
ELLIOTT GROUP
EBARA CORPORATION

# Elliott Flex-Op™ Compressor

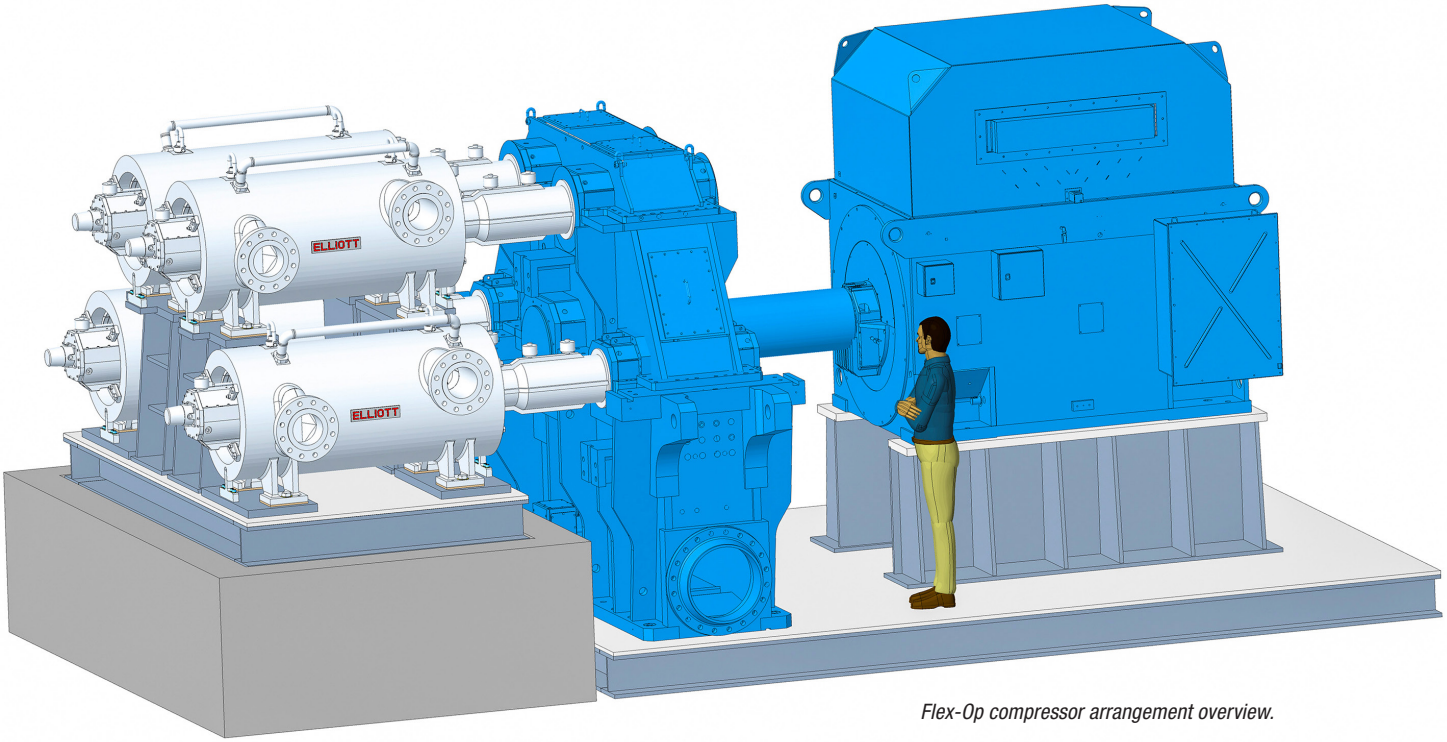
## Reliable Solutions for Hydrogen Compression

Elliott has been supplying compressors for a wide range of pure hydrogen and high-hydrogen process applications since 1955, including over 150 hydrogen-rich compressor trains to date.

## Elliott's Flex-Op Compressor

Elliott developed the Flex-Op™ compressor design to improve operational flexibility in hydrogen applications, including increased head and flow capabilities. The arrangement allows for improved reliability and accessibility to the rotating components.

The Flex-Op design is efficient, with many advantages over reciprocating compressors or extremely high-speed centrifugal compressors. It uses standard design compressors and impellers. The arrangement is compact and easier to maintain and repair. It is operationally flexible, with the potential to engage/disengage individual compressors, to switch between series and parallel operation, and to run each compressor at different speeds. Most importantly for pure hydrogen compression, the process gas is safe from risk of oil contamination, unlike with a reciprocating compressor. Finally, the Flex-Op design is not limited to just hydrogen applications. It is equally suitable for other service applications such as energy storage, process, refining, and chemical compression.



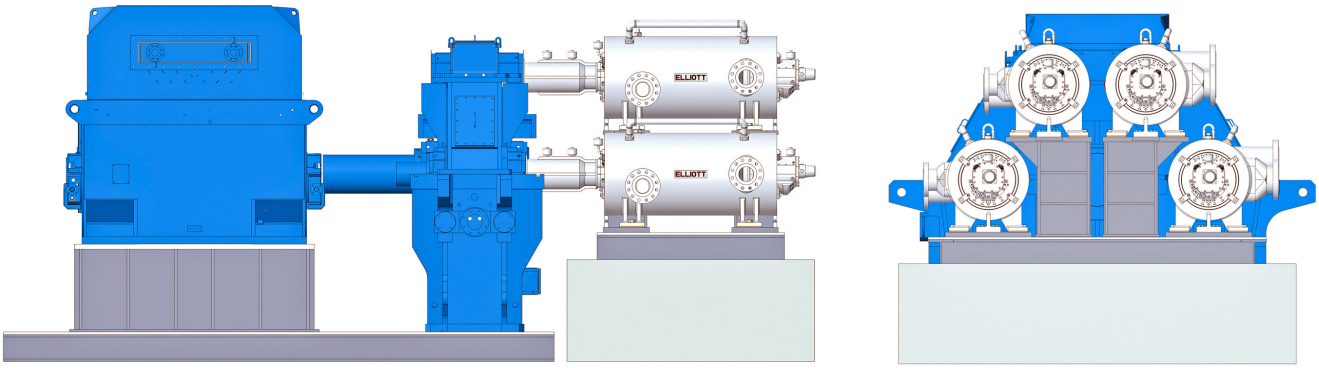

*Flex-Op compressor arrangement overview.*

### *Features*

- Proven Elliott compressor technology
- Flexible with two to four compressor bodies
- Single multi-pinion gearbox
- Up to 40 impellers in four bodies
- Optional intercooling
- Compressors at different speeds
- Casing approximately 36 inches in diameter

## Compressor Arrangement

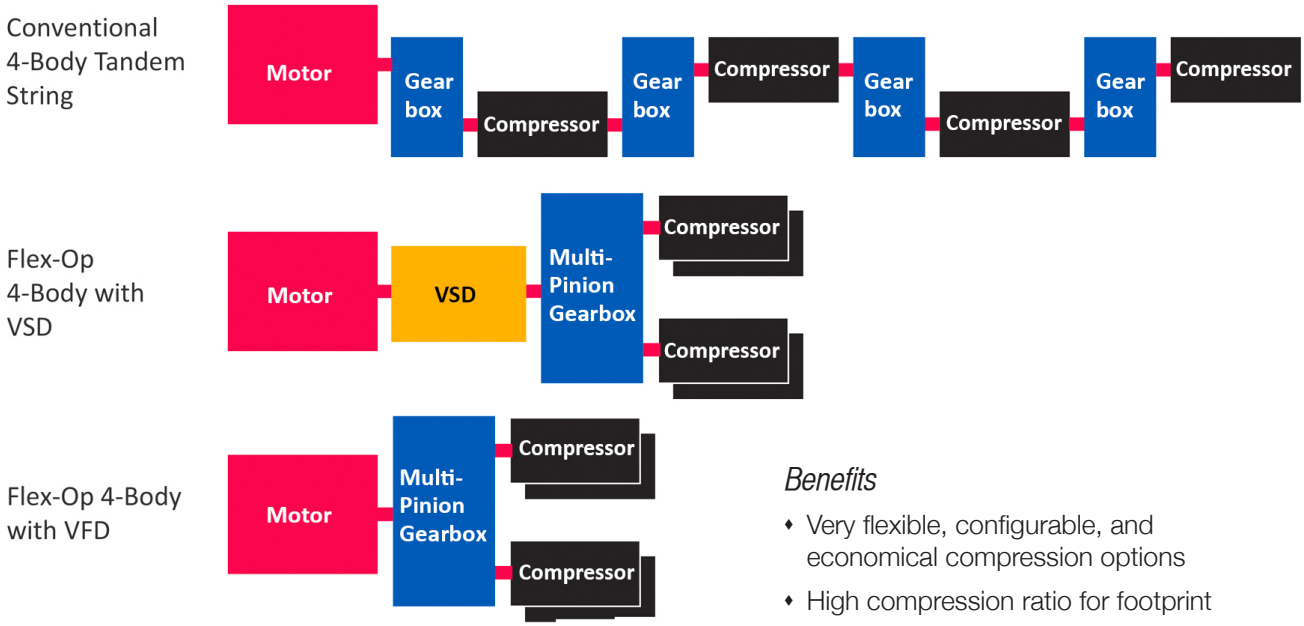
The Flex-Op compressor arrangement allows for flexibility since individual compressors can be either run in series or parallel (or both). This is achieved with three to four individual centrifugal compressors arranged about a single multi-pinion gearbox.



*Flex-Op gearbox and compressor arrangement.*

## Arrangement Options

Since each rotor is connected to its own pinion via a flexible shaft coupled to the central gear, the rotor speeds can be individually optimized for highest aerodynamic efficiency. Elliott's barrel casing configuration, coupled with the single multi-pinion gearbox, allows the entire assembly to be powered by a motor with a variable frequency drive (VFD) or a motor in conjunction with a variable speed drive (VSD) for speed control.




*Conventional compressor tandem vs. Flex-Op options.*

### *Benefits*

- Very flexible, configurable, and economical compression options
- High compression ratio for footprint
- Series/parallel operation
- Process gas free from oil contamination

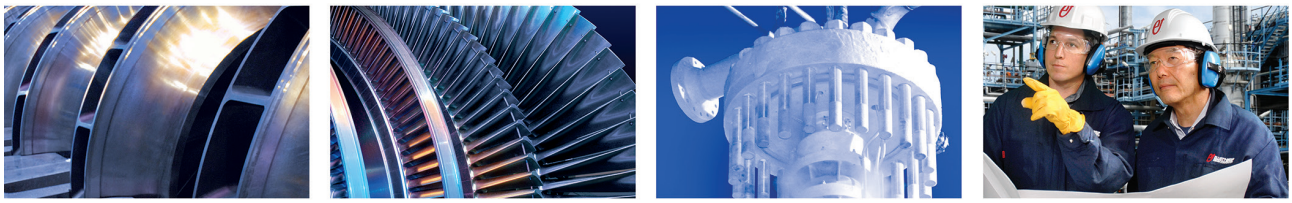

Elliott Group is a global leader in the design, manufacture, and service of technically advanced centrifugal compressors, steam turbines, power recovery expanders, cryogenic pumps and expanders, and axial compressors used in the petrochemical, refining, oil & gas, liquefied gas, and process industries, as well as in power applications.

Elliott Group is a wholly owned subsidiary of Ebara Corporation, a major industrial conglomerate headquartered in Tokyo, Japan.

ELLIOTT® GROUP
EBARA CORPORATION

901 North Fourth Street
Jeannette, PA 15644-1473
Telephone: 724-527-2811
Fax: 724-600-8442
Email: info@elliott-turbo.com
www.elliott-turbo.com

THE WORLD TURNS TO ELLIOTT



COMPRESSORS ■ TURBINES ■ CRYODYNAMICS ■ GLOBAL SERVICE



CMP.2006.1221