

# Renewable Energy



**Engineered sealing solutions**  
for Renewable energy applications

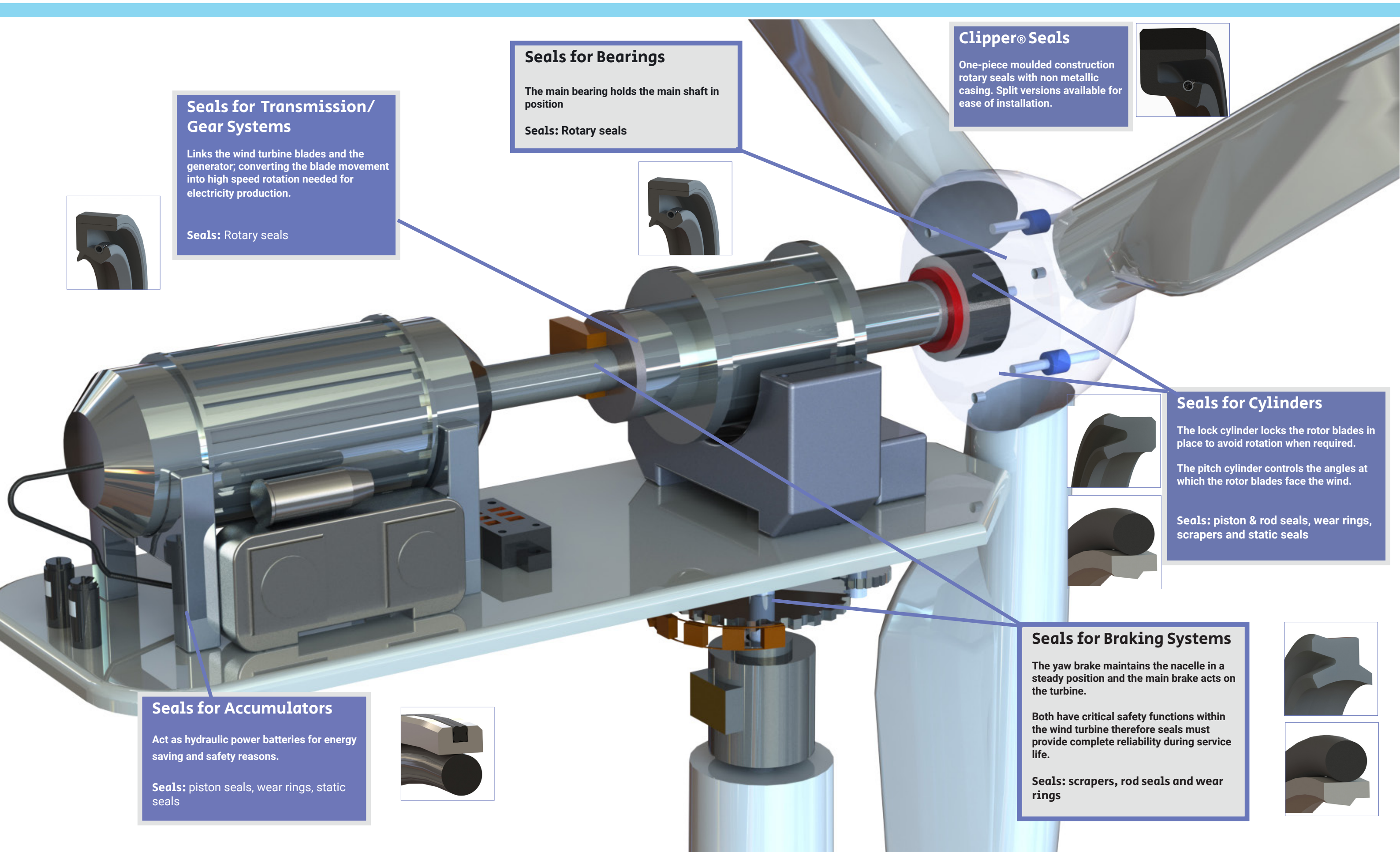




# Wind Power Generation

For rotary applications we offer a range of materials with outstanding friction and wear resistance characteristics as well as large diameter seals for high velocity shafts, and any additional components with oscillating or rotating parts. Standard groove profiles for aftermarket/service, speed of supply.

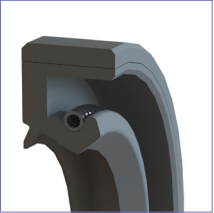
In hydraulic applications our seals provide leak free operation at high temperatures and pressures, and prevent the ingress of contaminants into critical areas of equipment to ensure service life and minimise maintenance.



**Seals for Transmission/  
Gear Systems**

Links the wind turbine blades and the generator; converting the blade movement into high speed rotation needed for electricity production.

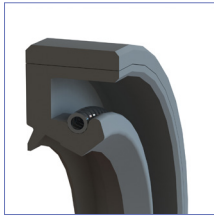
**Seals:** Rotary seals



**Seals for Bearings**

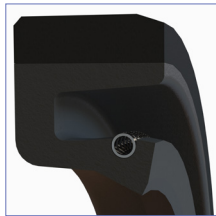
The main bearing holds the main shaft in position

**Seals:** Rotary seals



**Clipper® Seals**

One-piece moulded construction rotary seals with non metallic casing. Split versions available for ease of installation.

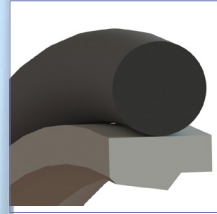
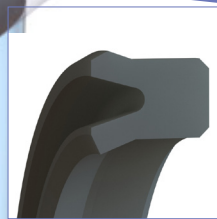


**Seals for Cylinders**

The lock cylinder locks the rotor blades in place to avoid rotation when required.

The pitch cylinder controls the angles at which the rotor blades face the wind.

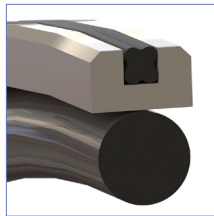
**Seals:** piston & rod seals, wear rings, scrapers and static seals



**Seals for Accumulators**

Act as hydraulic power batteries for energy saving and safety reasons.

**Seals:** piston seals, wear rings, static seals

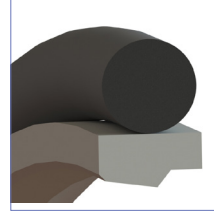
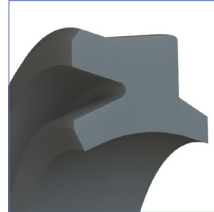


**Seals for Braking Systems**

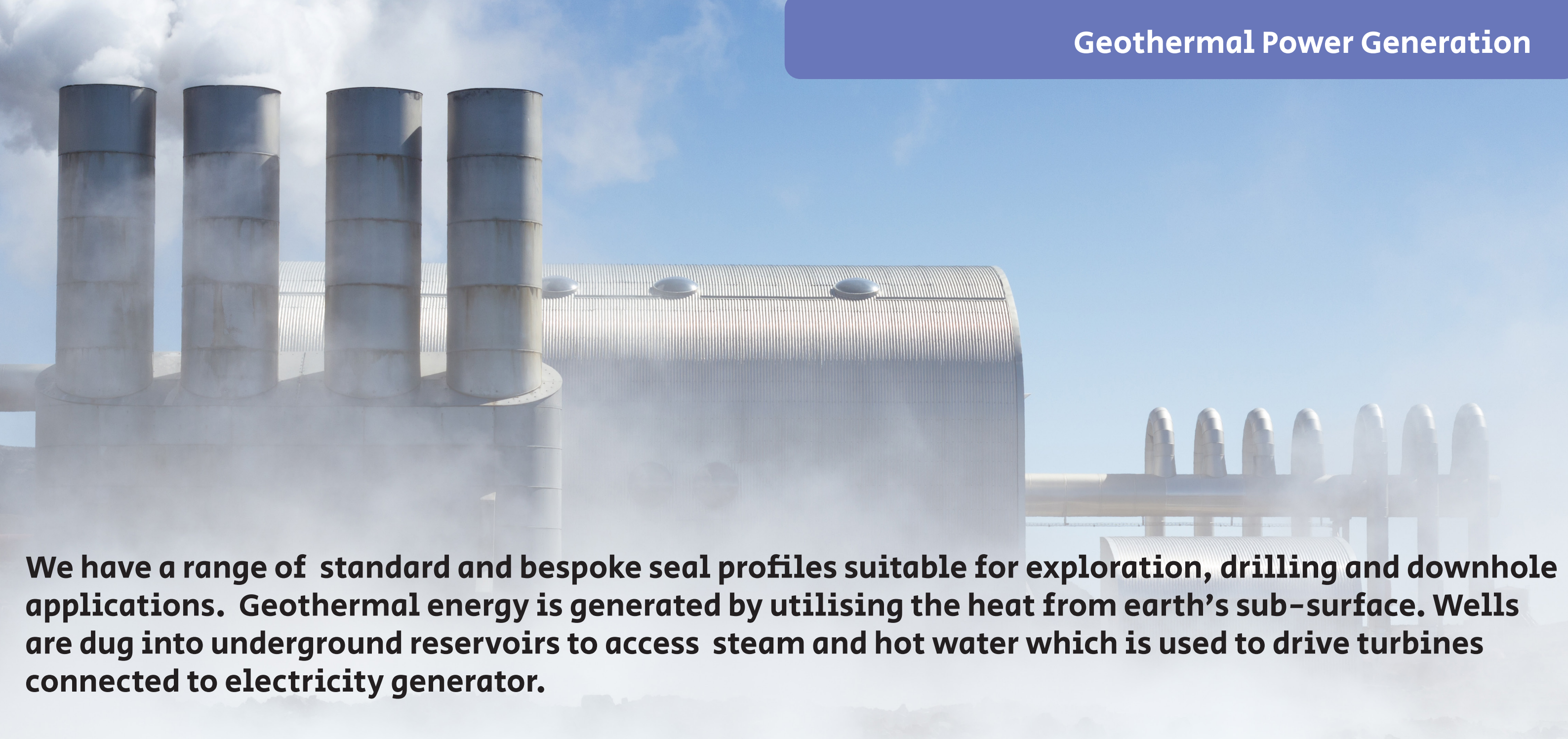
The yaw brake maintains the nacelle in a steady position and the main brake acts on the turbine.

Both have critical safety functions within the wind turbine therefore seals must provide complete reliability during service life.

**Seals:** scrapers, rod seals and wear rings



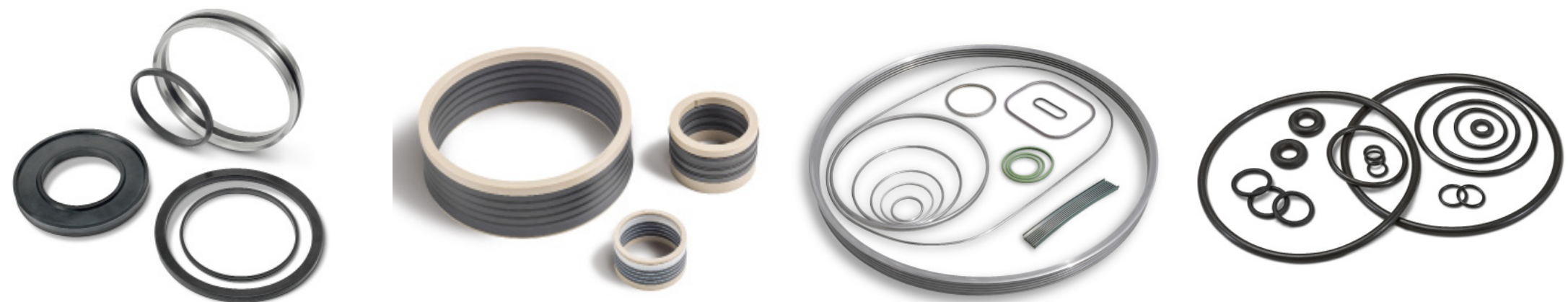




**We have a range of standard and bespoke seal profiles suitable for exploration, drilling and downhole applications. Geothermal energy is generated by utilising the heat from earth's sub-surface. Wells are dug into underground reservoirs to access steam and hot water which is used to drive turbines connected to electricity generator.**

**Typical downhole applications are high pressure and high temperature environments, requiring seals with high expansion and extrusion resistance.**

**Our downhole sealing solutions include o-rings, back-up rings, T-seals, PolyPak seals, PTFE seals, V-packing sets, metal seals and packer elements.**



**We can offer a range of specialist elastomer materials suitable for geothermal applications up to 320°C in water and steam applications.**



# Tidal Power Generation

Energy is created using the movement of tides. The movement of water rotates the turbine to generate electricity.

Our range of seals suitable for components for wind turbines can be utilised for tidal power generation.

Although different conditions the characteristics remain the same.

Speak to our engineers to discuss how we can help design engineered sealing solutions for your application.



# Specialist materials

Seals are a vital part of the critical function of components in renewable energy power generation. They are required to provide long term functionality and provide durability in harsh environmental conditions. Our range of engineered sealing materials are designed to withstand critical sealing characteristics in these applications including wear resistance, high pressure and high temperature conditions.

**Carbon/Graphite filled PTFE** - This compound has good wear resistance and performs well in non-lubricated applications. Carbon reduces creep, increases hardness and elevates the thermal conductivity of PTFE.

**Carbon fibre filled PTFE** - Carbon fibre lowers creep, increases flex and compressive modulus and raises hardness. Coefficient of thermal expansion is lowered and thermal conductivity is higher for this compound.

**Mineral filled PTFE** - Ideal for improved upper temperatures and offers low abrasion to soft surfaces making it ideal for rotary applications. Resistant to virtually all media and provides extended seal life.

**UHMWPE** - Good abrasion resistance and excellent for sealing environments with water.

**PEEK** - High strength material with outstanding chemical, high temperature and high pressure resistance.

**ZQTC931** - Composite bearing material with synthetic fabric re-inforcement and resin impregnated. Offers good coefficient of friction, is ideal in dry running applications and has good wear characteristics ensuring long cycle life.

**Elastomers** - Nitrile (NBR), Hydrogenated Nitrile (HNBR) and Fluorocarbon (FKM) commonly used in these applications.

We have a range of EPDM, FKM and FFKM materials suitable for geothermal applications up to 320°C in water and steam applications.

In downhole drilling where mixed media may be present we have a range of Aflas® grades suitable for more aggressive applications.



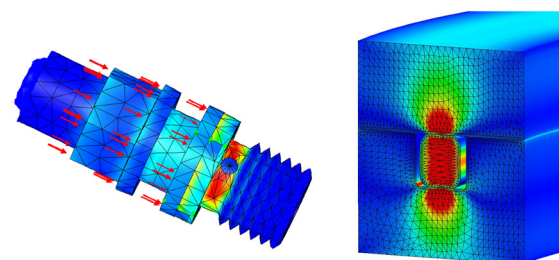
## Design & Development and Quality Assurance

We support your applications from concept, design and material development through to manufacture.

With design optimisation through Finite Element Analysis (FEA) simulation, housing design review, we support your engineers with a complete seal design service from start to finish.

Our materials engineers are also on-hand to develop and recommend compounds to meet the specific requirements of your application.

To maintain the highest levels of product integrity, from design to manufacturing, we are ISO9001:2015, ISO14001:2015 and AS9120B:2016 approved and our global manufacturing facilities are approved to IATF16949:2016, ISO13485 and AS9100.



Our team of Quality Engineers and Quality Inspectors ensure that advanced product quality planning is at the heart of our quality function.

From initial design review through to ongoing serial production, we follow strict processes in order to mitigate risk to our customers.

We regularly measure, monitor and review the quality of our production parts and relevant manufacturing processes.



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