

BORETS WR2 PUMP

Wear Resistant Wide Range ESP for operation in ultra demanding applications

APPLICATIONS

- Unconventional oil & gas wells
- Wells with unstable flow
- Highly abrasive wells
- Gassy wells
- Cost sensitive environments
- Wells with rapid decline in production
- Frac flow back wells

FEATURES & BENEFITS

- New stage manufacturing process:
 - Up to 55 % gas handling without a gas separator
 - Unlimited geometrical capability for complex stage design
 - Unmatched stage performances for extended pump run life and stable operating parameters
- High operating speeds up to 6,000 rpm:
 - Increase production with a shorter overall system length
- High pump efficiency (up to 75 %):
 - Cost effective production across a wide operating range
- Extremely high strength stage material with a hardness similar to Tungsten Carbide:
 - Ultra-abrasion resistant material for extended run life in sandy and gassy well environments
- Over 2.5 times wider operating range compared to conventional ESPs:
 - Ability to adapt to changing well conditions to maximize recovery while minimizing well intervention and nonproductive time

The innovatively designed Borets Wide Range Wear Resistant (WR2) pump exploits new technologies, manufacturing process and materials to expand the ESP system capabilities. The WR2 pump is designed to handle harsh well conditions including high amounts of gas and sand produced through the pump. The pump is ideally suited for a wide range of production with the goal of extending run life and minimizing well interventions.

The WR2 utilizes a Metal Injection Molding (MIM) manufacturing process never before used in the ESP industry. MIM provides a step change improvement for various manufacturing processes. It provides precise dimensional tolerances, enhanced surface finishes and no undersurface cavities.

The WR2 incorporates a superior hydraulic design for improved efficiency over a wider flow range thus reducing operating costs and improving reliability while optimizing production under dynamic downhole conditions.

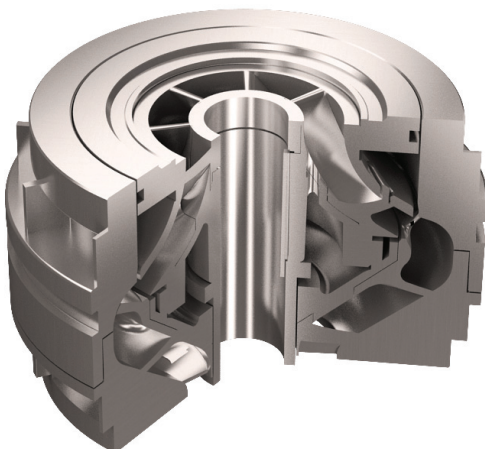
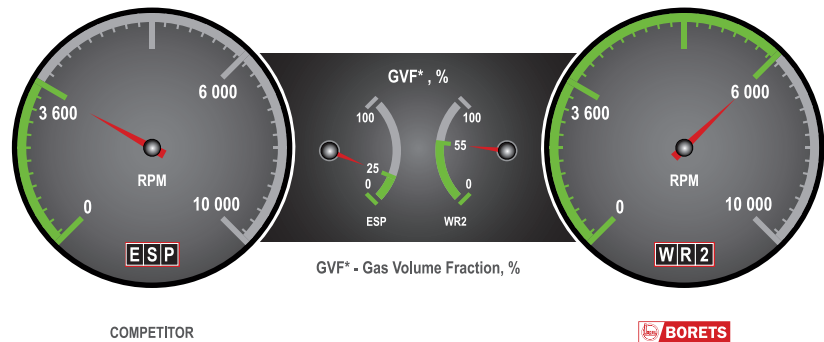
The operating range is greatly enhanced as compared to the conventional ESP designs,

since the hydraulically balanced stages reduce thrust wear at boundary conditions. This results in higher reliability, less stress on the system, and longer operating life. The mixed-flow design allows gas to pass more easily through the pump compared to a radial-flow stage, mitigating gas locking and well cycling conditions that can cause electrical shorts and other issues reducing ESP system run life.

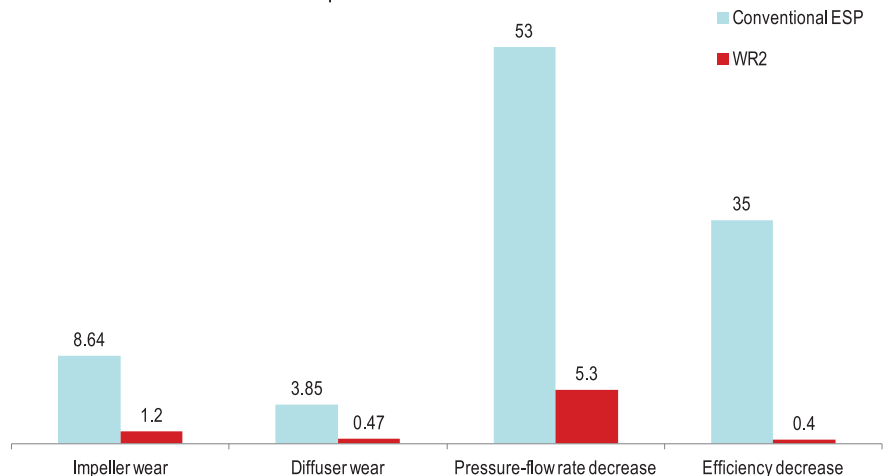
Several material combinations were designed by Borets R&D engineers to dramatically improve stage material hardness. Typical stage hardness of 57 HRC is met with high tensile strength limit of 2,100 MPa (304.5 Ksi).

The WR2 is designed for flow rates from 125 - 440 bpd (20 - 70 m³/day), 250 - 1000 bpd (40 - 160 m³/day) and 560-1900 bpd (90 - 300 m³/day).

The Borets WR2 pump mixed-flow design provides increased efficiency and reduced gas locking.



Comparative Abrasion Wear Test (%)
Compression ESP vs. WR2 ESP

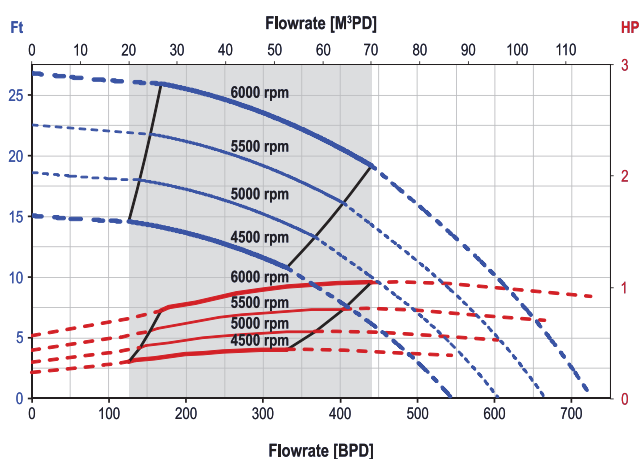


BORETS WR2 PUMP SPECIFICATIONS

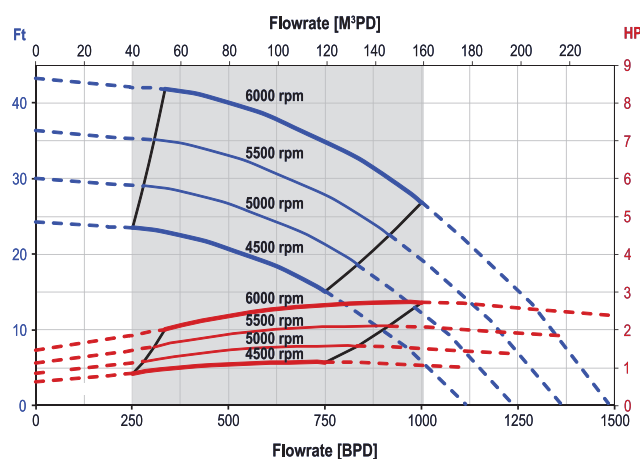
Flow range, BPD (m ³ /d)	125 – 440 (20 – 70) *	250 – 1,000 (40 – 160)	560 – 1,900 (90 – 300)
Pump OD, in/ (mm)	2.60 (66)	3.38 (86)	3.62 (92)
Stage alloy	MIM technology alloy	MIM technology alloy	MIM technology alloy
Stage geometry	Advanced Mixed Flow	Advanced Mixed Flow	Advanced Mixed Flow
Head per stage at BEP, ft (m) at 100 Hz	17.4 (5.3)	31.5 (9.6)	36.0 (11.0)
Power per stage at BEP, HP (kW) at 100 Hz	0.105 (0.079)	0.27 (0.20)	0.59 (0.44)
Efficiency at BEP, %	59	75	63
Standard housing alloys	Carbon steel	Carbon steel	Carbon steel
Standard shaft alloys	Inconel	Inconel	Inconel
Shaft diameter, mm [in]	12.8 (0.504)	15 (0.5906)	15 (0.5906)
Radial and axial bearing material	Tungsten carbide	Tungsten carbide	Tungsten carbide
Pump Construction	Packet (no shimming required)	Packet (no shimming required)	Packet (no shimming required)

* In development

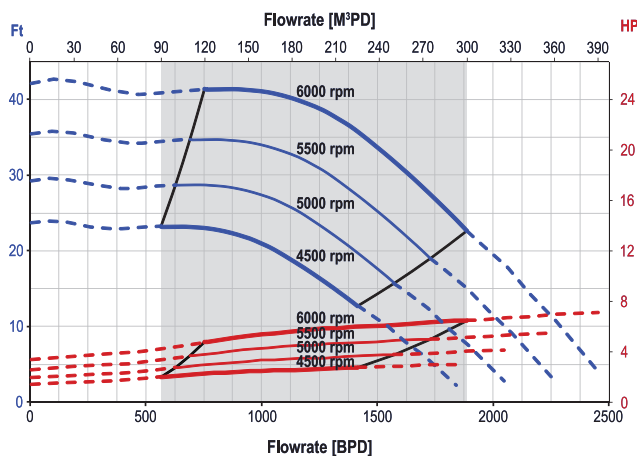
WR2 125-440 (20-70)



WR2 250-1000 (40-160)



WR2 560-1900 (90-300)



Canada Sales Office
 800, 444-5th Avenue SW Calgary,
 Alberta, Canada T2P 2T8
 Tel: +1-403-452-6355
 e-mail: Canada@borets.com

USA Sales Office
 10497 Town and Country Way Ste. 310
 Houston, Texas 77024
 Tel: +1-713-980-4530
 Fax: +1-713-980-4558
 e-mail: USA@borets.com

International Headquarters
 Office 22 The Gate Building, Level 15
 Dubai International Financial Centre
 P.O. Box 121208, Dubai UAE
 Tel: +971 4 401 95 11
 e-mail: global@borets.com