



DB Avalon

North America's First Hybrid Dredge

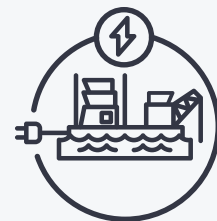
Largest Clamshell Dredge in North America • Lowest Carbon Footprint



Highest capacity, with the lowest carbon footprint vessel of its class.



Hybrid



Capable of an all-electric operation, with shore-power connection making it a true zero-emissions dredge.



DB Avalon

DB Avalon is a market-first, hybrid-powered dredge vessel designed and built by Curtin Maritime to be the highest capacity, with the lowest carbon footprint clamshell dredge of its class. Designed with a fully automated dredging system. Capable of an all-electric operation, with shore-power connection making it a true zero-emissions dredge.

Its system boasts a state-of-the-art hybrid power supply system utilizing a set of massive lithium-ion battery banks, allowing for usage of generators 30% smaller than those found in conventional dredges. The system is configured to optimize charge/discharge balance by harnessing regenerative power while lowering or decelerating the bucket, then uses power from the batteries and generators to hoist. It also possesses the ability to connect to shore-power, where available, enabling a fully electric, zero-emissions operation.

Its combination of the largest clamshell buckets ever built in the U.S. not only allows for faster dredging, but also the ability to dredge materials not possible by clamshell rigs without pre-treating (e.g. cutterhead rig, blasting). Fully automatic operation of these purpose-built buckets result in the most accurate dredging

available in the world. This level of precise digging greatly minimizes turbidity pollution and the necessity to clean-up dig, completing depth targets faster and further reducing carbon footprint of any project.

Though a first of its kind in the North American market, this groundbreaking system is tried and true around the world winning awards in its innovation to leverage technology to not only outperform virtually all clamshell dredge vessels, but a fraction of fuel consumption and carbon footprint.

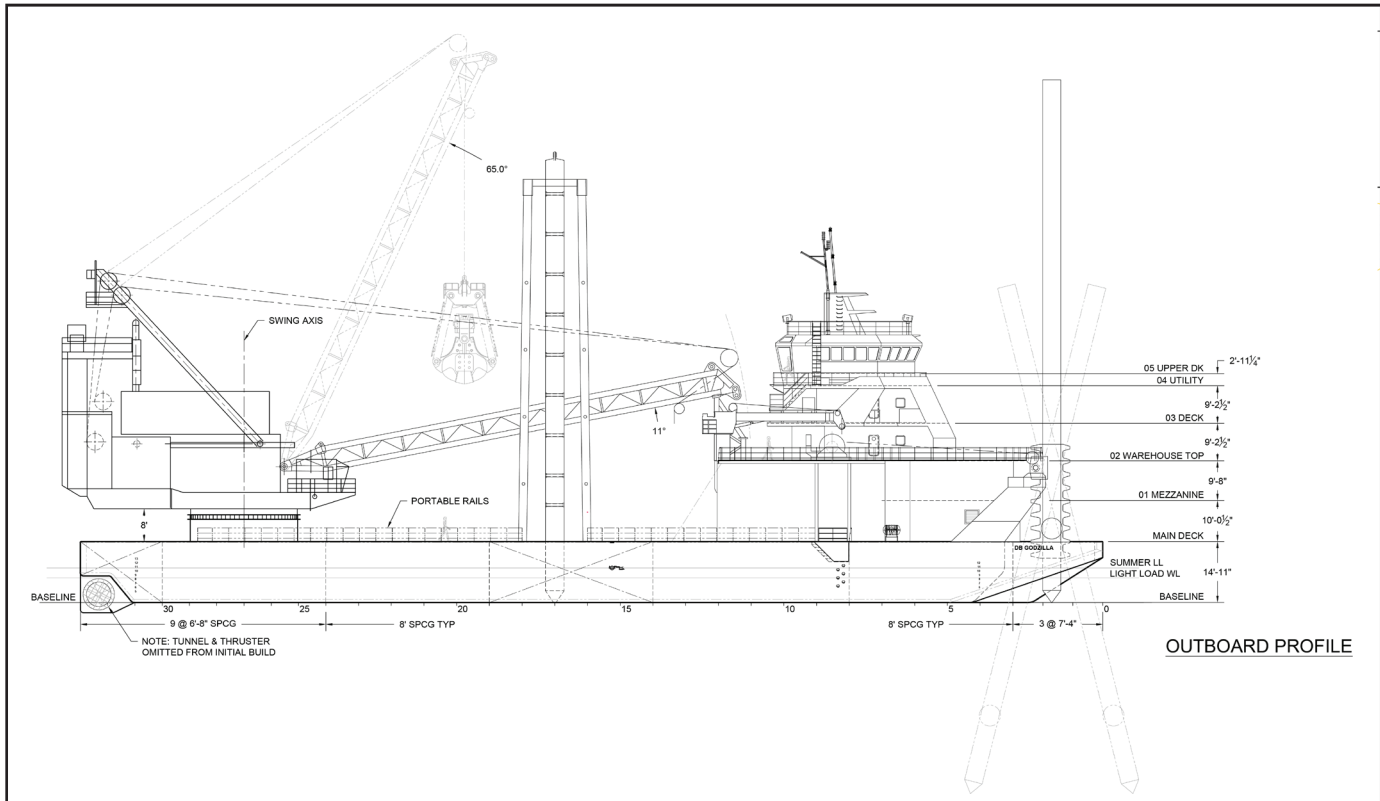
Ultimately, all these features make the DB Avalon the most cost-effective, most accurate, and highest capacity dredge vessel with the lowest carbon footprint in all of the Americas.



Equipment Data

DB Avalon: 250'x77'

EPA Tier 4



Construction/Key Data:

Owner: Curtin Maritime, Corp.
Design & Construction: Curtin Maritime
Crane & Hybrid System: IHI AMTEC, Sumitomo Heavy Industries
Barge: Conrad DeepWater South

Year Built: 2022

Certificates:

- ABS Load Lines, Manned, Oceans

Particulars: 250' x 77' x 15'

Fuel: 58,145 gl. (98%)

Water: 35,770 gl. (100%)

Gross Tonnage: 2412

Holding Tank: 35,060 gl. (98%)

DEF Capacity: 4,925 gl. (98%)

Max. Hoisting Load: 242,000 lbs. (110 MT)
Radius: 66.9 ft. (@ 55 ° boom angle)
Boom Length: 93.5 ft.
Fixed Spuds: (2)x 109 ft./85k lbs./φ4.6'
Walking Spuds: (2)x 130 ft./130k lbs/4.6'x4.6'

Generators:

(2) x Cummins QSK60 (EPA Tier 4)

Hybrid System:

Designed by Sumitomo Heavy Industries

Powered by Lithium-Ion Batteries

Energy Regeneration System

Features

EPA Tier 4

Fully electric plug-in, zero-emissions capability

Fully automated dredging software by Sumitomo

18 Berths / 10 Heads

Air-conditioned accommodations

Full galley



Award-Winning Technology

Infrastructure Technology

Development Award

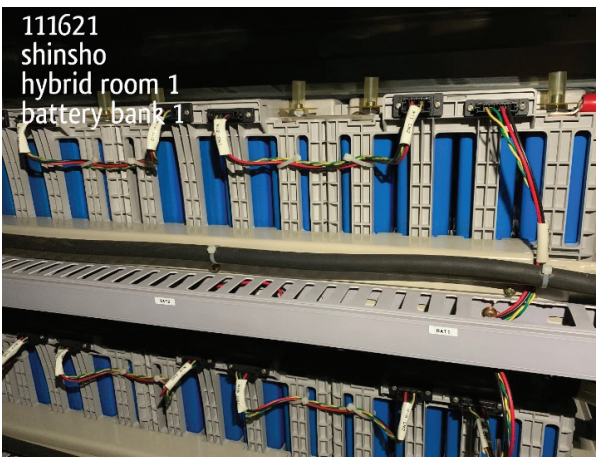
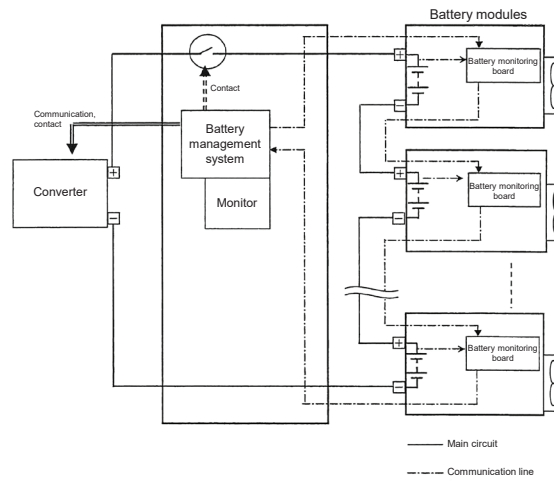
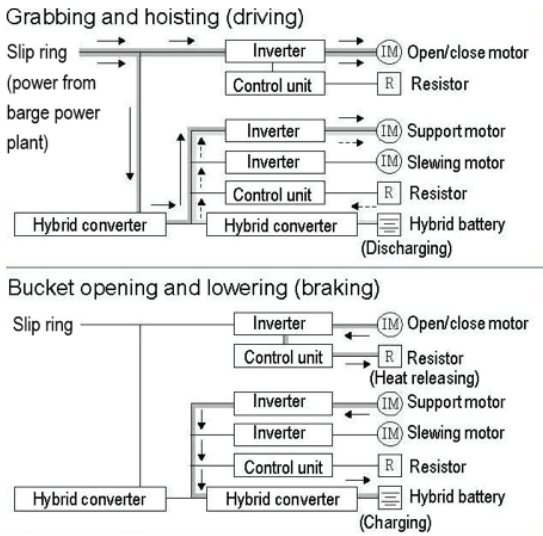
Japan Institute of Engineering

Coastal Development Institute of Technology



Hybrid Power Plant

DB Avalon: 250'x77'
EPA Tier 4



Credit: Sumitomo Heavy Industries

DB Avalon

The DB Avalon employs the latest hybrid technology, combined with the most energy-efficient Tier 4 generators in the market.

Because of the hybrid power source, it allows the usage of generators two-thirds the size of a conventional dredge vessel, further reducing CO2 emissions by 30% less than the highest tier rated generator available.

The two QSK60 generators manufactured by Cummins uses a proven Selective Catalytic Reduction (SCT) technology with a flow-through exhaust after-treatment system, using diesel exhaust fluid (DEF), to deliver ultra-low emissions.

Credit: Sumitomo Heavy Industries

The four banks of 20 battery modules each, are controlled by state-of-the-art software. It optimizes charge and discharge cycles by harnessing regenerative power from normal digging operations and re-charging the batteries, further reducing fuel consumption and greenhouse gas emissions.

The hybrid system designed and built by Sumitomo Heavy Industries received the Infrastructure Technology Development Award for its breakthrough innovation in increasing performance, while drastically reducing carbon footprint in the Asian market.



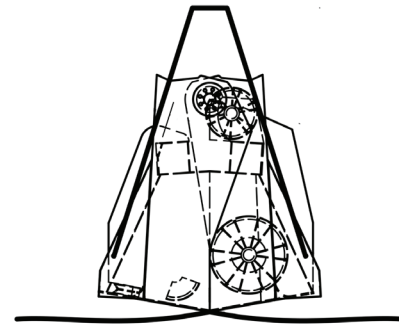
Dredging Gear

DB Avalon: 250'x77'
EPA Tier 4

Maintenance Bucket

Manufactured by Cable Arm
72 CY x 70,500 lbs.

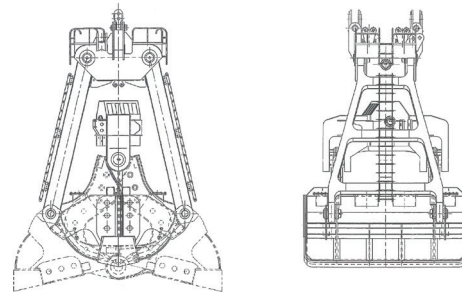
It is one of the largest, and only 4-line bucket of this size Cable Arm has ever produced. Curtin Maritime worked tirelessly with Cable Arm's founder Ray Bergeron to design this bucket to maximize on the extreme line pull in for line design of the crane. This is a closed lip environmental bucket that provides a level cut and low turbidity. It is a proven bucket design with proven results.



General Purpose Square Nose Bucket

Manufactured by Koei Iron Works
39 CY x 132,200 lbs.

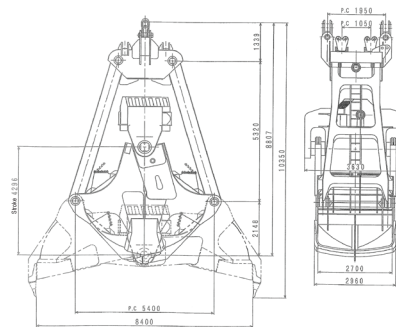
A closed bucket to reduce turbidity. It's the only one of its kind in the Americas. While the sheer weight and size of this bucket is unprecedented in the American markets, this is one of the most common buckets overseas where the crane originated.



Heavy Duty Round Nose Bucket

Manufactured by Koei Iron Works
33 CY x 143,300 lbs

Heavy deadweight design, round nose cutting edge and equipped with 7 heavy duty teeth; this bucket is designed to penetrate hard sediments such as stiff clays and dense compacted sands. Unlike many heavy duty buckets, this bucket is hooded and fully enclosed to keep sediment within the bucket to reduce turbidity entering the water column for environmental benefit.



Extra Extra Heavy Bucket

Manufactured by Atlas SSI
13 CY x 198,000 lbs

Atlas has built the heaviest bucket they have ever produced by almost twofold. Our "extra extra" heavy bucket weighs in at 198,000 pounds with a capacity of 13 yd.³ This bucket is capable of digging material that was unheard of with existing buckets in the United States. The common practice of pretreating material with a cutterhead or by blasting is now not always necessary. The economic value of digging once speaks for itself. This bucket weighs almost 100,000 pounds more than the heaviest bucket Atlas has ever produced. The design is based on a proven design widely used overseas.

