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## Innovative underwater robotic vehicle for offshore petroleum exploration and environmental evaluation

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One of the safest and most efficient ways to explore and operate in deep marine environments is through underwater robotics systems where they become the diver's eyes and hands without jeopardizing the diver's safety or the aquatic life. Submersible technologies, such as Remotely Operated Vehicles (ROV), can safely explore and work around oil, sewage and other industrial words. An ROV's motion can be classified as either autonomous or manual operation. depending on the operator's degree of input.

This project aspires to enable an innovative automated robotic vehicle that was designed, engineered and constructed at Khalifa University of Science and Technology to tackle the safety challenges faced by offshore petroleum exploration and environmental assessment of fields Current methodologies are associated with health and occupational hazards in addition to high cost. The remotely-operated robot is equipped with an end effector that will ignite Ni-Al reactive multilayers (Nanofoil®) which are structurally modified with holes that will increase the integrity of the welds created. Innovative technologies are transferred to a startup business incubated for marine operations. This multi-disciplinary, inter-institutional project aims at world research leadership in robotic assisted operations of offshore platforms.

### Biography

Abdelaziz Alzaabi holds a BSc. Of Mechanical Engineering from Khalifa University of Science, Technology & Research (KUSTAR). He is a Graduate Research Assistant focused in various underwater robotics design and manufacturing for industrial purposes. He led a team to develop and design the first Remotely Operated Underwater Vehicle (ROV) –Observation Class- that was completely engineered and manufactured in the UAE. Abdelaziz also is a recipient of Society of Petroleum Engineering (SPE) award 2016 for Oil and gas innovation. HH Sheikh Khalifa Award for excellence in academic achievements, Gold medals of the local Chemistry and Physics Olympics, H.H Sheikh Hamdan Bin Rashid Award for Excellence in academic performance, Sharjah Award for excellence in academic achievements. Currently, Abdelaziz is undertaking his MSc of Mechanical Engineering at KUSTAR and is working to develop an underwater remotely operated robot that will actively assist in the offshore Oil and Gas sector.

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