



Manufacturing Marina Bull forklifts in the Wiggins factory, Oxnard, California.



Mike Wiggins

rack heights, bay widths and the utilisation of the end racks present difficult challenges in planning facilities today.

As a leading manufacturer of boat handling equipment, Wiggins Lift Co., spends a lot of time and resources helping to solve problems facing the dry storage industry. Through the years we have designed higher capacity 'marina lifts' with shorter wheelbases. We have increased lift heights and negative lifts to accommodate industry needs.

We have now designed our new Marina Bull 2. Through the use of state of the art technology this new innovation in boat handling requires reduced aisle widths, decreased tyre load on the floor and allows for greater lift and negative heights.

The Marina Bull 2 picks the boat out of the water and pulls it back over itself. This will accomplish two things. One, by traversing the boat back over the vehicle it will reduce the overall length of the lift and boat considerably. This will allow the operator to manoeuvre longer boats in narrower aisles. Two, with the boat in its carry position the weight is distributed equally over both front and rear tyres. The unique patented design of this vehicle greatly reduces its overall gross vehicle weight, thus allowing a sizable reduction in the amount of concrete and steel necessary to withstand the load.

Larger boats in smaller buildings

There are two major cost considerations when designing a dry stack facility. Number one is the

Marina Bull 2 offers greater lift, needs less aisle space and puts less strain on concrete surfaces.

Forklift for the future

by Mike Wiggins

I was honoured to be part of the IMI's Seventh Annual Dry Stack Conference, held in Palm Beach Gardens Florida last October. IMI's executive director, Tim Timpson, is to be commended for pulling off another very successful and highly informative conference. The thrust of this year's event was to consider new trends and developments.

Wiggins Lift Co., is constantly surveying the needs of the dry storage industry and has discovered a number of key factors which will influence the direction we must take as manufacturers of boat handling equipment.

Firstly, there is a growing market demand for storing larger and longer boats and, secondly, an increasing need to safely store them. The boat owner now understands the importance of keeping a boat protected and ready for the next outing. Inside storage helps to maintain a boat's value while reducing maintenance costs and it is also agreed that boat sales increase when there is a storage facility available.

Thirdly, land space is becoming ever more scarce. In the past five years we have seen dry storage facilities disappear in the USA to be replaced by high-rise condominiums. The land is just too valuable not to sell to developers; an ocean view is a valuable commodity. The land that is left is often too small to accommodate a dry storage building as we now know it.

Fourthly, when the land is available it is so expensive that it cannot generate enough revenue to sustain a boat storage barn. Waterfront property in most coastal regions has continued to escalate and will continue

operations must take up less room. One way to generate the profits necessary to sustain a dry storage facility is the ability to use those odd shaped, small, narrow pieces of property, which until now were unusable.

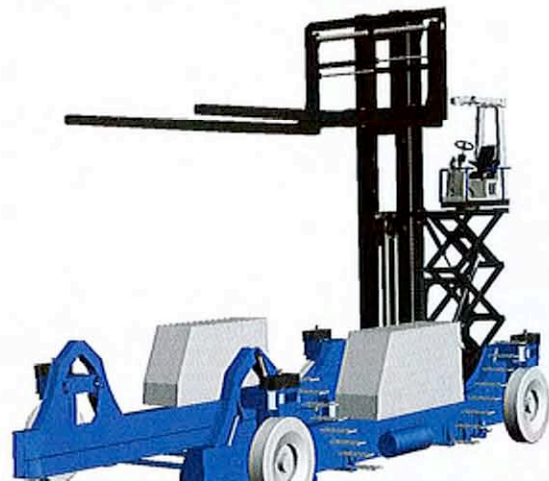
Second, boat storage operations must allow for greater stacking density. They must have reduced aisle widths and stack boats higher and closer together in order to use up less space on the property and increase revenues.

New thinking

The opportunity exists for innovative boat handling. We see the means of handling ever larger and longer boats as changing, with available technologies evolving rapidly giving us the opportunity to look at methodology in a whole new way. New thinking must be applied.

Existing marina facilities are now using a variety of equipment such as various models and types of marina forklifts to move boats to and from rack and water. There are stationary cranes, dock hoists, straddle lifts and powered hydraulic boat trailers all in use.

Drystacks that are currently being planned for construction can face limitations due to the available handling equipment. Problems such as the space required to stack boats safely, the increased weight

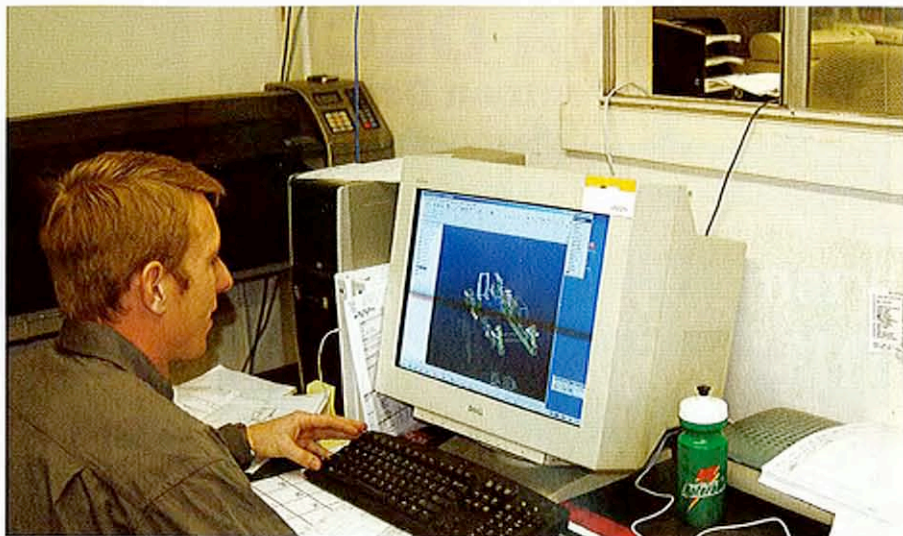


size of the building necessary to stack and house larger boats. With the cost of building materials, increasing the cost per square foot has become astronomical. The second is the thickness of the concrete floor necessary to handle the loads generated by the combined weight of the boat and the forklift needed to carry it. We are seeing loads well over 150,000lbs in some cases, with most of the load on a single axle. This extreme centre point loading increases the thickness of the floor and the amount of steel needed to reinforce the concrete, thus making the floor extremely costly.

The Marina Bull 2 will be able to stack longer boats in existing narrow aisle drystack buildings. This will give the owners the opportunity for increased revenue and more versatility. In new building designs, the Marina Bull 2 can help lower building costs while making it possible to stack larger boats on higher racks, thus increasing revenue.

Using the frame as its counterweight, the Marina Bull 2 lifts the largest rated boat at the seawall. The mast traverse carriage moves the boat securely to the rear of the chassis and the operator console rotates to the driving position giving the operator an unobstructed field of view for swift and safe transit. While driving, the tyre loads on the concrete are half those of a conventional Marina Bull, requiring 30% less concrete.

Inside the building, the operator rotates back towards the boat for racking mode, giving him several steering modes, including circle steer where the Marina Bull 2 turns around its own centre. Longer boats can thus be stored in shorter aisle widths. The Wiggins side step



All aspects of boat handling and racking are explored by the design team in order to refine the new generation Marina Bull.

feature allows full use of the end racks for increased revenue and crab and radius four-wheel steering provide the greatest possible operator control. The operator lines up with the intended bay and raises the boat. He can also elevate himself for better racking visibility.

By first driving forward, then moving the traverse carriage forward, the operator places the boat in its rack. During 'park and place' mode, the exclusive Wiggins Active Stability Control System ensures the operator can concentrate on the safe placement of the boat into the rack.

This incredibly innovative machine

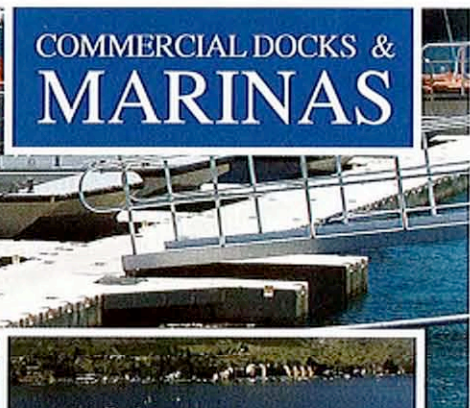
features four-wheel hydrostatic drive, digital hydraulics, in-rigger cylinders and numerous lift and stability sensors to accomplish what was previously impossible - putting larger numbers of longer boats on higher racks in smaller building footprints!

We completed design and production of the first Marina Bull 2 at the end of 2006 and models are available to order this quarter. Mike Wiggins is president of Wiggins Lift Co. Inc., manufacturer of the Marina Bull, in California, USA. He can be reached via email at mikew@wigginslift.com or by fax: +1 805 485 5230.



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