

HIGH-PERFORMANCE CERAMICS

## HIGH-PRESSURE FEEDTHROUGHS

**Application:**

Ceramic high-pressure feedthroughs for use in offshore applications

**Material:**

Aluminium Oxide **F99.7**

Future refineries will be built on the seabed. Oil deposits in areas difficult to access are increasingly gaining in importance as energy resources run short. Deep sea plant engineering down to a depth of 3,000 meters will become more important for energy supply in the decades to come.

The extracted oil, water and sand mixture are processed by pumps, filters and separators at the production point on the seabed. The pressure, temperature and chemical composition of the mixture are measured over many kilometres of pipe line.

The electrical supply to the pumps and separators on the seabed is a particular challenge that engineers have to face. The components used must be suitable for high pressure applications often related to high currents and high voltage as well as high temperatures and a mostly corrosive environment. Despite these difficult conditions, measurement results can be transmitted reliably to the process control centre using pressure-tight electrical feedthroughs.



In cooperation with our customers we develop single and multiple feedthroughs made of aluminium oxide **F99.7**. The good electrical insulation of the material in conjunction with high mechanical strength is an important requirement for efficient feedthroughs.

The feedthrough shown in the photo was designed to supply power to energy-intense pump stations based on the seabed. The copper pin is brazed using a specially developed process. A gold coating on the outer diameter reliably seals the shrink fit. Before using these components in the capital intense offshore facilities, they are subjected to extensive tests using high currents, extreme voltages and water pressure.

- ▶ Best insulation properties
- ▶ Extraordinary pressure resistance
- ▶ Refractoriness
- ▶ Material firmly bonded by brazing ceramic-to-metal

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**Competence in Advanced Ceramics**  
Engineering for customized solutions

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