

Yachts and Superyachts

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Yachts and Superyachts: Contents

- Yachts, Superyachts and the Industry
- Owners - the Rich and Not Very Famous
- Style - Beauty is in the Eye of the Beholder...
- Engineering Challenges
- Yachts, Superyachts and Solent

Yachts, Superyachts and the Industry

Yacht?

- From the Dutch word “jacht”, meaning a vessel sailed for pleasure or to carry important people



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UK Marine Industry (Yachts and Workboats)

- Contributes direct and indirect revenues of over £3.2 billion and over £6.2 billion in gross value added to UK GDP
- 31600 jobs
- Circa £900m in exports in 2014/15
- 3.2 million UK adults took part in a sailing/watersports activity in 2015
- Over 1 million boats/watersports craft owned by UK households

How Popular is Sailing in the UK?

Round the Island Race

- 1,700 boats, 16,000 sailors
- Fourth largest participation sporting event in the UK after the London Marathon and the Great North and South Runs

www.roundtheislandrace.org

European Marine Industry (Yachts)

- Annual turnover of 20 billion Euros (2011)
- 280,000 jobs
- 36 million adults take part annually in a boating activity
- Over 6 million boats in European waters

How Popular is Sailing in Europe?

- **Vendee Globe Race**
 - 380,000 Spectators
 - 29 Competitors racing single-handed around the world
- **EDHEC Sailing Cup**
 - 160 Universities
 - 3000 Participants



Chinese Yacht Industry - 2011

- Approximately 300 pleasure boat builders, approximately 90 yacht builders
- Around 100 foreign yacht brands marketed
- Manufacturing costs 20%-30% cheaper than Europe (Luxury Tax applies...)

Chinese Yacht Industry - 2020 and beyond?

- Predicted to be 100,000 yachts by 2020
- \$8 billion market
- Predicted to be 163,000 yachts (under 8m in length) by 2030

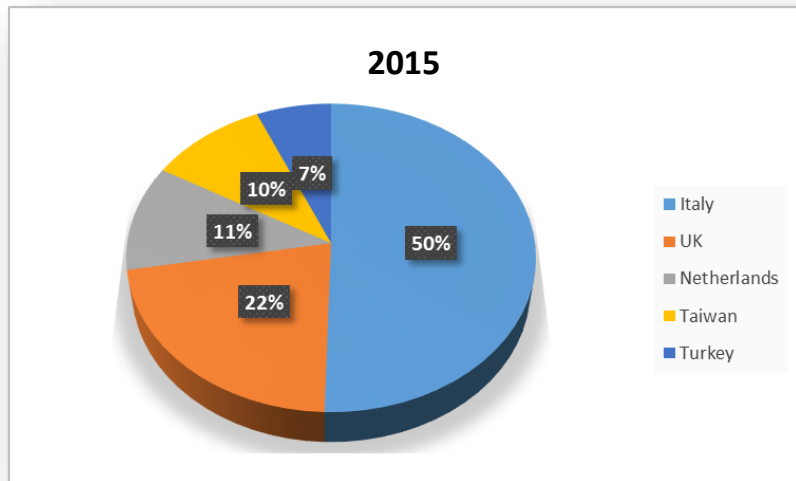
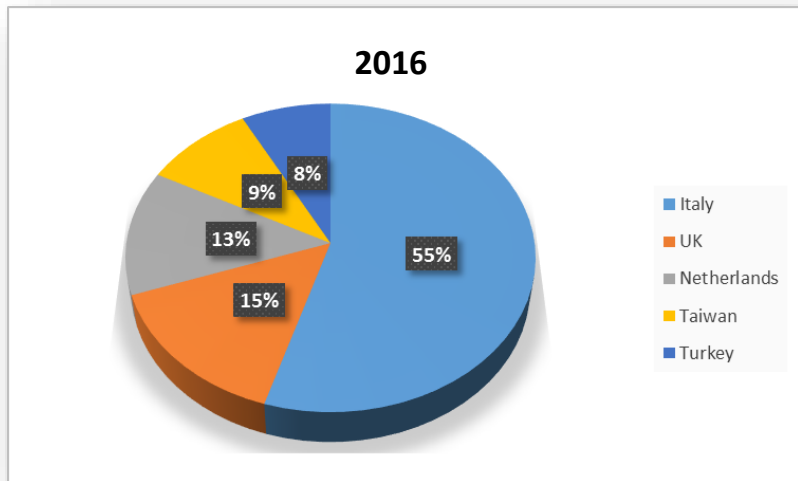
Superyachts



Source: Photo By G S Barkley. Used with permission.

- No consistent definition of what a “Superyacht” is
- Generally assumed to be a vessel approximately over 23-30m in length
- All aspects of the industry generate \$20 billion per annum globally
- Over 4400 superyachts currently afloat
- Far fewer than the number of potential customers - known as *Ultra High Net Worth* or UHNW individuals or households

Superyacht Launches by Country (23m and above)



UK Superyachts - Sunseeker (Dalian Wanda Group)



Source: Sunseeker 155 Yacht Brochure

Source: Sunseeker 131 Yacht
Brochure



UK Superyachts - Sunseeker



Source: Sunseeker 116 Yacht Brochure

Owners - the Rich and Not Very Famous

Ultra High Net Worth Individuals

- Generally considered to be someone with at least \$30 Million of investable assets
 - 100,000+ Individuals controlling approximately 35% of the wealth of \$ millionaires and richer individuals
 - US 50,767
 - Japan 19,916
 - China 15,681
 - Germany 14,481
 - UK 13,176
- Highest Growth:**
- 1. Europe**
 - 2. Asia**
 - 3. North America**

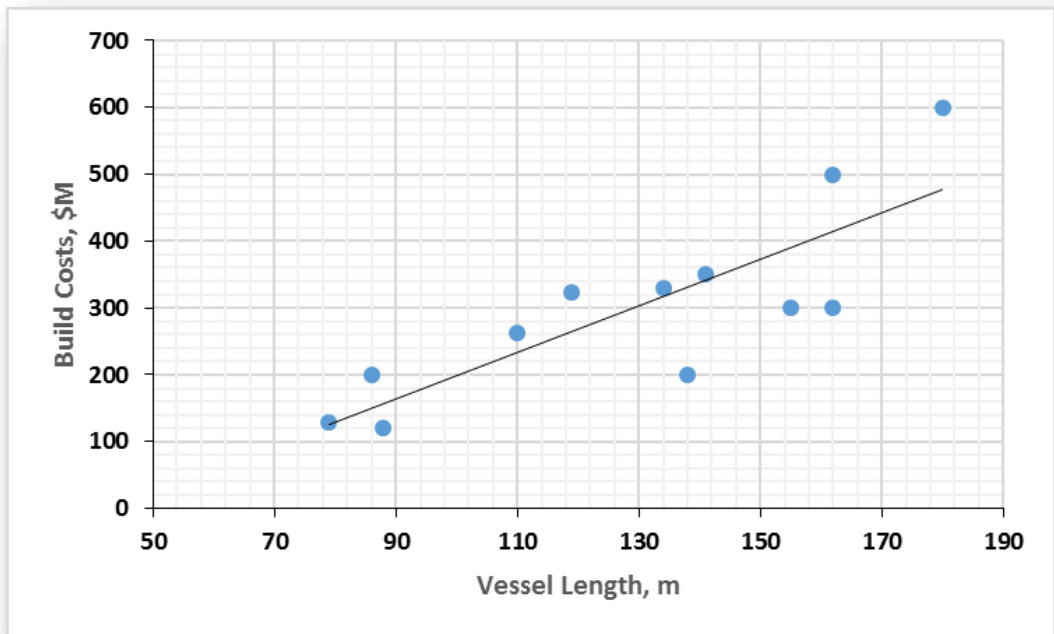
How Wealthy Do You Need To Be?

- Initial purchase cost - as much as you can spare!
- Annual running costs at least 10% of purchase cost
- Costs include:
 - Maintenance
 - Fuel
 - Crew
 - Insurance
 - Refits



Source: Photo By G S Barkley. Used with permission.

How Wealthy Do You Need To Be?



Source: Author's own research from various sources – values to be treated with extreme caution!

Possible Income

- Charter (limited to 12 passengers)
- “Savings” in holiday and hotel costs
- Investment/Tax advantages (not just the yacht)



Source: Photo By G S Barkley. Used with permission.

Style - Beauty is in the Eye of the Beholder...

Style: Tatoosh (2000)



Style: Octopus (2003)



Style: Ecstasea (2004)



Source: Author's own photo

Style: Regina d'Italia (2006)



Style: Dubai (2006)



Source: Imre Solt [GFDL (<http://www.gnu.org/copyleft/fdl.html>) or CC-BY-SA-3.0 (<http://creativecommons.org/licenses/by-sa/3.0/>)], via Wikimedia Commons

Style: Maltese Falcon (2006)



Source: lj16 from US - The Maltese Falcon, CC BY 2.0,
<https://commons.wikimedia.org/w/index.php?curid=49271767>



Source: David Orban from New York, United States - Maltese Falcon sailboat - 2, CC BY 2.0, <https://commons.wikimedia.org/w/index.php?curid=49273199>

Style: Nero (2007, built in China)



Source: Matthasaproblem - Own work, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=38778342>

Style: A (2008)



Source: Dstnfrey (Own work) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0>) or GFDL (<http://www.gnu.org/copyleft/fdl.html>)], via Wikimedia Commons

Style: Main (2008)



Style: Eclipse (2009)



Source: Keld Gydm [3] / Picasa Page [4] (Mr. Keld Gydm's Picasa Page [1] ([2])) [Attribution], via Wikimedia Commons

Style: Eclipse (2009)



Source: Author's own photo

Style: Palladium (2010)



Source: Daniel Wodischek - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=12014505>

Style: Seven Seas (2010)



Source: Von Adolfo59 – Own Work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=19236979>

Style: Serene (2011)



Style: Venus (2012)



Source: Mcampos, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=41975136>

Style: Adastral (2012, built in China)



Source: Photo By G S Barkley. Used with permission.

Style: Madame Gu (2013)



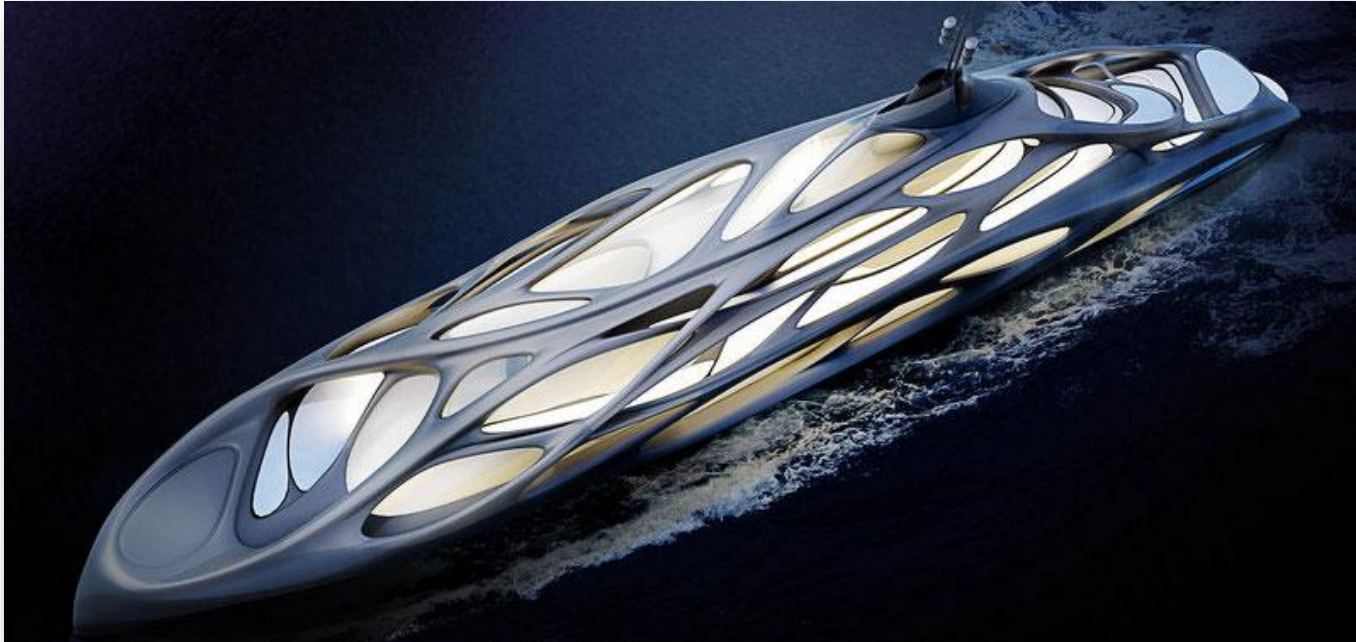
Source: Simpacker - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=26506000>

Style: Sailing Yacht A (2016)



Source: KarleHorn & Waldi - Own work, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=43804811>

Style: 2020?



Source: <http://www.pilotdesignco.com/the-design-concept-of-futuristic-superyachts/>

Style: Competition



Interiors



Interiors



Interiors



Source: Jean-Baptiste Soupeze, used with permission

Interiors: Serene
































Interiors: Serene



Source: Serene Charter Brochure www.YachtCharterFleet.com

Interiors: Serene

	Accessible		Air Conditioning		BBQ
	Beach Club		Beauty Room		Childrens Playroom
	Conference Room		Dance Floor		Deck Jacuzzi
	Diving		Elevator		Games Consoles
	Gym		Helipad		Inflatables
	Kayaking		Movie Theatre		Satcom
	Satellite TV		Sauna		Spa
	Stabilizers		Steam Room		Submarine
	Swimming Pool		Video-on-demand		Wakeboard
	Water Ski		Wi Fi		

Accessories...



Source: Photo By G S Barkley. Used with permission.

Accessories... Aston Martin



Source: <http://www.architecturaldigest.com/story/aston-martin-unveils-design-first-ever-superyacht>



Source: Markjholloway - Geneva Motor Show Previously published: No, CC BY-SA 3.0,
<https://en.wikipedia.org/w/index.php?curid=50227763>

Accessories... Mercedes Benz



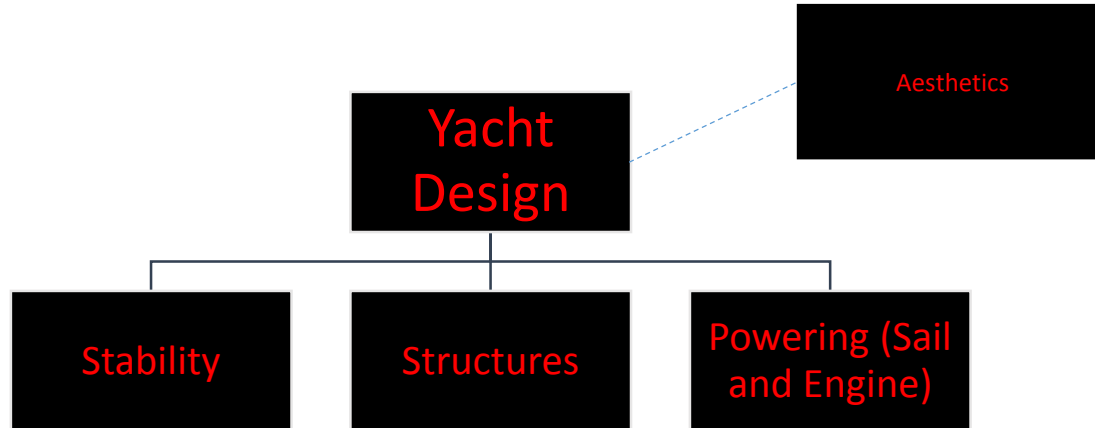
Source: <http://www.silverarrowsmarine.com/>



Source: M 93 - Own work, CC BY-SA 3.0 de, <https://commons.wikimedia.org/w/index.php?curid=16056654>

Engineering Challenges

The Challenge of Yacht Design



Stability

- Centre of Gravity
- Form stability
- Flooded Stability



Stability



Structures

- The First Challenge - identify the loads
 - **Local**
 - Engine and thrust
 - Rudder and keel
 - **Global**
 - Hydrostatic Pressure
 - Torsion
 - Rigging
 - Wave Loads

Structures

- The Second Challenge - How big is a wave?
 - Hurricane Ivan, 2004, Gulf of Mexico, 27 metres⁽¹⁾
 - Draupner wave, 1995, Norway, 25.6 metres⁽²⁾



Source: Indian Coastguard Service, Mumbai

(1) Anon, BBC News Website – Hurricane caused 'tallest wave', August 2005

(2) Haver, S., 1995, *A Possible Freak Wave Event Measured at the Draupner Jacket January 1 1995*, Statoil ASA

Structures

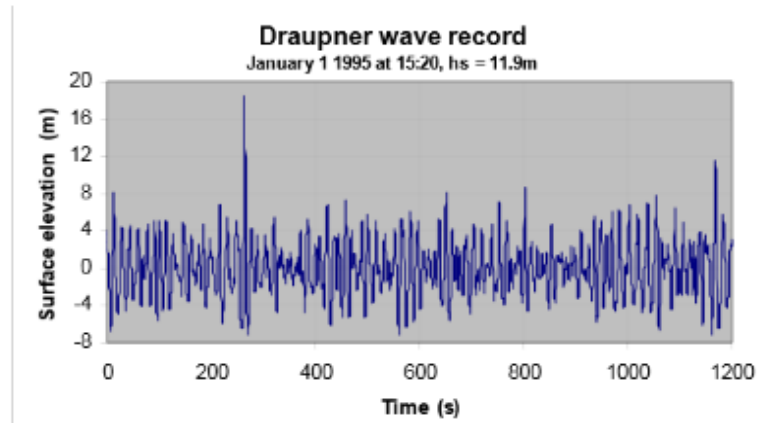


Fig. 4. Time history including an possible freak wave event

Structures



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Common Design Goals...

- Minimise Weight
 - Maximise Strength
 - Hydrodynamic Limitations
 - Structure designed by a Naval Architect
- Minimise Weight
 - Maximise Strength
 - Hydrodynamic Limitations
 - Structure designed by a Naval Architect!

Powering

- More propulsion power =
 - More capital cost
 - More fuel (hence costs)
 - More pollution (hence potential costs)
 - More noise (upset owner and guests)
- Therefore the hull and design must be as efficient as possible
 - Friction Drag
 - Wave Making Drag
 - Very complex problem!

Powering



Yachts, Superyachts and Solent

Solent's Unique Yacht Design History

1969-1990

Southampton Institute of Higher Education

3yr diplomas in yacht design and yacht manufacturing

1990-1999

Southampton Institute

3yr Honours Degree in Yacht Design and HND in Naval Architecture and Yacht Manufacturing

1999-2005

Southampton Institute

3yr Honours Degree in Yacht Design and 3yr Honours degree in Yacht Manufacturing & Surveying (1999)

2005-2013

Southampton Solent University

Both degrees revalidated – both BEng. YMS > YPS

2014-15

BEng Yacht & Powercraft Design

BEng Yacht Design & Production

2017

**MSc Superyacht
Design**

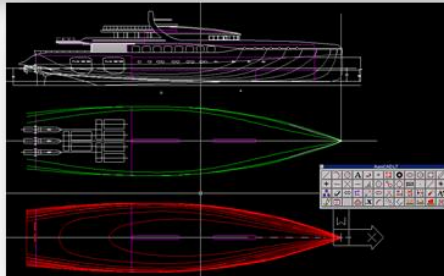
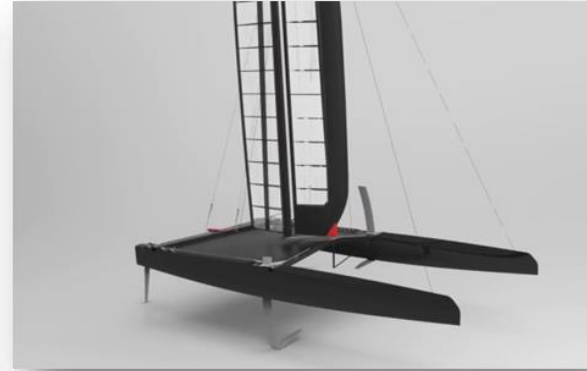
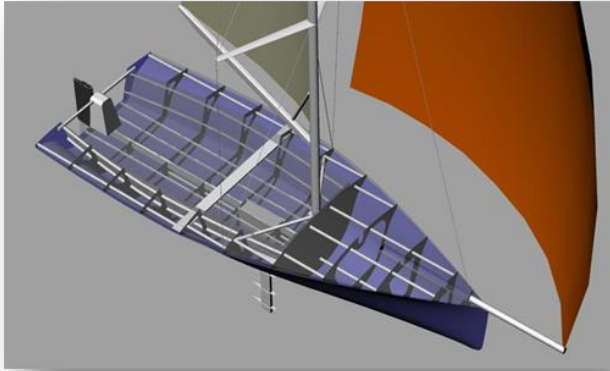
The Start of the First Year



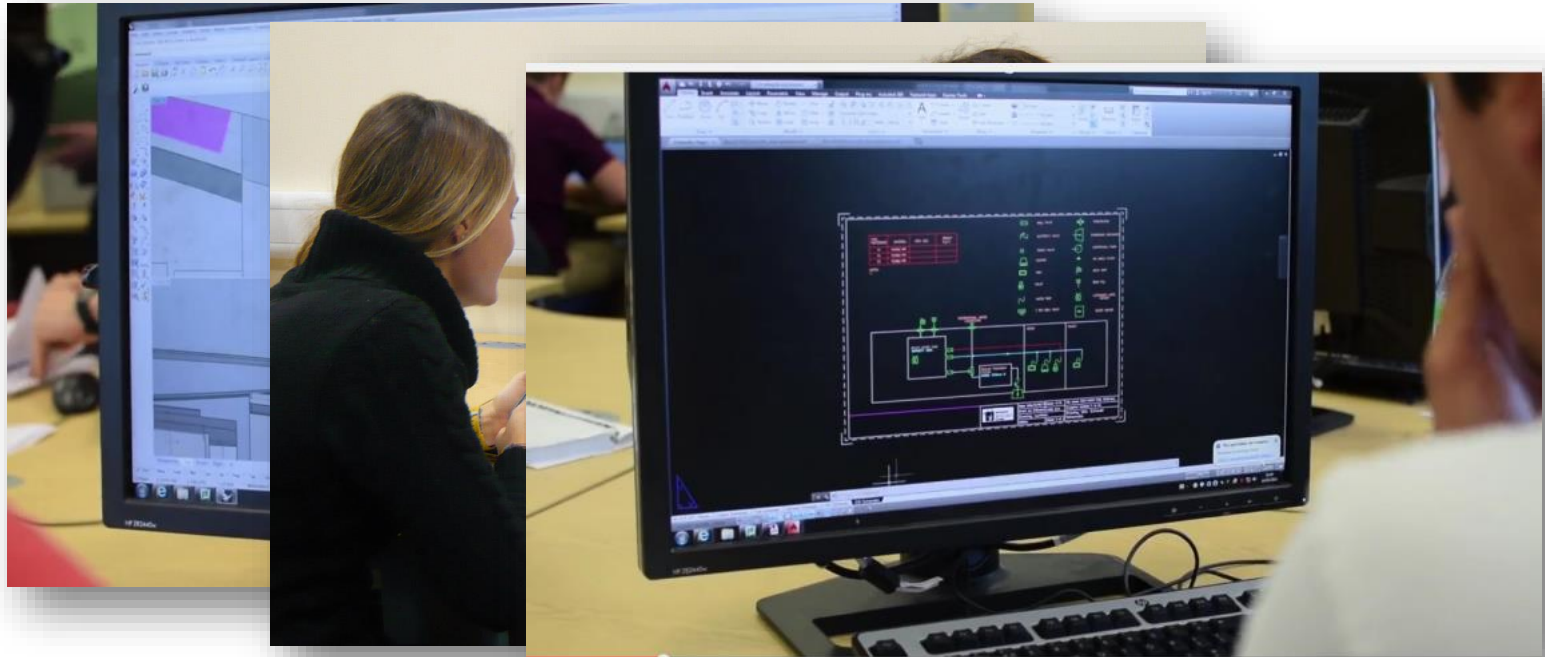
The End of the First Year



The End of the Third Year



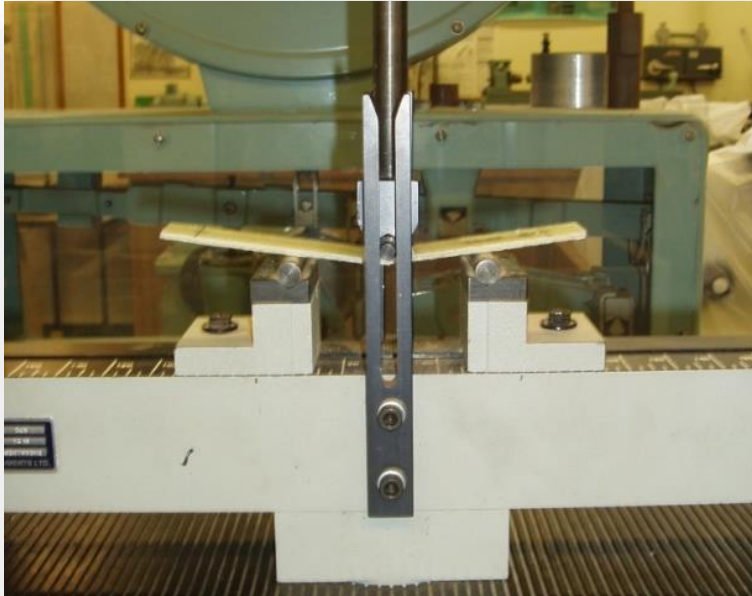
Facilities: Computer Aided Design



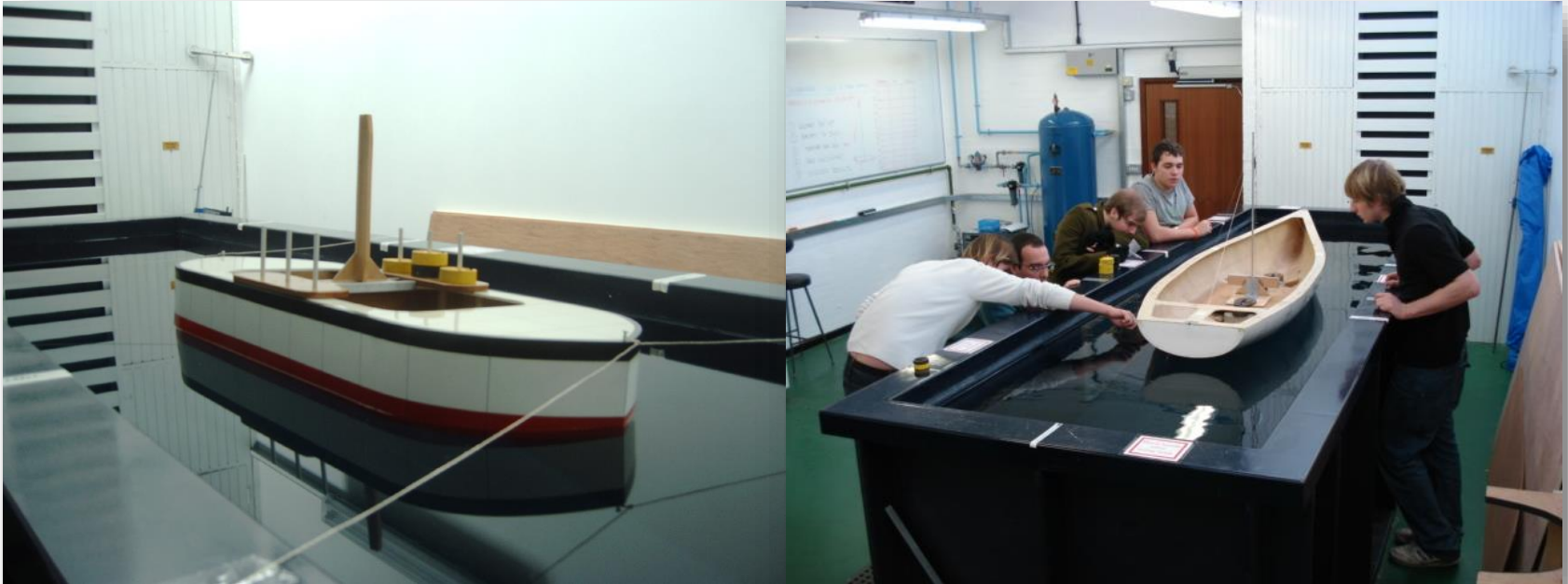
Facilities: Composite Workshop



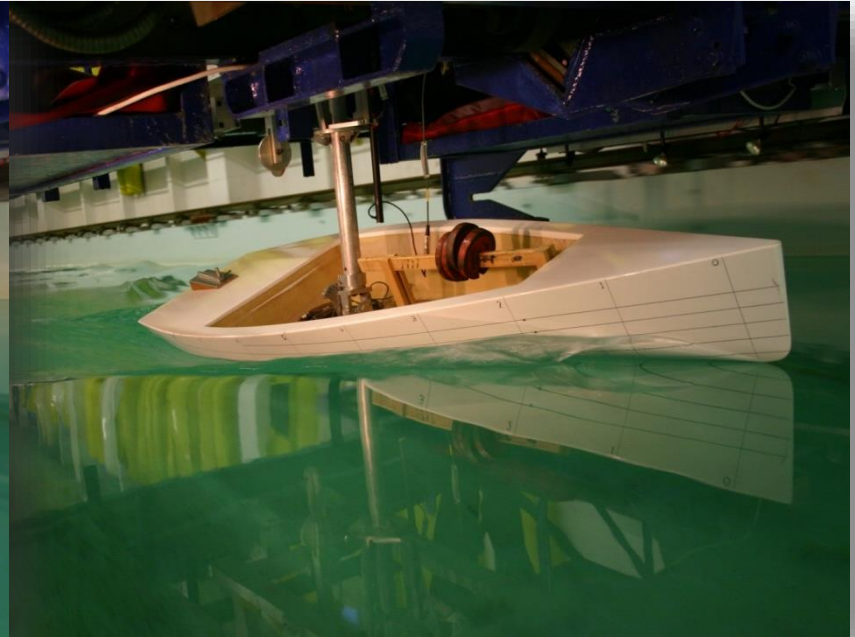
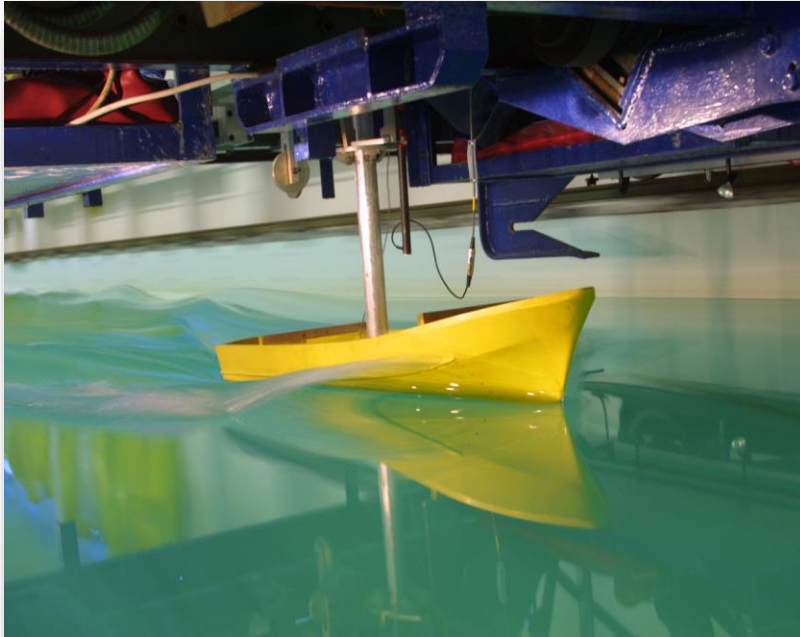
Facilities: Material Testing



Facilities: Stability Tank



Facilities: 60m Towing Tank



Example Graduates

- **Bill Dixon** - Dixon Yacht Design, www.dixonyachtdesign.com
- **Ed Dubois** - Dubois Naval Architects, www.duboisyachts.com
- **Jason Ker** - Ker Yacht Design, www.kerdesign.com
- **Juan Kouyoumdjian** - Juan Yacht Design, www.juanyachtdesign.com/index.html
- **Guillaume Verdier** - Guillaume Verdier Architecture Navale, <http://www.guillaumeverdier.com/en/>

Graduate's Work: Kokomo III



Graduate's Work: Mondango III



Graduate's Work: Clarity



The Future...

- MSc Superyacht Design
 - One year course specialising in Superyachts and extending the theory taught in the degree courses
 - Currently undergoing validation for 2017 delivery
- International Partnerships with China?

Thank You

- Any Questions?