Wind, Wave & Tide

Oil Price Collapse

MIT Ushers in New Age in Autonomy

Renewable Energy

Subsea Hardware

The ‘Wireless’ Reservoir
According to the International Association of Dredging Companies’ (IADC) Dredging Figures 2013, the global dredging turnover grew nearly 3% in 2013, nearly hitting the $13 billion mark. More significantly, even in bad economic times the industry recorded solid growth. Growth of 13% to be exact, from $11.4 billion in 2008 to $12.97 billion in 2013. Following is a statistical abstract of the most recent data from the world of dredging. IADC celebrates half a century with the publication of a special limited edition book, ‘Beyond Sand and Sea.’ Full details can be found on page 49.

Drivers for Dredging

1. World Trade
As the majority of the world’s goods transport via ship, it stands to reason that dredging need correlates closely with world trade. Figure 1 indicates a long-term, positive trend in World trade more than doubling over the last 30 years. In addition, ships are getting bigger, and ports are becoming more snarled than ever. The need for dredging is central to maintaining and building port capability.

2. Urban Development
The world’s population continues to grow, and so too does the push toward expanding population centers on the world’s coasts. According to statistics cited in “Dredging Figures 2013,” urbanized land is likely to double by 2030 as another 1.5 billion people migrate toward cities. In 1950 about 30% of the world’s population lived in urban areas; today that number is 54%. In 2050 an estimated 66% of the world’s population will live in urban areas.

3. Coastal Protection
Increasingly severe weather has put many coastal areas at heightened risk for significant damage from wind and waves when disaster inevitably strikes, as became alarmingly clear

![Graph of Development Turnover Per Driver in € MLN](Source: IADC)

![Graph of Development Turnover in € MLN Per Region](Source: IADC)
when Hurricane Sandy wrought damage in Manhattan in the autumn of 2012. Dredging activities can go a long way in helping to shore up shorelines.

4. Offshore Energy
As population, Urban areas and world trade grows, so to does the need for Energy. It is estimated that 5% of the world’s energy finds must be replaced every year, and increasingly companies are searching in deeper waters, further from shore, to score major new energy finds. This hunt for fossil fuels demands a lot of dredging, to prepare the seabed to digging trenches for pipeline and cabling.

5. Tourism & Leisure
Tourism along coastlines and beaches remains a growing phenomenon, from the small personal watercraft to the mammoth cruise ships roaming the world and further stretching port facilities and infrastructure. In addition, the replenishment of beaches from weather-related erosion is ongoing. But curiously, while tourism shows a steady growth of 4 to 5% over the last 5 years, dredging related to tourism has decreased from 4 to 3% according to Dredging Figures 2013.
The first Maasvlakte extension at the Port of Rotterdam was built by a combination of dikes and sand suppletion reaching west into the North Sea. This expansion made it possible to receive larger ships and build numerous container terminals directly connected by train lines to the hinterlands of the rest of Europe, especially Germany. The extension also created space for the storage of toxic waste and polluted sand in an area called the Slufter and provided better protection for the environment.
Maritime extension works at the Port of Zeebrugge began in 1977 and continued for some 15 years. New breakwaters, improved slope protection, a sea lock and an LNG terminal at the port’s eastern side were added. More than 30 million cu. m. of sand, silt and clay were dredged to create soil-substitution trenches, reclaimed terminal areas and to deepen the port basin for container and cruise ships. Finally, in 1991 the Albert II container quay wall and platform at the port’s western end were constructed for a new container terminal.
1984 - 2012

Singapore / Jurong & Tuas

By the 1980s, after a decade of rapid industrialization, property on Singapore’s mainland was scarce. A solution was found in the Jurong Island reclamation and Tuas extension projects. For 30 years since 1984, dredgers developed new land there. A plan to unite the 7 islets off Singapore’s southwestern coast to form one island was implemented in stages. Started in 1995, Jurong Island was officially opened in autumn 2000, tripling the land surface of the original little islands. Together Jurong and Tuas form the new industrial zone of Singapore, with 987 hectares for the construction of a petro-chemical complex.
The 33.9-km-long Saemangeum Sea Dike – the longest dike in the world – links the cities of Gunsan in the north and Buan in the south. Before construction of the dike, two rivers, the Mangyeon and Dongjin, discharged directly into the Yellow Sea. Now these rivers flow into a 400-sq. km reservoir created by the dike. In the future this reservoir will be transformed into land equal to two thirds the area of Seoul to be used for agricultural, industrial, business, residential, wetland and ecotourism.
One hundred years after its opening in 1914, extensive operations are taking place at the Panama Canal. While improvements have been ongoing, recent works encompass the construction of two major lock complexes at the Atlantic and Pacific entrances, widening of a 14.2-km stretch of canal to 225 m and deepening to – 16.3 m, and deepening of the Pacific entrance and southern approach channel. Some 40 million cu. m. of soil and rock have been excavated and 5 million cu. m. of concrete are being poured. The notoriously hard subsoil was drilled and blasted. In total 25 million cu. m. of Atlantic muck and Gatun rock were dredged.