

# OEM KNOW-HOW

## Procedures to guarantee best-of operation

Remanufacturing is an ideal solution for customers requiring a replica or substitution of the existing compressor and/or components utilizing the original design and current standards.

NEUMAN & ESSER GROUP has exclusive rights to the original manufacturer drawings, updated bills of materials and compressor documentation of 11 legacy brand lines, including:

- PENN Process Compressors
- Chicago Pneumatic
- Halberg
- KSB Compressors
- Esslingen
- Borsig (recips built in Berlin up to the end of 1995)
- Linde
- Mafa Wurzen
- E&S
- Demag
- HOFER

These exclusive rights extend to parts lists, specifications, fabrication drawings, history, modifications of the machine, and more. Especially for revamp projects, this documentation ensures the possibility to adapt, improve and properly maintain existing compressor systems with original spare parts or according to technical specifications.

Experience has proven that only the correct replacement part - produced from the original drawing with the highest quality and precision - can guarantee high availability of the equipment.



## NEUMAN & ESSER GROUP

- COMPRESSORS
- SERVICES
- SEALINGS
- PROCESS
- DIGITALS

### Find out more @

www.neuman-esser.com  
 www.neacusa.com  
 www.neac.de  
 www.stasskol.com  
 www.hofer-hochdrucktechnik.de

### Headquarters

Übach-Palenberg, Germany  
 Phone: +49 2451 481-01

EN 08-2016  
 RS - 2018-03



# REVAMP & MODERNIZATION

## A comprehensive portfolio for any spec

NEUMAN & ESSER GROUP (NEA) is a fully integrated OEM supplier engaged in the engineering, manufacturing, packaging, and servicing of NEA reciprocating compressors as well as 11 other OEM legacies for upstream, midstream, and downstream applications. NEA's specialty is its ability to customize any component within the compression system while also following API 618 or ISO 13631 standards and customer specifications. This extends to revamp/reconditioning projects of the compressor alone or the entire compression system.

The following solutions are tailored to meet each customer's varying needs:

- Engineering & Feasibility
- Reapplication & Rerating
- Reconditioning & Repairs
- Upgrades & Technical Improvements

Companies of NEA GROUP emphasize on different priorities. The majority of the NEUMAN & ESSER Sales & Application Centers focuses on the engineering and project management of new compressor packages and revamps of machines/equipment in the field. NEA's in-house engineers provide the latest, turn-key solutions to bring customers the most reliable and efficient operation of their compression system.

The aftermarket organization, NEAC Compressor Service, is the specialist for service, spare parts and repairs. NEAC service technicians are factory certified for NEA equipment and multiple OEMs of compressors and drivers. In addition, they offer the flexibility to work on machines on-site or at a preferred fabrication shop.

# NEUMAN & ESSER

## REVAMP / RECONDITIONING RECIPROCATING COMPRESSORS

automation of operation process	capacity reduction	PROCESSES	OPTIMIZATION	new compressor application	optimization or refitting of compressor accessories	certification according to CE / ATEX	PULSATION ANALYSIS	LEGACY SUPPORT	OEM SUPPORT	RERATING UPGRADE	conversion from lubricating to dry-running service and vice versa
feasibility study	adaptation	ENERGY SAVING	NEW PROCESS CONDITIONS	improvement of lifetime and availability	improvement of service possibilities	flexible flow control	ADAPTATION ACCORDING TO MODIFIED OPERATING CONDITIONS	increase compressor safety	TORSIONAL VIBRATION ANALYSIS		
compressor revamp	DIAGNOSTICS	new gas analysis	NEW PROCESS CONDITIONS	optimization of wear parts	flexible flow control	ADAPTATION ACCORDING TO MODIFIED OPERATING CONDITIONS	increase compressor safety	TORSIONAL VIBRATION ANALYSIS			



# A NEW FIT FOR PARTS & MACHINES

Ingenious solutions to easily meet new requirements

## Engineering & Feasibility

To start, NEA works closely with customers to establish new requirements, a schedule and a budget. It is important that the current compressor system undergoes a thorough analysis of its performance data, to fully understand the root cause of the problem or damage. Following, NEA engineers utilize the cutting-edge compressor design tool, KO<sup>3</sup>, to run a detailed verification analysis on the compressor and its accessories. KO<sup>3</sup> allows NEA engineers to examine, in detail, the current situation and all possible alternatives feasible to accomplish the customer's goals.

In addition to the KO<sup>3</sup> technical report, with the NEA Revamp Evaluation Matrix, each revamp possibility is checked for verification according to cost, efficiency and reliability. The result of such an engineering study is a complete technical and commercial catalogue with all possible solutions for a compressor revamp according to specific customer requirements.

The intensive engineering in advance pays off. This way NEA always provides the technically safest and economically most reasonable solution.

## Reapplication

NEA's portfolio allows to review changes to gas properties, pressure levels, and/or other process conditions, thus resulting in a reapplication of the compressor and/or the compressor system to meet new customer specified parameters. NEA engineers are experienced in handling a variety of reapplication projects, including:

- Flexibility to re-power the driver from an electric motor to a gas engine drive or vice versa
- Rework on major components, such as frames, cylinders, bottles, piping, coolers, control systems and skids
- Eliminate limitations and bottle necking
- Conversion from lubricated to dry-running service or vice versa

Revamping allows for a shorter turnaround time, extended equipment life with improved materials and design, and is a lower cost alternative to the purchase of new equipment.

## Rerating

An increase or decrease in the capacity yield can result in reducing rated throughput for the purpose of gaining mechanical efficiency, or increasing throughput capacity to gain production capability. Techniques are:

- Synchronous or open/close suction valve unloading
- Finger or plug type unloaders
- Valve pockets - variable volume clearance pocket (VVCP) **BLUEPOCKET**<sup>®</sup>
- Motor VFD control
- Gas capacity can also be made possible by enlarging cylinders, stroke, speed or combination

These techniques allow for the reciprocating compressors to meet a variety of different gas flow conditions through the use of unloaded compressor cylinder ends and/or clearance pockets while minimizing power consumption.



## Reconditioning & Repairs

There are numerous factors that can contribute to the wear and tear of compressor parts, such as vibration-caused issues, deterioration, and poor maintenance practices. Reconditioning and repair scope of work extends to:

- Detailed documentation of inspection, analysis, work performed, and start-up results
- Quick turn-around on repair or replacement work on any component
- Thorough clean-up of any component to remove dirt, rust, and etc. (i.e.; blast-cleaning, liquid flushing and abrasive cleaning)
- Reworking flange surfaces, cylinders, bore lines on-site or in the repair center
- Foundation improvement and overhaul
- Touch-up or repaint the existing equipment

NEA has exclusive rights to select OEM drawings and documentation to ensure that legacy equipment can be properly maintained and repaired with original spare parts in accordance to technical specifications.

## Upgrades & Technical Improvements

Upgrades are ideal for customers experiencing parts with high failure rates, outdated technology, major process changes, or to meet new standards or environmental requirements. NEA upgrades the existing equipment or delivers new parts, for the following:

- Bearing material
- Crosshead piston rod connection, Super Nut
- Various ring designs, guide bushings, piston rod sealings, pressure breaker

- Valves, control systems
- Oil system, cylinder lubricator
- Cooling systems
- Piping and vessels, separators
- Instrumentation, monitoring
- New working tools
- Drive system
- Skid / foundation

NEA engineers examine each accessory and verify it for fit, according to the customers' requirements. If necessary and feasible, an adaptation can be made to the part to satisfy the new fit.

## Instrumentation, Monitoring & Diagnostics

NEA offers a wide range of instrumentation devices that are designed to track changes in equipment, pressure, temperatures, vibration, flow and liquid level. NEA's in-house instrumentation team specializes in fully customizing every detail – from the level of software sophistication, to the arrangement, functions, and brand, e.g.:

- Monitoring gauges, or readout devices
- Protective devices that alert to a disturbance and will shut down
- Diagnostic instruments that search for changes in various parameters and trends and makes a diagnosis accordingly.

NEA provides a reliability strategy and service plan that focuses on condition monitoring to prevent downtime by the monitoring of known or measurable wear of critical parts for the most efficient operation.