

Deep-sea mining and offshore exploration

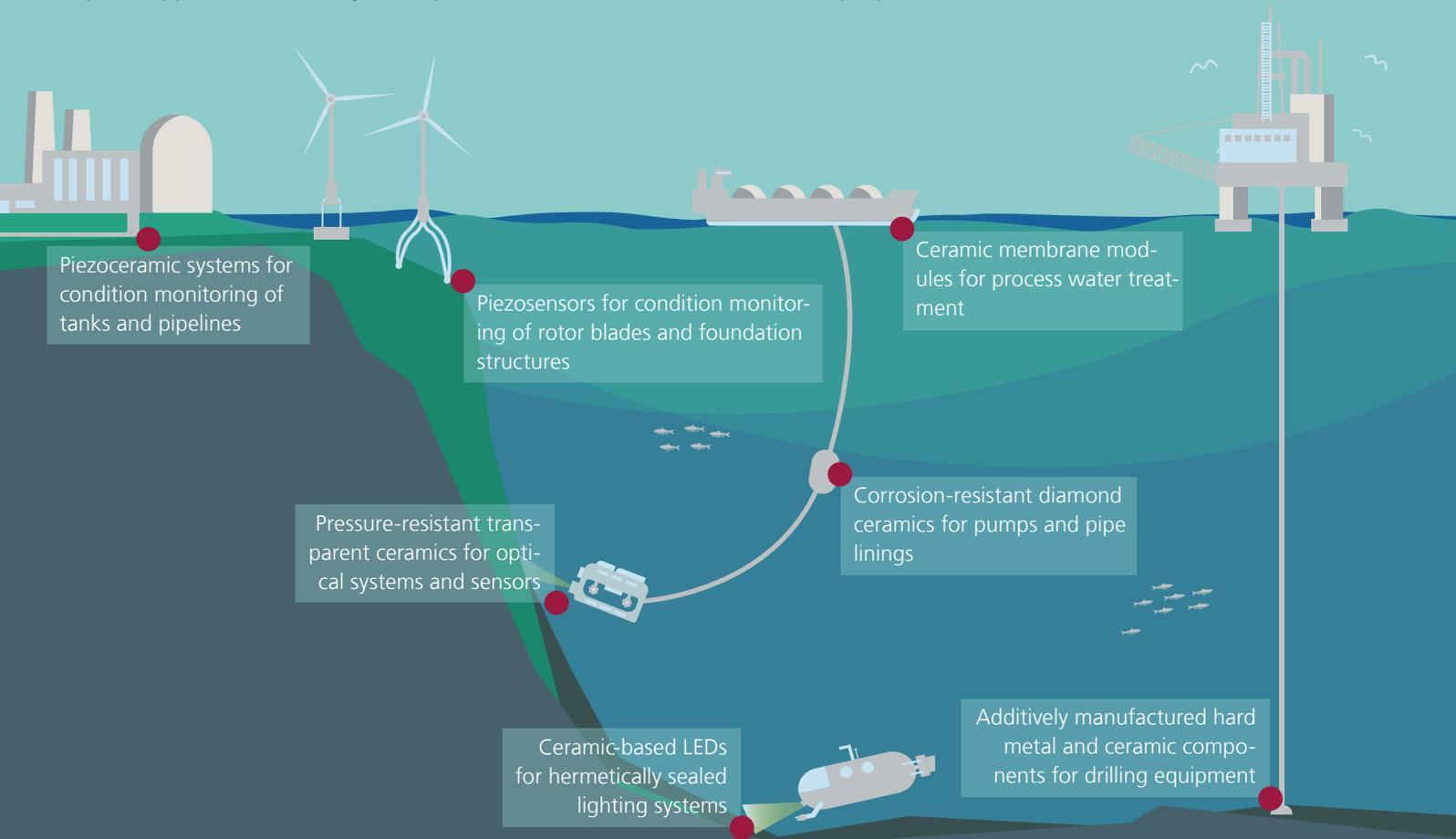


www.ikts.fraunhofer.de/en/mining_offshore

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Ceramic components for maritime applications

Advanced ceramics have already established in many industrial sectors and contribute to added value as function-decisive components. They can also be pioneering for deep-sea applications, as they are superior to other materials in numerous properties.



Condition monitoring

Piezoceramic transducers are core elements for condition monitoring systems. Critical components such as pipelines, foundation structures or rotor blades can be permanently monitored and maintenance costs significantly reduced, especially in hard-to-reach environments.

Wear and corrosion protection

Advanced ceramics such as diamond ceramics not only achieve strengths of 450 to 500 MPa, but also very high corrosion resistance. The wear resistance is 10 times higher than that of commercial boron carbide materials and the wear behavior is similar to that of extremely hard polycrystalline diamond.

Process water treatment

Ceramic membranes are highly mechanically, thermally and chemically stable. This makes them ideally suited for efficient process water treatment. The molecular separation limit can be up to 200 Daltons. Due to the low membrane resistance, high permeate and back-flushing fluxes can be achieved.

Optics and lighting

Transparent ceramics combine optical and ceramic properties. With a true inline transmission of 80 % and a hardness HV10 of over 20 GPa, they are superior to optical glasses. Combined with light-converting phosphors, they can be used in LED modules. There they guarantee high color stability and constant luminous efficiency.

Extremely hard



Pressure-resistant



Light-weight



Functionalizable



Chemically stable



Corrosion-resistant



Transparent

