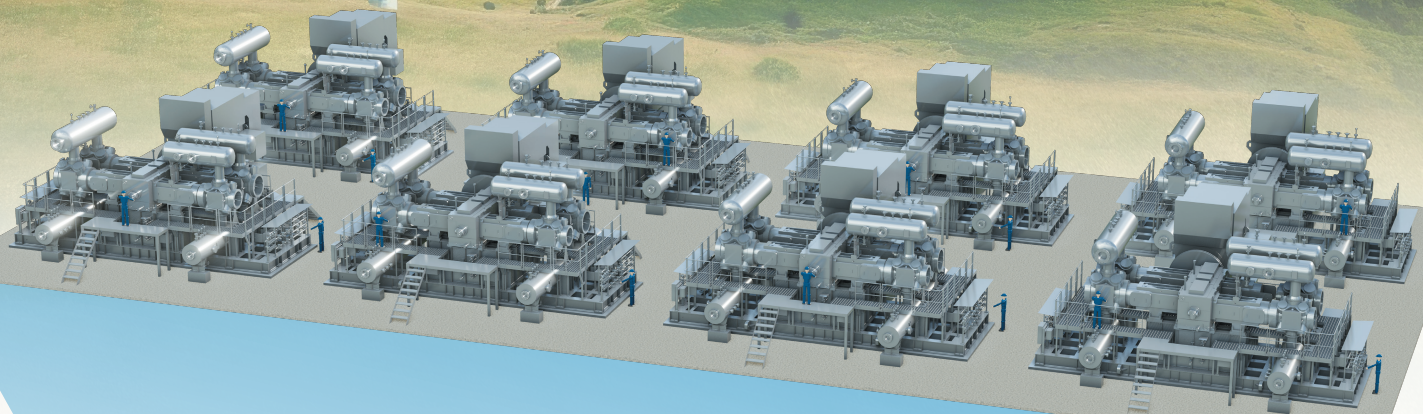


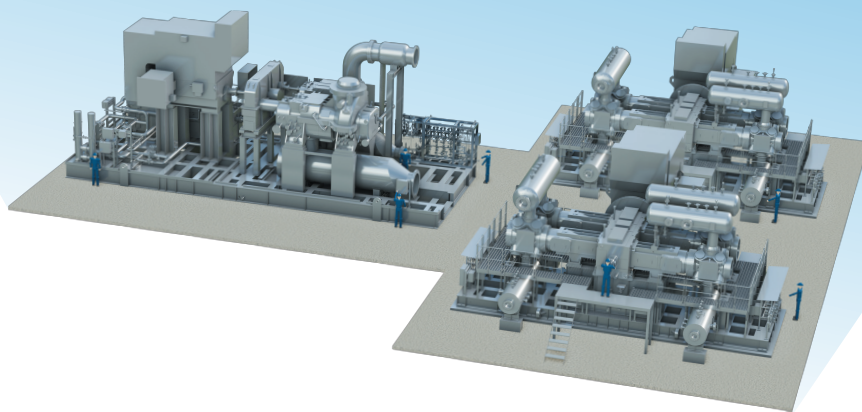
KOBELCO

“Hybrid Solution” for Hydrogen Applications

Combination of Oil-Free Screw and Reciprocating Compressor



Over 50% Smaller Footprint



Optimized Design for Compactness, Reliability and High Efficiency

KOBE STEEL, LTD.

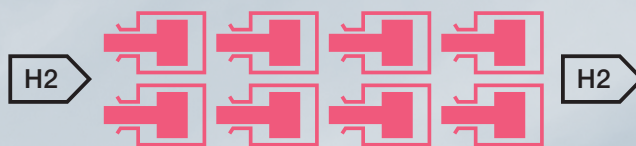
What KOBELCO Offers for a Hydrogen-Powered Society

With the global demand for hydrogen energy rapidly increasing in recent years, there is a growing need for large-capacity, high-purity hydrogen compressors. Traditionally, hydrogen compression has relied primarily on reciprocating compressors. However, leveraging its long-standing expertise as a leading manufacturer of the three major compressor types, KOBELCO presents a **"Hybrid Solution"** —a strategic combination of screw and reciprocating compressors. Screw compressors can process significantly higher flow rates compared to reciprocating units. By positioning a screw compressor upstream, the number of downstream reciprocating compressors can be reduced. This solution offers the optimal balance of CAPEX and OPEX for large-scale hydrogen plants.

"Hybrid Solution" conditions illustrated on the front page

- 1 GW electrolyser plant - 200,000 m³/h (RH100%)
- Suc. Press=0.1 barG
- Dis. Press=30 barG
- skid-mounted recip

Conventional Design



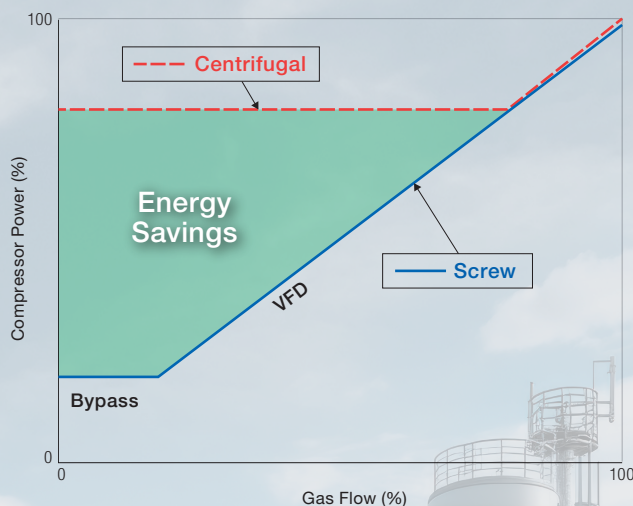
Hybrid Solution



Advantages of Hybrid Solution

- ✓ Less Number of Compression Stage in Recips
⇒ By boosting inlet pressure by screw
- ✓ Wide Turn Down Range of Screw
⇒ Better OPEX than centrifugal compressors
- ✓ High Reliability in Oil-free Screw
⇒ Continuous operation for several years
⇒ No redundant stand-by unit required
- ✓ Skid-Mounted Design of Recips Available
⇒ Minimal site construction work and period
- ✓ Integrated Design of Screw & Recips
⇒ Seamless optimization by one team

Turndown Range for Screw vs Centrifugal Compressor



Best in Class Technology by KOBELCO Screw and Recips



Largest Oil-Free Screw – KS80 Model

- ✓ The world's largest screw compressor
- ✓ Achieved processing capacity of 240,000 m³/h
- ✓ Capable of **1 GW** electrolyzer with a **single unit**
(**"Hybrid Solution"** Ps=0.1 barG)
- ✓ Water mist injection for enhanced efficiency and gas cooling



Oil-Free Recip with World-Class Large Piston

- ✓ World-class large piston diameter
- ✓ Capable of **1 GW** electrolyzer with a **single unit**
(**"Hybrid Solution"** Pd=30 barG, foundation-mounted)
- ✓ Capable of **300 MW** electrolyzer with a **single unit**
(All recip, 0.1⇒30 barG, foundation-mounted)

KOBE STEEL, LTD.

Web site



LinkedIn

