The World of Watermaster

NEWSLETTER • 2016

smart solution for hard work

Time to get busy

Work smart

Fighting floods

www.watermaster.fi

30 years of development, hundreds of references world wide. We call it the beginning.

Time to get busy

***A** lot has happened in three decades, since 1986. It was the year when Aquamec Ltd. introduced something entirely different to the very conventional dredging field. A completely new way to approach all shallow water work - an Amphibious Multipurpose Dredger, the first Watermaster.*

Watermaster became the next step in the evolution of shallow water dredgers. While including the skills of its predecessors, it had also developed unique talents enabling it to significantly improve the dredging efficiency and widen its habitat from conventional dredgers.

Over the past 30 years the Watermaster concept has proven itself. More than 300 units have been operating in over 70 countries worldwide completing thousands of shallow water projects.

During this time we have been humbled and proud to see, that many traditional and new manufacturers in the industry have acknowledged the superiority of our Amphibious Multipurpose Dredger –concept and entered the category themselves. It is a clear sign that we are on the right path, actively leading the way.

When the first Watermaster was launched in 1986 the world population was under 5 billion. We are now past 7 billion and thirty years into the future we are likely to be close to the 10 billion mark.

With the growing number of people comes the accumulating influence that we have on the environment and the increasing necessity and will to build, modify, maintain and clean the surroundings.

Waterway siltation and eutrophication, urbanization, unpredictable changing climates, more frequently occurring floods, shortages of clean water - the challenges of the coming decades are plenty but with the right technology we can adapt.

The shallow inland waters are, and will be increasingly more affected by the above-mentioned problems. These waters are essential for the sustainability of our modern lifestyle. Watermasters together with other innovative solutions are more needed than ever.

Watermaster has now gotten started, next it is time to get busy.

Yours faithfully,
AQUAMEC LTD.

Lauri Kalliola
Managing Director

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Versatile Watermaster replaces several single-purpose machines.

Watermaster concept:

Work smart

***T**he innovation that revolutionized shallow water dredging, followed by 30 years of systematic development. This is the Watermaster concept today.*

To combine different capabilities and units into one high quality product is a difficult thing to do, but brings undeniable advantages and savings when done successfully.

A standard smart phone combines for instance: a phone, a camera, a flashlight, an alarm clock and a music player. Watermaster is the smart phone of the dredging industry – it combines for example: a suction dredger, an excavator, a harvester, a piledriver, a crane and a tugboat. Watermaster has revolutionized the way shallow water work can be done.

Watermaster's territory covers the whole area from 0 to 6 meters depth – the zone where most of the water-related environmental problems are focused and which no other machine but Watermaster can handle alone. Conventional dredgers and excavators (long-reach and floating) only cover this area partly. Watermaster masters it completely. One machine for all shallow water applications – Watermaster is the smart way to work.

The quick inexpensive transportation and unique mobility on land and in water allow Watermaster to reach more sites than the conventional machines. The wide selection of heavy duty attachments enable work ranging from the always important suction dredging to tasks such as clearing vegetated water systems, pile driving and underwater excavating and hammering.

Aquamec invests heavily in the development of the work attachments and the base machine. The patented Watermaster Cutter Pump is a prime example of these efforts. This continuous innovation and development work of the whole concept consistently improves Watermaster's performance and opens up new application opportunities.

Watermaster specializes in the jobs that are difficult for others – projects in the shallow, rocky and muddy environments, urban and rural sites with trash, vegetation, hard bottoms or bottoms with soils too loose for excavating. The sites where you need to move often, work in narrow channels, in places packed with water traffic and in remote sites inaccessible to other vessels.

No cranes or tugboats required - the amphibious Watermaster moves independently on land and in water.

The evolution of shallow water dredgers has led here. Whatever your application is, the amphibious multipurpose Watermaster is ready to work.

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Maintenance and deepening of waterways, rivers, tributaries, canals, lagoons, lakes, ponds and basins

Marina and harbor maintenance dredging

Beach nourishment and land reclamation

DREDGING

Shallow water dredging from dry ground to 6 meters depth

Process water pond maintenance dredging at different industrial sites, for example mines

INDUSTRIAL

Pond maintenance and recovering of valuable materials

Recovering valuable materials from tailings- and drainage ponds

Tailings pond maintenance work at enrichment plants

Watermaster

for all shallow water work

Flood prevention and controlling

De-weeding water systems overrun by vegetation

ENVIRONMENT

Flood prevention, restoration and removal of invasive vegetation

Cleaning and restoring urban canals

CONSTRUCTION

Infrastructure projects in the water environment

Foundation work by pile driving

Trench digging and laying underwater pipe and cable

Strengthening shorelines by pile driving

The amphibious multipurpose Watermaster dredgers are widely utilised in flood prevention works around the world, including Indonesia, India, Ghana, Zambia, South Africa, Venezuela, Colombia and Russia.

The Philippines:
Fighting floods

The Department of Public Works and Highways (DPWH) of the Philippine Government is responsible for providing and managing quality infrastructure facilities and services for the Filipino people. DPWH utilises a fleet of Watermaster dredgers to help prevent floods and to keep the shallow waterways fully operational.

With over a hundred million citizens, the Philippines is one of the most populous countries in the world. It is a mountainous archipelago composed of over 7500 islands. The Country is located in a seismically and volcanically active tropical region prone to a range of natural hazards, including earthquakes, volcano eruptions, typhoons and perennial floods.

In 1991 on the island of Luzon, the Mount Pinatubo volcano erupted violently, ejecting enormous amounts of ash, magma and sulfuric acid into the air. The disaster caused hundreds of causalities and massive damage to the surrounding areas. In the eruption aftermath the Watermaster concept was first introduced to DPWH. They were searching for machinery that could operate in the ash-filled shallow rivers. Watermaster's unique mobility convinced the department to try a new kind of approach.

The new complements the old

DPWH had been implementing river dredging since the 1950's. They already owned an arsenal of dredgers, but their conventional cutter suction dredgers are not amphibious and thus unable to work in the shallow waters between 0 to 2 meters depth. Their engine cooling system requires plenty of fresh water, which was a problem in the muddy waters that occur in the rainy season and made the engines overheat repeatedly.

The conventional dredgers require assisting vessels, separate anchors and wire-cables in their dredging process. Their work angle is limited to roughly 35-70 degrees and they need to reposition the machine and anchors often, reducing the effective work hours per day.

The Philippines is located in the disaster prone Pacific Ring of Fire and Pacific Typhoon belt.

The transportation of the vessels is slow and expensive, which is why they rarely change sites. They need assembling at the site and a crane to enter and exit water. The conventional dredgers are, however, well-suited for long-lasting projects in big rivers and deep waters, where they can fully make use of their big pumping capacity.

DPWH also operates a number of long-reach excavators, but these machines can only work from the shores, not from the water. Urban riverbanks are often packed with formal or informal housing, restricting excavators' access to the worksites.

Watermaster was the missing link that complemented their existing machinery – a multipurpose amphibious machine that can reach the difficult shallow water sites and carry out all work needed there.

Watermaster operates independently without assisting vessels, separate anchors and wire-cables. The machine is self-propelled and the work attachments (such as the Cutter Pump) are connected to the flexible excavator arm, enabling cable-less working on a wide 180 degrees angle. Watermaster repositions itself quickly using its integrated stabilizers so almost the entire operational time goes to effective work. The air-cooled Caterpillar engine does not require outside water for cooling so Watermaster can operate without overheating even on dry land.

Three Watermasters were delivered to DPWH in 2001-2002 for the Pinatubo eruption clean-up work. DPWH soon noticed that they could utilise versatile Watermasters on a wider scale.

Fighting floods

The Philippines has suffered several serious floods in the recent past, causing hundreds of deaths and financial losses totalling billions of Euros. Millions of people have been affected by these disasters.

The main reason for the flooding is that many of the inland waterways are filled with sediments and trash due to upstream erosion and the dumping of waste in the river systems, leading to a reduced water carrying capacity. The narrow, silted urban canals are especially vulnerable to flooding during heavy rainfalls of the typhoon season (from May to October).

DPWH's goal is to transform the flood prone areas to flood protected areas by increasing the water carrying capacity of the waterways. They do this by dredging the accumulated silt, by removing

Active waterway maintenance reduces the vulnerability to floods and secures the flow of people, goods and services, thus boosting the economy.

all trash and vegetation that disturb the free flow of water and by strengthening and raising the riverbanks where necessary. The multipurpose Watermaster can handle all these operations.

The depth of the Philippine waterways varies significantly between the dry and the rainy season, leaving some of them almost completely waterless during the dry season drought. The conventional dredgers could not work there year-round due to this periodic lack of water.

Convinced of Watermaster's versatility, DPWH has reinforced their Watermaster fleet on several occasions between 2004-2014. Ten new units were delivered to DPWH two years ago and were immediately put to fight floods in the Dagupan, Olangapo, Balanga, Sasmuan, Iloilo, Tacloban, Kawit, Cabagan, Paoay and Cantillan city areas. Currently DPWH has 21 Watermasters.

The work continues

DPWH has achieved great results with the Watermaster fleet, but the work is continuous and far from over. The Philippines' location in the Pacific Ring of Fire and the Pacific typhoon belt will undoubtedly keep the need for mobile and versatile dredging high in the future, too. Dredging is a necessity required to help protect the Philippine people who live in the vulnerable low-lying areas of the country.

Seasonal floods are a major problem in the Philippines.

DPWH utilises 21 Watermaster dredgers in flood mitigation work.

Briefly

- **The Philippines suffers from perennial flooding**
- **The Government body "DPWH" uses a fleet of 21 Watermasters to help mitigate floods**
- **Results have been good and the work continues**
- **There are all together 25 Watermasters improving the Philippine waterways**

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