

Generally, in the past, the speculation of obstacles and expenses that would be incurred while obtaining construction permits has been enough to curtail most potential developers from building in coastal areas without special government support.

Recent Developments

Coastal developments. Because of the large increases in leisure-related industries in the recent past, including a "resort boom" presently in progress, the permit barriers have become more relaxed in certain areas. Potential profits have become attractive enough for developers to forego initial inconveniences and coastal development is increasing at a relatively steady pace in this sector.

In addition, several government-backed projects have been influential in the relaxation or "conditional modification" of some of the restrictive laws. Important examples are the Setonaikai Bridge connecting Honshu and Shikoku; the proposed Tokyo Bay Bridge/tunnel/man-made island project, and the new Kansai International Airport which utilizes a man-made island.

Moves to shallow water. Until recently, the overall trend has been to develop and research deep-water areas. As a result of ocean industry-related groups searching for more practical uses of ocean and coastal areas, the focus has shifted to shallow water in the past year. The Kansai International Airport, waterfront re-development in Tokyo and Osaka, and other harbour-area developments for leisure activities are leading examples of this trend.

Offshore oil and gas research carried out by the Ministry of International Trade and Industry (MITI) and several private companies is also currently being conducted in shallower water. Previously, private testing was carried out at depths of 450 m, but in 1990, tests were at depths closer to 300 m. In addition, MITI tests are being moved to 3 000 m from the previous depths of 4 000 m to 5 000 m.

Replacement of industrial divers with machines. Underwater human operations are being replaced by machines when possible. This move has been prompted by concern for the safety of divers in deep-water operations and other life-threatening situations, and the shortage of skilled/experienced divers.

In recent years, there has been a reverse pyramid effect in relation to the age and experience of industrial divers in Japan. Most divers capable of handling deep-water dives and other specialty underwater operations have become too old to

work, while few young divers with substantial experience are waiting to take their place. This has caused a serious shortage of experienced industrial divers and an increased demand for mechanical diving equipment.

Leisure diving. The market for leisure diving equipment has substantial potential for growth. In the past 10 years, the number of scuba divers has increased from between 20 000 and 30 000 to approximately 500 000 and is expected to double again in the foreseeable future. Significant opportunities will thus be created for such items as leisure-type diving communication systems and submersibles. This type of equipment is considered necessary to reduce the safety hazards associated with the rising number of divers.

Future Directions

Industry sources are optimistic about future growth potential in the ocean industries equipment sector and have indicated several elements that will contribute to market growth within the next decade. This development will create substantial demand for ocean industries equipment but is not expected to change the "niche" status of Japan's ocean industries equipment market.

The drive for future ocean technological development is influenced by many elements, some of which are outlined below.

Rising world oil prices. Oil prices currently exceed the \$25/barrel mark that industry sources indicated was necessary for domestic oil companies to feasibly re-open or intensify oil exploration activities – domestically as well as internationally.

Cold water-related development projects. It is generally believed that cold water operations will increase in the near future. As relations between Japan and the Soviet Union ease, successful joint oil exploration activities in Siberia will begin making production and delivery possible.

In the long run, Japanese "sogo shoshas" (general trading companies) involved in these activities plan to construct an underwater pipeline between the Soviet Union and northern Japan to transport crude oil. If this project is carried out, production and maintenance-related underwater equipment and personnel will be in great demand. Experienced divers and equipment proven in cold water, as well as other ice-related oil exploration equipment, will be in particularly strong demand.