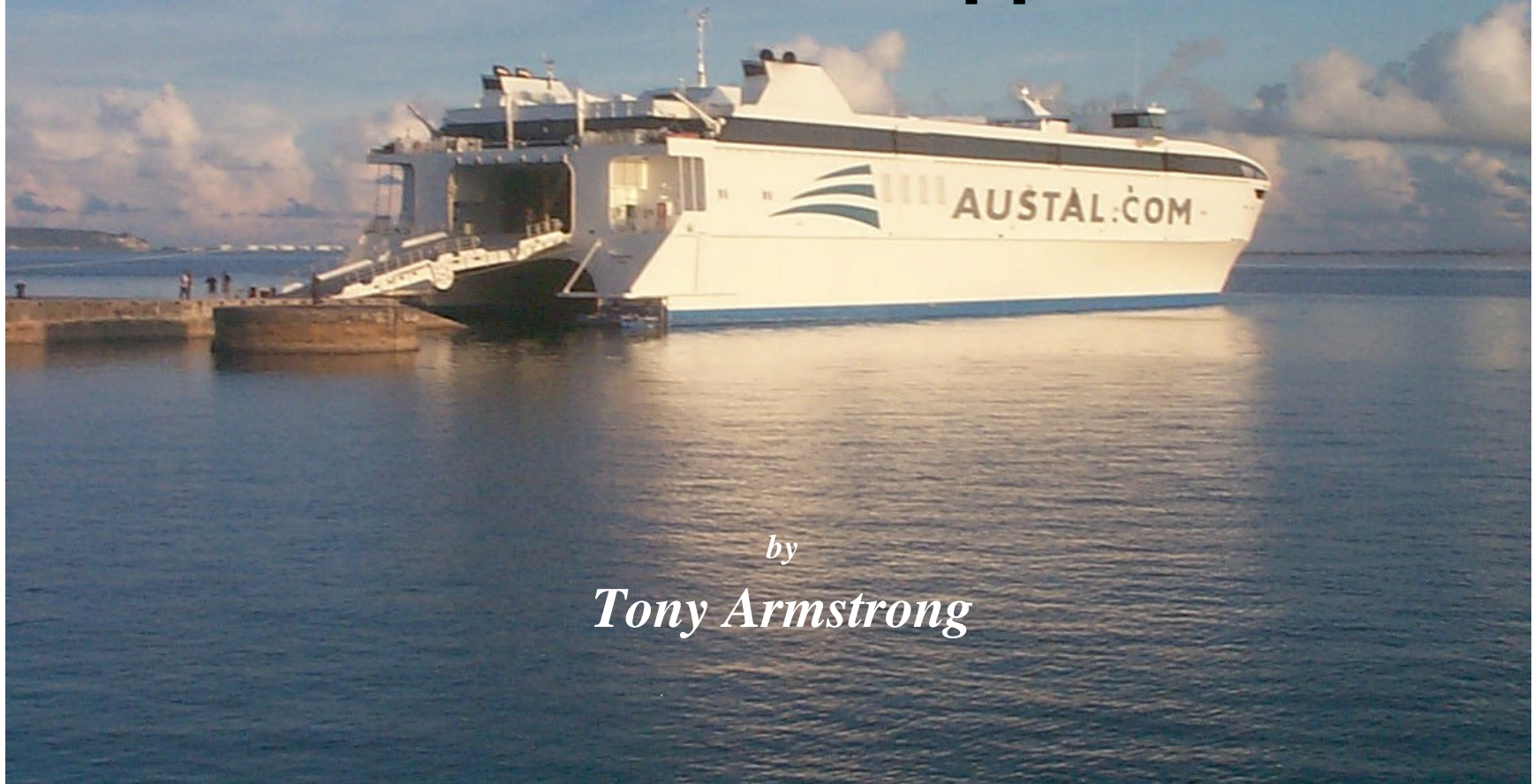


ADVANCED HULL FORMS - A Commercial Approach



by
Tony Armstrong

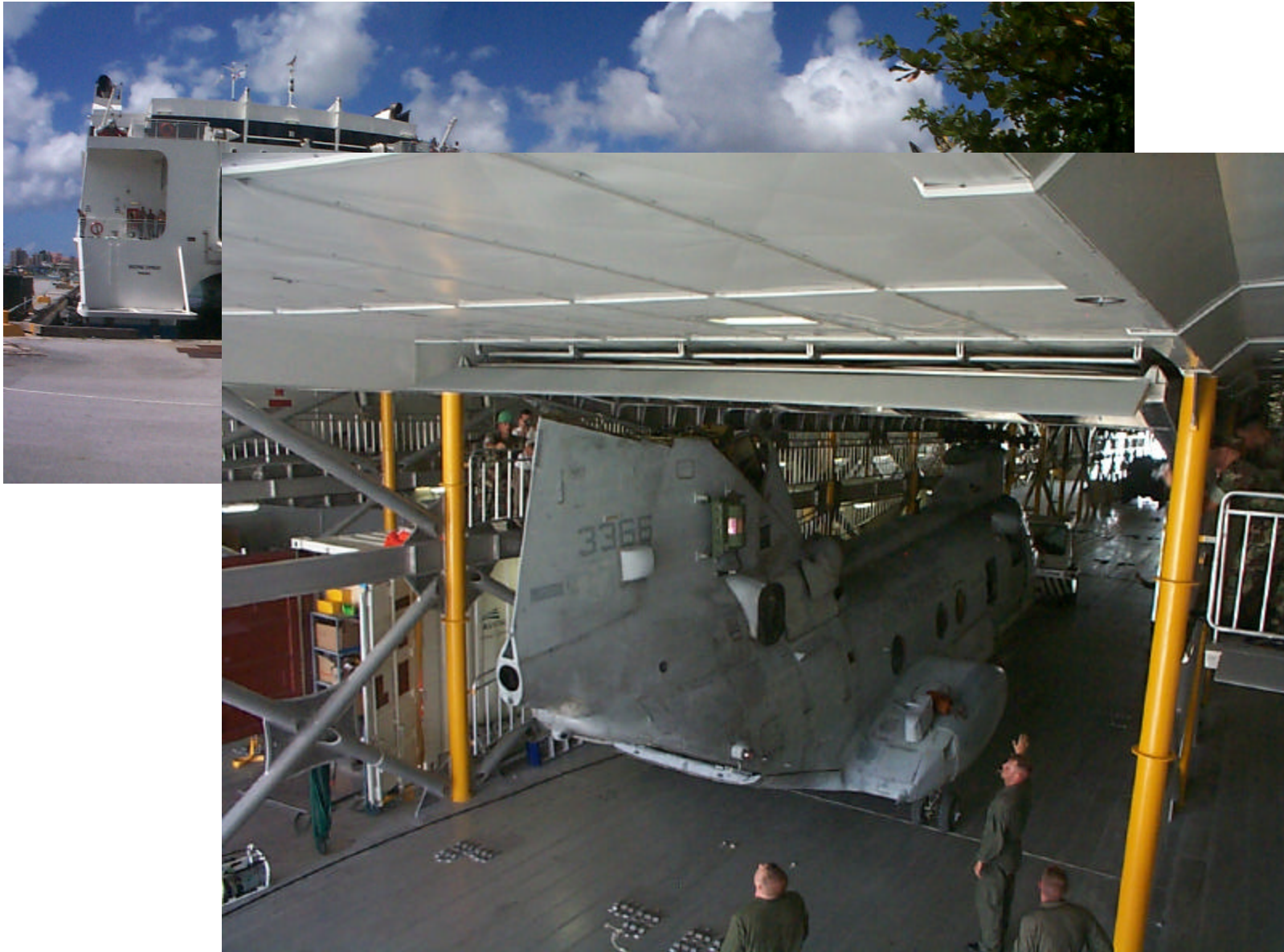














**Austal custom-
design and
build to meet
the client's
needs.**

**may be a
multihull**

or a monohull



Rapid design and construction



From start to handover in 27 weeks

Aluminium advantages -

- *Lightweight*
- *Easy to handle*
- *Easy to fabricate – simple tools*
- *Low overhead costs*

Aluminium disadvantages –

- *Need for fire protection*
- *Need for experienced design to avoid fatigue fracture*



Tried and proven formula for commercial fast ferries is:



SIMPLICITY

Considerations in the choice of hull shape and parameters

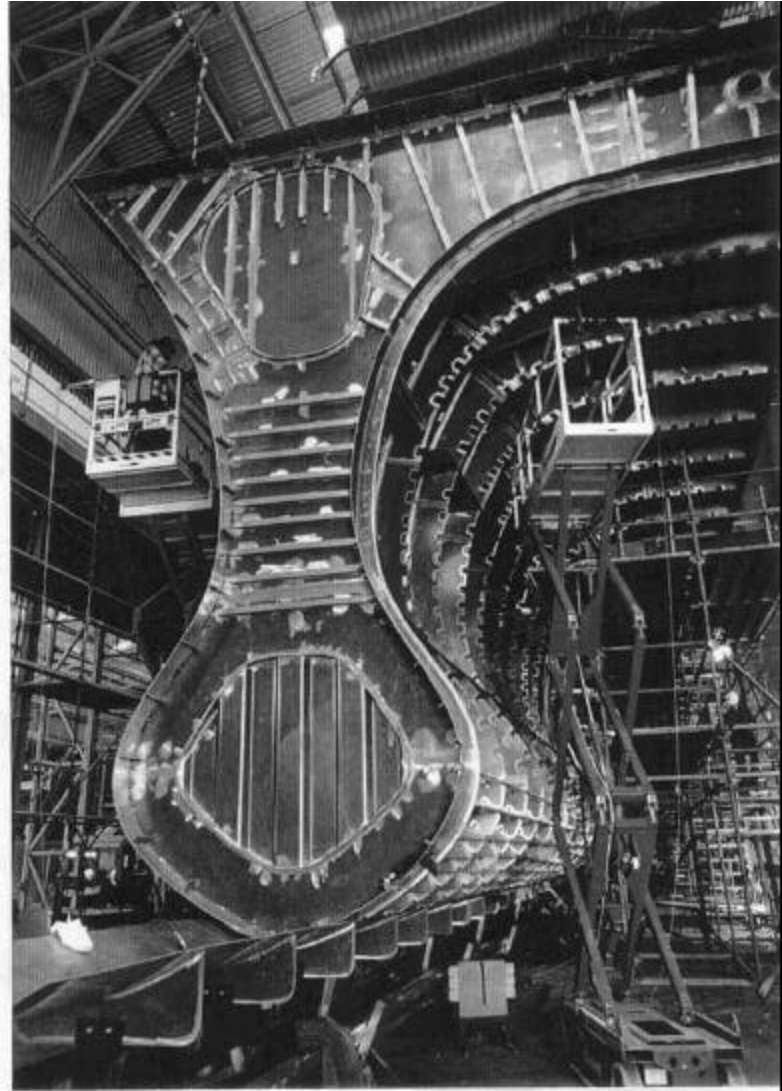
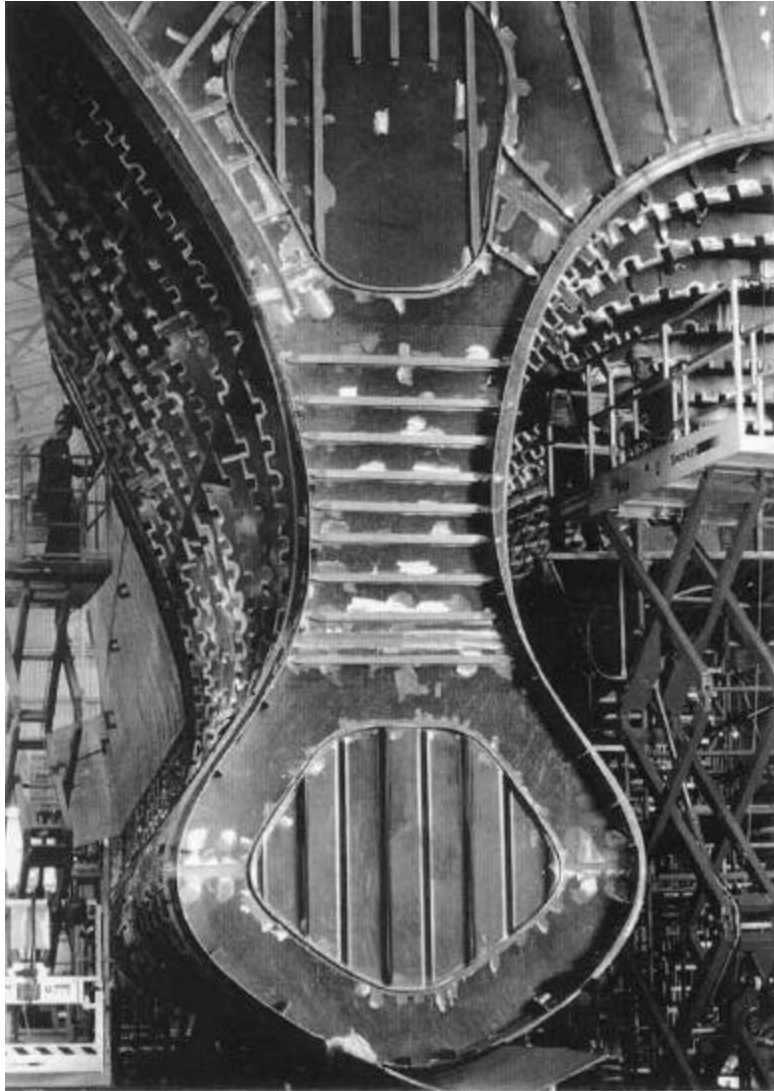


Resistance

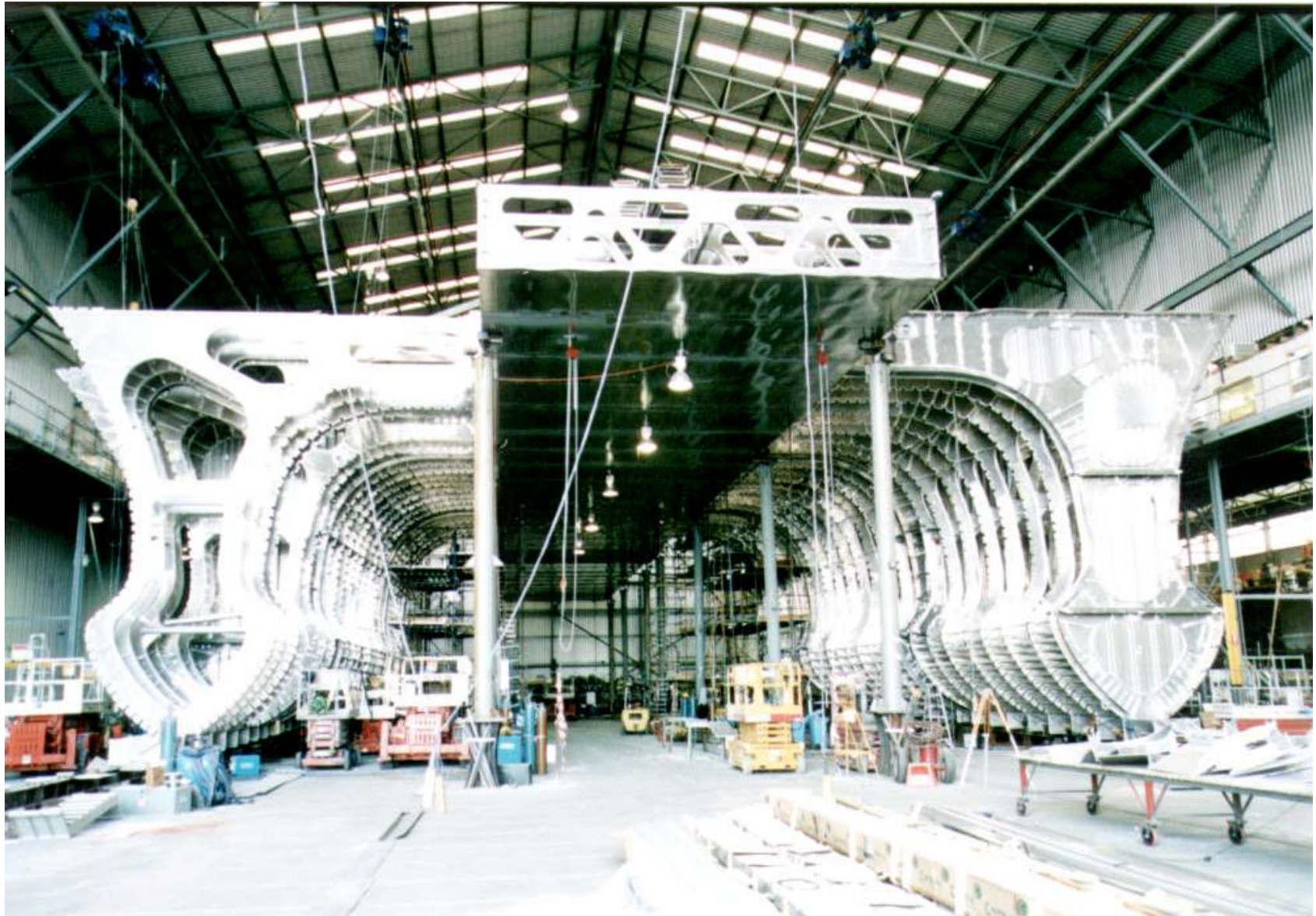
Payload

Seakeeping

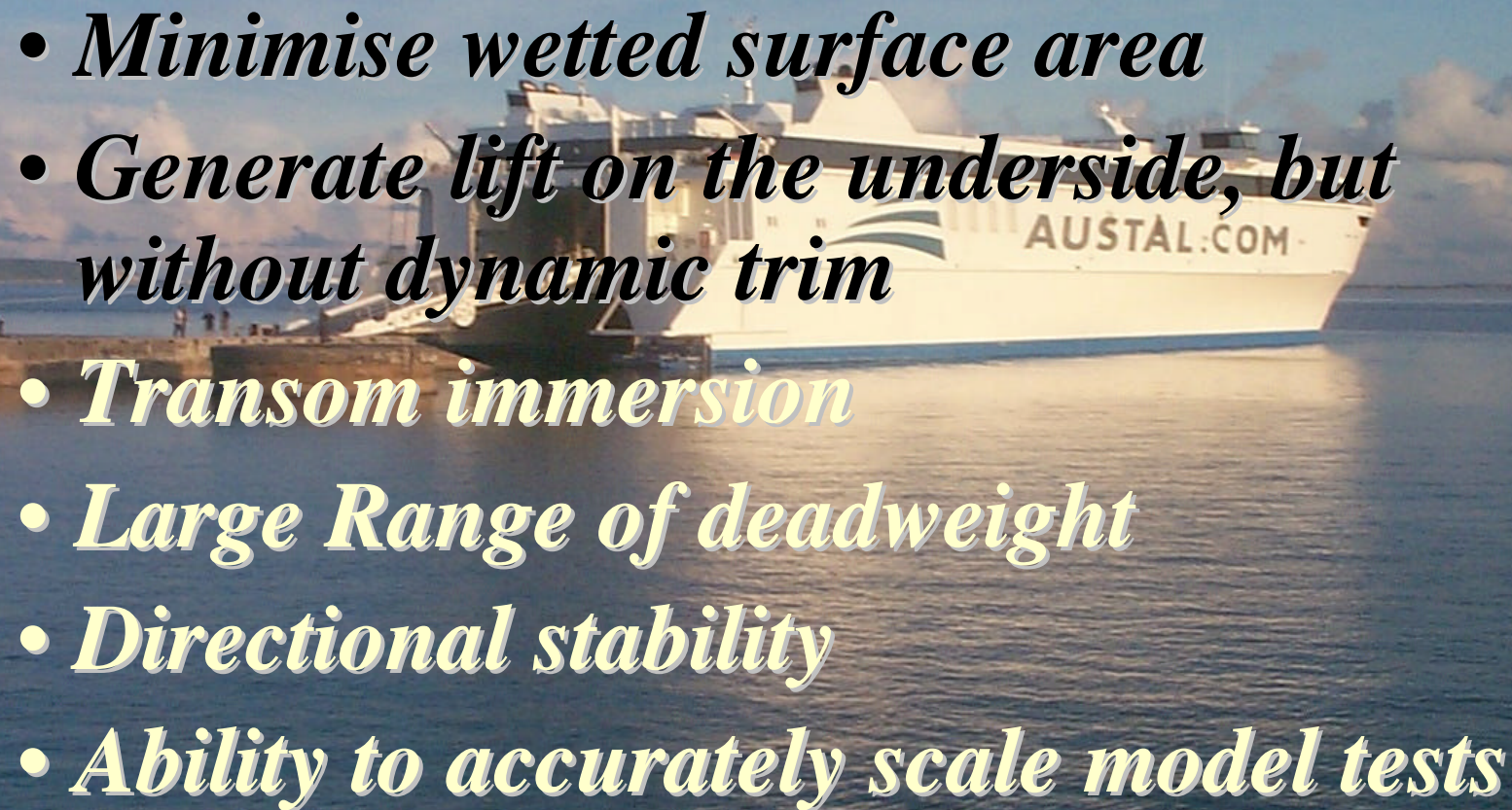
Wake wash



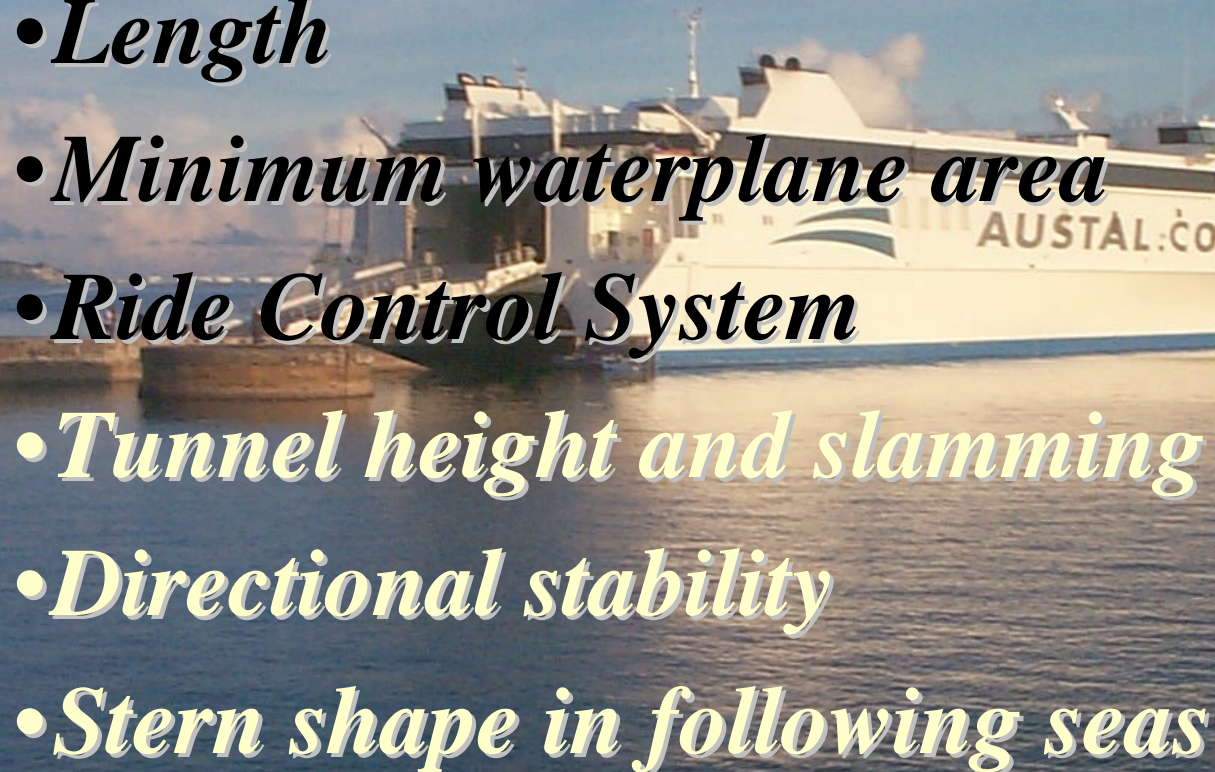




Considerations in the choice of hull shape -Resistance

- *Minimise wetted surface area*
 - *Generate lift on the underside, but without dynamic trim*
 - *Transom immersion*
 - *Large Range of deadweight*
 - *Directional stability*
 - *Ability to accurately scale model tests*
- 

Considerations in the choice of hull shape - Seakeeping

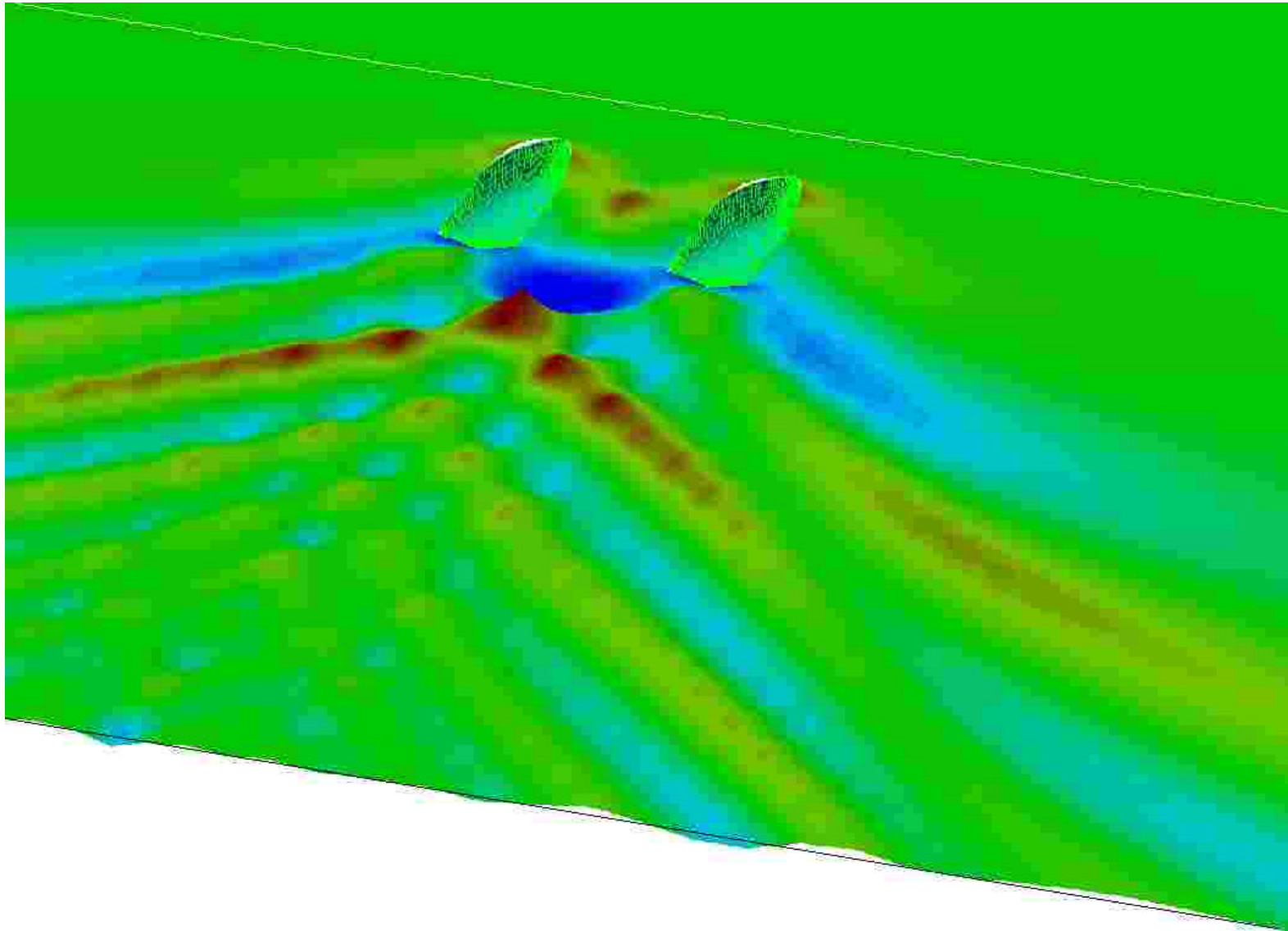
- *Length*
 - *Minimum waterplane area*
 - *Ride Control System*
 - *Tunnel height and slamming*
 - *Directional stability*
 - *Stern shape in following seas*
- 
- A large white Austal ferry ship is docked at a pier. The ship has 'AUSTAL.COM' written on its side. The background shows a blue sky with some clouds and a body of water.

Considerations in the choice of hull shape -Wash

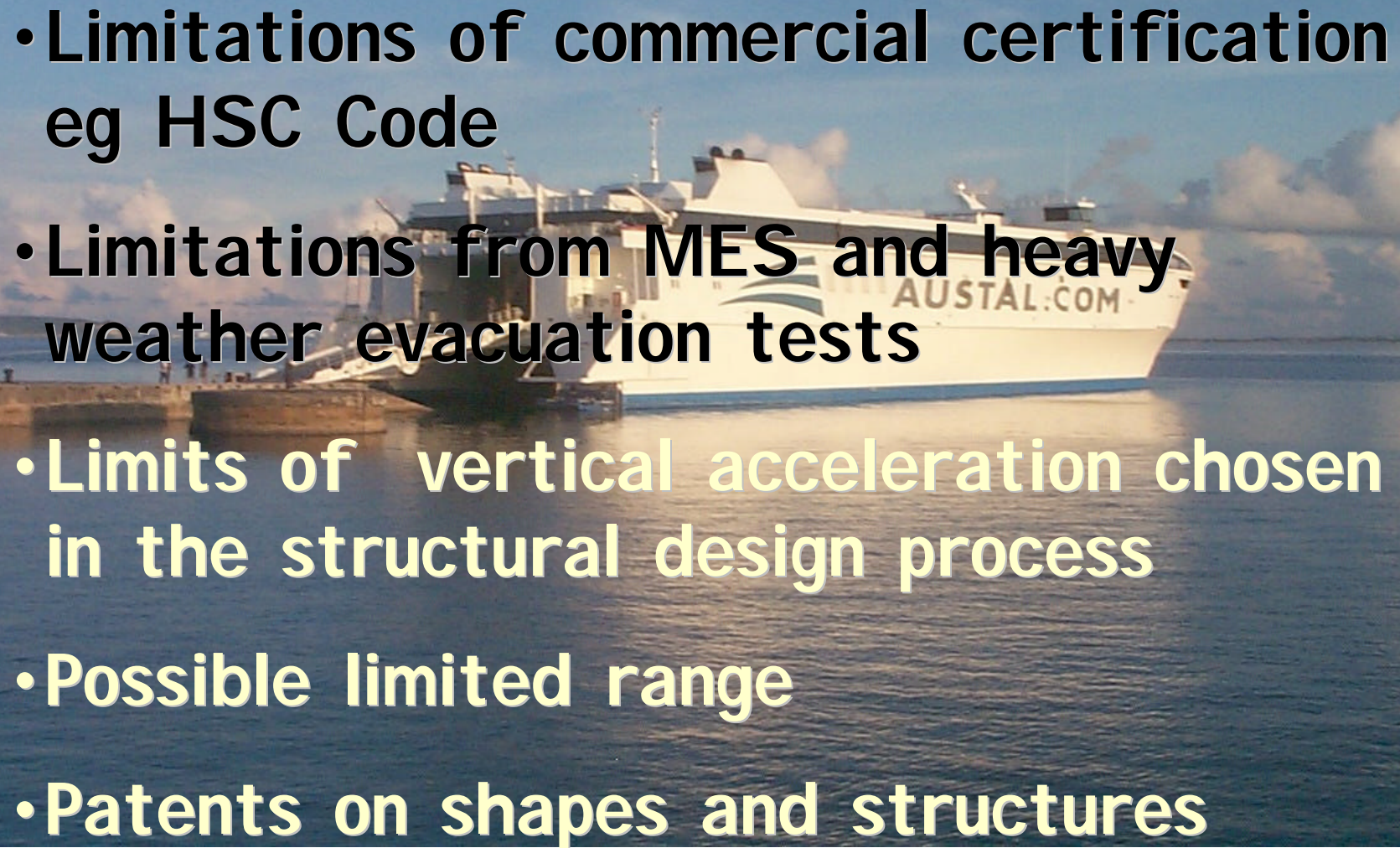
- Length
- Displacement
- Depth of water







Commercial v. Military conflicts

- Limitations of commercial certification eg HSC Code
 - Limitations from MES and heavy weather evacuation tests
 - Limits of vertical acceleration chosen in the structural design process
 - Possible limited range
 - Patents on shapes and structures
- 

Some commercial design benefits of multihulls

- Speed
- Redundancy
- Advantages of shallow draft
- Able to be beached
- Low wash
- Will have some stealth features



**Two views of a 10 m
prototype SES
designed and built
by Austal Ships**



