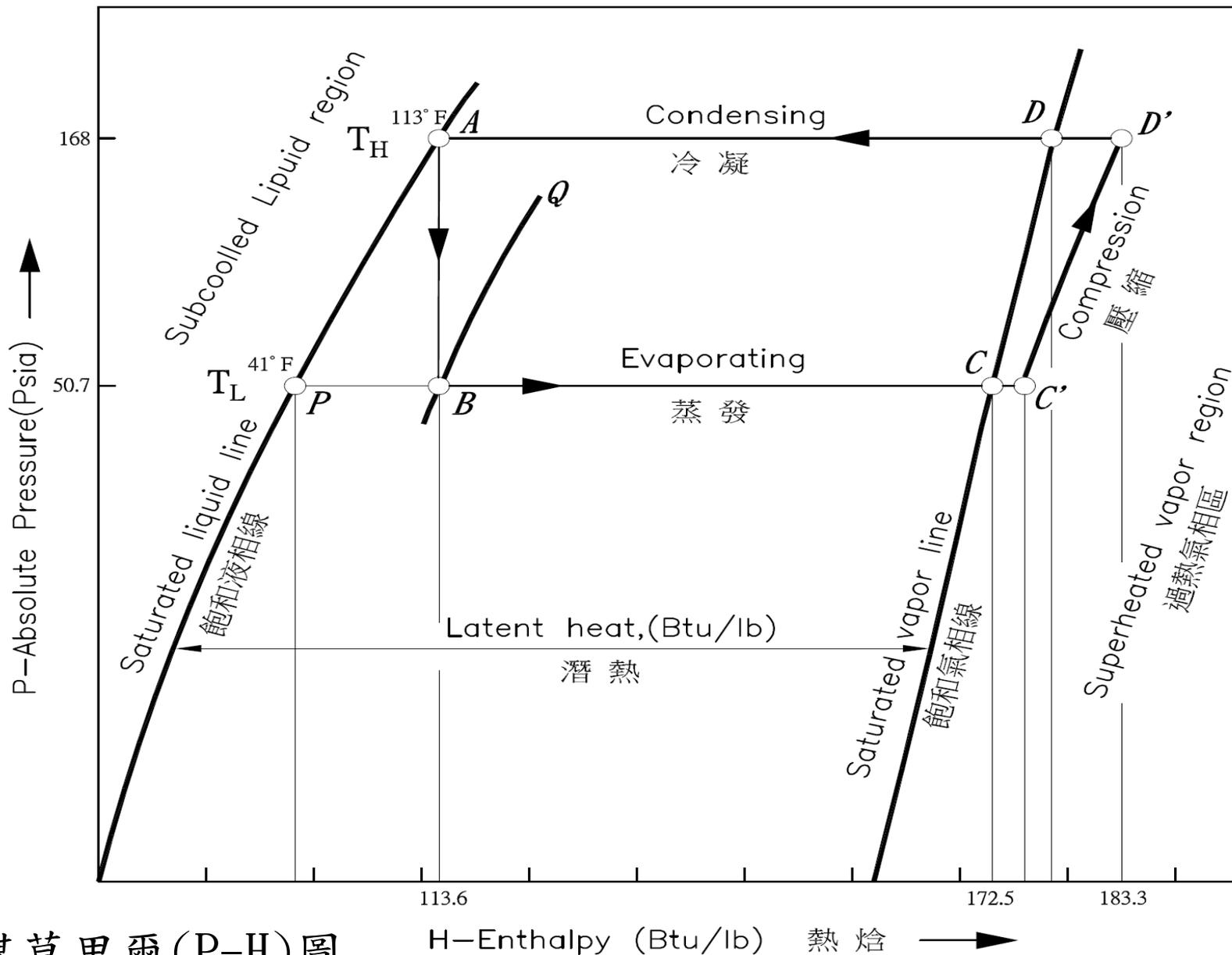
# Psychrometric Chart

(焓濕圖)



Specific humidity (lb water/lb dry air) →  
 比(絕對)濕度 (lb 水 / lb 乾空氣) →

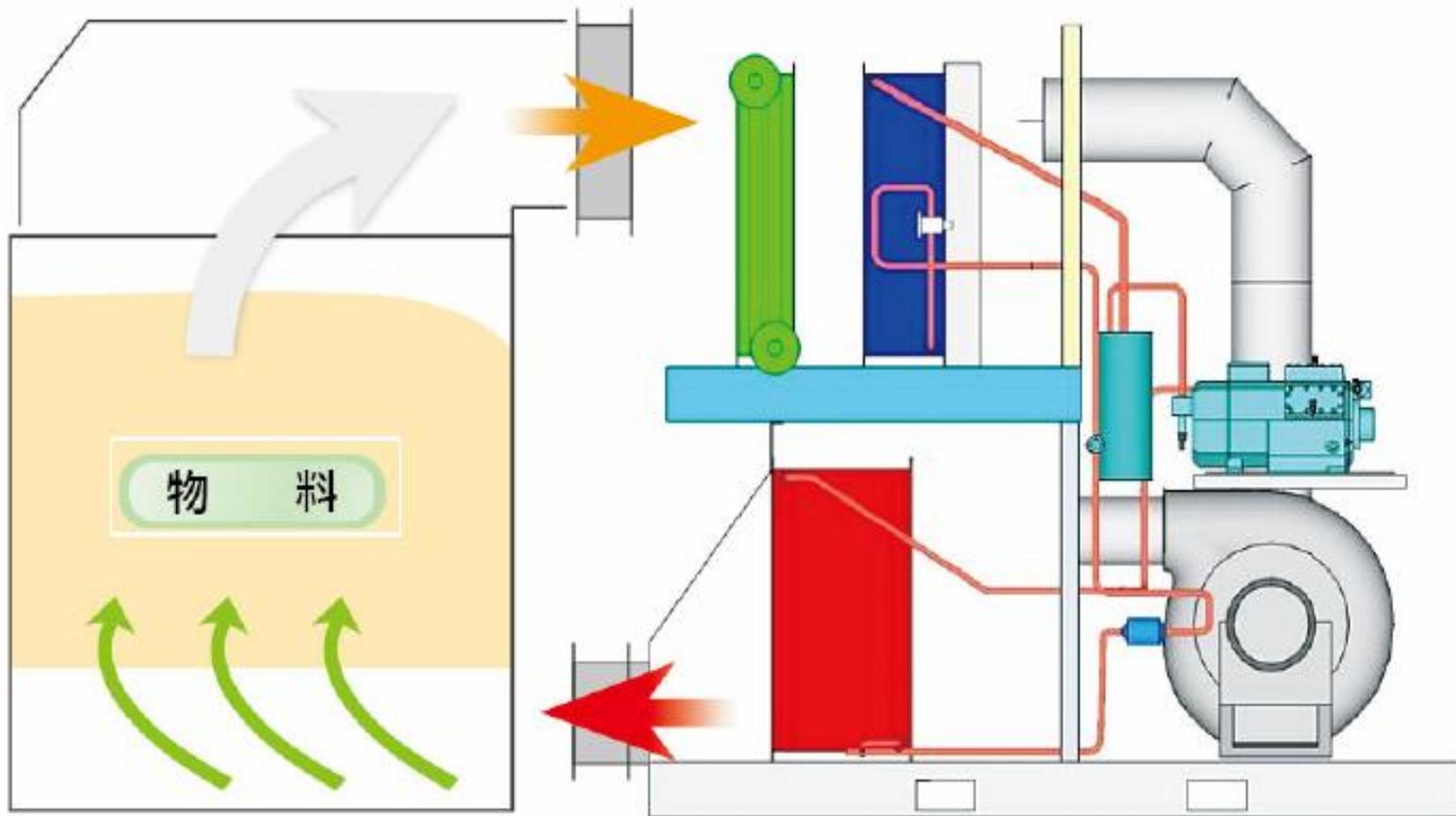
絕對壓力



冷媒莫里爾 (P-H) 圖

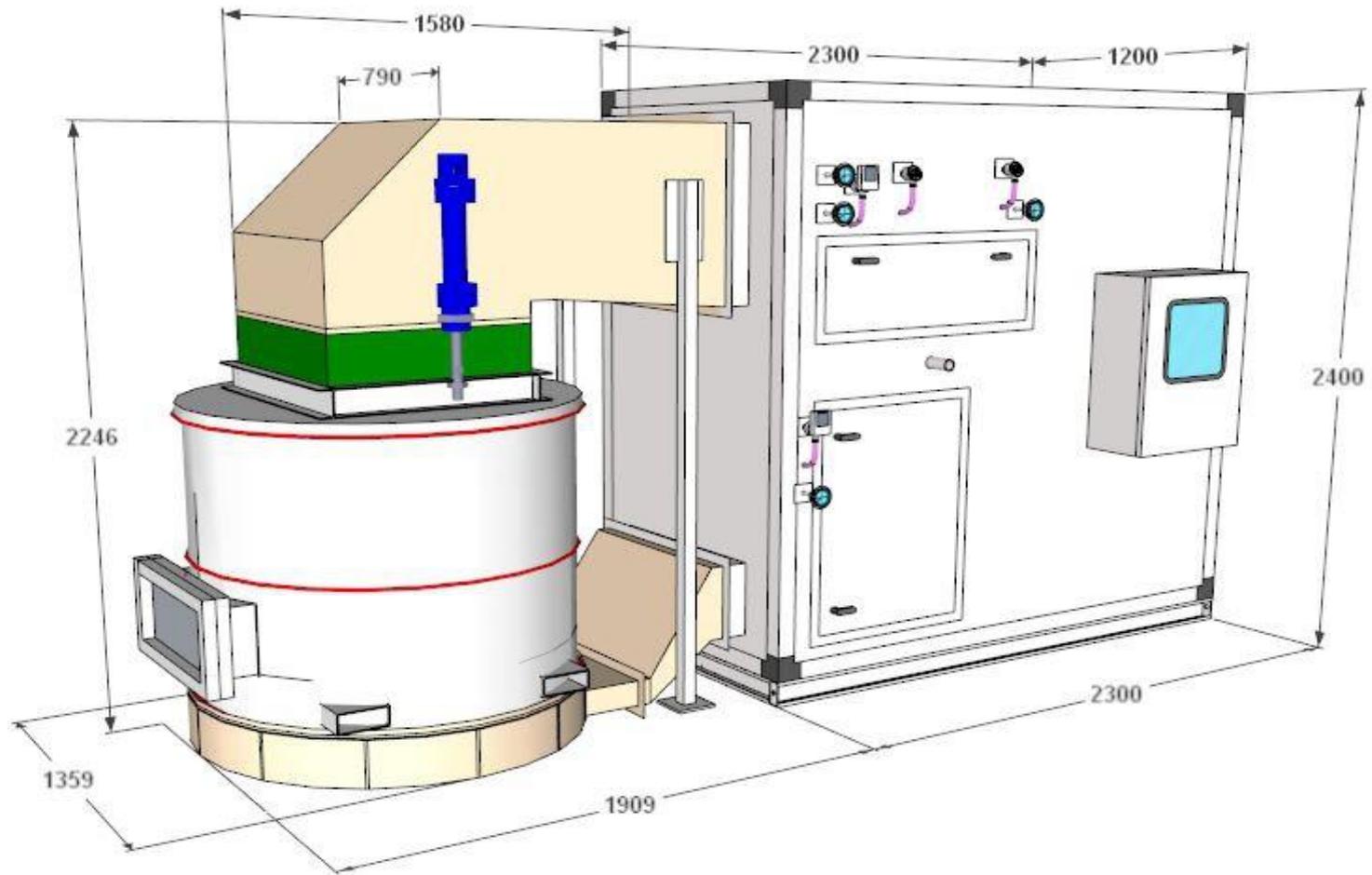
H-Enthalpy (Btu/lb) 熱焓

# 批次式DHD 機械流程示意圖



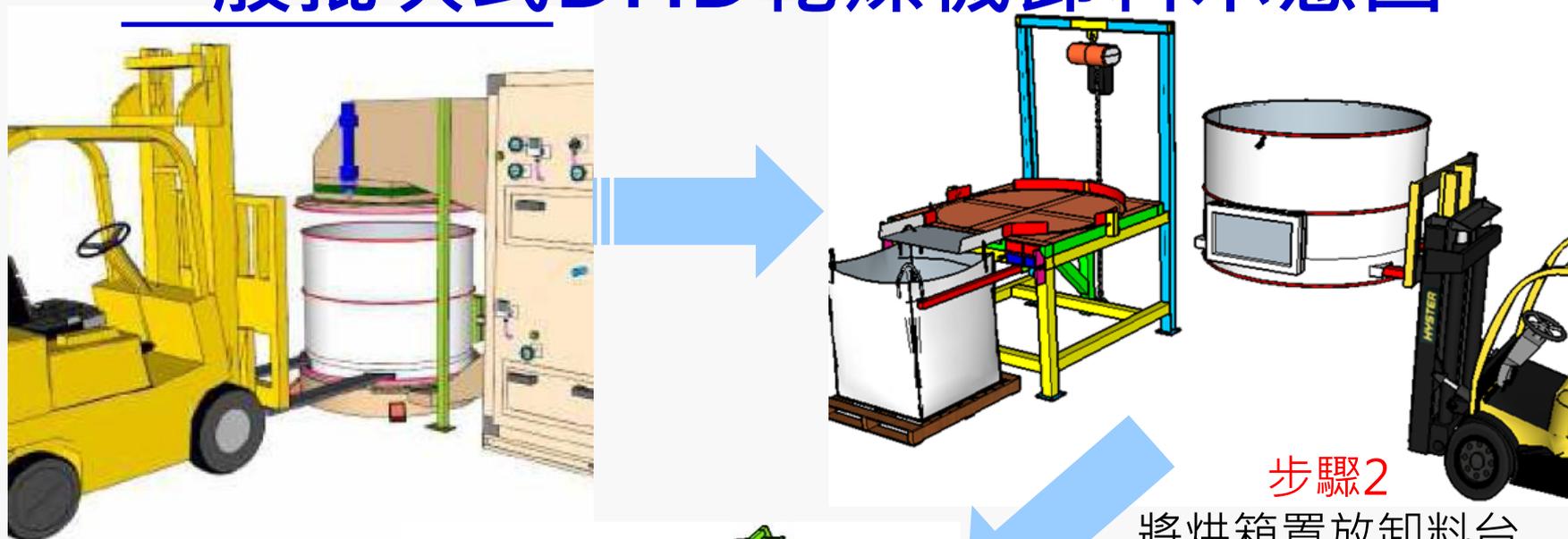
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# 一般批次式外型(除濕主機+移動式烘箱)



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# 一般批次式DHD乾燥機卸料示意圖

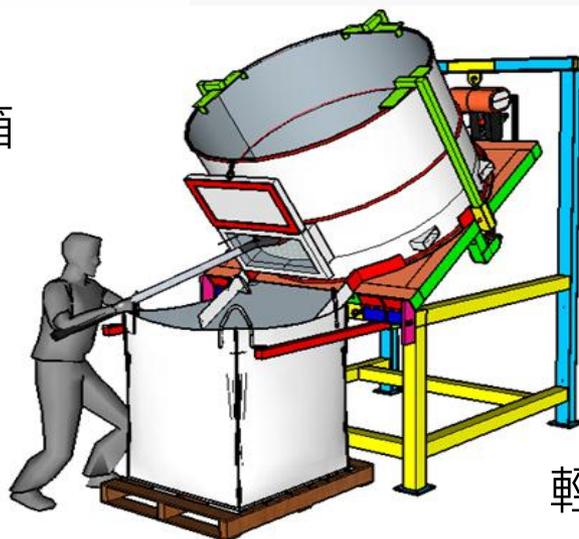


步驟1

以堆高機取出烘箱

步驟2

將烘箱置放卸料台



步驟3

輕鬆完成卸料

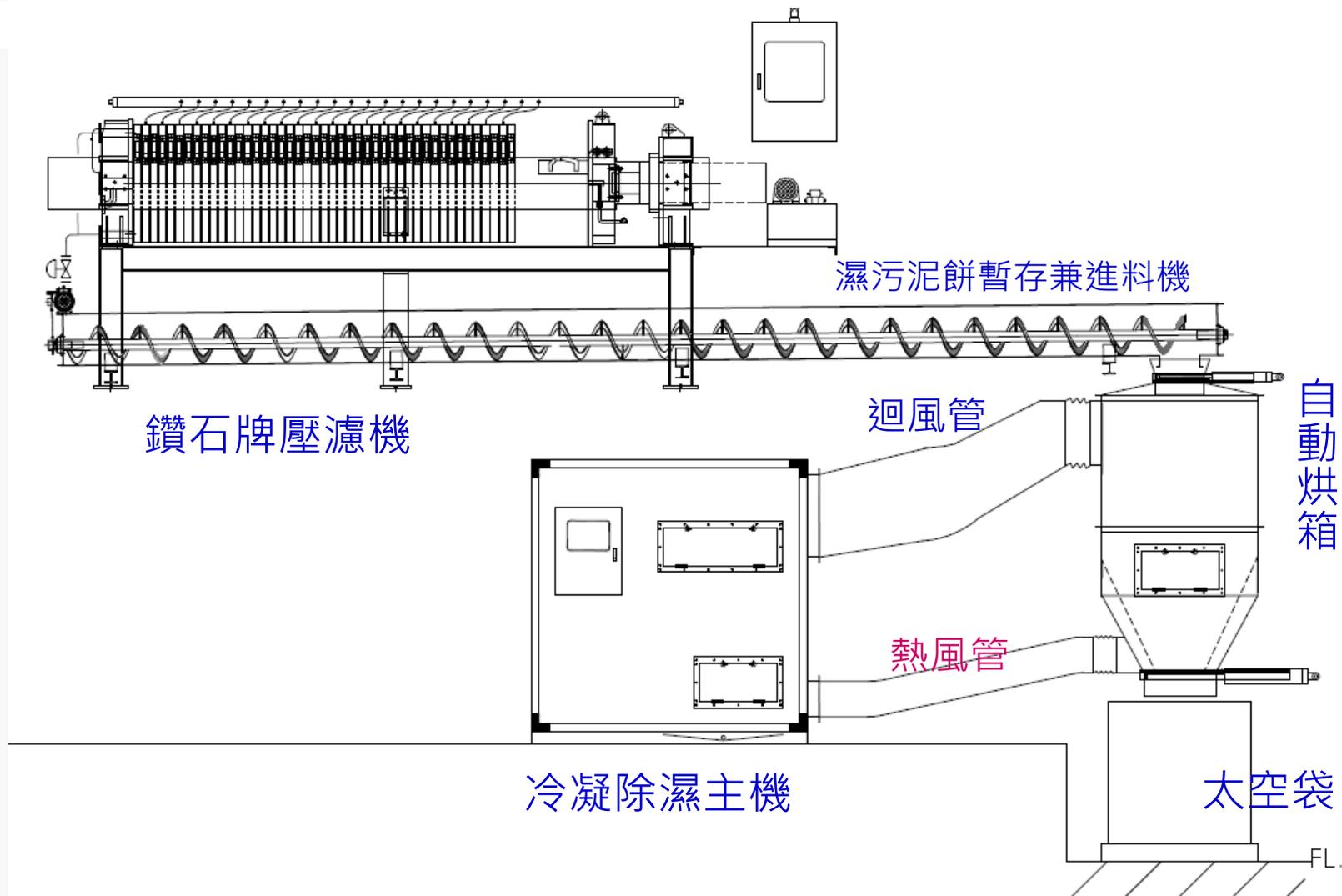
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# 一般批次式乾燥機(除濕主機+移動式烘箱)



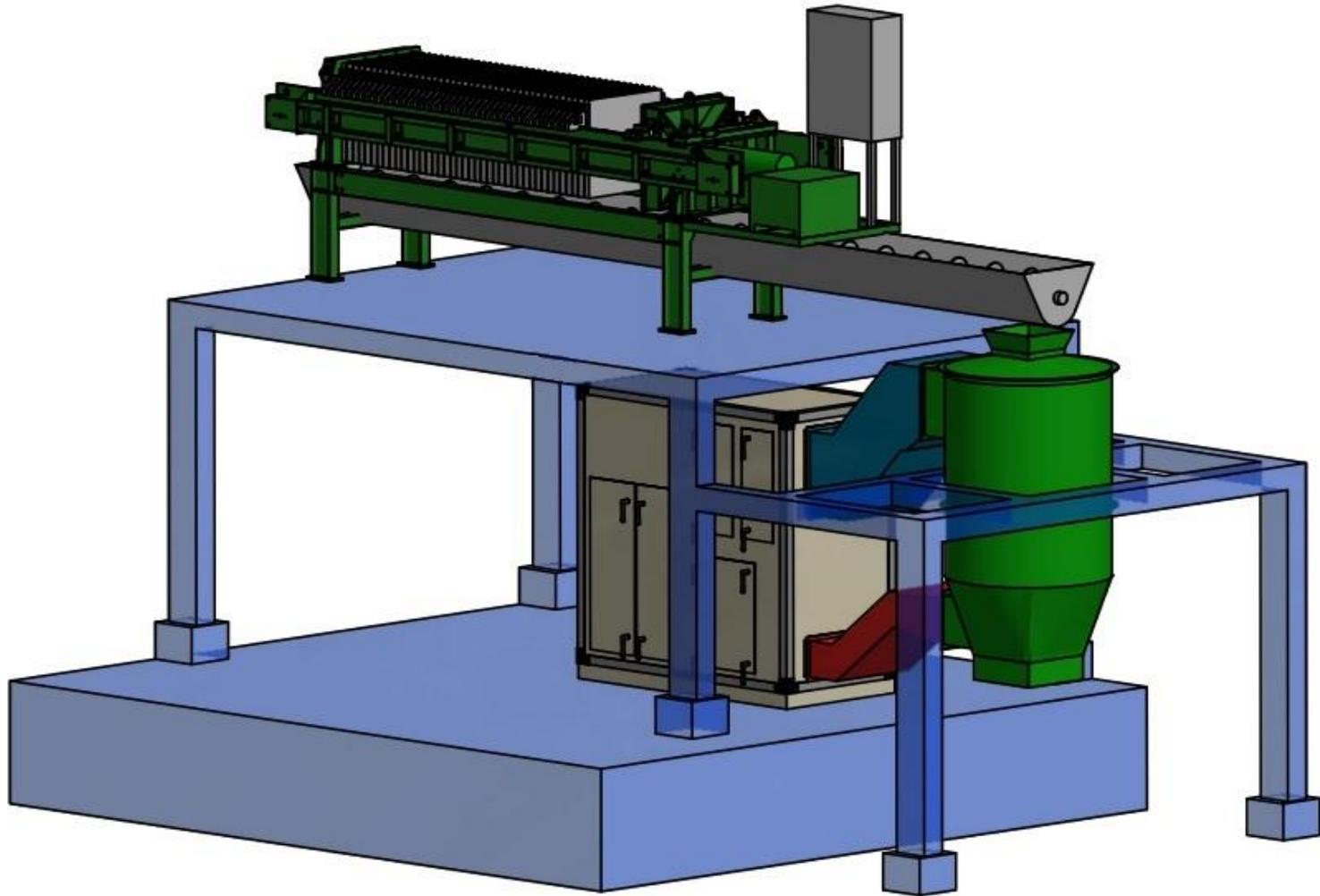
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# 自動批次式乾燥機外型(除濕主機+固定式烘箱)



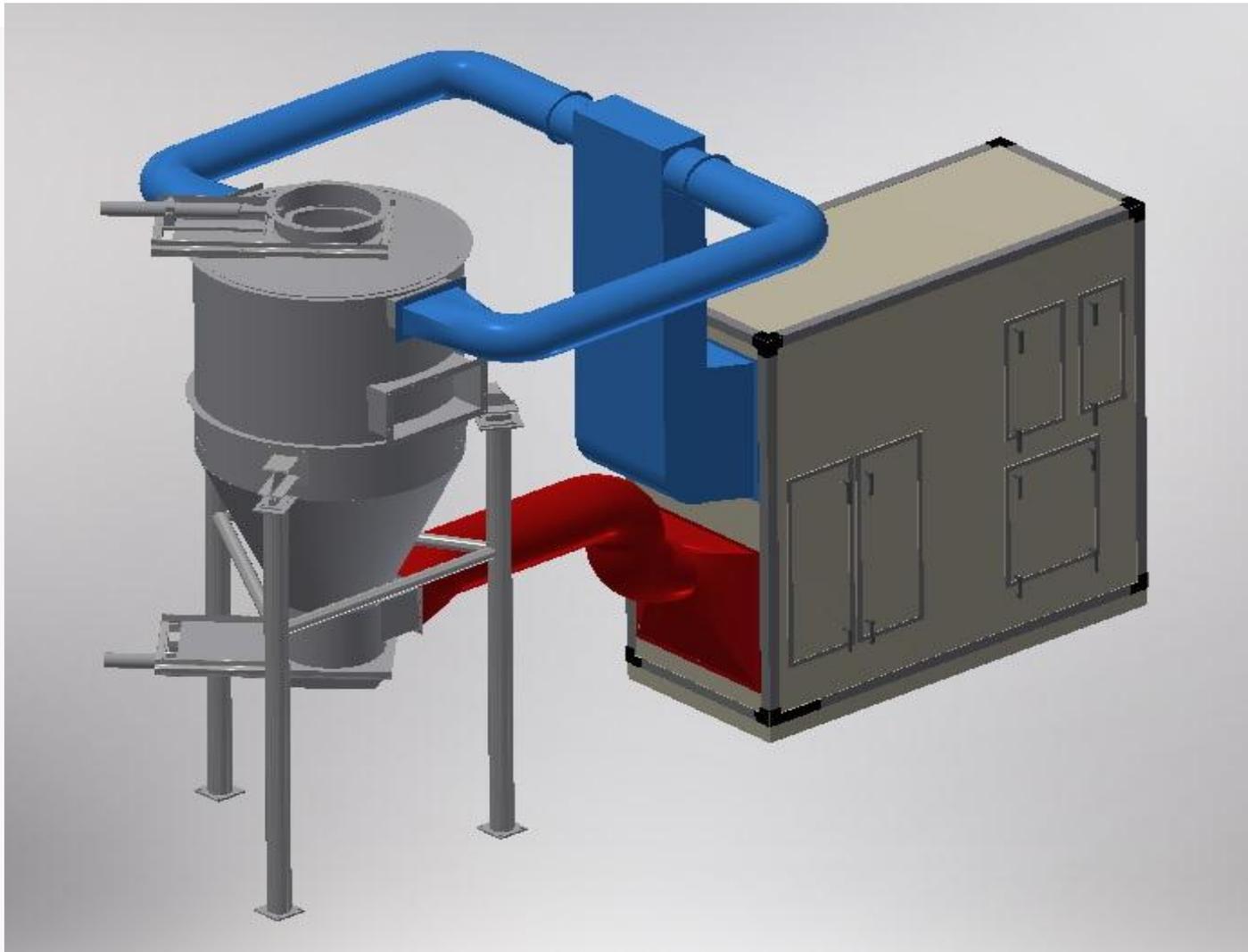
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# 自動批次式乾燥機(冷凝主機+固定式烘箱)



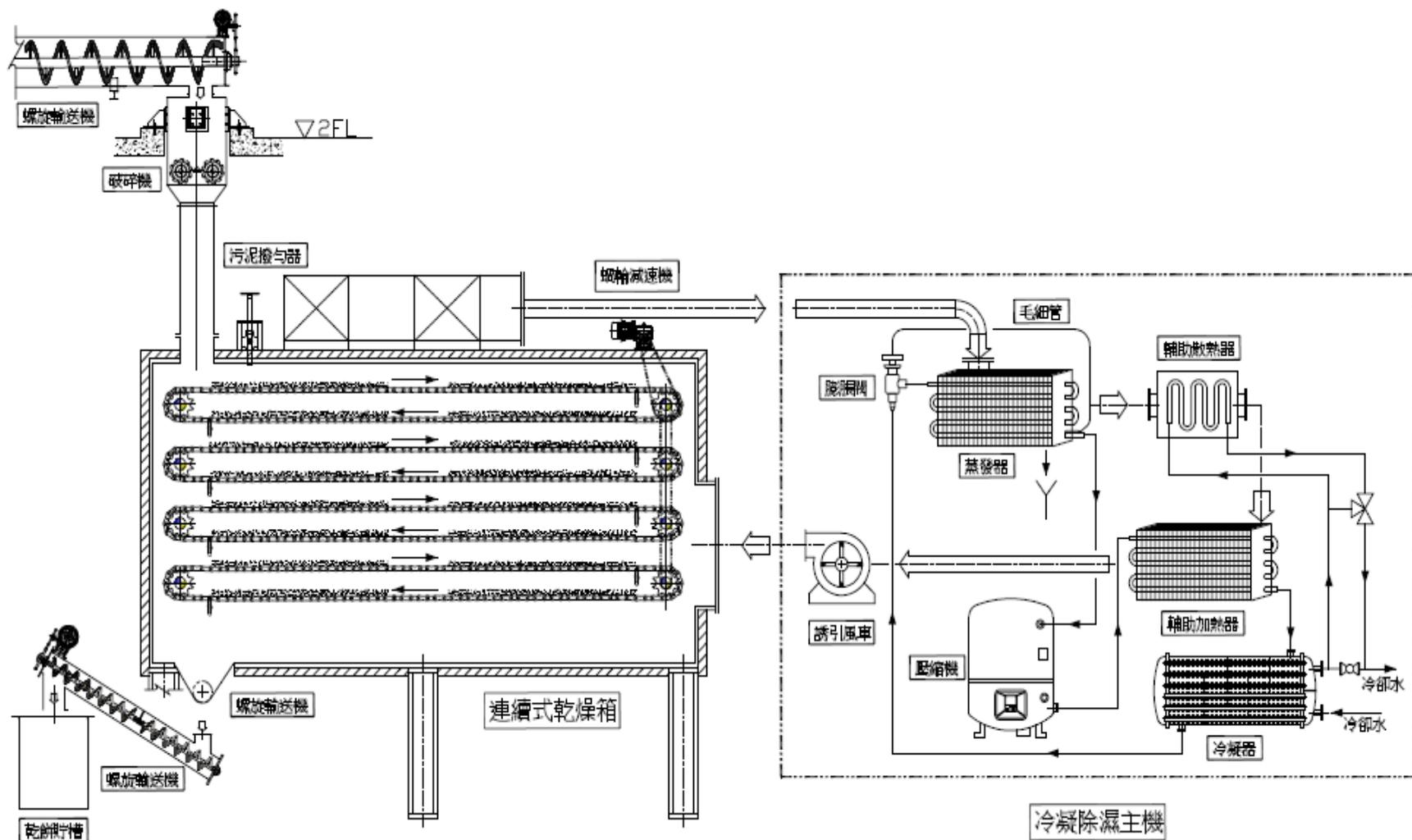
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# 自動批次式乾燥機(冷凝主機+固定式烘箱)



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# 自動連續式DHD 乾燥機流程示意圖



# DHD乾燥機(多組式除濕主機)照片



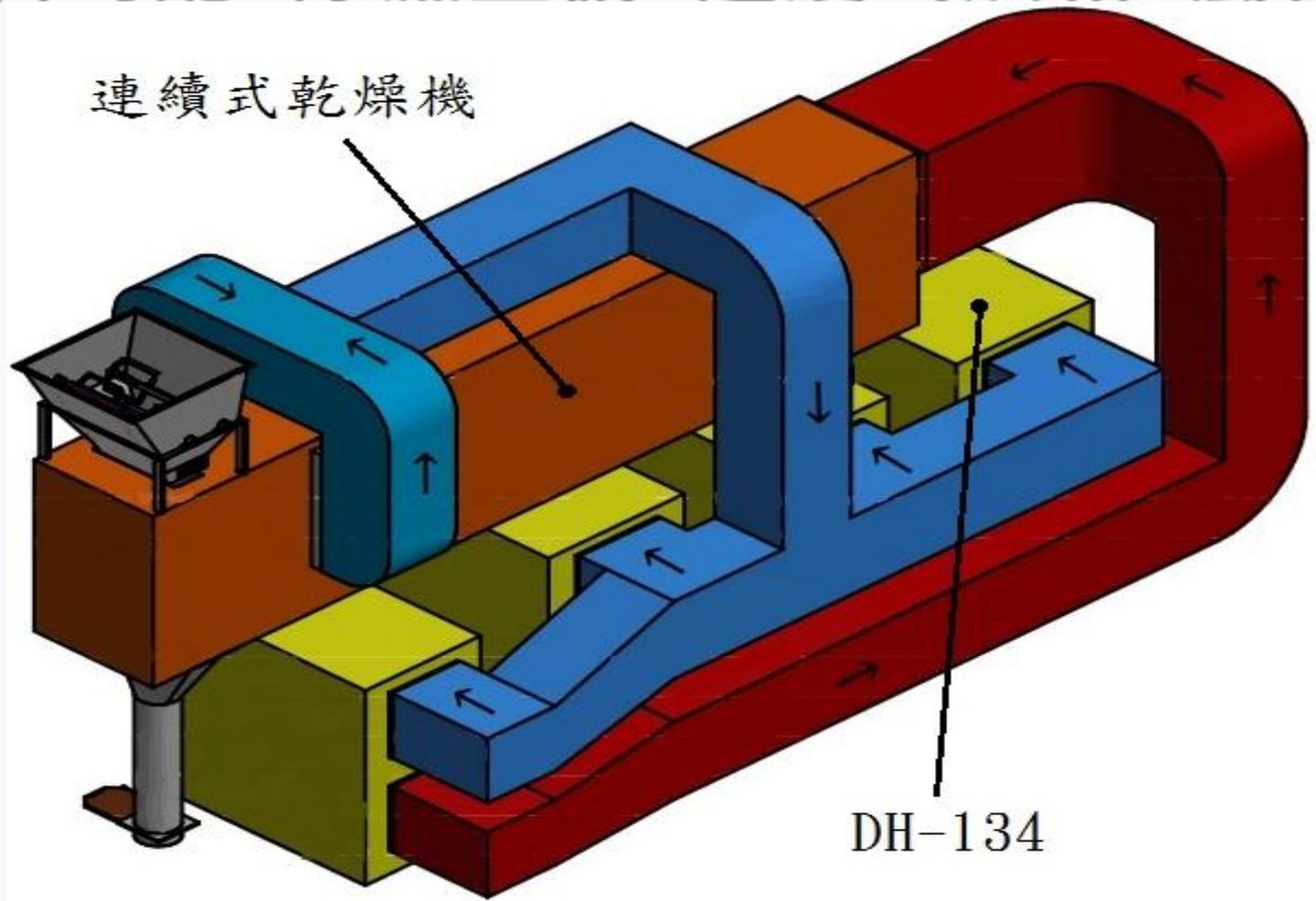
Diamond DHD DRYER

# 自動連續式DHD乾燥機(連續式烘箱)



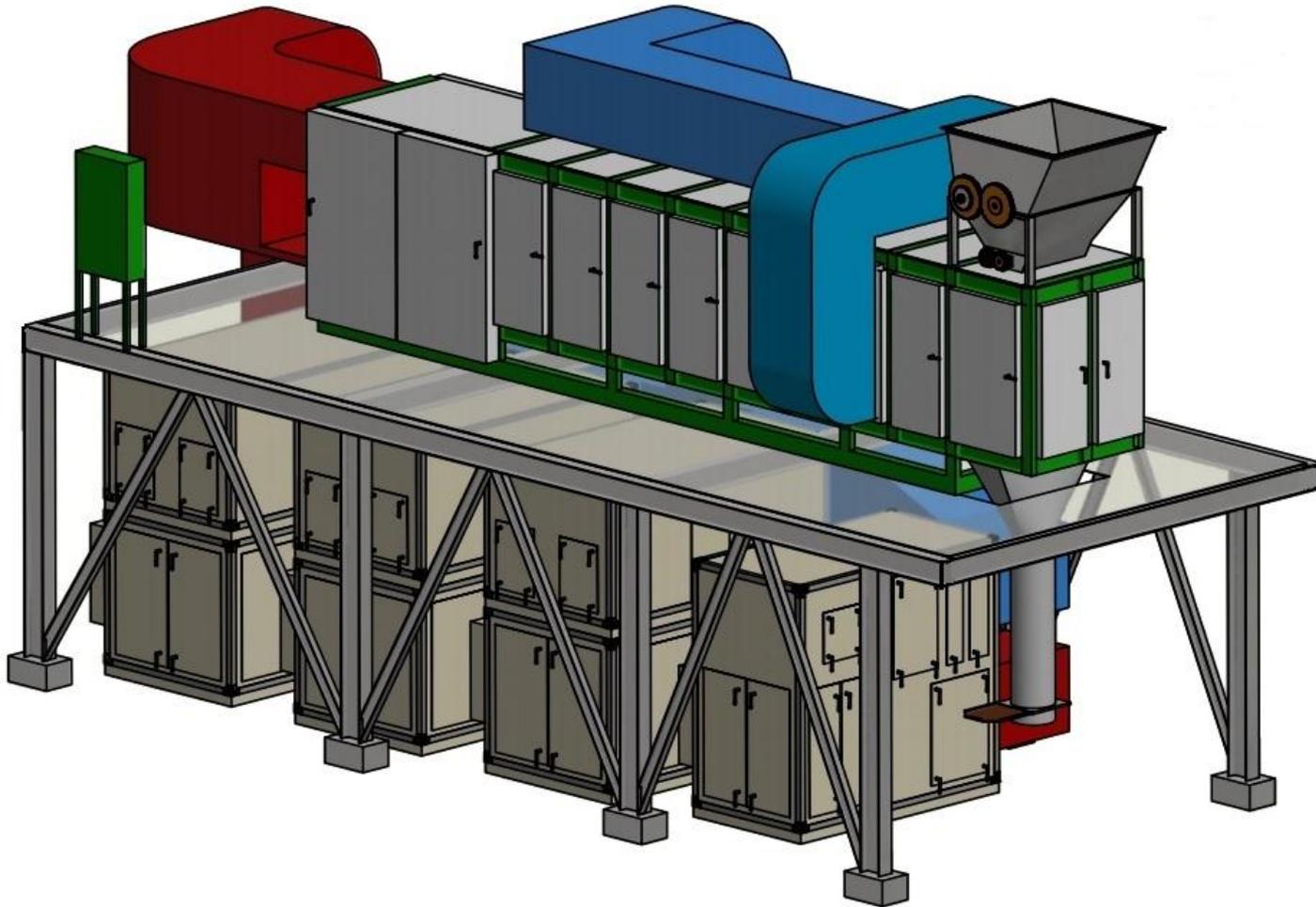
Diamond Filter Presses

# 自動連續式DHD乾燥機組合圖 (進料均配+除濕主機+連續式烘箱+風管)



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# 自動連續式DHD乾燥機組合圖



Diamond DHD Dryer

# 全自動連續式DHD乾燥機(15噸/日)



Diamond DHD Dryer

# DHD乾燥機HMI控制盤(人機介面)



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# DHD污泥乾燥機操作減重效益

- ◆每日處理量(案例)：15噸
- ◆委外處理單價：NT\$8,000 /噸
- ◆電力單價：NT\$ 3.0 /度
- ◆耗電率：330~550度/噸-水

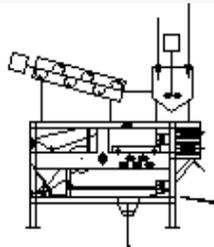


	污泥餅含水率	乾基污泥重	水重	總重
處理前	85 %	2.25噸	12.75噸	15噸
處理後	30 %	2.25噸	0.964噸 (除水量 11.786噸)	3.214噸

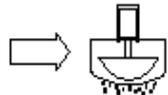
節省金額:  $11.786 \text{噸/日} \times (8,000 \text{元/噸} - 330 \text{度/噸-水} \times 3.0 \text{元/度})$   
 $= 11.786 \text{噸/日} \times (8,000 \text{元/噸} - 990 \text{元/噸})$   
 $= 82,620 \text{元/日}$

# 各種脫水污泥之配套應用

## 除濕式污泥乾燥機



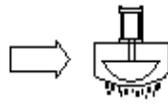
皮帶式脫水機



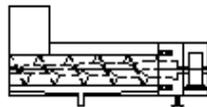
均配或造粒機



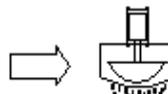
離心式脫水機



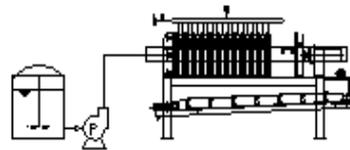
均配或造粒機



螺旋擠壓式脫水機

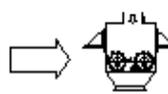


均配或造粒機

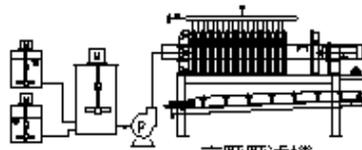


簡易調理

高壓壓濾機

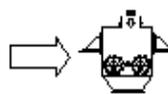


破碎機

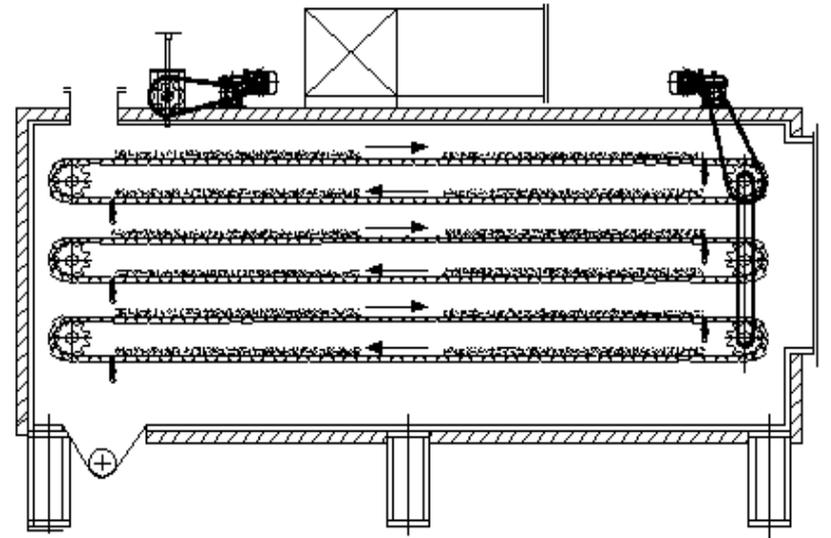


深度調理

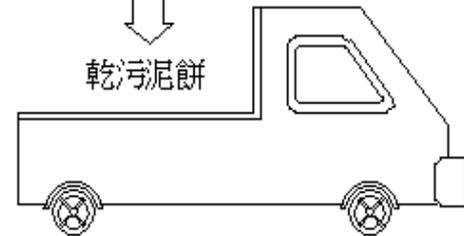
高壓壓濾機



破碎機



乾污泥餅



## 客戶的滿意

品質政策：技術專業

品質保證

全程德國及台灣製造

企業理念：正直 誠信

[不輕易許諾，一但承諾必定負責到底]