

# Hitachi Compressor World-Wide Sales Service Network (Main Office)

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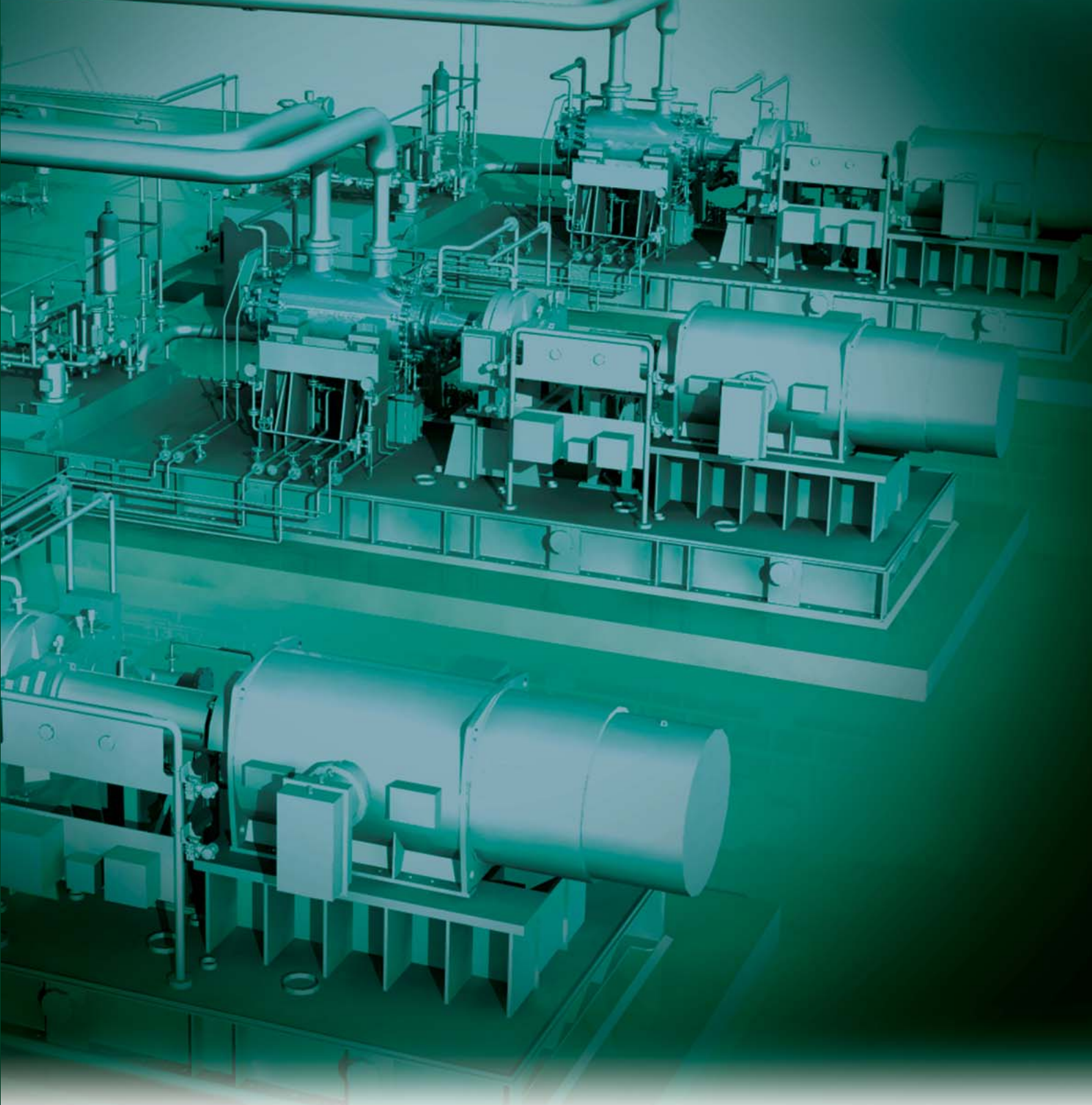
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Fax: <82> (2) 3210-3596

**HITACHI**  
Inspire the Next

## Hitachi Centrifugal Compressors

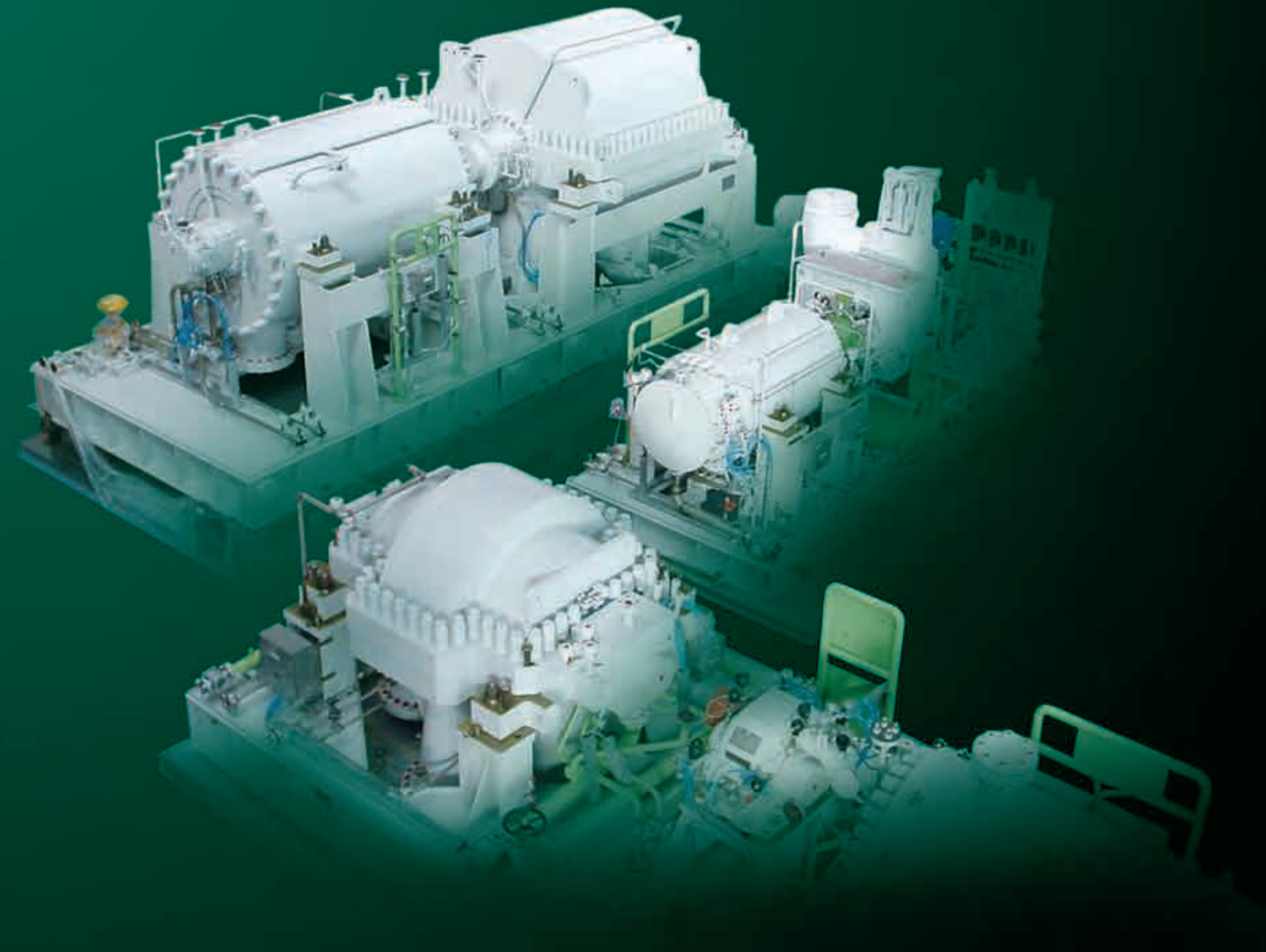


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 **Hitachi Plant Technologies, Ltd.**





			가 HITACHI
HITACHI 1910	(Centrifugal Compressor)		
1,000 casing		HITACHI	(Performance),
(Rotor dynamics)		(Shaft seal system)	
HITACHI	Centrifugal compressor		
	가		
	HITACHI		

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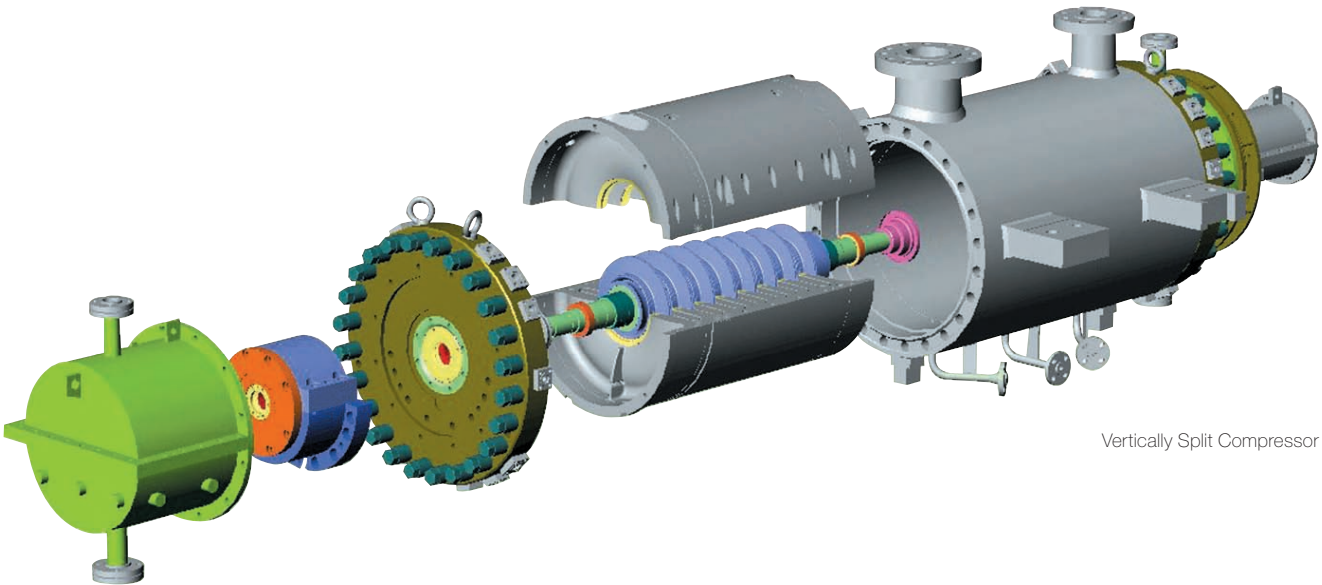
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Overhang Compressors	
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Casings	
Diaphragms	
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Rotors	
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Control System	
Seal Gas System 가	
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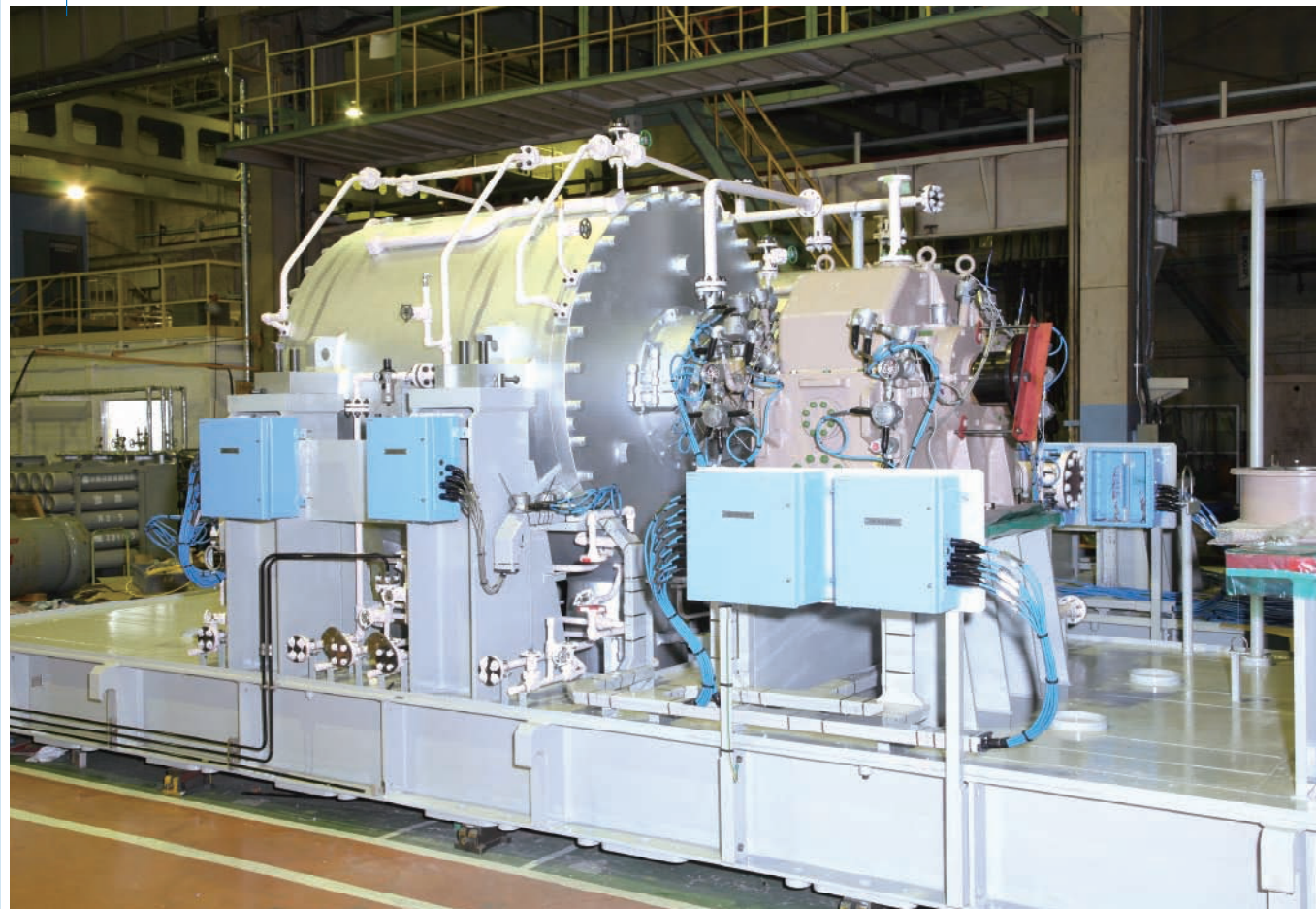
# Compressor Line-up

## Vertically Split Compressors (BCH)

Vertical split casing	API617	1380kPa
Vertical split casing		
Vertical split casing	가	
가		
BCH, 2BCH	BCH/A	"B"



Compressor Line-up



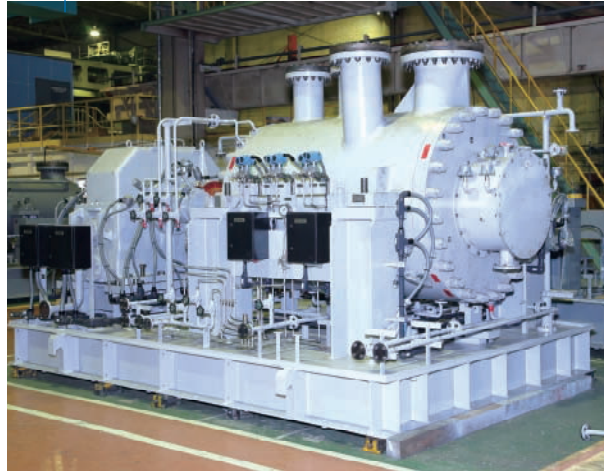
BCH802  
Booster Compressor



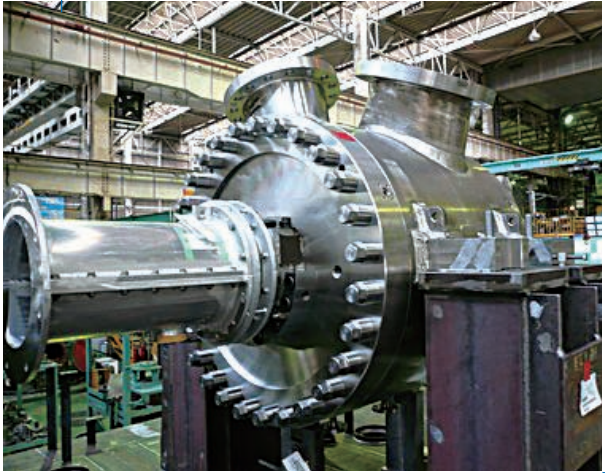
BCH804  
ATM Compressor



BCH458  
Recycle Compressor



3BCH607  
Propane Compressor



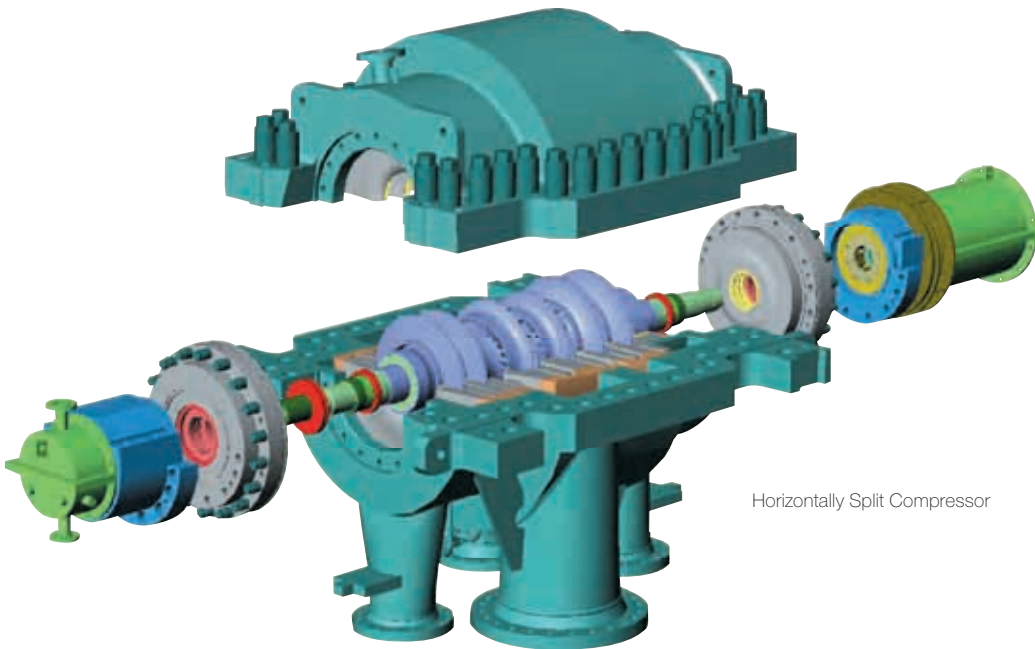
BCH451  
Low Temperature (-165°C) Methane Compressor



# Compressor Line-up

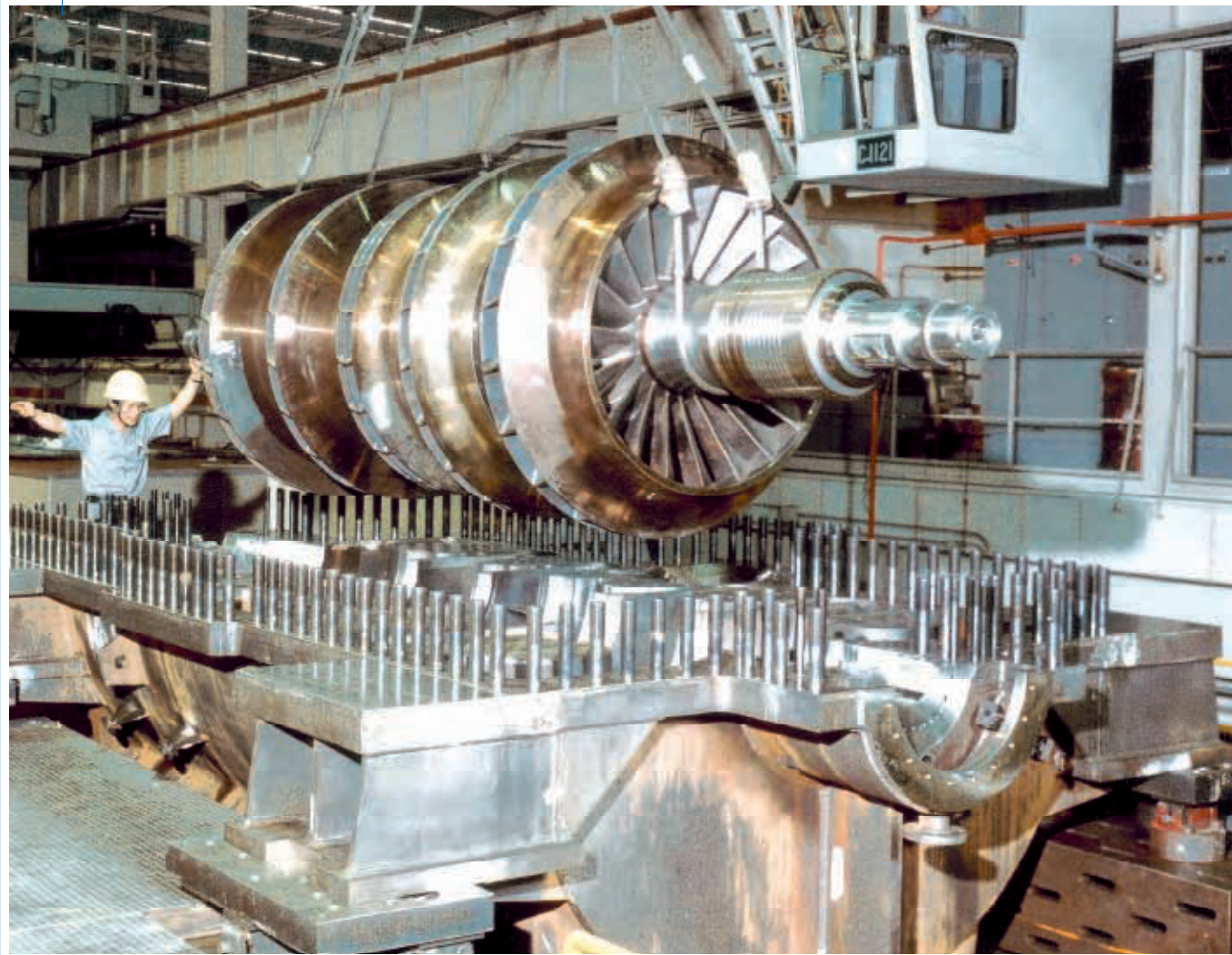
## Horizontally Split Compressors (MCH)

Horizontally split casing    duty, service temperature    gas requirement  
configuration    FEM Analysis    가  
가    "M"    Horizontally split    MCH, 2MCH    3MCH



Horizontally Split Compressor

Compressor Line-up



DMCH1406  
Butadiene Compressor



2MCH608  
End Flash Gas Compressor



2MCH806+2MCH607  
Air Compressor



2MCH606  
CO<sub>2</sub> Compressor



3MCH457  
Ethylene Ref. Compressor



# Compressor Line-up

Pipeline Compressors (PCH)

Open-piece cast  
delivery nozzle

100barA

가

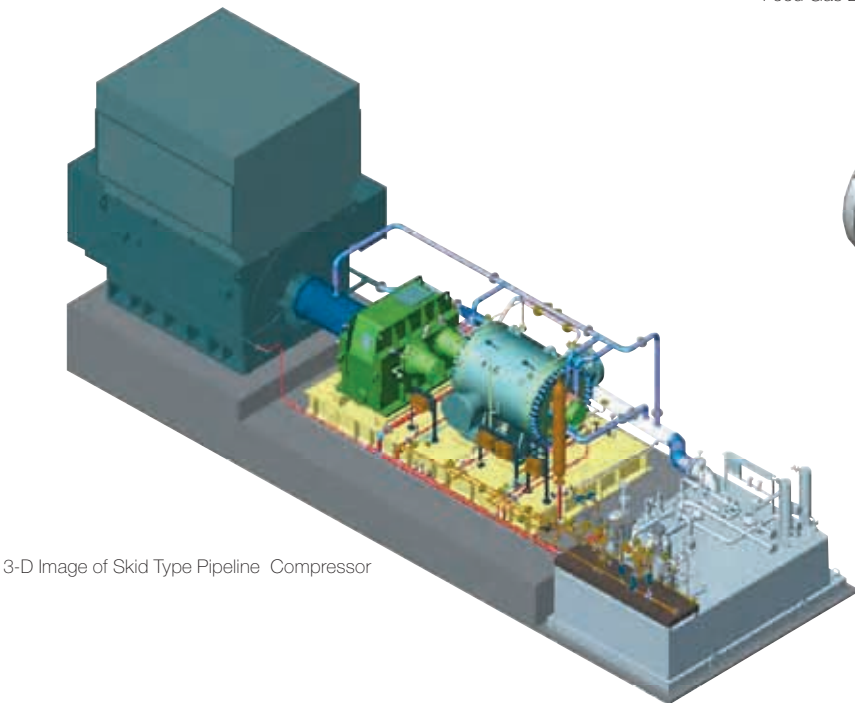
, suction

pedestal

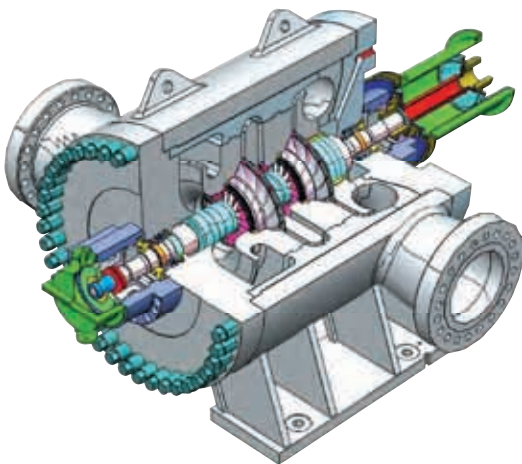
Oil seal



PCH601  
Feed Gas Booster Compressor



3-D Image of Skid Type Pipeline Compressor

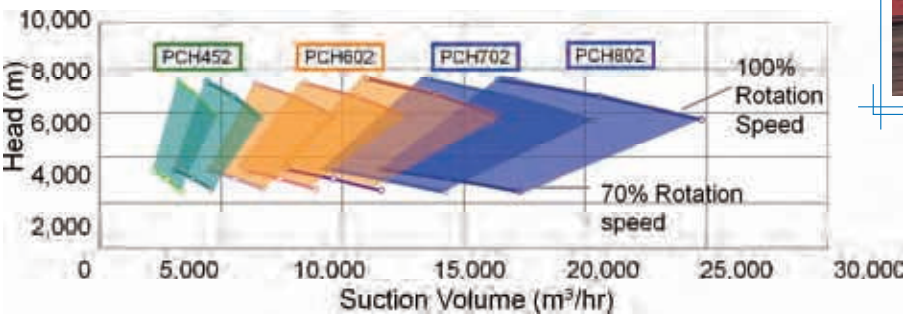
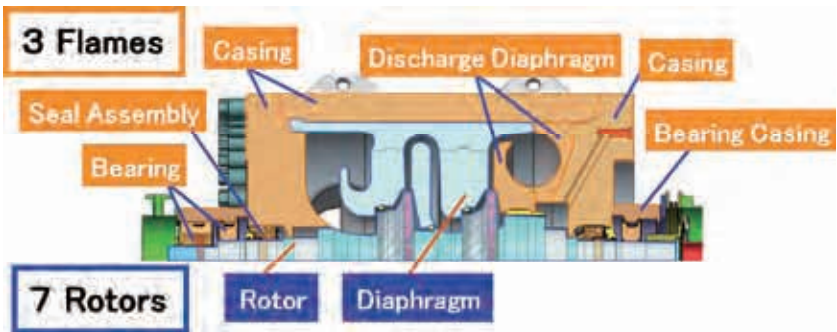


Pipeline Compressor

HITACHI

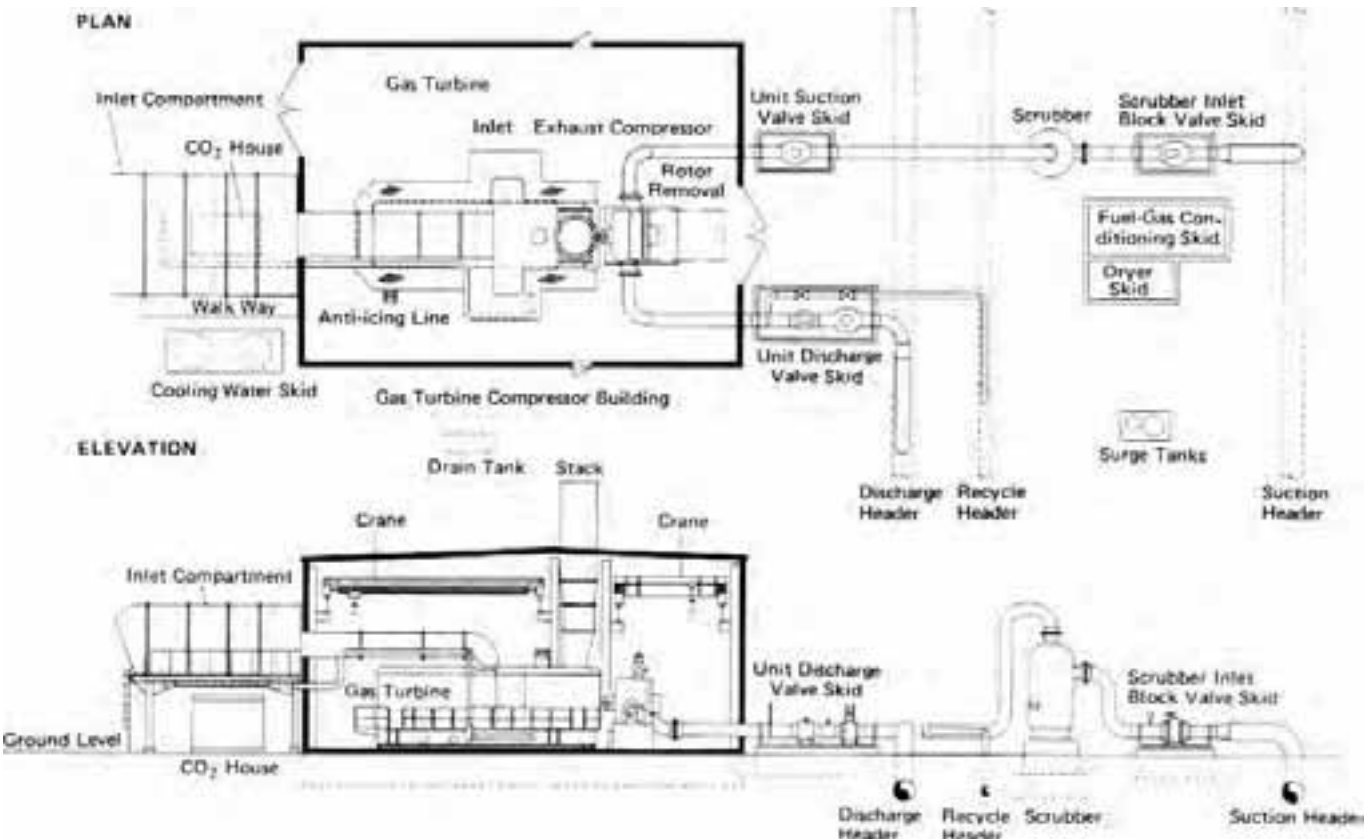
3 / 7

3,000~24,000m<sup>3</sup>/hr



PCH802  
Pipeline Booster Compressor

가





# Compressor Line-up

## Overhang Compressors

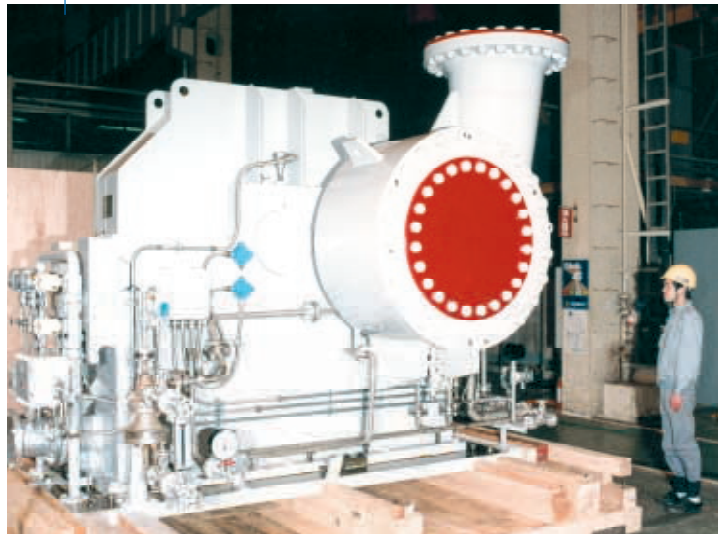
가		가	Suction	가
Inlet-guide vane, suction/discharge throttle valve		가 가	by-passing	
			HITACHI	
가		가	'POB-GH'	
'POB-CH'	가	가	가	API617 가
EO/EG				



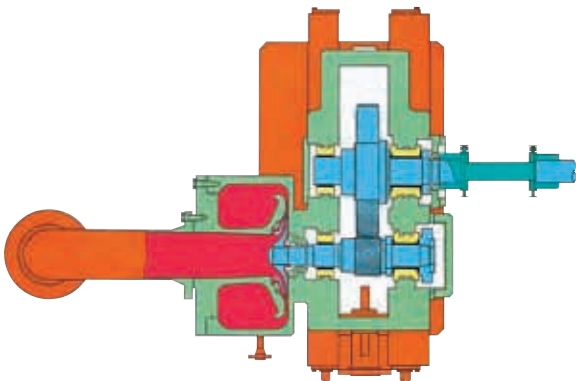
Compressor Casing



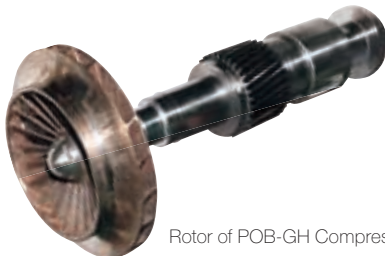
POB-CH  
Recycle Compressor



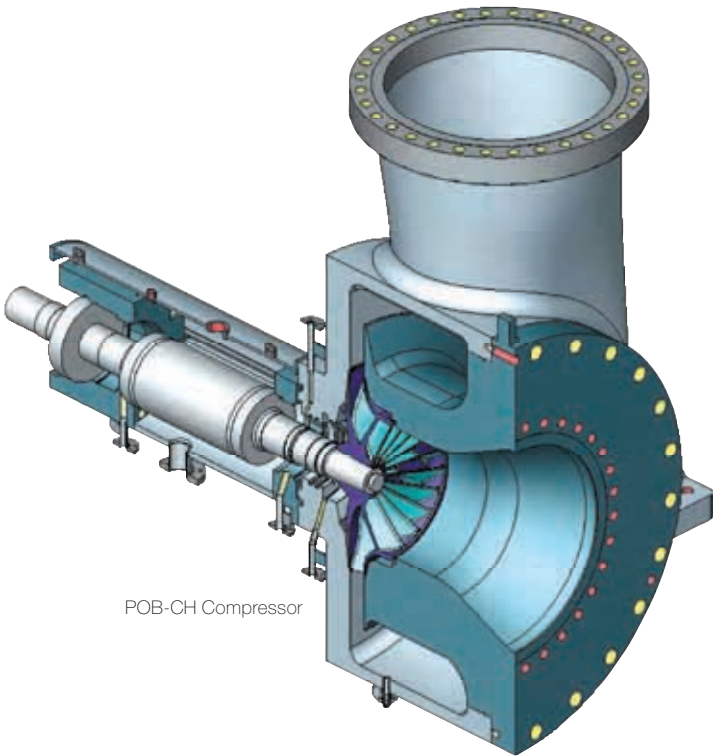
POB-GH  
LLDPE Recycle Compressor



POB-GH Compressor



Rotor of POB-GH Compressor



POB-CH Compressor



POB-CH  
EO/EG Recycle Compressor





# Components

## Casings

가  
가  
가



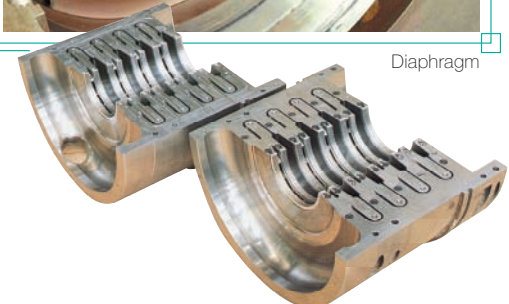
Casing

## Diaphragms

return vane Impeller eye  
NACA profile wings  
return vane wing N/C 가  
가 , Back-to-back  
가  
Computer design system  
FEM



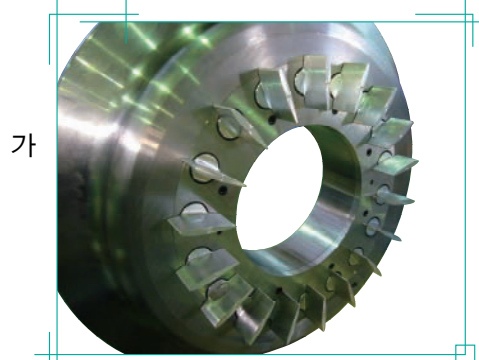
Diaphragm



## Inlet Guide Vane (IGV)

IGV Lower starting torque  
pressure service

IGV



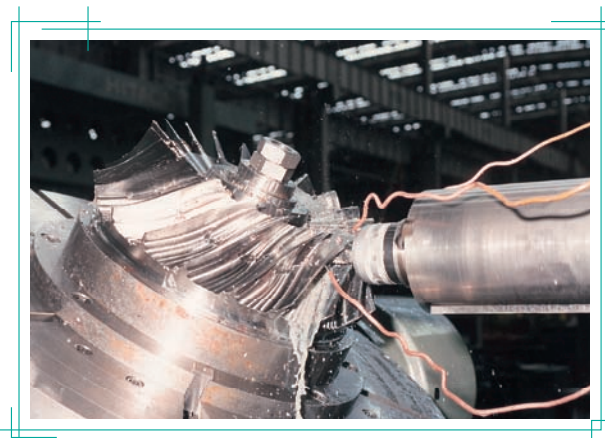
Inlet Guide Vane (IGV)

## Rotors

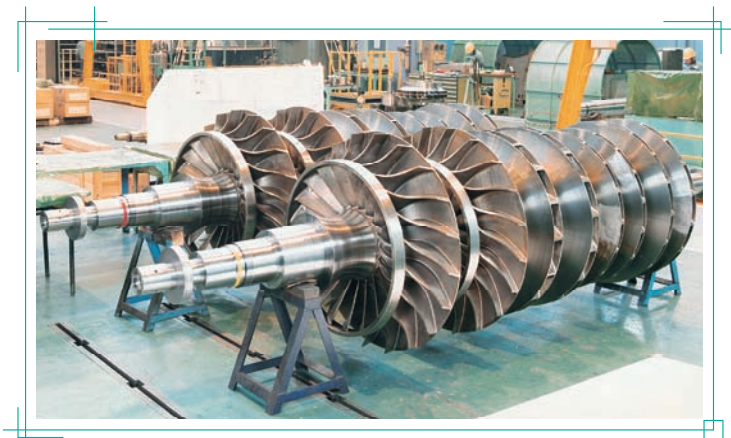
(Shaft), (Impeller), (Balancing drum) (Thrust collar)  
가  
(Welding) (Diffusion bonding, DB) , 가 (Machining), (Precision forging)  
가 DB HITACHI  
(Shroud) (Blade)  
(Magnetic particle), DB  
DB Narrow tip width 가  
가 HITACHI . ( : US5964398)

Shaft end seal

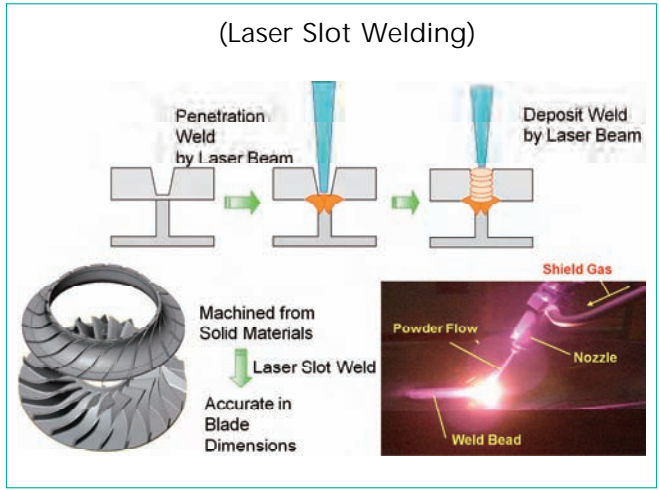
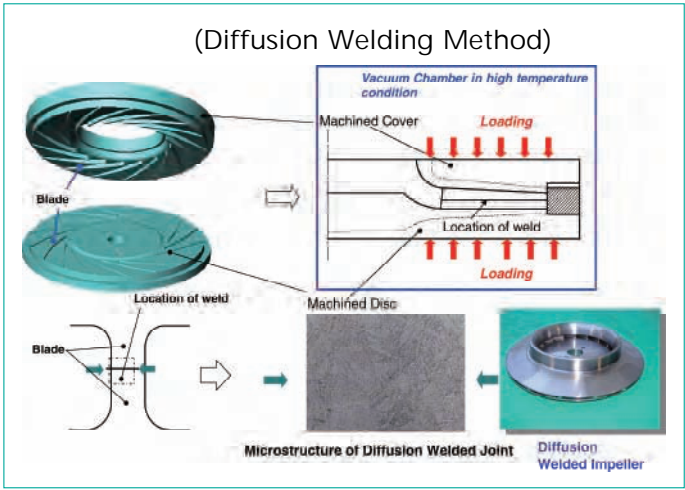
가



Mixed Flow Impeller 5 가



Mixed Flow Impeller





# Components

## Bearings

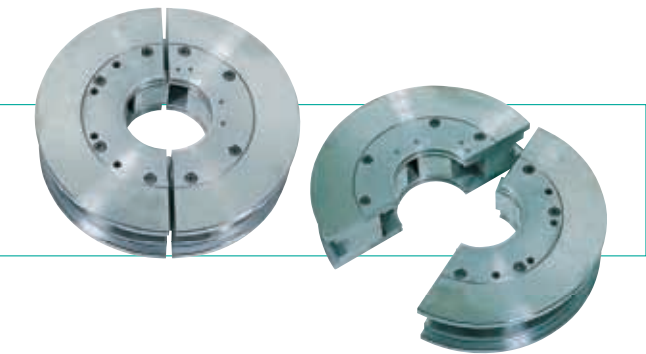
### Journal bearings

damping

HITACHI  
가

(Oil whirling)

(Oil clearance)가

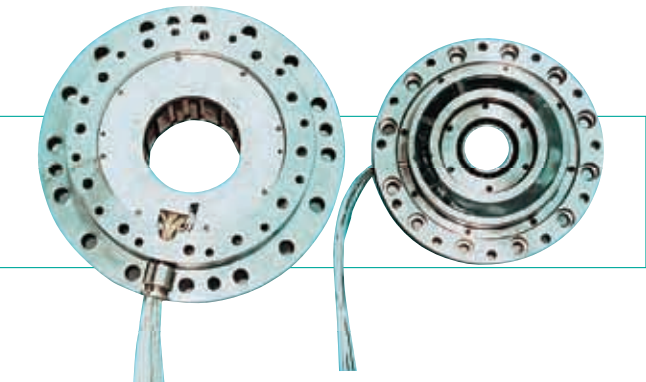


### Magnetic bearings

(Active magnetic bearing)

(Oil-less operation)

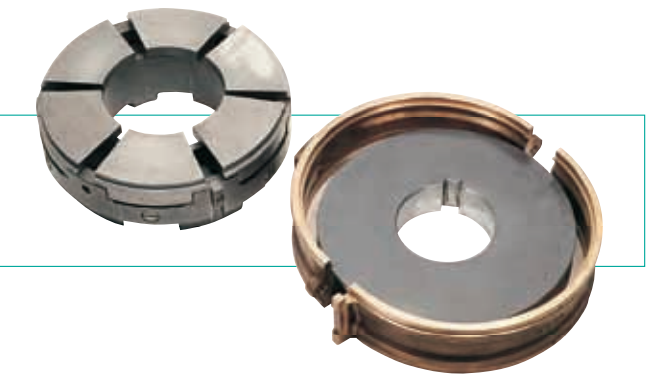
(Utility power)



### Thrust bearings

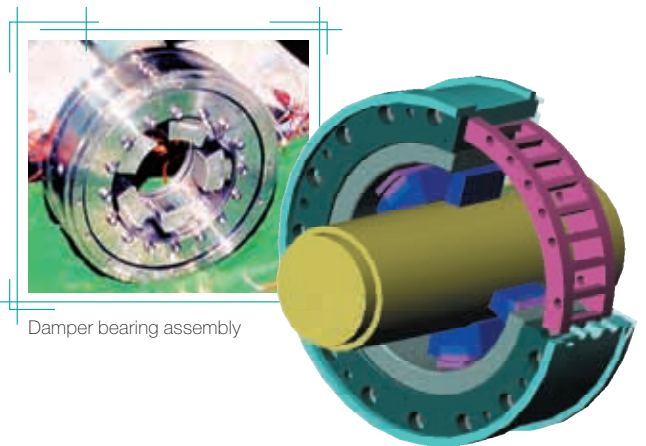
Kingsbury tilting type)

(Double



### Damper bearings

(Damper bearing)

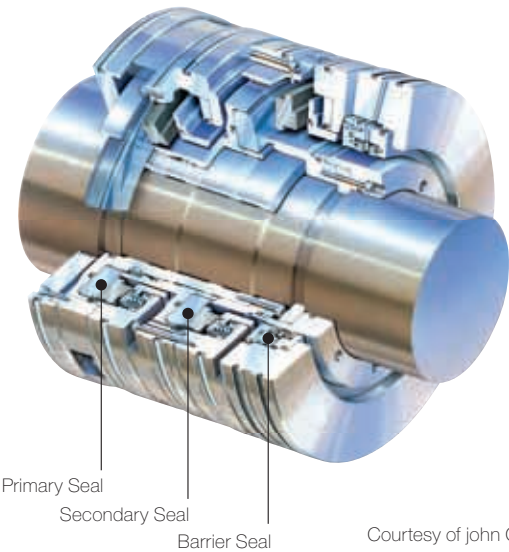


Damper bearing assembly

## Seals

가

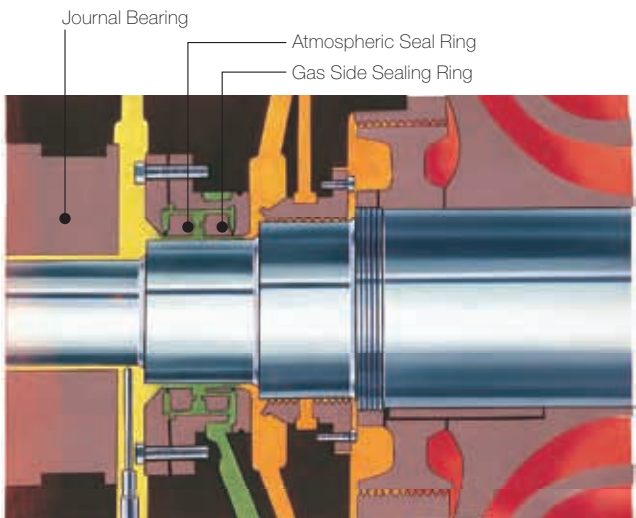
### Dry gas seal



Primary Seal  
Secondary Seal  
Barrier Seal

Courtesy of John Crane

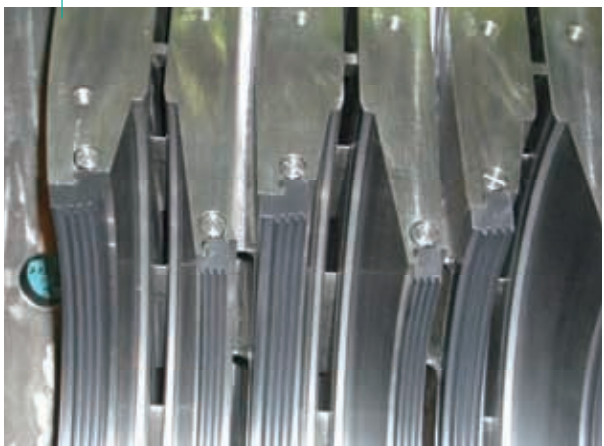
### Oil film seal



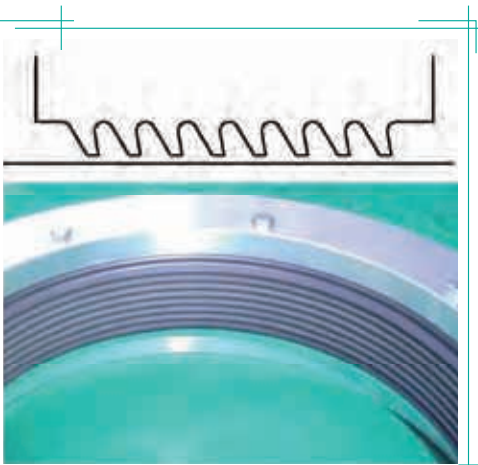
Journal Bearing  
Atmospheric Seal Ring  
Gas Side Sealing Ring

### Labyrinth seal

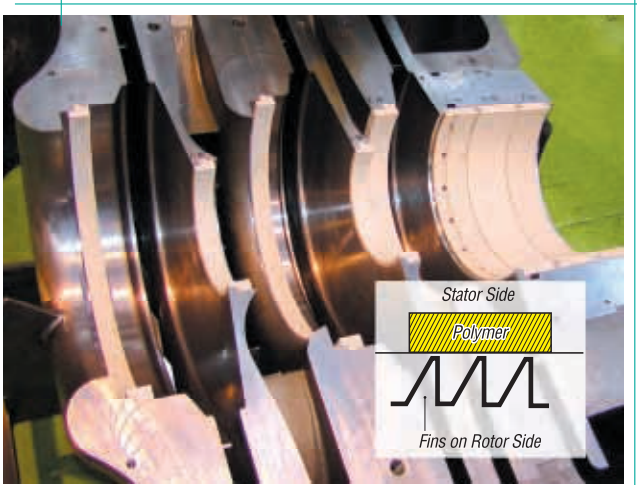
- (1) Aluminum seal
- (2) Rub tolerance seal
- (3) Abradable seal



Conventional Aluminum Labyrinth



Rub Tolerance Seal



Stator Side  
Polymer  
Fins on Rotor Side

Abradable Seal



# Components

## Oil Systems

가 (가) (Seal oil system)

API (Interconnecting piping)



Lube Oil Unit

## Control System : HCCS (Hitachi Compressor Control System)



## Seal Gas System

Dry gas seal

가 가 가 가

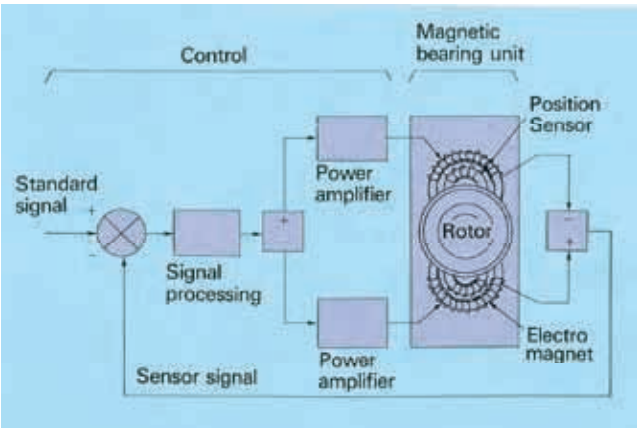


Seal Gas Unit

## Magnetic Bearing Control System

(Air gap)

HITACHI





Design

(Design Automation System)

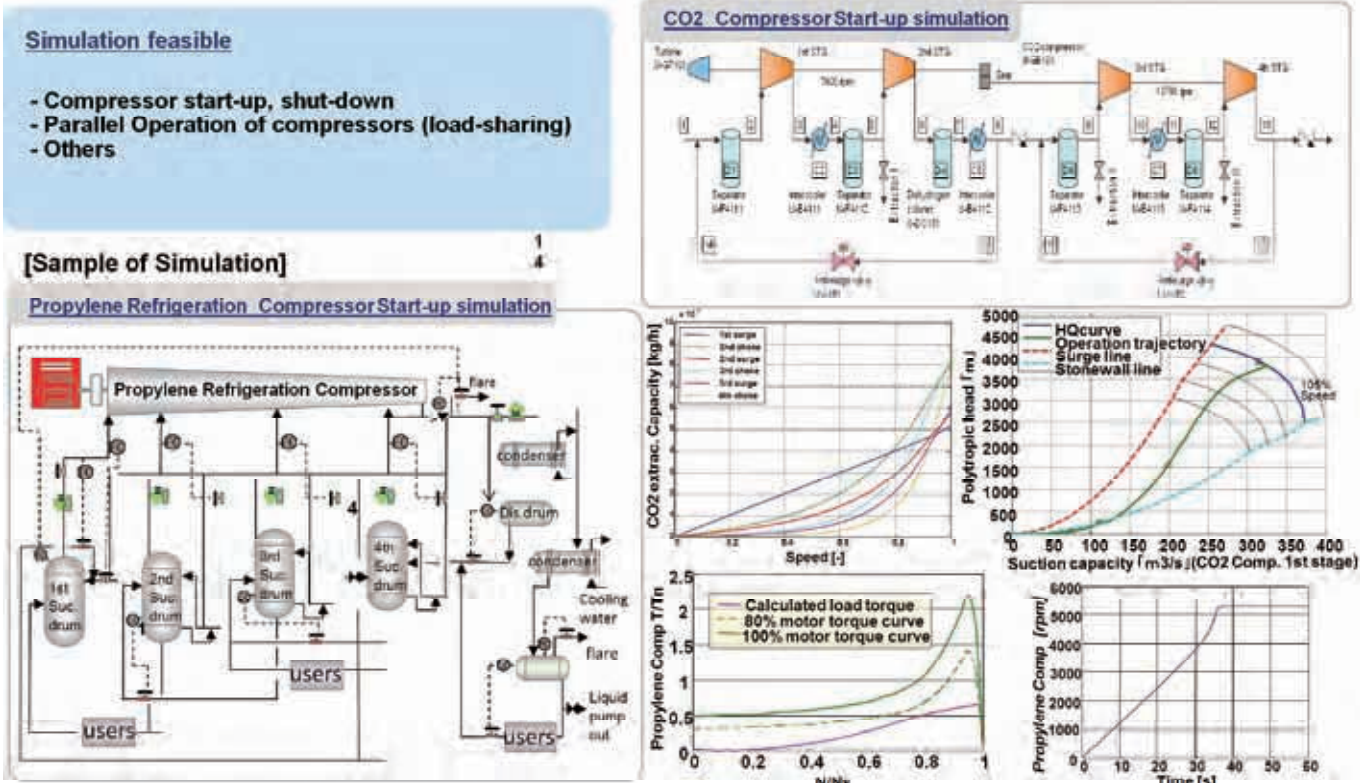
HITACHI

N/C

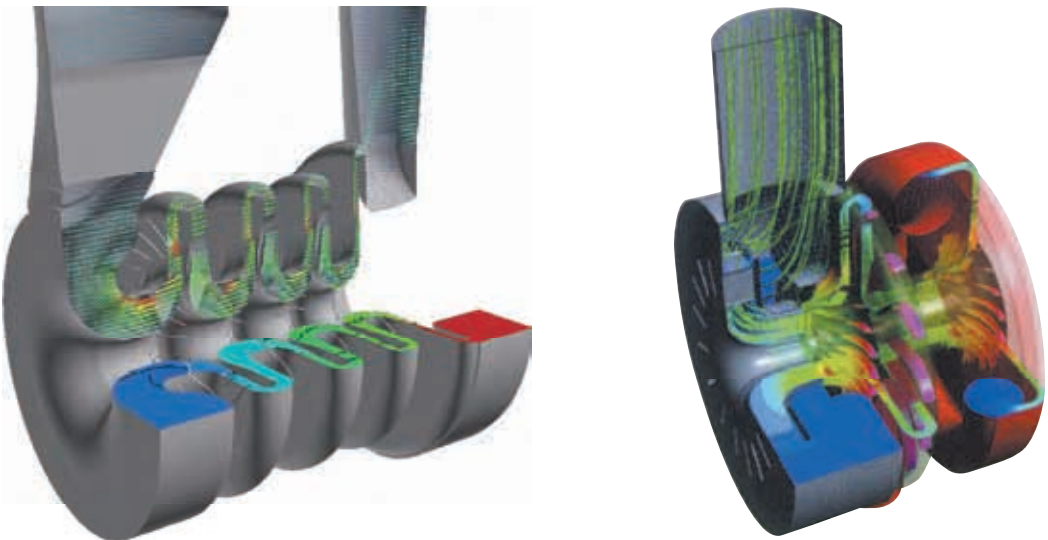
가 가

N/C

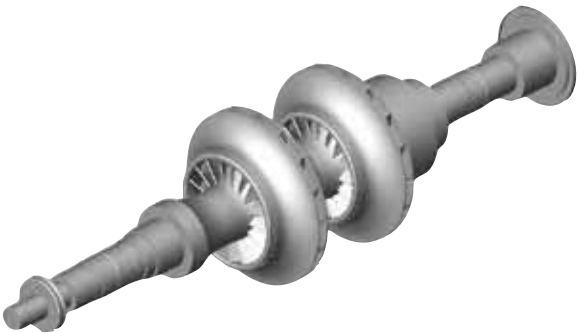
(Process Dynamic Simulation)



Nozzle-to-Nozzle

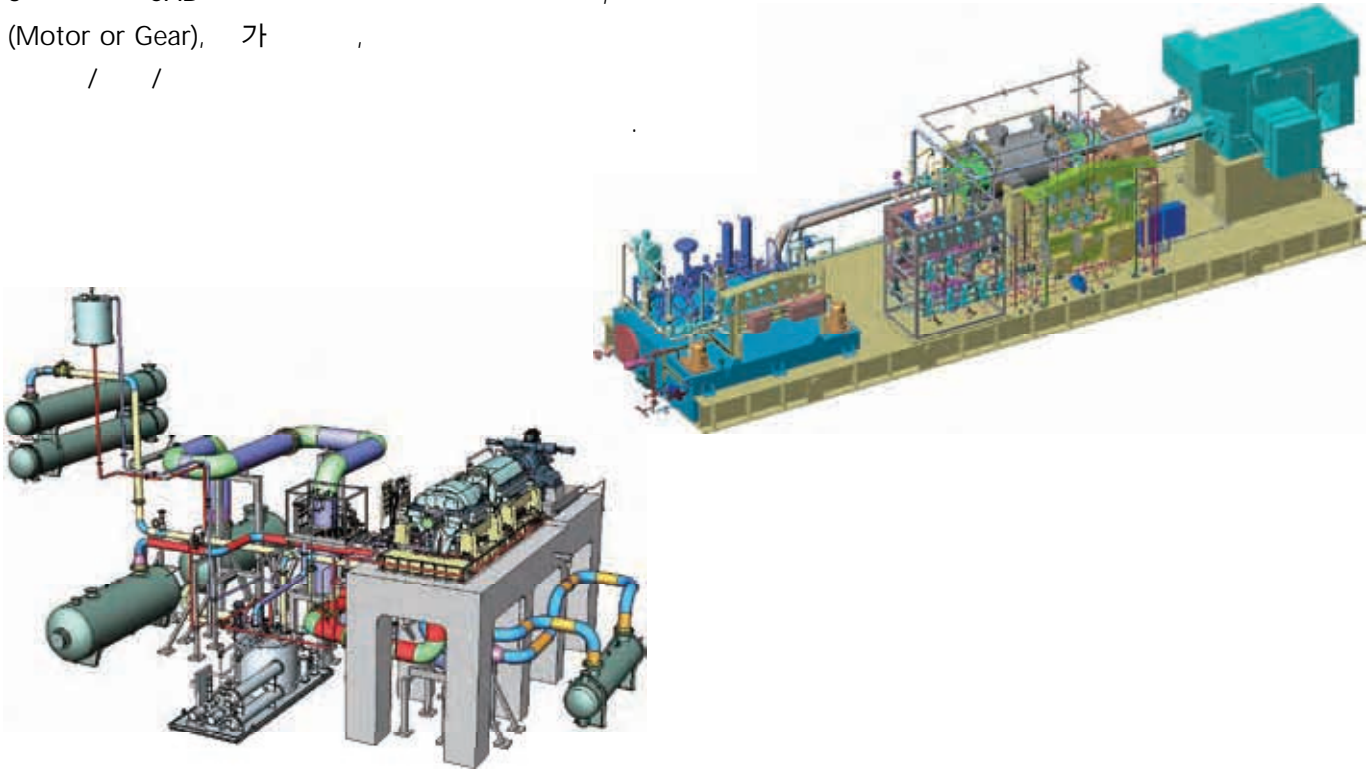


(Rotor Dynamics Calculations)



3-D CAD

3 CAD  
(Motor or Gear), 가  
/ /





# Test Facilities

ISO9001

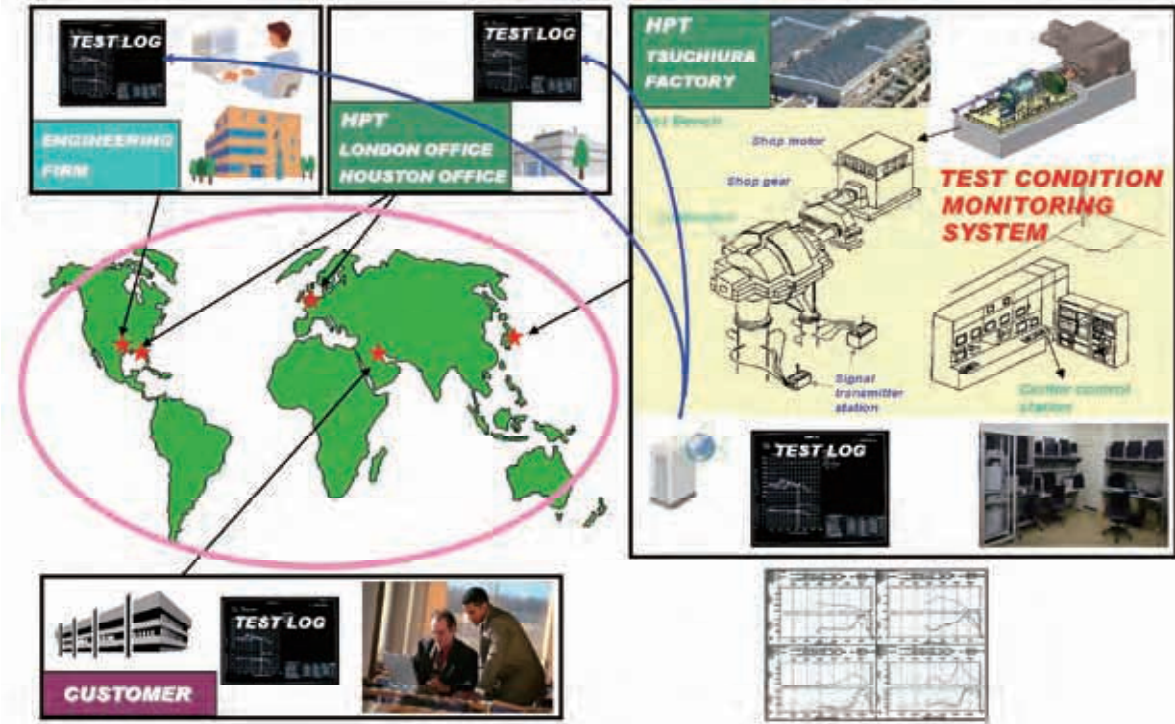
API ASME



Complete Unit Test



On-line Test Control Room



High Speed Motor



BCH804  
Complete Unit Test with 35MW Motor



Satellite Test Bench



# After-Sales Services

HITACHI

HITACHI

HITACHI OEM

가

가



Assembly of an Abradable Seal-Mounted Compressor



Gas Compressor for Gas Gathering Plant



HITACHI  
가  
가

가

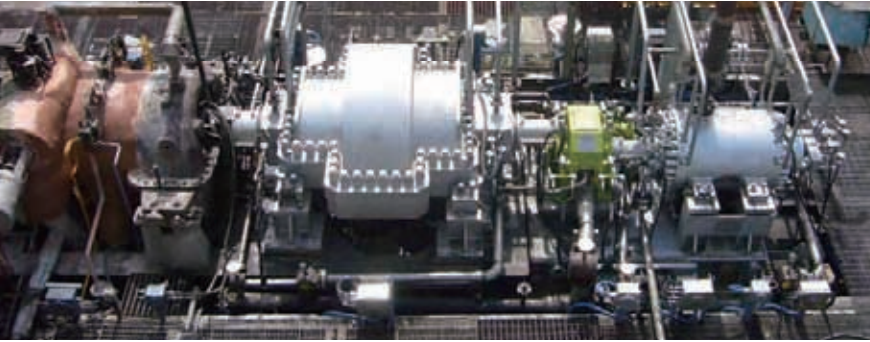
HITACHI

가

**[Before]**



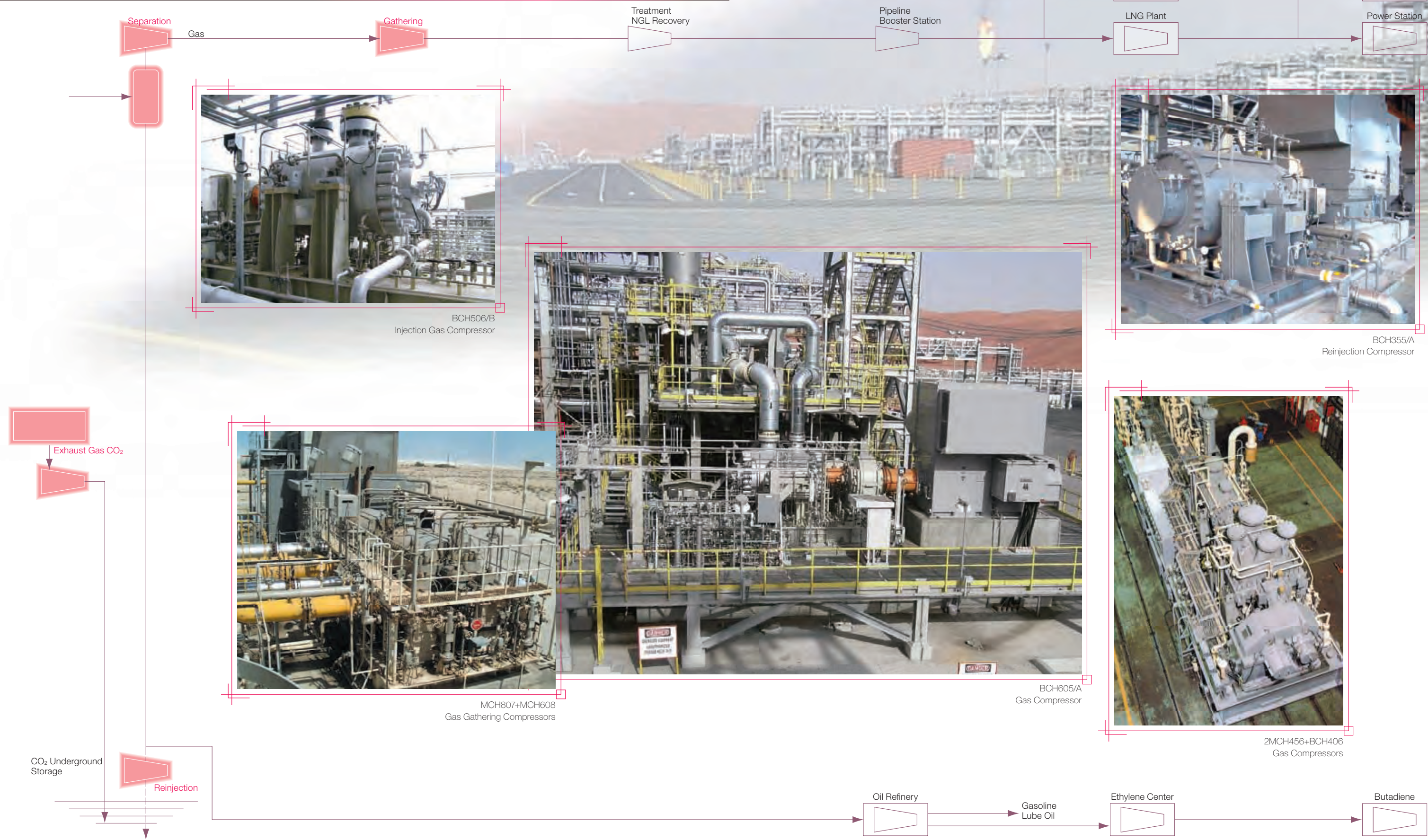
**[After]**



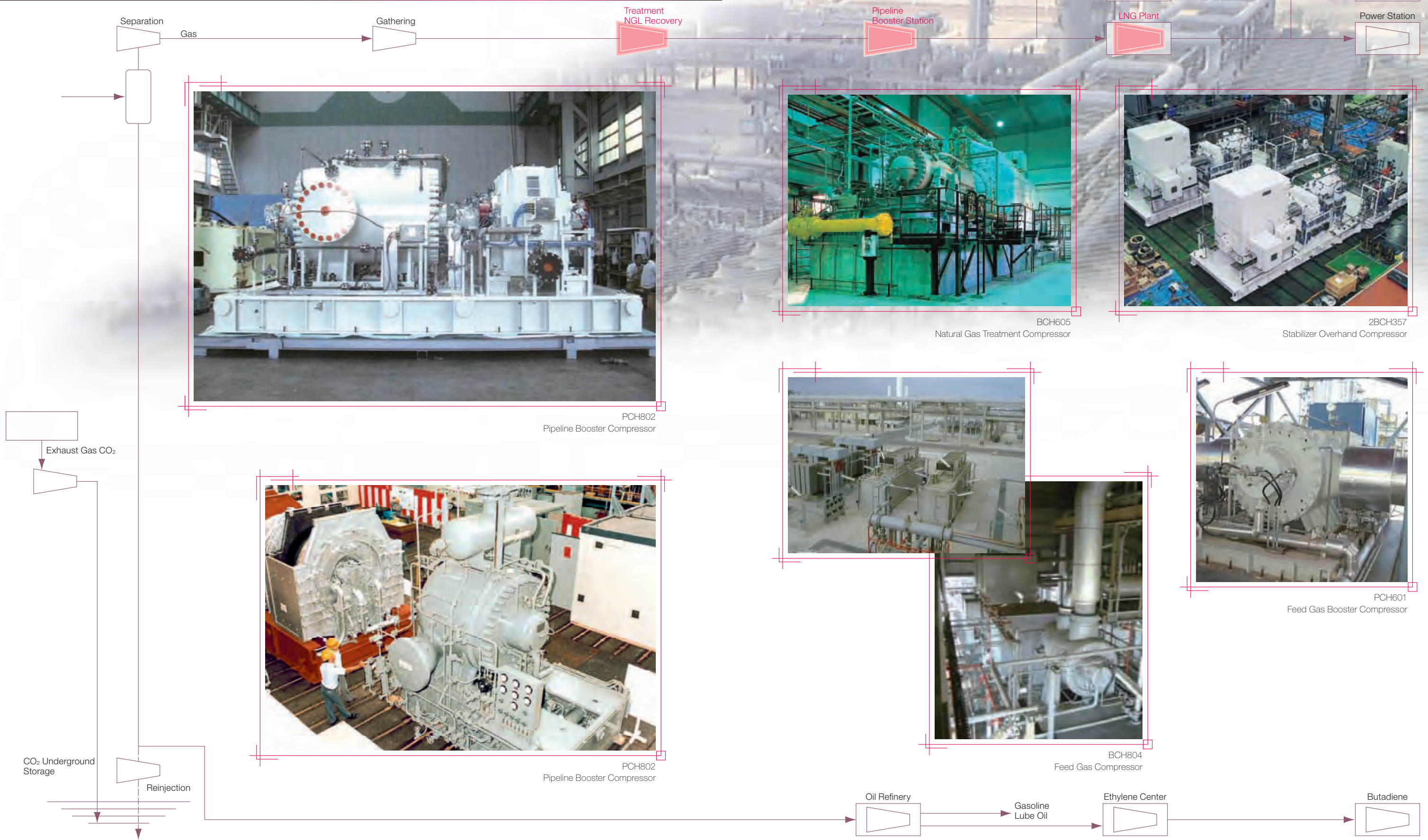
40% Capacity-up



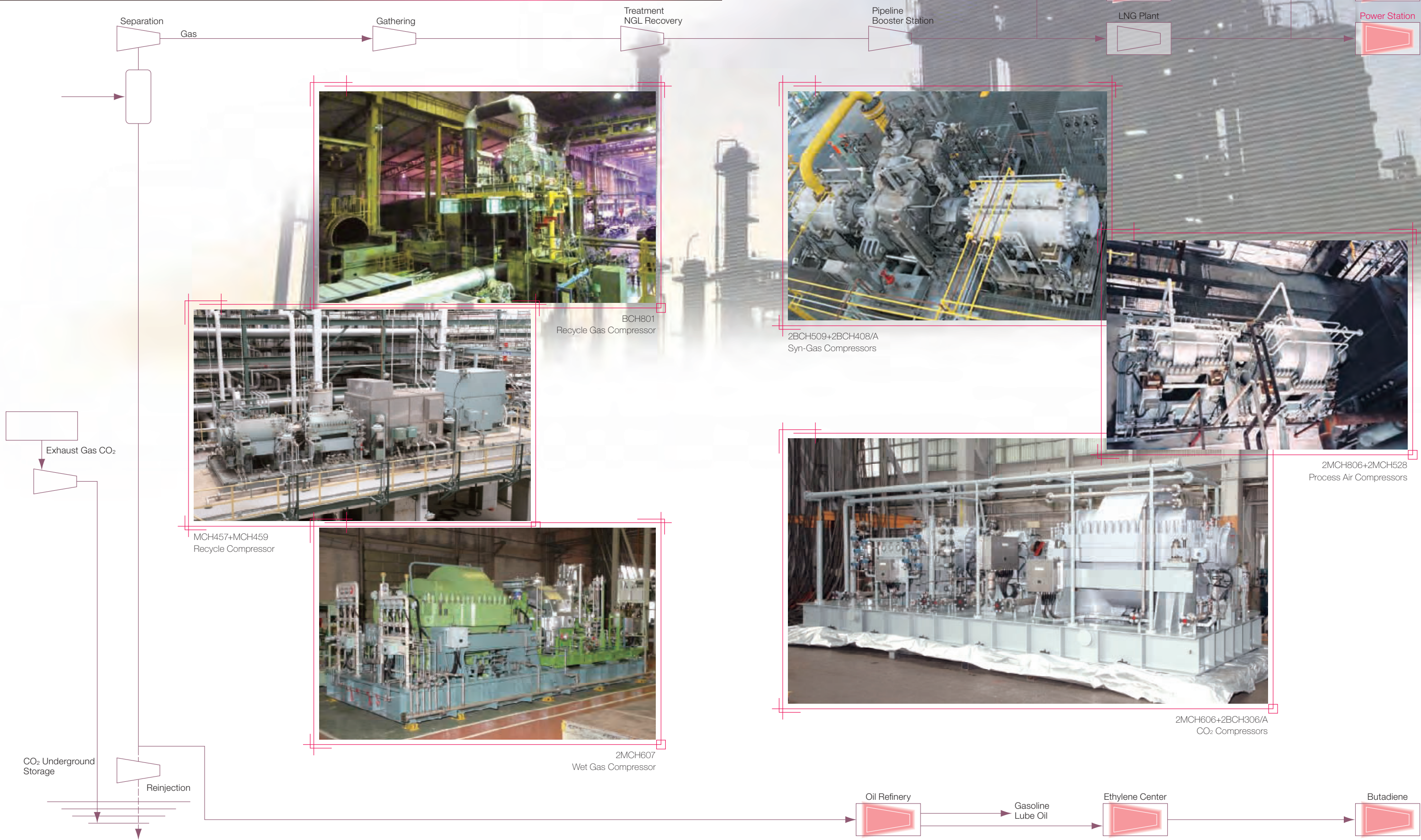






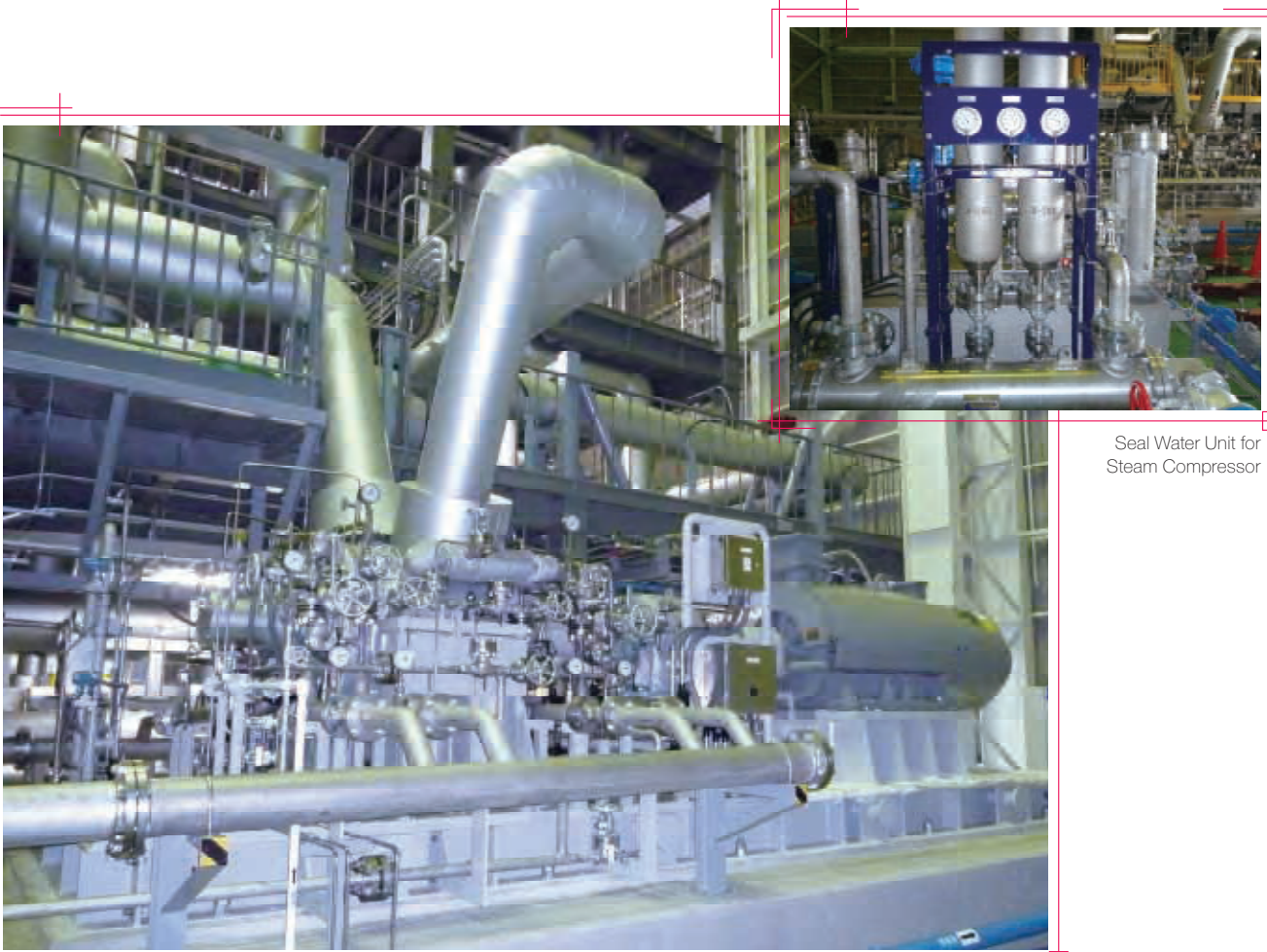








Model Numbers



Seal Water Unit for Steam Compressor

BCH301 Steam Compressor



BCH302 Air Compressor



BCH303 Gas Turbine Fuel Booster Compressor

HITACHI

5

(1) (2) (3) (4) (5) (6)  
2 BCH 30 6 /A

(1) 가  
2 Back-to-Back 2-group 가  
3 Side stream 가

(2) 가 MCH Horizontally split casing , BCH Vertically split barrel type casing

(3) H HITACHI가 High-quality, High-performance, High-reliability

(4)

(5) 1 9

(6)BCH /A,/B,/C  
( )

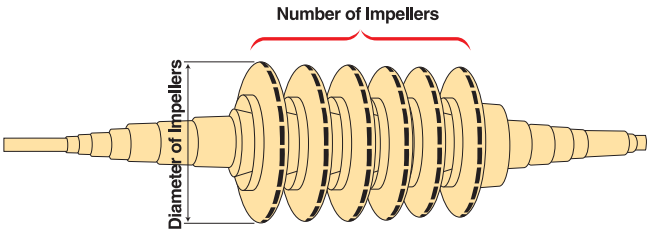
가

Sample

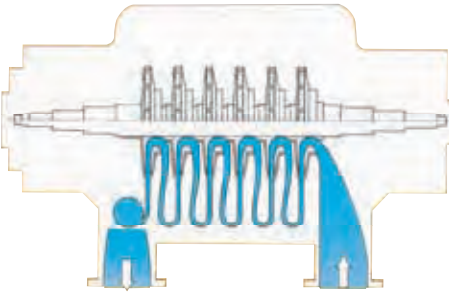
(1)	(2)	(3)
3	MCH	100 6
BCH	45	8
2	BCH	40 6 /A

(6) For BCH Type only

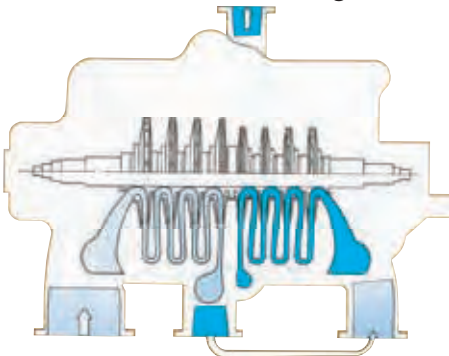
/A ≥ 10MPa
/B ≥ 20MPa
/C ≥ 30MPa
/D ≥ 50MPa



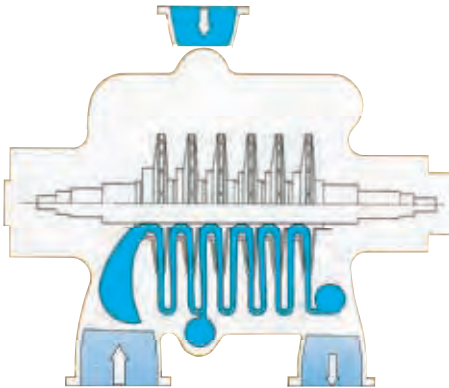
Unnumbered Straight-through Arrangement



“2” Back-to-Back Arrangement



“3” With Side Stream



PCH

