Novel remedial dredging technology for removal of contaminated sediment

CLEAN WATERS FOR FUTURE GENERATIONS

HYDREX®
UNDERWATER TECHNOLOGY

Introduction

Hydrex Group was founded in 1974 with a very clear goal

CLEAN RIVERS, SEAS AND OCEANS

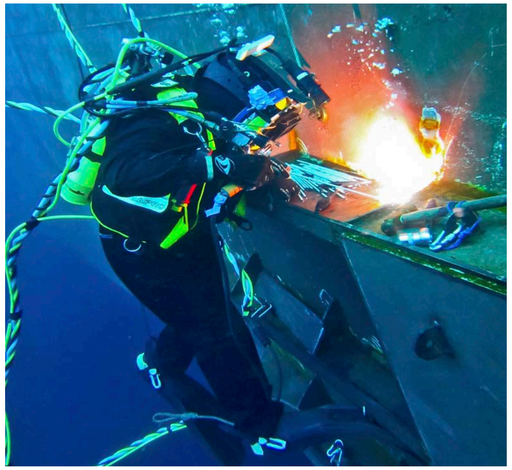
Hydrex Group has been working with the express purpose of developing expertise in the field of water.

Antwerp, Belgium | Rotterdam, Netherlands | Tampa, FL, US | Algeciras, Spain | Worldwide

Overview Hydrex Group

HYDREX®
UNDERWATER TECHNOLOGY

Hydrex **provides underwater maintenance and repair services to the shipping and offshore industry worldwide**



SUBSEA INDUSTRIES

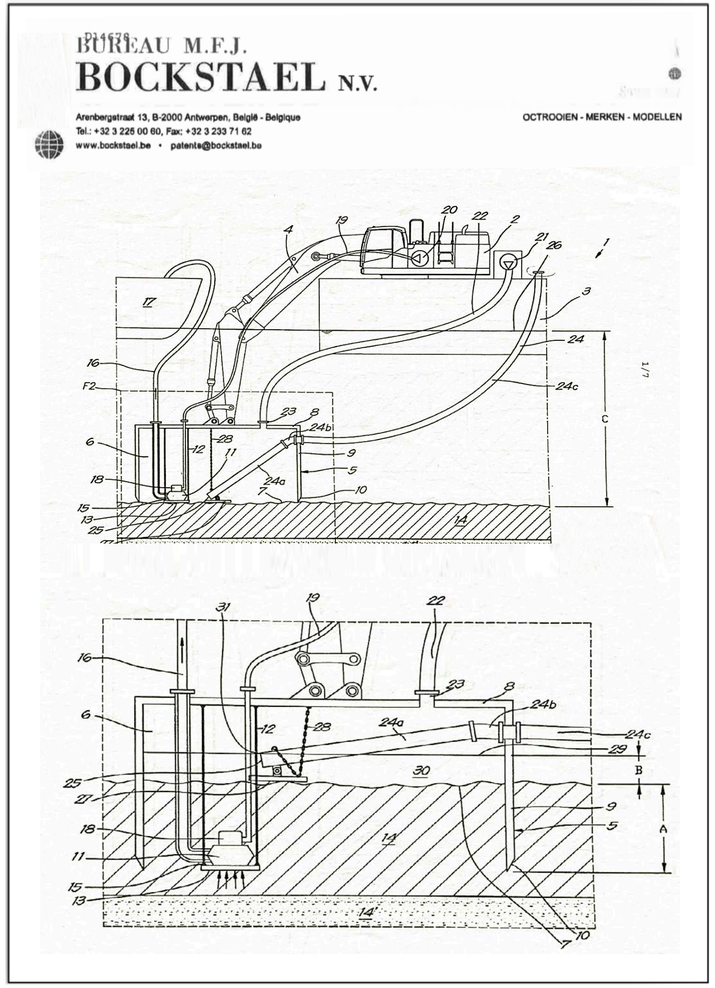
Subsea Industries **produces durable, non-toxic coatings and underwater cleaning systems for permanent protection and optimal performance**

HYDREX RESEARCH CENTER
CLEAN RIVERS, SEAS AND OCEANS

Hydrex Research Center **provides research and advice on the environment, water, innovation and sustainability**

Remediation of contaminated sediment with new dredging technology

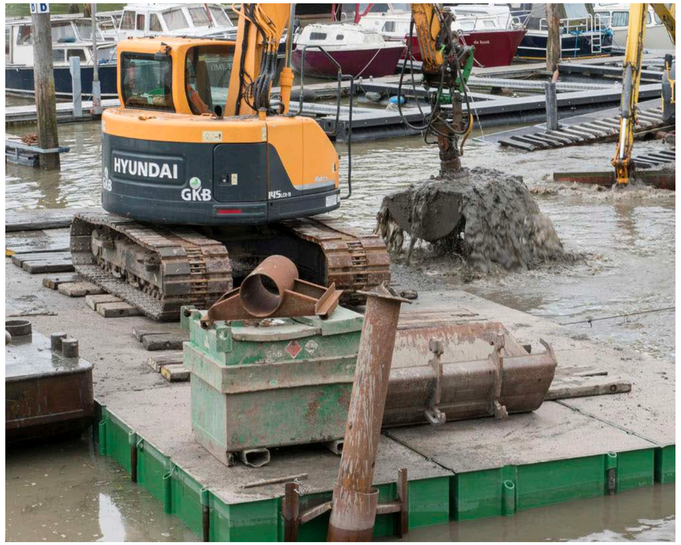
Development of innovative technologies towards clean rivers, seas and oceans



Challenges of current methods

Mechanical Dredging

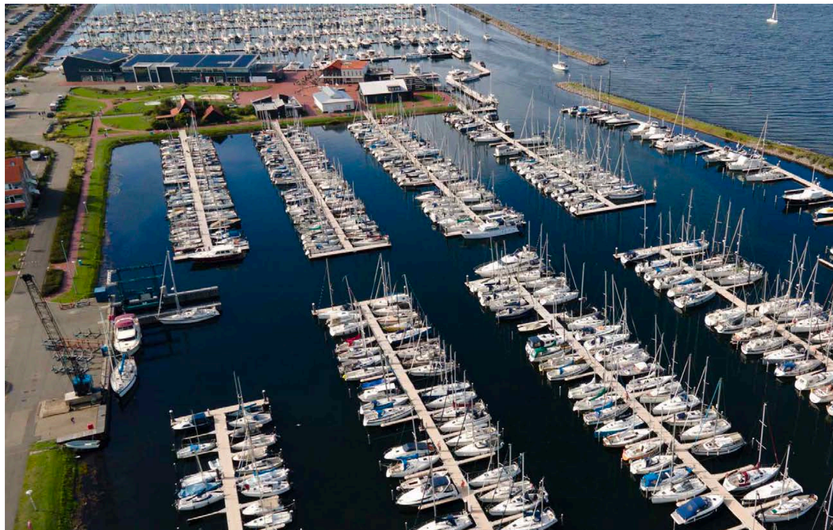
This method results in a **relatively high density** of the dredged material. However, mechanical dredging creates **turbidity**, which causes the sludge to spread further. Moreover, the **capacity is low**.



Hydraulic Dredging

This method has a **higher capacity** compared to mechanical dredging, but it also leads to **re-suspension** of the sludge. The method is expensive due to the ingestion of **large amounts of water**.

Contained Dredging System™
CDS

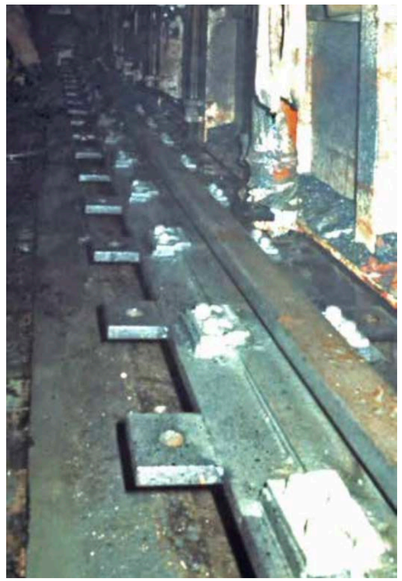


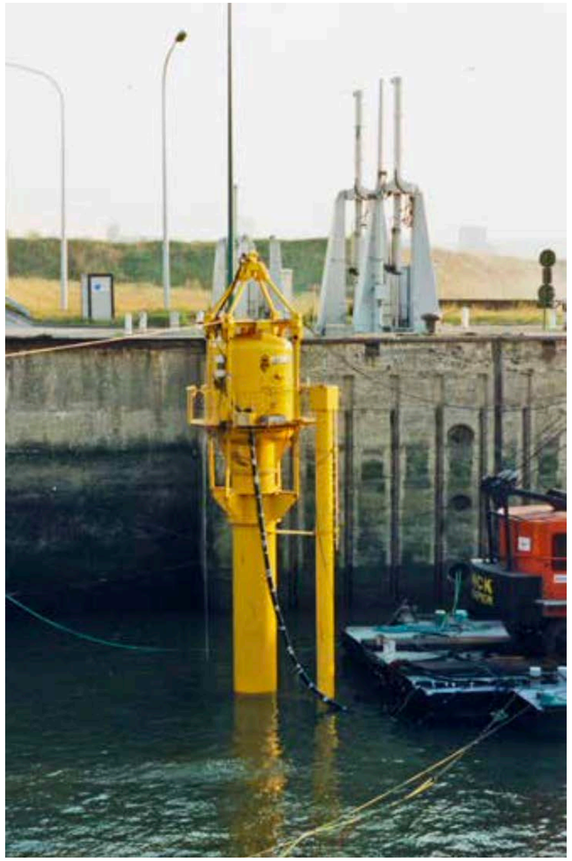
R&D of the CDS

- 10 years of research and development
- Four patents
  - Submitted between 2013-2023
  - Internationally approved
- Fully functional model available

Lock gate repairs in Antwerp in 1993

Deep water cofferdam, 30 meter



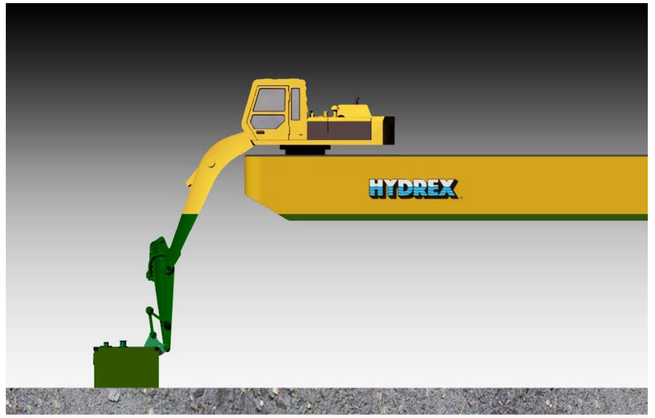


Replacing the rails for the Antwerp lock gates required an 28-meter habitat to be built so that the work could be carried out underwater in dry conditions. Hydrex built the habitat and made the operation possible.


HYDREX
EXPERTISE IN WATER

Operational information

- The CDS can be mounted on a regular excavator
- Full underwater visibility due to air chamber and cameras
- Very accurate dredging work
- Productivity depends on the configuration: pump capacity, number of pumps, air chamber dimensions, project specifications
- Universally applicable: marinas, harbours, lakes, rivers, canals and estuaries




170
150
160
130
140
90
100

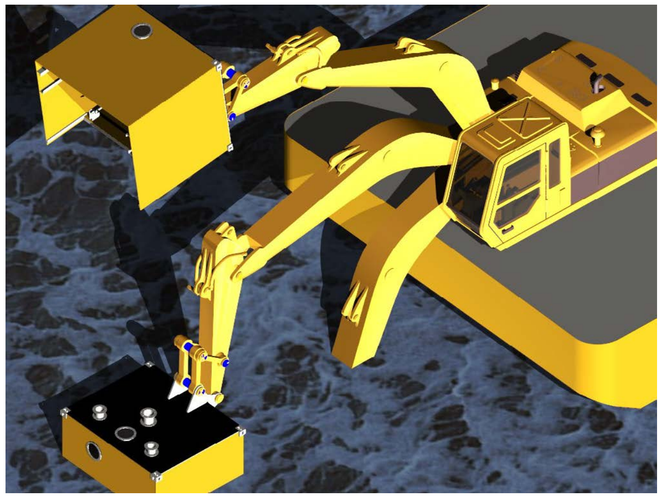
Technical advantages

Ecological

- Minimal turbidity:
  - Minimal re-suspension of contaminants
  - Low impact on ecosystem

Economical

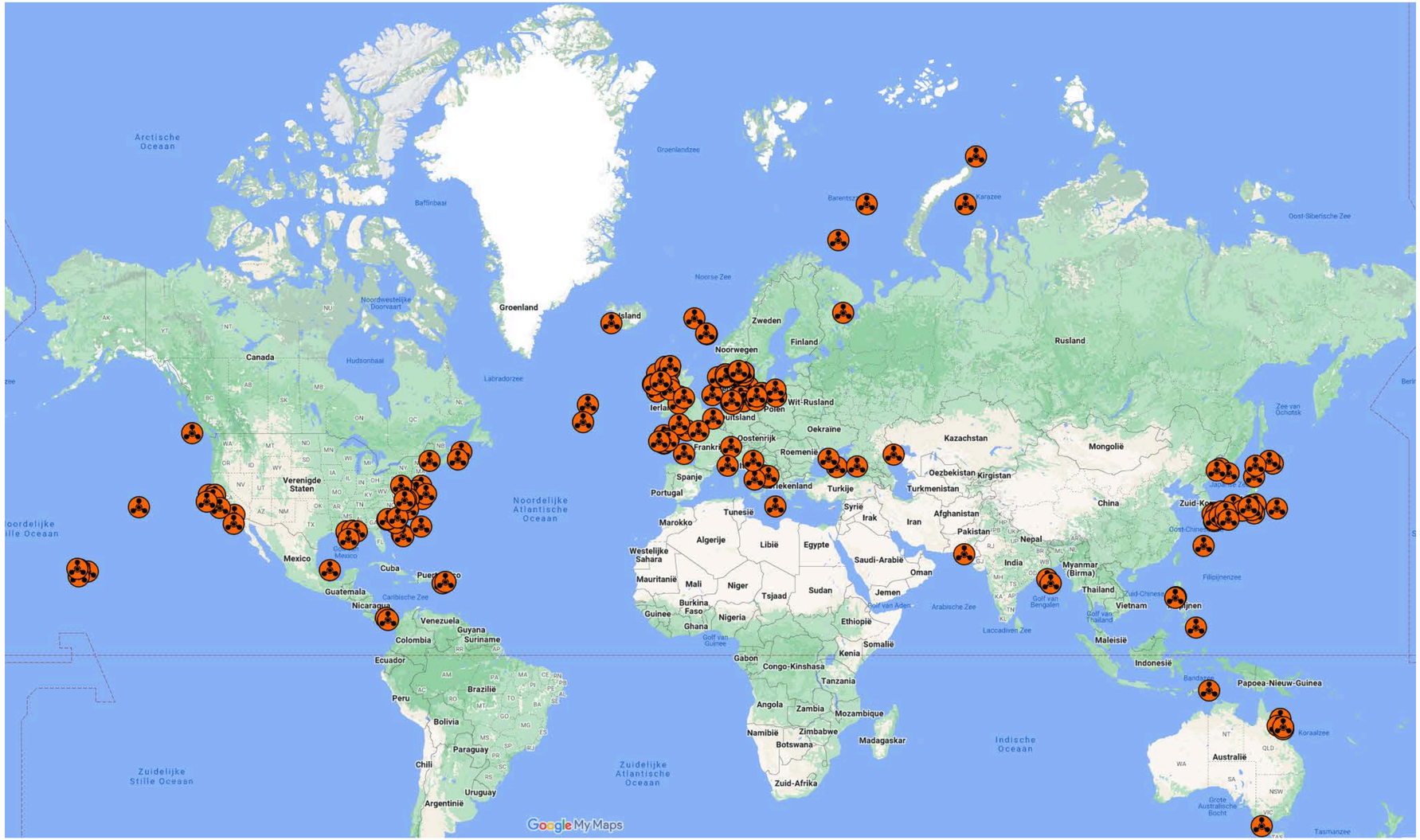
- High density of the dredged material:
  - A reduced water content of the sludge makes transport cheaper and more sustainable
  - Simple remediation of the contaminated sediment with lower costs

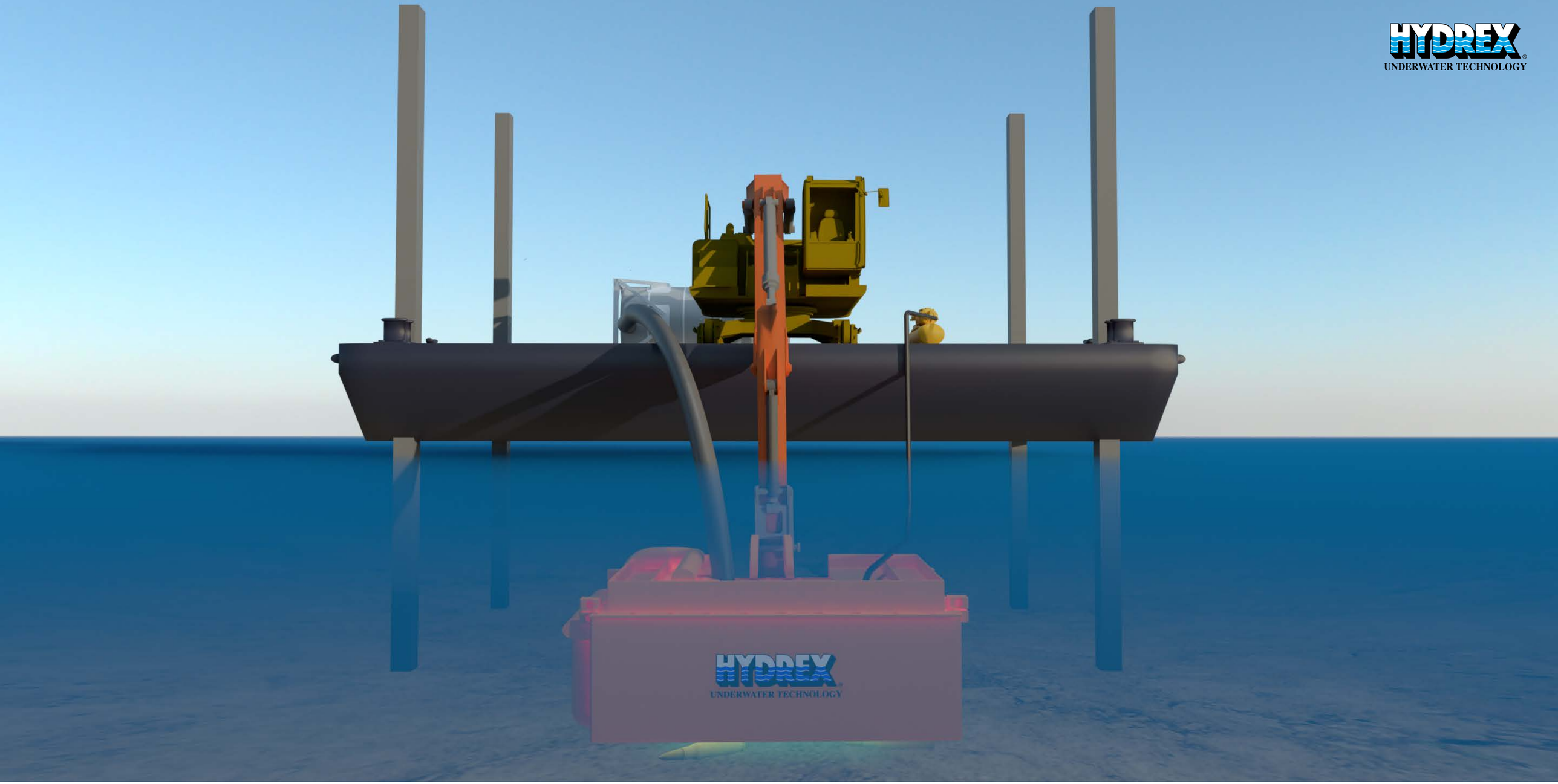



CH2


HYDREX

Habitat technology for dumped ammunition recovery





Front view of the Ammunition Clean-up System set-up hovering above dumped shells.

Underwater view of the ACS highlighting dumped ammunition before retrieval.

HYDREX®
UNDERWATER TECHNOLOGY

CONTACT

Martijn van Ruiten

Email: mvanruiten@hydrex.nl | Tel: +31 6 43279935

Hydrex NV

Tel: +32 3 213 53 00 (24/7)

hydrex@hydrex.be

Haven 29 2030

Antwerpen, België

www.hydrex.be