

ON THE DOORSTEP OF TAMAN SARI RESORT, IN PEMUTERAN BAY BALI, LIES THE WORLD'S NEWEST, BIGGEST AND MOST RADICAL REEF SYSTEM.

THE MOST UNIQUE REEF SYSTEM IN SOUTH-EAST ASIA

[THERE ARE NO OTHER coral reefs quite like it and it is nothing like anything else you have seen before underwater. In the shallow bay 45 specially built steel contraptions in the shapes of caterpillars, Mexican hats, Eiffel towers, sugar loafs and tunnels are the rehabilitation platforms for broken corals. My first impression was that of an underwater educational theme park, a Disneyland coral reef, a new-age reef system! This unique reef system is the brain-child of scientists Professor Wolf Hilbertz and Dr Tom Goreau.

Artificial reef construction by means of mineral accretion, also known as "third generation" artificial reef systems (first reported in Asian Geographic in 2001), is a novel technology which uses electricity to "grow" limestone rock on artificial reef frames and increase growth rates of corals and other reef organisms. Two electrodes supplied with low-voltage direct current are submerged in seawater. Electrolytic reactions at the cathode cause minerals naturally present in seawater to build up. At the same time a wide range of organisms on or near the growing substrate are affected by electrochemically-changed conditions, shifting their growth rates.

Stray or loose living corals are carefully collected from nearby destroyed reefs and transplanted onto the structures. They are attached with wires or wedged between steel bars. These coral bits are quickly cemented into place by the growing minerals forming over the structure's surface; the reefs are electronically charged to grow.

The Karang Lestari Project in Pemuteran first began in June 2000. It was the initiative of Yos Amerta of YOS DIVING when he met with Dr Goreau and Professor Hilbertz in Bangkok. The first structure

was launched after the 2000 Coral Reef Symposium in Bali, fully funded by Yos and Pondok Sari Hotel, Pemuteran. In October 2002 the owner of Taman Sari hotel took interest in the project and an international workshop was organised to design and install more steel-structured nurseries. Using only local materials, local villagers and students, both Professor Hilbertz and Dr Goreau were on-hand and personally spearheaded the project as well as continuing to train and educate people and build and place the artificial reefs in Pemuteran Bay.

The success of the Pemuteran artificial reef project demonstrates how the effort and willingness of a few scientists, dive operators, resorts and the local people can help preserve the quality of our marine environment. The project is funded privately without any government or NGO support. At a recent National Coastal Zone Management Conference in Bali the Karang Lestari Pemuteran project was selected as the best coastal project in the country and recognised with a cash prize equivalent of US\$500. Subsequently the success story was presented by Indonesia's Culture and Tourism Minister I Gede Ardika at the United Nations Preparatory Committee and Ministerial Meeting of the World Summit.

The reef restoration project is only one phase of a bigger overall plan. The time scope for the project is many years as coral grows slowly and releases spores only once a year to repopulate other areas. However, the technology ensures that the coral structures inside the project will stay healthy even in times of stress (such as the El Nino warming of the water experiences in 1998). One of the many benefits of the reef restoration project is that reef fish, schooling fish and many other marine life forms gravitate to the area. It is a fish nursery as well as a coral nursery, and thus is becoming an excellent snorkelling and dive site. We recommend that every diver serious about contributing to the well-being of our reef systems go and dive at this radical reef system in Bali and make a donation to the project.] SD

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