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UNDERWATER-WELDING

Underwater welding is a type of welding which takes place underwater. A number of different welding techniques can be used underwater, with arc welding being among the most common. There are numerous applications for underwater welding skills, including repairing ships, working on oil platforms, and maintaining underwater pipelines. People with skills and experience in this field can find employment all over the world.

The advantages are of economical nature, because Underwater-welding for marine maintenance and repair jobs bypasses the need to pull the structure out of the sea and saves much valuable time. The limitations of Underwater-welding concern the inevitable bulky and expensive setup to provide the welder with all the support needed, for respiration, for protection from cold, for special welding equipment, for remote surveillance camera, for special non destructive testing.

The main risks for the welder performing Underwater-welding are the potential for electric shock, the possibility of producing in the arc mixtures of hydrogen and oxygen in pockets, which might set up an explosion, and the common danger sustained by divers, of having nitrogen diffuse in the blood in dangerous proportions. Curiously the risk of drowning is not listed with the hazards of Underwater-welding.

There are three main ways to perform Underwater-welding. One is to build an enclosure, a pit, around the place of repair and to pump away all the water: that amounts to prepare the conditions for normal welding in air, although the place may be deep under sea level. Another method of Underwater-welding consists in preparing an enclosure to be filled with gas (helium) under high pressure (hyperbaric) to push water back, and have the welder, fitted with breathing mask and other protective equipment, weld quite normally out of water but under pressure. The third is the wet Underwater-welding method, where no attempts are made to dry up the location of welding. Instead the power of the arc generates a bubble of a mixture of gases which lets metal melting and joining occur more or less normally, using specially covered electrodes to avoid that too much hydrogen be absorbed in the weld.

In underwater welding, the environment around the welder is wet. He or she wears a dive suit, and uses welding equipment which has been customized for wet environments. This equipment is designed to be as safe as possible for the welder, reducing the risk of electric shock and the development of dangerous situations. Someone who practices underwater welding must be both a skilled welder and a skilled diver, with the ability to safely and effectively prepare a scene for welding and to confirm that the welds are of high quality.

An entry level underwater welder can find employment in a number of environments. In some cases, a company will actually pay for welding or dive training if it has an employee which it feels would be a good candidate for an underwater welding position. With more experience, a welder-diver can work on increasingly large and complex projects, and may potentially act as a consultant for other companies and offer training for people interested in underwater welding.

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