

LEAVE NOTHING BUT YOUR WAKE.

Hyde GUARDIAN™

Ballast Water Treatment System

Come on
in. The
water's
fine.



HONEST SOLUTIONS. HONEST EQUIPMENT

Once upon a time more than a decade ago, the innovators at Hyde Marine began developing an honest solution to fight the spread of aquatic invasive species. They teamed up with many stakeholders in this evolving market.

Customers. Regulators. Scientists. Government agencies. Hyde Marine led the ballast water community through this maiden voyage. A voyage to perfect a solution to stop what

global environmental authorities describe as one

of the greatest threats to our waterways – invasion of non-native species via ballast water. In early 2004, strict industry guidelines were put into place for proper ballast water treatment which would be phased into all ship operations in the years to come. Working with the marine market since 1969 and a marine machinery heritage dating back to 1865, Hyde fully understood the time-sensitive challenges ahead. They pioneered the use of mechanical separation and UV disinfection as a ballast

water management solution. **And in the true spirit of Hyde ingenuity; the GUARDIAN™ emerged.**

Sophisticated yet simple in form and function, the Hyde GUARDIAN Ballast Water Treatment System

delivers. It's totally automatic. Completely chemical-free. And because of its

simple, low-maintenance

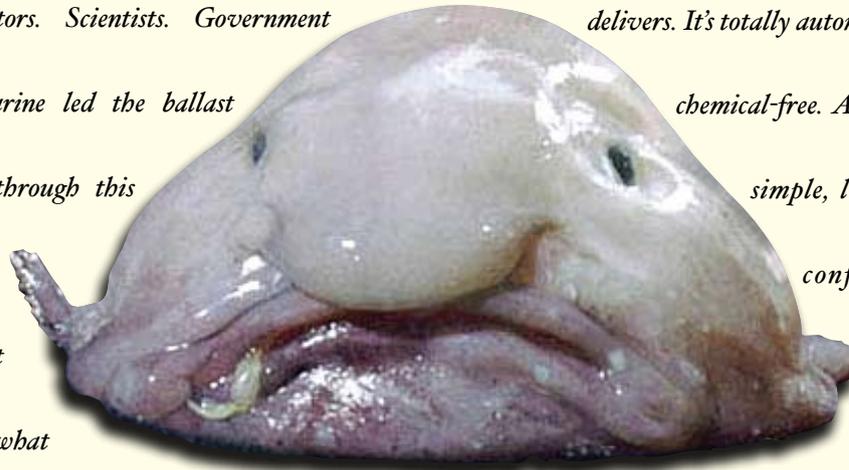
configuration, the

GUARDIAN

presents a cost-

effective solution

like no other. This



^{True} Fish Story

straightforward process is based on a patented auto-backflushing disk filter and potent UV treatment.

Sure, this system successfully performed according to the toughest market standards. But more important,

it performed to Hyde standards to do what's right by customers and the environment. Simply

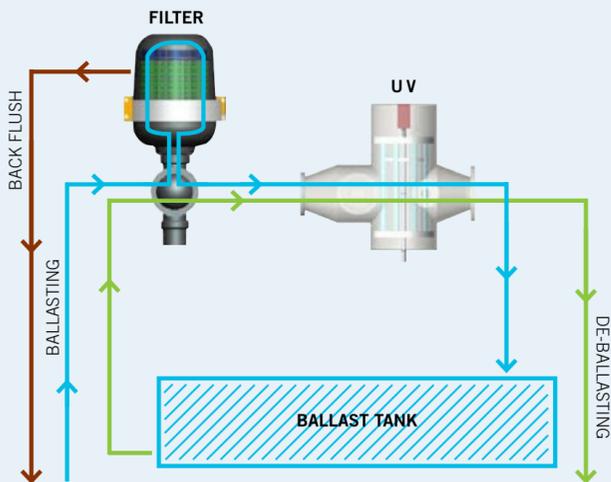
put, Hyde GUARDIAN is the most experienced, economical and environmentally friendly ballast

water treatment solution available. **End of story.**

Scalable for optimum efficiency.

THE BEST CHOICE

- Proven in continuous shipboard use.
- Small footprint suitable for all ship types.
- Modular design installs easily in crowded machinery spaces.
- Low pressure drop allows use of existing ballast pump(s).
- Low power consumption – operates with existing generators.
- Explosion proof option.



DURING HYDE GUARDIAN BALLASTING

- Water processes through filter, larger sediment and organisms removed.
- Backflushing automatically returns separated materials overboard at ballasting site.
- Water passes through UV treatment and to ship's ballast system.

DURING HYDE GUARDIAN DE-BALLASTING

- Filter is automatically bypassed.
- Ballast water receives a second dose of UV during discharge assuring compliance.



TYPICAL ENERGY CONSUMPTION

GUARDIAN SYSTEM	Capacity m3/h	Power Range (kW)
HG 60	60	10 - 15
HG 250	250	18 - 25
HG 500	500	36 - 50
HG 1250	1250	78 - 114
HG 6000	6000	414 - 600

HYDE GUARDIAN ECONOMY

- Minimal effect on ballast rate and turn-around time.
- Easy, automatic operation requiring no special training.
- Small power consumption.
- Low maintenance and consumables.
- No chemicals to purchase, transport, store or handle.

HYDE GUARDIAN FILTER SYSTEM



- Unique, stacked-disk design provides efficient depth filtration.
- Operates reliably in high sediment conditions.
- Automatic backflushing keeps filter clean and maintains high flow rates.
- Designed for minimal pressure drop, between 0.3 and 0.7 Bar.
- 100% non-corrosive materials.
- Modular design installs in tight spaces.
- Reliable design proven in thousands of applications.

HYDE GUARDIAN UV SYSTEM



- High-quality, long-life, high-output, medium pressure lamps.
- Automatic sleeve wiper. No Chemicals.
- Monitored UV, consistent dosage.
- Robust corrosion resistant treatment chamber.
- Access hatch for easy inspection.
- Robust design proven in thousands of critical applications.

HYDE GUARDIAN CONTROL SYSTEM

- Single control panel operates and monitors all functions.
- Automatic data logging.
- Easy integration into ship's control system.

Simplicity is at the HEART of the design.

WHAT'S TRULY AMAZING ABOUT THE HYDE GUARDIAN IS HOW IT COMPARES TO THE COMPETITION.

Unlike other wannabe systems, this compact, robust design is flexible. Modular. No new ballast pumps are needed. This all adds up to easy installation on existing ships. New ships. Even machinery-packed spaces.

The GUARDIAN uses no chemicals. No chemicals to transport, store, or handle. No chemicals for treatment or maintenance. Safety is our priority.

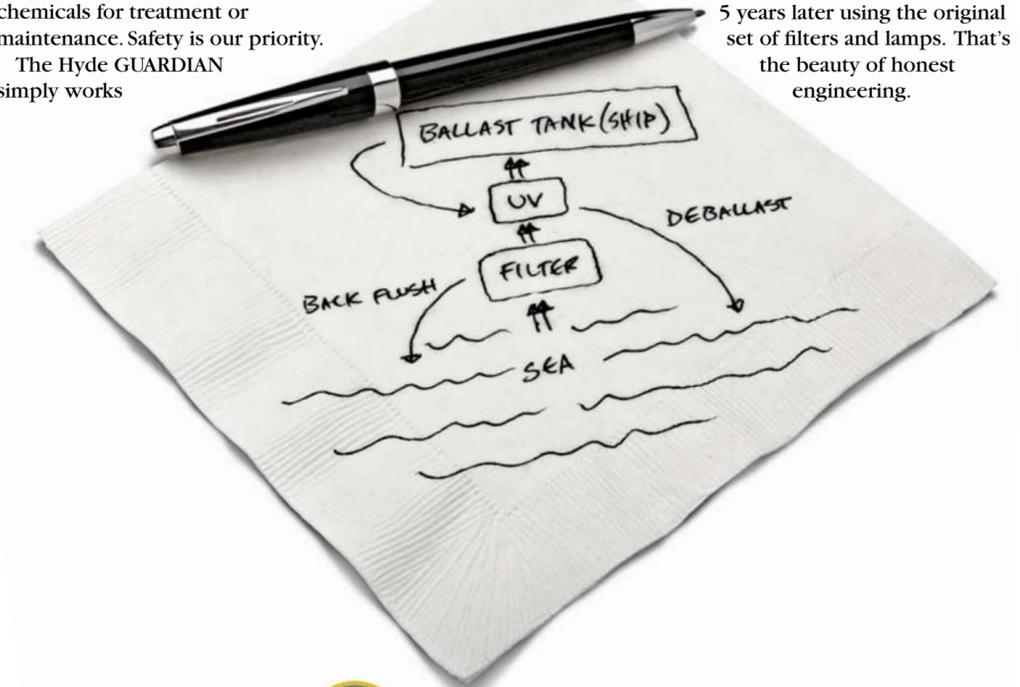
The Hyde GUARDIAN simply works

behind the scenes with seamless integration.

But there's more (or we could say less.) Less power is used. With few moving parts and just two main components, less attention is required for operation. You also enjoy the lowest total cost of ownership that

this meticulous attention to detail brings at every level.

What's the catch? There is none. Since the first GUARDIAN installation in 2003, the Coral Princess experienced no downtime for repair and required no consumables. In fact, it underwent USCG STEP Approval and IMO TYPE Approval testing 5 years later using the original set of filters and lamps. That's the beauty of honest engineering.



A BRIEF HISTORY:



1865
Hyde Windlass Co.
Bath, Maine



1969
Hyde Marine
Cleveland, Ohio



1996
Hyde Marine and
University of Michigan
Ballast Water Study



1997
Great Lakes Ballast
Water Technology
Demonstration Project



2000
First Ballast Water
Treatment System
M/S Regal Princess



2001
BWT Systems Installed on
Four Commercial Ships



2003
First Hyde GUARDIAN System
M/S Coral Princess



2006
GUARDIAN Modular System
M/S Celebrity Mercury



2008
Six GUARDIAN Systems for
Royal Navy CVF Aircraft Carriers



2008
USCG STEP Approval
Coral Princess



2009
IMO Type Approval

Nothing fishy about pioneering innovation.



“This is leading edge technology that deals with a serious concern in the maritime industry, protection of coastal waters from invasive species.”

— Tom Dow
Vice President, Public Affairs, Carnival Corporation

Behind every Hyde solution are customer-oriented professionals in a class all their own. And their impact on the GUARDIAN evolution is no exception.

At Hyde, we're not concerned about being the biggest – just the best. We involved our customers every step of the way. We asked questions. We listened. We learned. Then we got to work.

Decades of customer input, field experience and unsurpassed ballast water management expertise went

into every inch of the GUARDIAN.

Hyde engineers worked to optimize this fundamental approach of sediment removal and UV disinfection. They're the reason the GUARDIAN offers superior performance while consuming less power than other comparable systems. They're the reason this technological and environmental breakthrough meets the strict treatment standards facing our customers today. And better yet, tomorrow.

Rest assured, Hyde put it to the test. Again and again. On and off actual shipboard applications to get it just right.

And with our customers' confidence fueling this pursuit of perfection, the Hyde GUARDIAN allows us to offer ship owners a solution, a sound investment that will perform as long as their ships. Honestly, can you think of anything more innovative than that?



HONEST SOLUTIONS. HONEST EQUIPMENT.

The elegance of the Hyde GUARDIAN solution resulted from our first principles approach which promises a system that will:

- Do the job.
- Perform in the most straightforward manner.
- Work in the most demanding shipboard situations.
- Meet all customer needs for safety, no environmental harm, easy installation and ship integration – all with minimum maintenance and operating costs.

Our early start in the market and supportive customers and suppliers allowed us to refine and optimize the system under actual shipboard operating conditions. Developing and maintaining these strong relationships with customers, suppliers, the scientific community, and the regulators (USCG, IMO, State Agencies, etc.) is the secret to our success story.

Tom

Tom Mackey
Hyde Marine Chairman of the Board

Deepening our resolve to do what's right for all involved.

A critical part of our mission to deliver clean ballast water was anchored by making the right choices. Every step of the way. From the suppliers we partnered with, to the best land-based test facilities. From the caliber of scientists on our shipboard test team, to the dedicated government organization for Type Approval. Every party involved

shared our perseverance and commitment to the cause.

In the midst of developing this revolutionary system in a market that barely existed, we at Hyde Marine also put considerable effort into naming it. The same time and effort you might say that's involved in naming a child.

We searched deep. Deep into the meaning of strength.

The meaning of defense and protection from pollution. We looked for a name that would symbolize much more than marketing savvy.

Hence, the Hyde GUARDIAN was born. A name, a symbol and a promise that would give confidence to our customers that their ballast water would do no harm on our watch.

*Leave
Nothing
but
your Wake.*

Hyde joins you in this personal and professional responsibility to make ballast water treatment an ongoing success story. For immediate response, click on www.hydemarine.com or call +1 440 871 8000.



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a **LAMOR** group company

Hyde Marine, Inc., 28045 Ranney Parkway, Cleveland, Ohio 44145 USA
Tel: +1 440 871 8000, Fax: +1 440 871 8104, e-mail: sales@hydmarine.com
World Wide Offices and Agent Network: www.hydmarine.com

