

PROCESS GAS COMPRESSORS

COMPREHENSIVE API 618 COMPRESSOR PORTFOLIO



Compressors for a Lifetime™



BURCKHARDT COMPRESSION

OVER 170 YEARS OF KNOW-HOW AND EXPERTISE

OVER 170 YEARS OF EXPERIENCE

Burckhardt Compression is the worldwide market leader for reciprocating compressor systems and the only manufacturer and service provider that covers a full range of reciprocating compressor technologies and services. Its customized compressor systems are used in the upstream oil & gas, gas transport and storage, refinery, chemical, petrochemical and industrial gas sectors. Burckhardt Compression's leading technology, broad portfolio of compressor components and the full range of services help customers around the world to find the optimized solution for their reciprocating compressor systems. Since 1844 its highly skilled workforce has crafted superior solutions and set the benchmark in the gas compression industry.

YOUR COMPRESSION SOLUTION PARTNER

As your partner, Burckhardt Compression supports you in all phases of your project. From the first idea until the end of your facility's lifetime. We understand the different customer needs in terms of specification and cost-efficiency. Our gas compression experts support you in the selection and specification of the best Process Gas Compressor solution for your project.

We offer a complete range of API 618 Process Gas Compressor systems, from solutions with the highest possible availability and lowest life cycle costs to CAPEX-optimized systems, for all processes that require reciprocating compressors. In addition, our customers can benefit from a wide range of standardized sets and products based on decades of experience in industrial gas compression.

Online Portfolio:

www.recip.com/process-gas



MARKETS AND APPLICATIONS

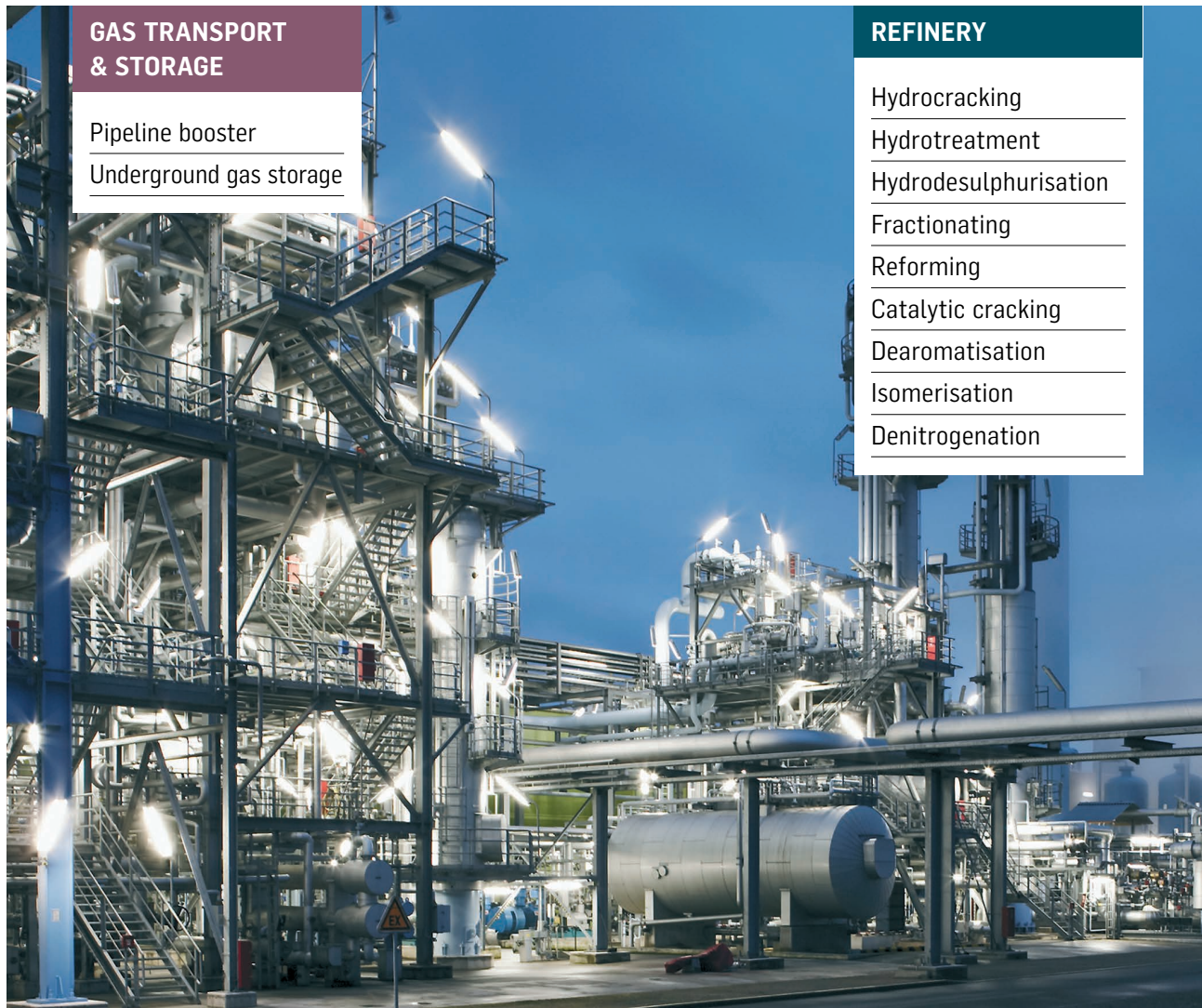
FROM NATURAL GAS TO PROCESSING APPLICATIONS AND INDUSTRIAL GASES

GAS TRANSPORT & STORAGE

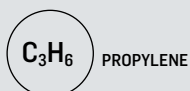
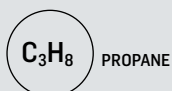
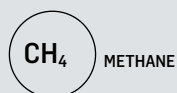
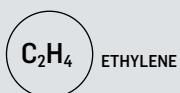
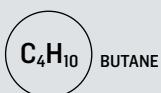
Pipeline booster
Underground gas storage

REFINERY

Hydrocracking
Hydrotreatment
Hydrodesulphurisation
Fractionating
Reforming
Catalytic cracking
Dearomatisation
Isomerisation
Denitrogenation



GASES HANDLED (INCLUDING CORROSIVE, EXPLOSIVE AND TOXIC COMPOSITIONS)



PETROCHEMICAL/ CHEMICAL INDUSTRY

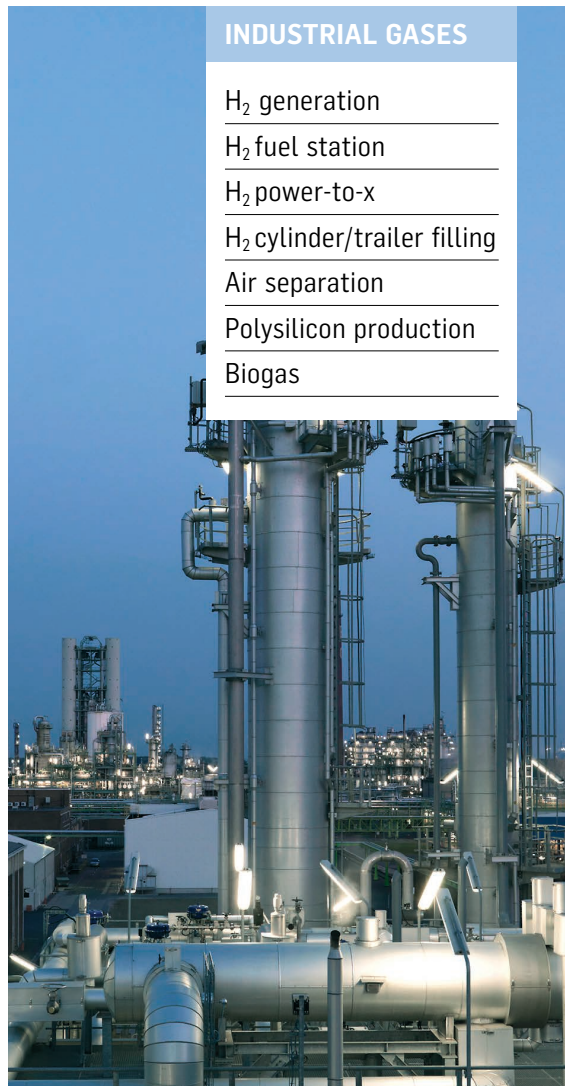
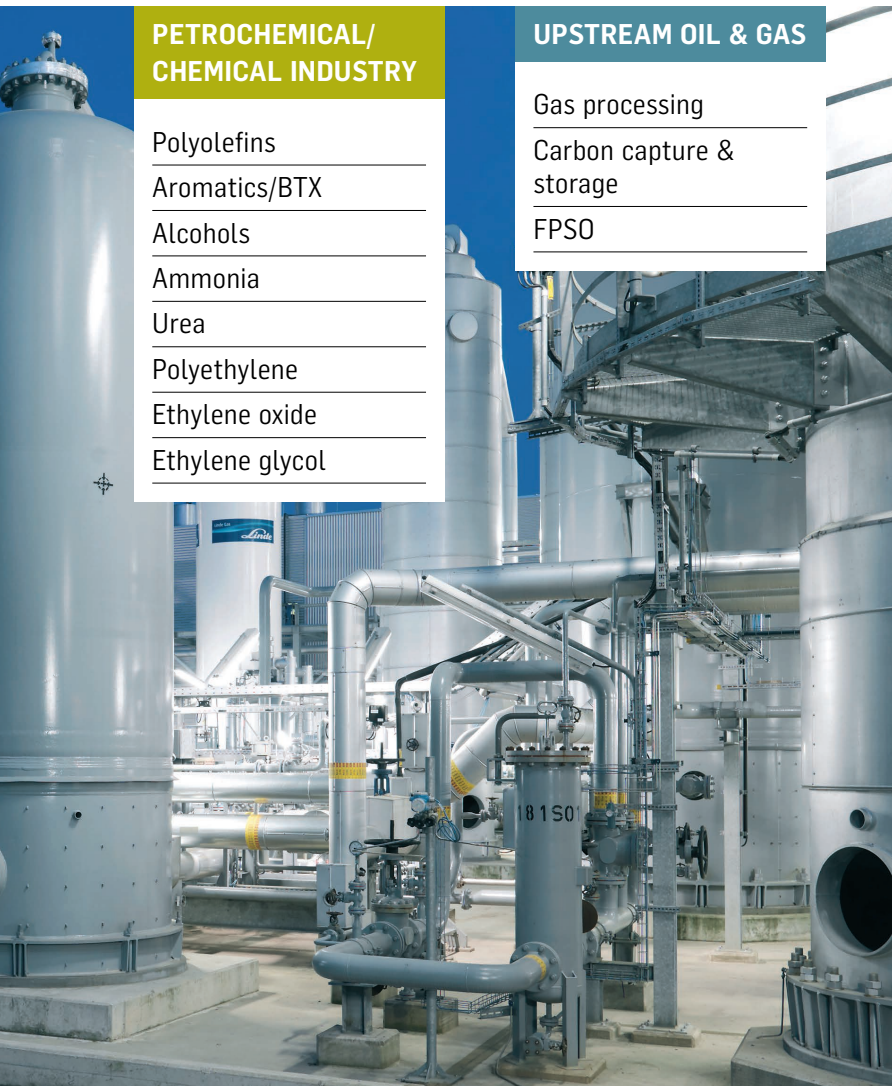
Polyolefins
Aromatics/BTX
Alcohols
Ammonia
Urea
Polyethylene
Ethylene oxide
Ethylene glycol

UPSTREAM OIL & GAS

Gas processing
Carbon capture &
storage
FPSO

INDUSTRIAL GASES

H₂ generation
H₂ fuel station
H₂ power-to-x
H₂ cylinder/trailer filling
Air separation
Polysilicon production
Biogas



CO

CARBON MONOXIDE

N₂

NITROGEN

NH₃

AMMONIA

H₂

HYDROGEN

H₂S

HYDROGEN SULPHIDE

CL₂

CHLORINE

HCl

HYDROGEN CHLORIDE

TWO PRODUCT LINES

A COMPREHENSIVE PORTFOLIO

In addition to our premium API 618 Process Gas Compressors, which are specifically designed for lowest total cost of ownership (TCO). We offer a robust, modular and CAPEX-optimized API 618 Process Gas Compressors product line with the brand name BCS. This enables Burckhardt Compression to offer a complete portfolio which covers the preferences of all our customers.

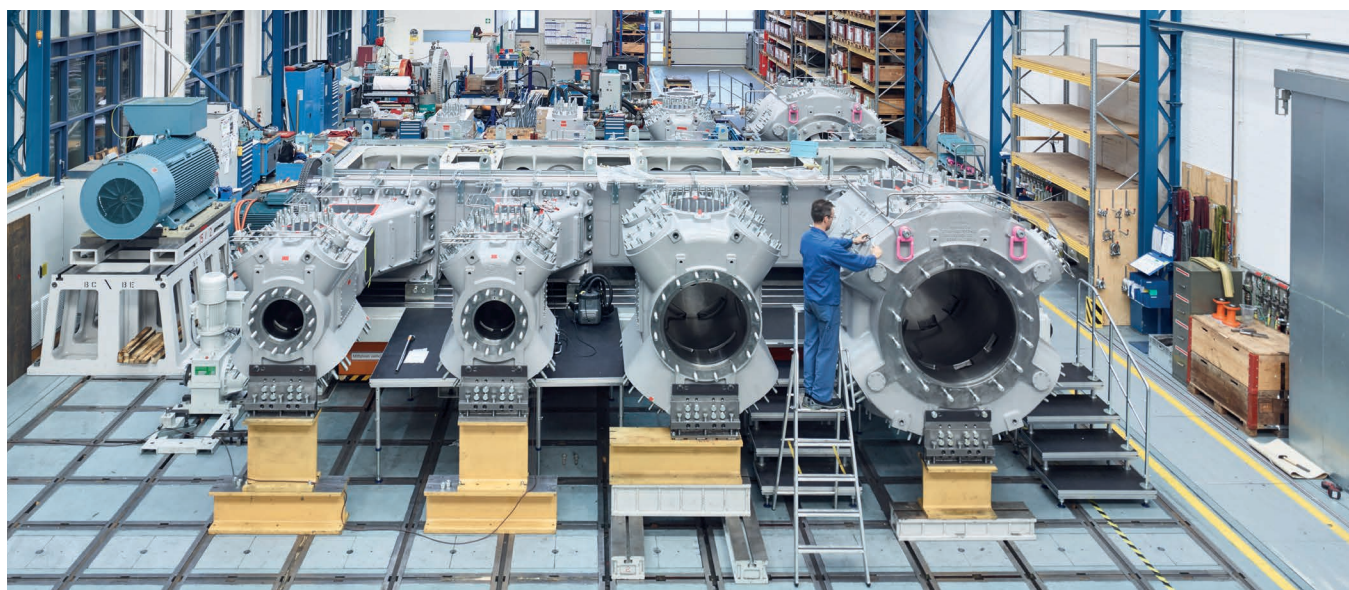
PROCESS GAS COMPRESSORS BY BURCKHARDT COMPRESSION

Burckhardt Compression offers process gas compressors for most demanding and complex applications up to 1'000 bar/14'500 psi (lubricated) and 450 bar/6'530 psi (non-lubricated) discharge pressure. The compressor, designed in Switzerland, is optimized to the customer's process conditions in order to achieve longest possible lifetime and highest level of reliability.

BCS PROCESS GAS COMPRESSORS

BCS Compressors offers an extended range of compressors solutions, up to 200 bar/2'900 psi (lubricated) and 70 bar/1'015 psi (non-lubricated) discharge pressure. The modular compressor design enables cost-efficient engineering and manufacturing resulting in a capex-oriented compressor system, according to API 618 requirements.

Burckhardt Compression has established a worldwide engineering organization with global processes, which enables us to benefit from synergies and competence centers around the world in order to offer the best product according to our customers' specifications.

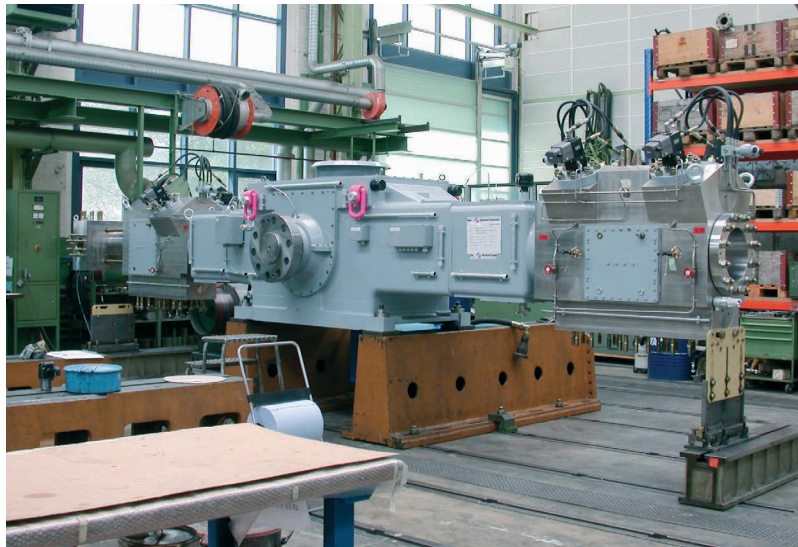


WORLDWIDE REFERENCES

RENOWNED TECHNICAL EXPERTISE



1

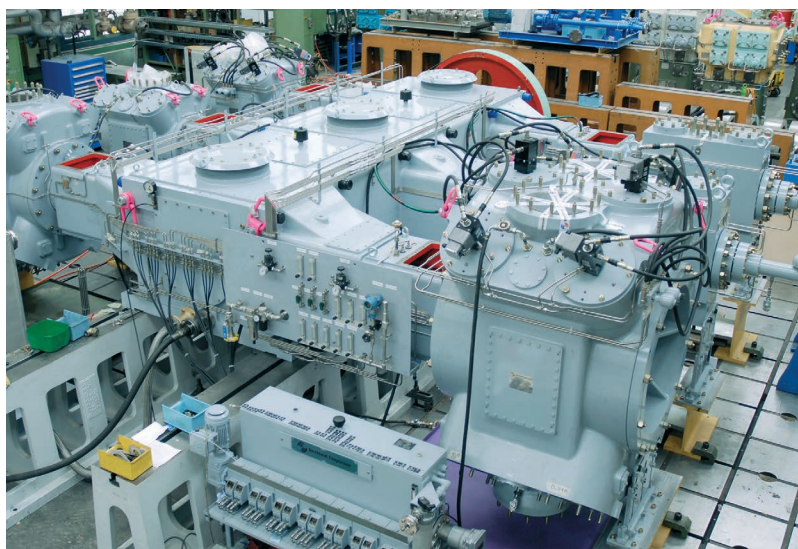


2

1 Hydrogen, discharge pressure 120 bara (1'740 psia), non-lubricated 12'000 h operation without maintenance

2 Carbon dioxide, discharge pressure 235 bara (3'400 psia). Transcritical compression cycle

3 Ethylene, discharge pressure 288 bara (4'177 psia). Main stream Process Gas Compressor without a stand-by compressor due to its high availability



3

Guan Xinchun, Mechanical Maintenance Manager, CTM LDPE BASF-YPC Company Limited, Luhe District, Nanjing, China

"At our plant in Nanjing, we operate a Process Gas Compressor as booster/primary compressor with a piston diameter close to one meter, and a horizontal opposed reciprocating compressor (Hyper Compressor). Both units are crucial for the operation of our LDPE production plant. Safety, availability and reliability are the most important equipment requirements since the

compressors are used within the main production line and we don't have any stand-by units. We rely on Burckhardt Compression due to their high quality standards and their long-term experience in designing and manufacturing large reciprocating compressors".

BURCKHARDT COMPRESSOR DESIGN

OPTIMIZED SOLUTION FOR HIGHEST AVAILABILITY AND EFFICIENCY

KEY COMPRESSOR COMPONENTS – FOR BEST PERFORMANCE AND LOWEST TOTAL COST OF OWNERSHIP

GUIDE RINGS

- According to API 618
- Pressure relieved
- Very long lifetime
- Optimized mounting position

PISTON RINGS

- Decades of lubricated and non-lubricated experience
- Various own designs and materials for maximum durability
- Optimized wear compensation

PISTON ROD PACKINGS

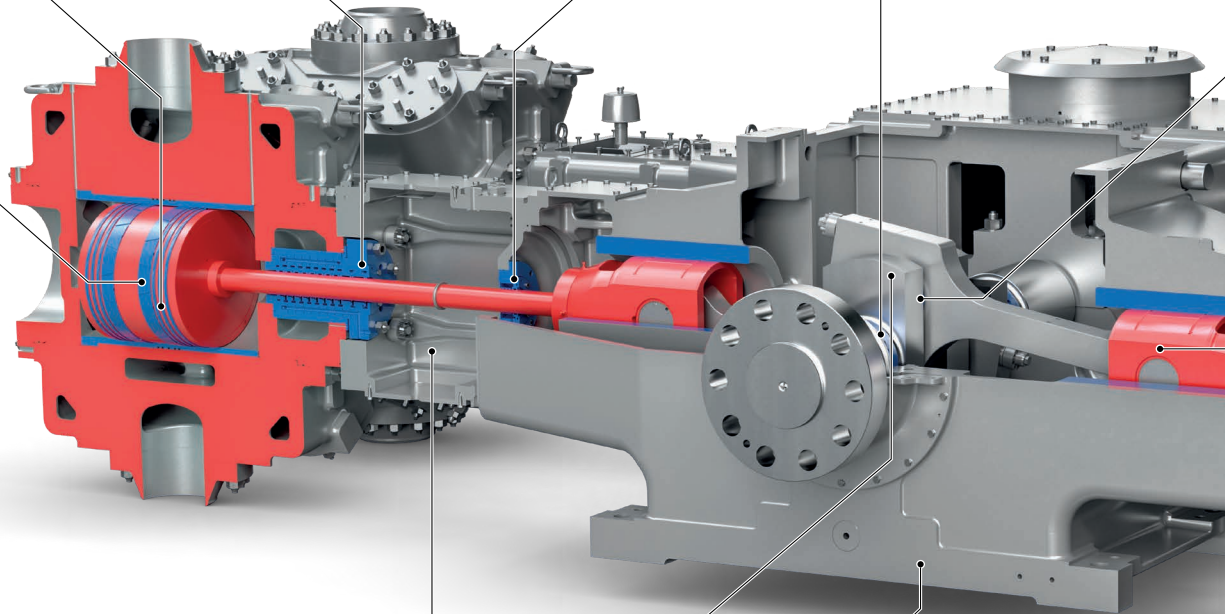
- Applied technology based on decades of experience
- Heterogeneous systems allowing high pressure non-lubricated services
- Extremely high sealing efficiency and lifetime

OIL SCRAPERS

- Highly efficient oil removal
- Material selection according to specific application
- Long lasting design for minimum lube-oil consumption

MAIN BEARINGS

- Interchangeable with big-end bearings



RUGGED DESIGN – FOR DURABILITY

LUBRICATION SYSTEM (NOT ILLUSTRATED)

- According to API 618/614 or to customer requirements

DISTANCE PIECES

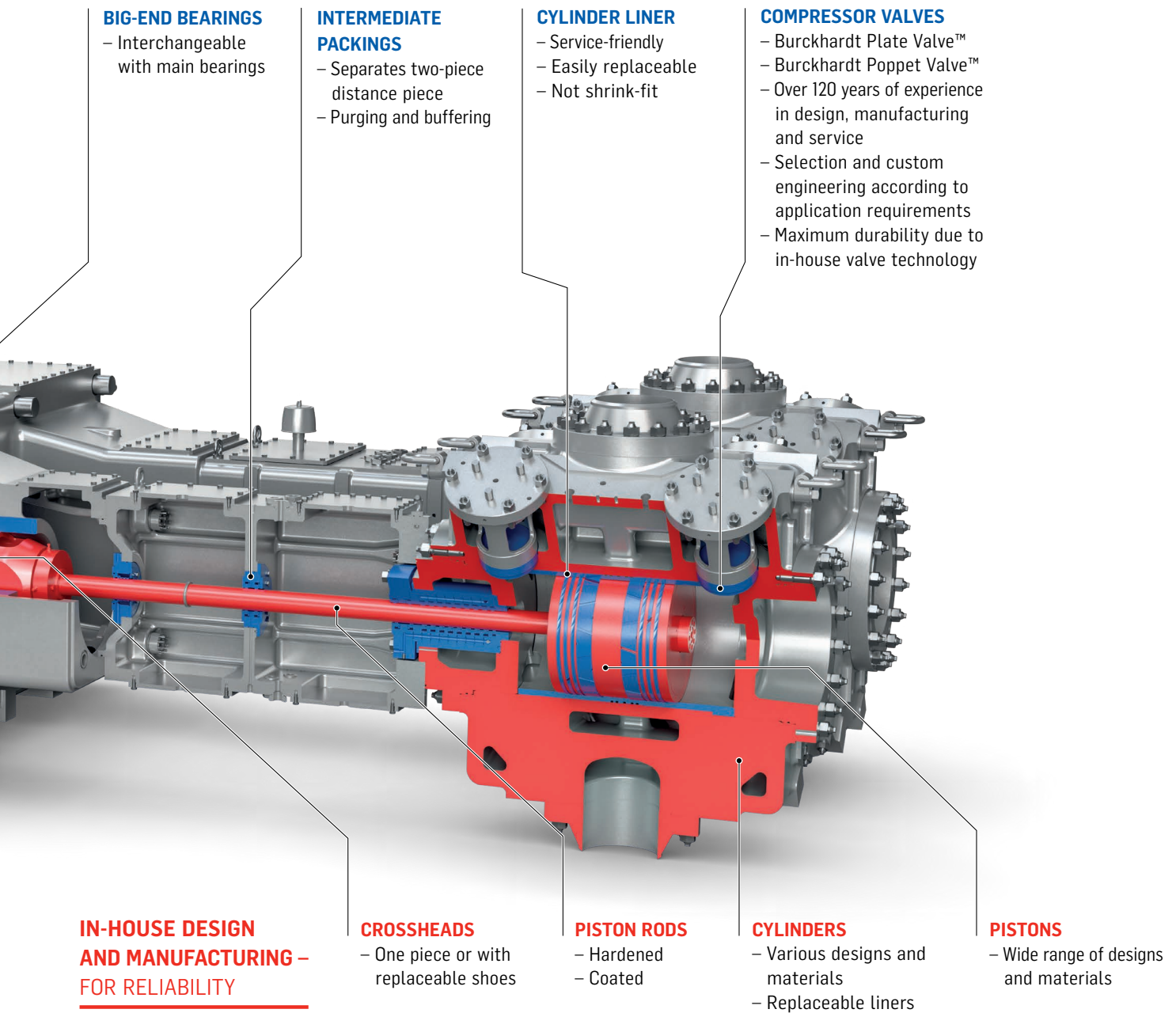
- Single- or two-compartment
- Vented
- Purged
- Pressurized

CRANKSHAFT

- Forged

FRAME

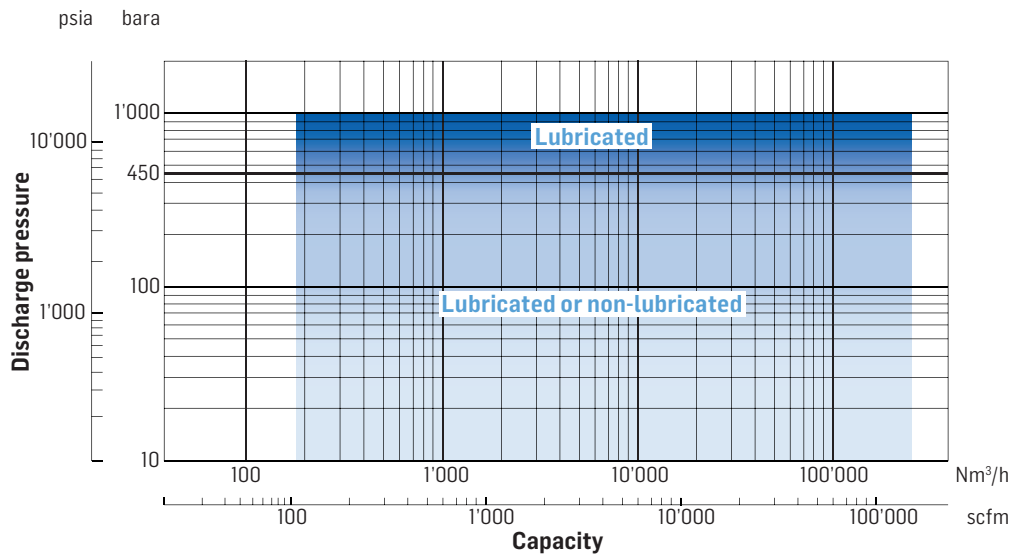
- Robust
- FEM optimized



TECHNICAL DATA

PERFORMANCE RANGE AND DIMENSIONS

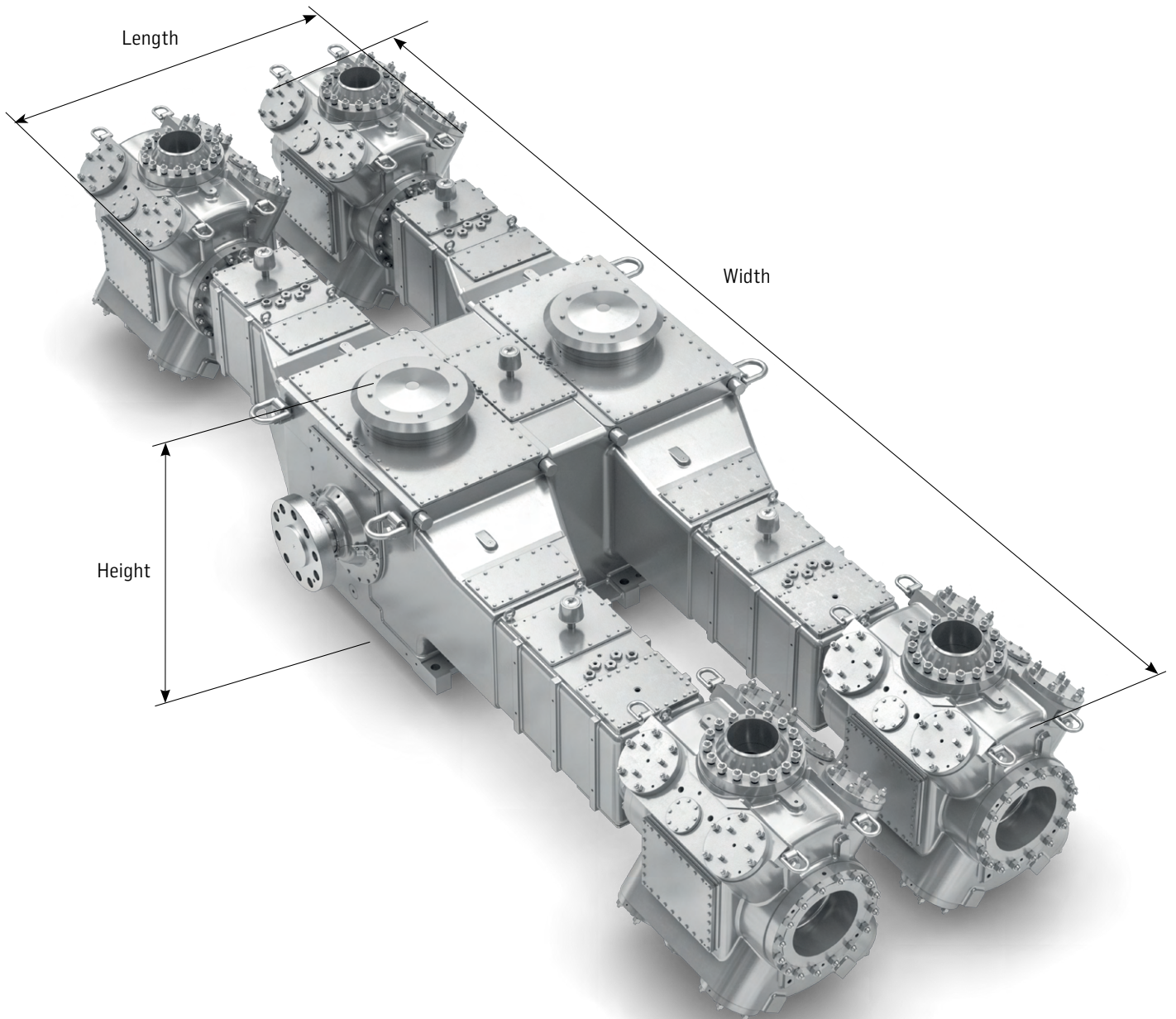
PERFORMANCE RANGE



DIMENSIONS

Type	Max. Speed rpm	Rated Power kW / hp	Max. Rod Load kN / lbs	Width mm / in	Height mm / in	Length mm / in	Cranks
BY	850	900 / 1'200	100 / 22'500	4'400 / 173	1'100 / 43	900 / 35	2
						1'500 / 59	4
BF	600	2'200 / 3'000	145 / 32'500	6'700 / 264	1'400 / 55	1'560 / 61	2
						2'300 / 91	4
BS	750	2'400 / 3'200	200 / 44'500	5'600 / 220	1'200 / 47	1'000 / 40	2
						2'150 / 84	4
						3'350 / 131	6
BX	520	5'400 / 7'200	350 / 79'000	7'750 / 305	1'390 / 54	890 / 35	2
						2'150 / 84	4
						3'390 / 133	6
BA	500	9'500 / 12'700	550 / 124'000	8'000 / 314	1'390 / 54	1'000 / 40	2
						2'800 / 110	4
						4'600 / 181	6
						6'400 / 251	8
BC	450	16'000 / 21'700	900 / 200'000	9'500 / 374	1'600 / 63	1'500 / 59	2
						3'500 / 138	4
						5'500 / 216	6
						7'500 / 295	8
BE	429	31'000 / 42'100	1'700 / 382'000	11'500 / 453	1'900 / 75	1'800 / 70	2
						4'000 / 158	4
						6'200 / 244	6
						8'800 / 347	8

Vertical 1, 2, 3 and 4 crank BY and BS compressors are also available as CY and CS.



BCS COMPRESSOR DESIGN

ROBUST SOLUTIONS FOR DEMANDING PROCESS GAS COMPRESSION

KEY COMPRESSOR COMPONENTS – FOR A CAPEX-OPTIMIZED COMPRESSION SOLUTION

GUIDE RINGS

- According to API 618
- Pressure relieved

PISTON RINGS

- Lubricated and non-lubricated piston rings

PISTON ROD PACKINGS

- Non-purged / purged
- Leak gas recovery
- Water cooled
- Rod drop sensor
- Temperature monitoring

OIL SCRAPERS

- Highly efficient oil removal
- Material selection according to specific application

MAIN BEARINGS

- Robust design

RUGGED DESIGN – FOR DURABILITY

LUBRICATION SYSTEM (NOT ILLUSTRATED)

- According to API 618/614 or to customer requirements

DISTANCE PIECES

- Single- or two-compartment
- Vented
- Purged
- Drained

BASE PIECE

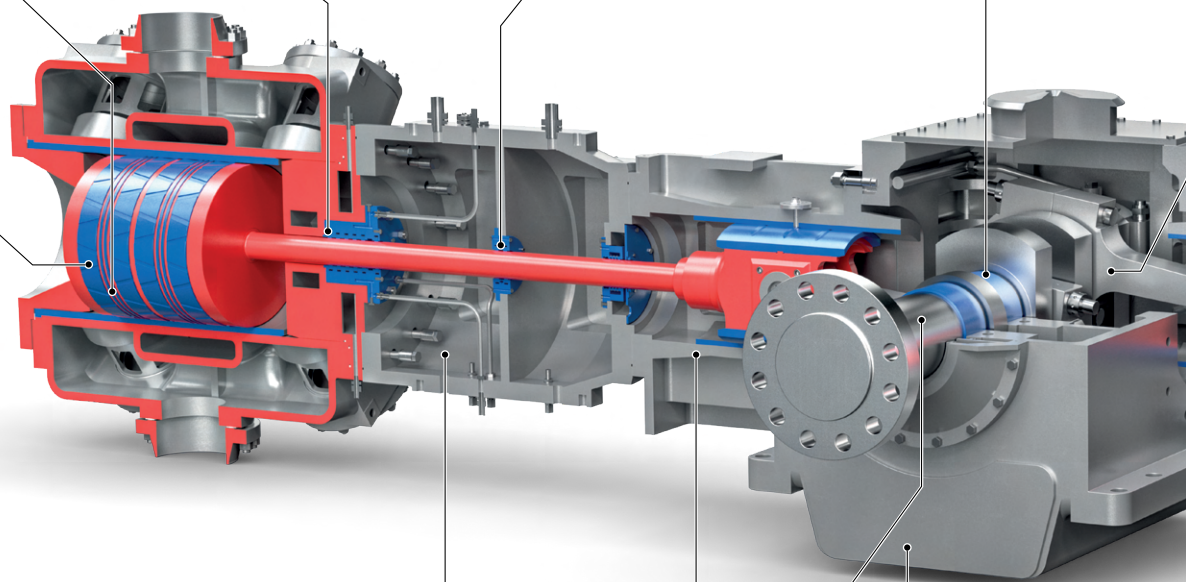
- Robust foundation-supported crosshead housing

CRANKSHAFT

- Forged
- Without oil hole structure
- Crankshaft-driven main lube oil pump

FRAME

- Robust
- FEM optimized
- Integrated lube oil reservoir





Part of the Burckhardt Compression Group

CONNECTING RODS

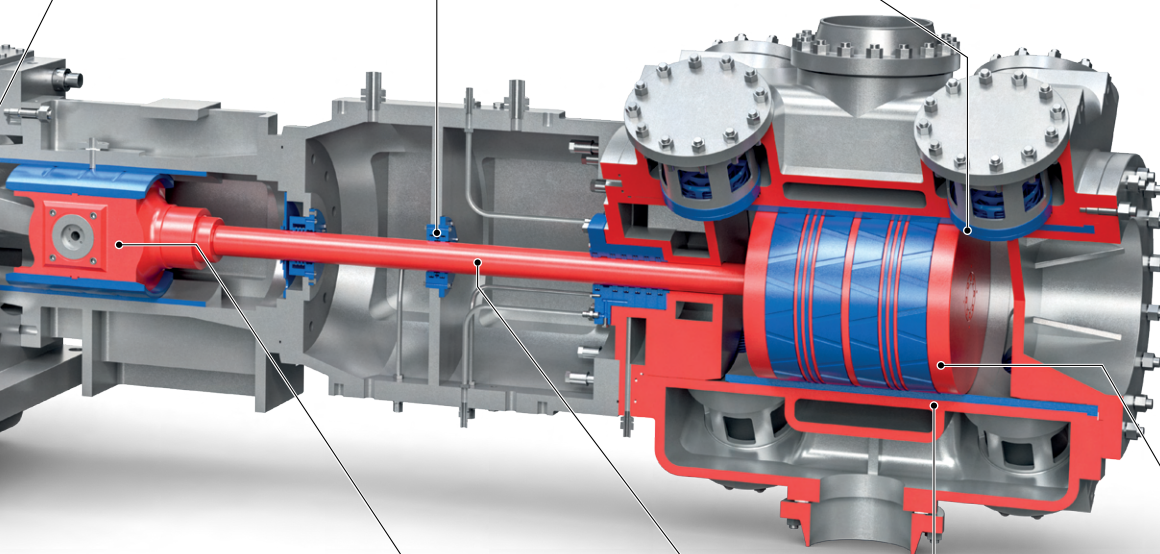
- Die-forged
- Lubricated from crosshead side

INTERMEDIATE PACKINGS

- Separates two-piece distance piece
- Purging and buffering

COMPRESSOR VALVES

- Burckhardt Plate Valve™
- Burckhardt Poppet Valve™
- Over 120 years of experience in design, manufacturing and service
- Selection and custom engineering according to application requirements
- Maximum durability due to in-house valve technology



GLOBAL DESIGN AND MANUFACTURING – FOR RELIABILITY

CROSSHEADS

- Three-piece crosshead acc. to API 618
- Exchangeable crosshead shoes
- Easy access for inspection and maintenance

PISTON RODS

- Hardened
- Coated

CYLINDERS

- Various designs and materials
- Shrink fit liners

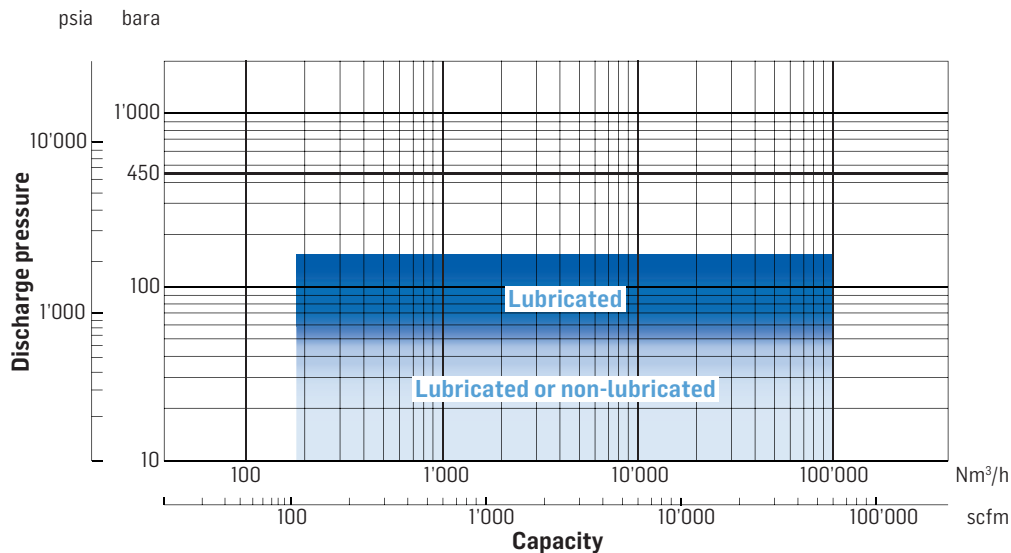
PISTONS

- Wide range of designs and materials

BCS TECHNICAL DATA

PERFORMANCE RANGE AND DIMENSIONS

PERFORMANCE RANGE

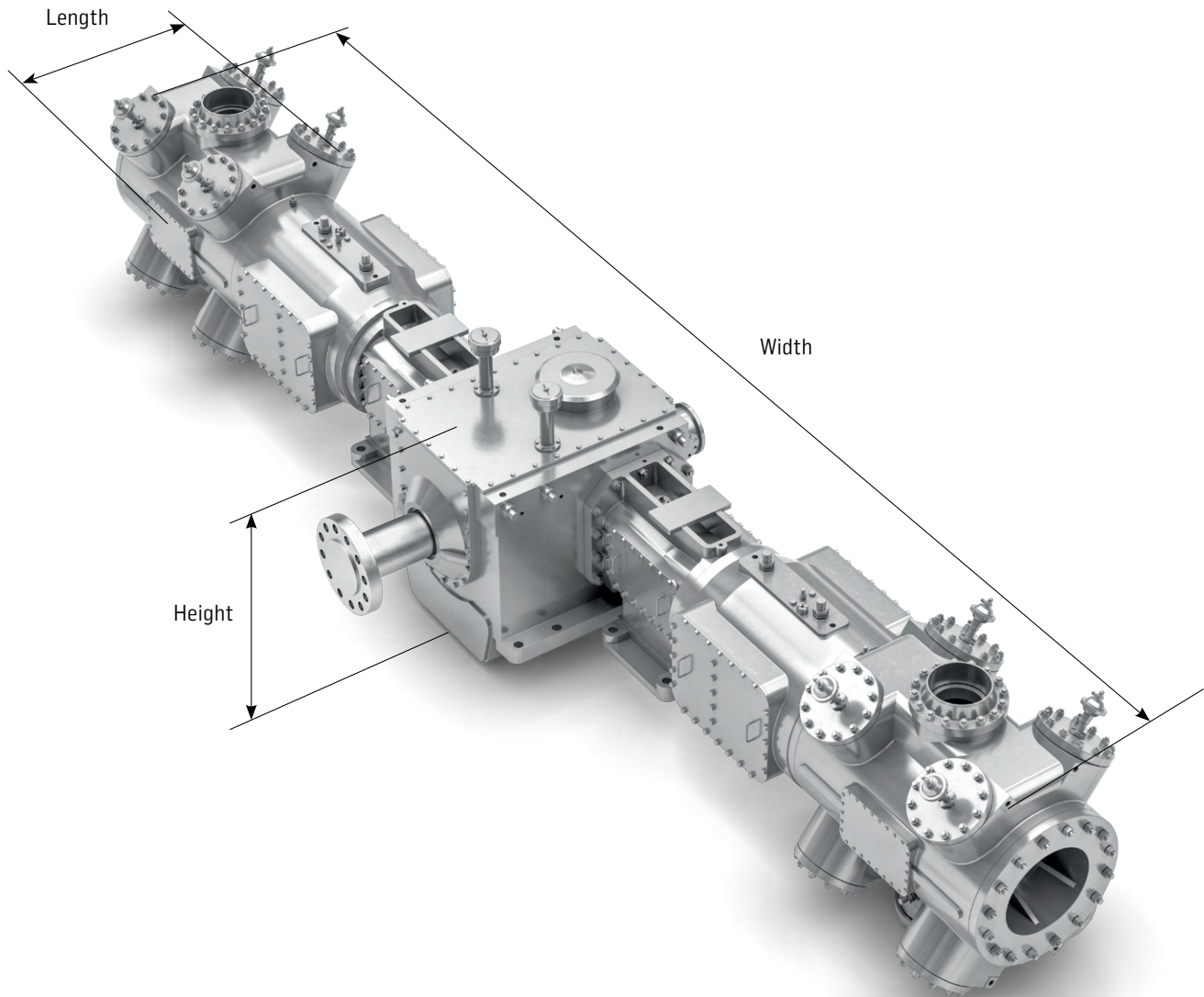


DIMENSIONS

Type	Max. Speed rpm	Rated Power kW / hp	Max. Rod Load kN / lbs	Width mm / in	Height mm / in	Length mm / in	Cranks
MQ	500	600 / 805	65 / 14'600	6'100 / 240	1'200 / 47	1'100 / 43 2'300 / 90	2 4
MY	428	1'100 / 1'475	100 / 22'500	6'800 / 268	1'900 / 75	2'400 / 94 3'700 / 146	2 4
MF	428	1'300 / 1'743	120 / 27'000	7'200 / 283	1'900 / 75	2'600 / 102 4'300 / 169	2 4
MS	450	1'600 / 2'145	160 / 36'000	7'100 / 279	1'500 / 59	1'300 / 51 2'900 / 114	2 4
MX	420	5'400 / 7'242	320 / 72'000	8'600 / 339	2'000 / 78	1'500 / 59 3'400 / 133 5'600 / 220	2 4 6
MA	333	5'550 / 7'445	450 / 101'000	9'500 / 374	1'900 / 75	3'100 / 122 5'500 / 217 7'900 / 312	2 4 6
MC	333	8'325 / 11'165	800 / 180'000	9'800 / 386	2'200 / 87	3'500 / 122 5'900 / 232 8'400 / 331	2 4 6
MW	333	16'200 / 21'725	1'240 / 278'800	11'000 / 433	2'200 / 87	4'000 / 157 6'800 / 268 9'600 / 378	2 4 6



Part of the Burckhardt Compression Group





ONLINE CONDITION MONITORING AND SIL3 MACHINE PROTECTION

MINIMIZE RISKS – MAXIMIZE UPTIME

MONITORING THE CRUCIAL PARTS

Preventing accidental breakdowns is vital. They can have serious consequences, such as risks for plant safety and the environment, production loss, expensive and time consuming repairs, etc.

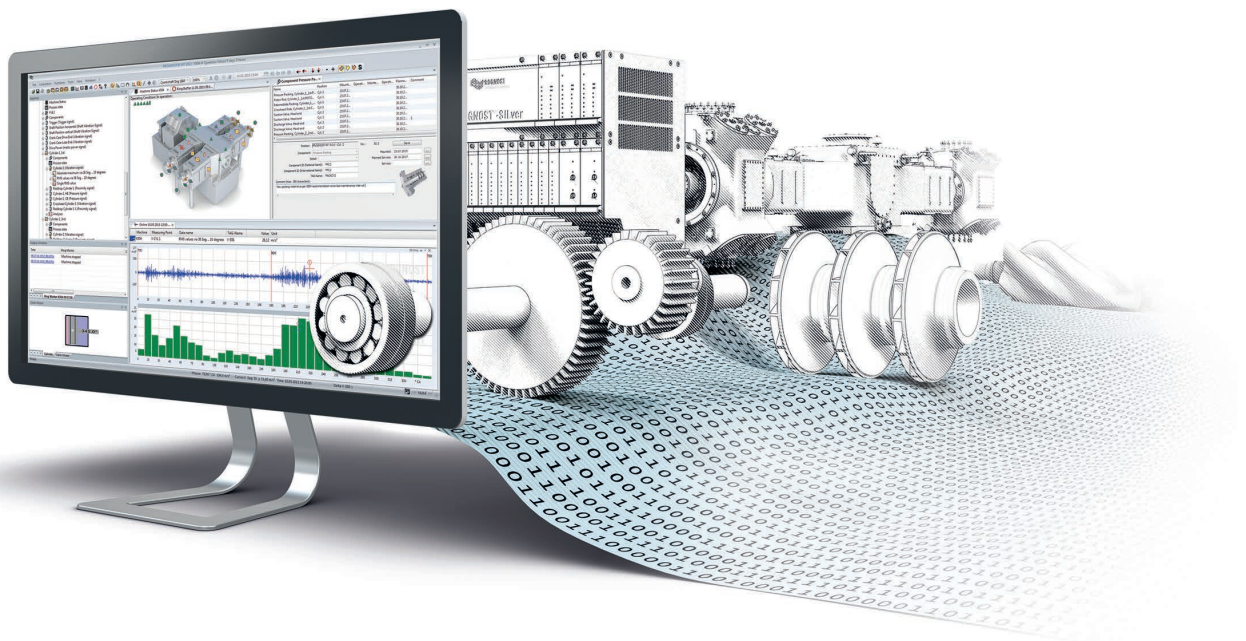
Main measurements points for monitoring are:

- Vibration acceleration of crosshead
- Displacement of piston rod
- Crankshaft trigger for the crankshaft position
- Vibration velocity on crank gear
- Temperature and vibration acceleration on valves

WE RECOMMEND PROGNOST®

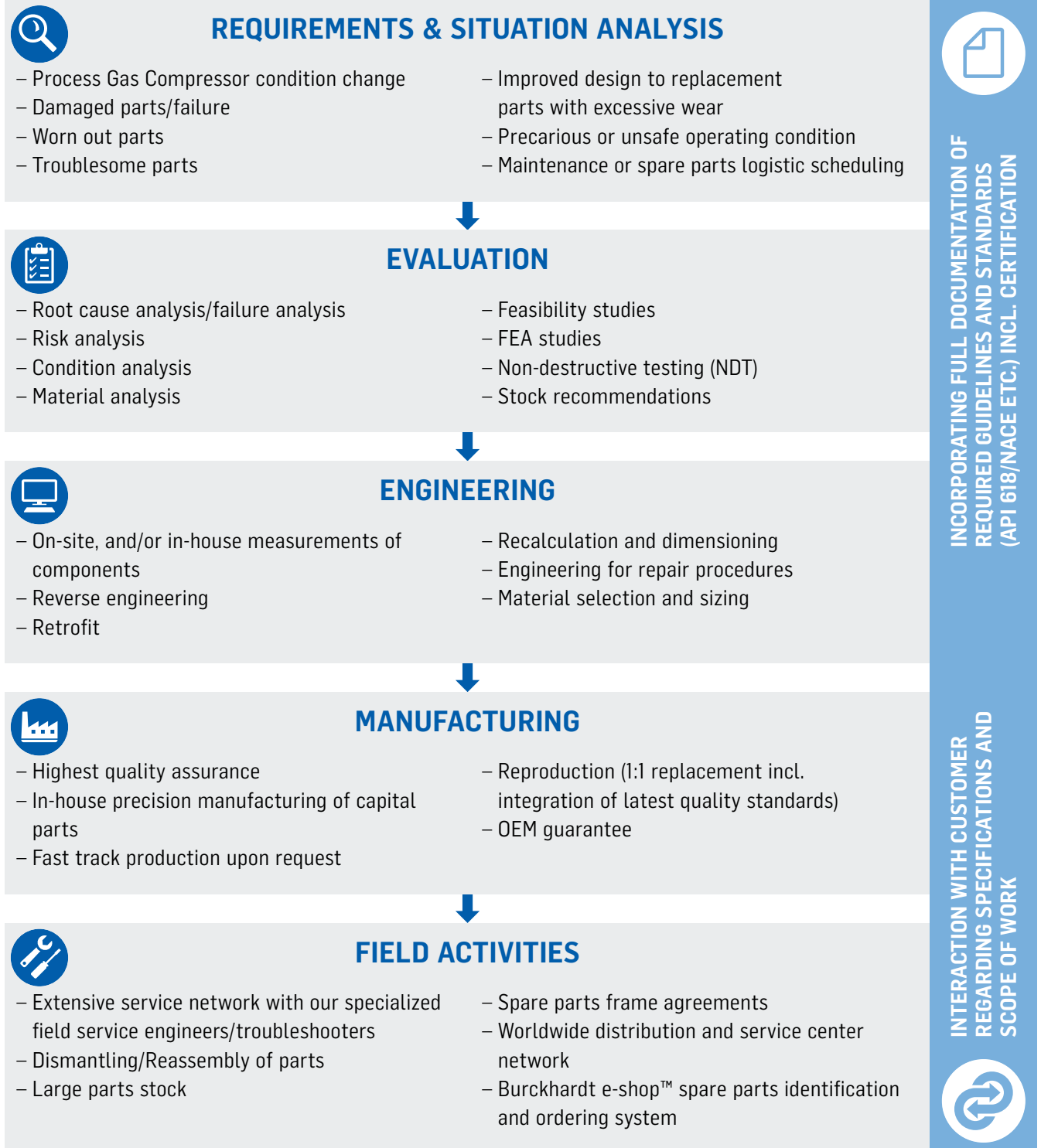
Burckhardt Compression recommends PROGNOST Systems – the technological leader in machine protection and online monitoring with more than 25 years of experience.

PROGNOST®-NT is an automated machinery diagnostic system incorporating SIL 3-certified and online condition monitoring. It has been developed specifically for reciprocating machinery and is also used for different kinds of rotating equipment. Its unique vibration signal segmentation detects impending failures at an very early stage and identifies the affected components. Operation-critical damages are avoided and maintenance work can be performed efficiently.



UNEQUALED SERVICE CAPABILITIES

FOR EVERY RECIPROCATING COMPRESSOR





**YOUR SOLUTION PARTNER
FOR THE ENTIRE LIFE
CYCLE OF COMPRESSOR
SYSTEMS**



DESIGN & ENGINEERING



BARE COMPRESSORS TO
TURNKEY SOLUTIONS



SERVICE & COMPONENTS

COMPRESSOR COMPONENTS

BEST PERFORMANCE
AND LONGEST LIFETIME

Compressor valves

Redura® rings & packings

Capacity control systems

Capital parts

Labyrinth piston compressor
components

Hyper/secondary compressor
components

SERVICES

THE FULL RANGE

Burckhardt Valve Service

Spare parts logistics

Field service

Technical support

Revamps & upgrades

Component repair

Condition monitoring &
diagnostics

Training

Burckhardt Compression

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www.burckhardtcompression.com

Your local contact

