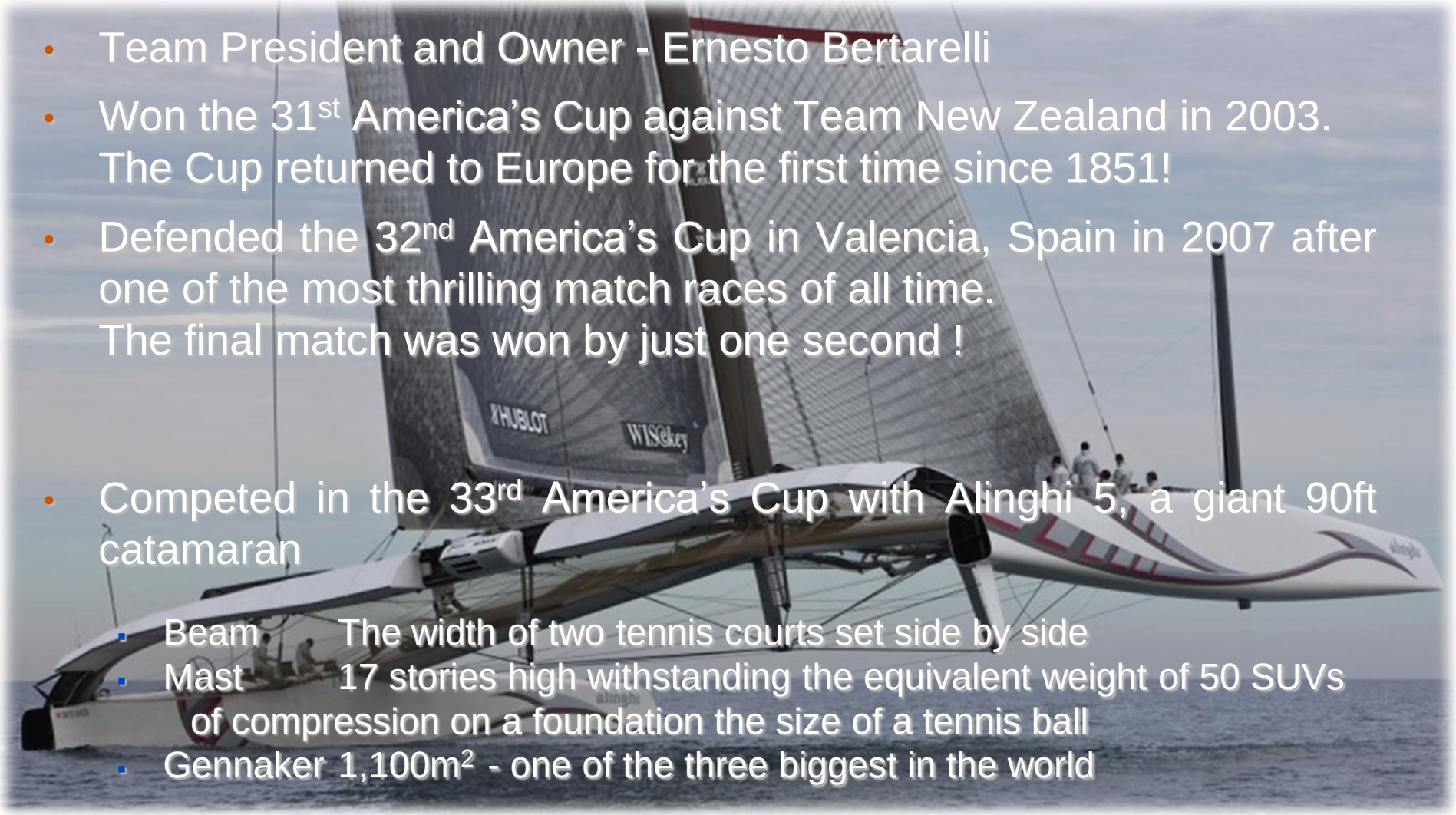
Case Study – Team Alinghi

- 31st America's Cup Winner 2003
- 32nd America's Cup Winner 2007
- 33rd America's Cup Defender 2010

Team Alinghi - History



- Team President and Owner - Ernesto Bertarelli
- Won the 31st America's Cup against Team New Zealand in 2003. The Cup returned to Europe for the first time since 1851!
- Defended the 32nd America's Cup in Valencia, Spain in 2007 after one of the most thrilling match races of all time.
  The final match was won by just one second !
- Competed in the 33rd America's Cup with Alinghi 5, a giant 90ft catamaran
  - Beam The width of two tennis courts set side by side
  - Mast 17 stories high withstanding the equivalent weight of 50 SUVs of compression on a foundation the size of a tennis ball
  - Gennaker 1,100m^2 - one of the three biggest in the world

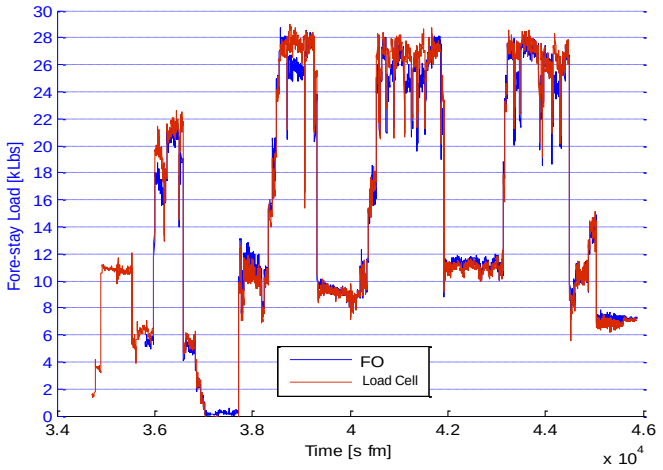
Team Alinghi – Overview

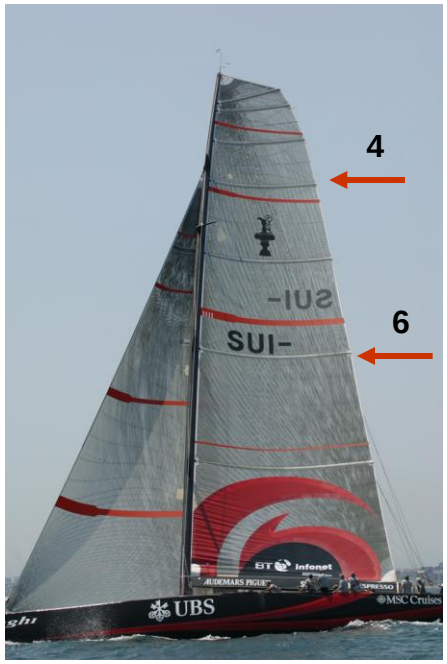
Aim	Monitor the structural behavior of critical components of the boat during sailing and racing. Use real-time structural and shape measurements for performance development and boat handling.
Location	Lausanne (Switzerland), Valencia (Spain)
Engineering	Design Coordinator: Grant Simmer Chief Engineer: Dirk Kramers Structural Engineer: Kurt Jordan Measurement Engineer: Daniele Costantini
Customer and System Integrator	alinghi
Date	2004-2010
Instrumentation	Customized Micron Optics Optical Sensing Interrogator
Sensors	Embedded and Bonded Strain sensors fabricated and installed by Team Alinghi
Project Scope	The initial scope was to validate the design and to monitor the dynamic load-cases applied to the composite structures. However, data soon became invaluable to crew and scope shifted to an on-board, real-time, monitoring system that was completely integrated with other on-board systems for testing, performance development and racing. Alinghi has now installed such systems on 7 boats and is planning to implement FBG sensing on future boats as well.

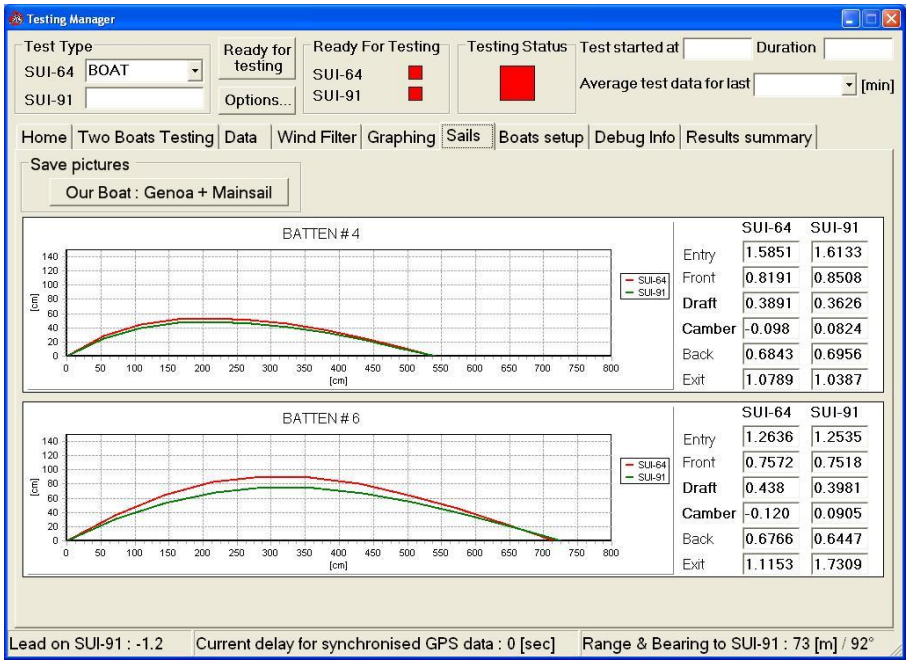
Team Alinghi – International America's Cup Class

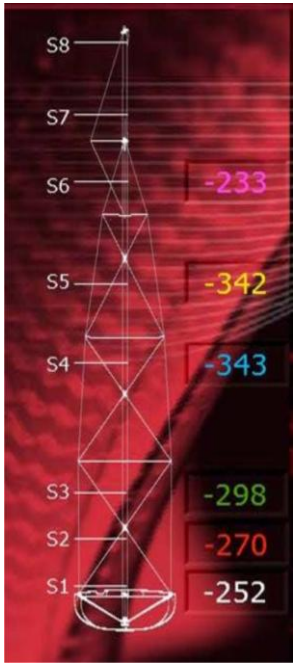
Applications

- Mast Strains
- Mast Twist & Bending
- Rudder Loads & Deflections
- CFRP Rigging Loads
- Hulls Strains
- Main-sail Shape





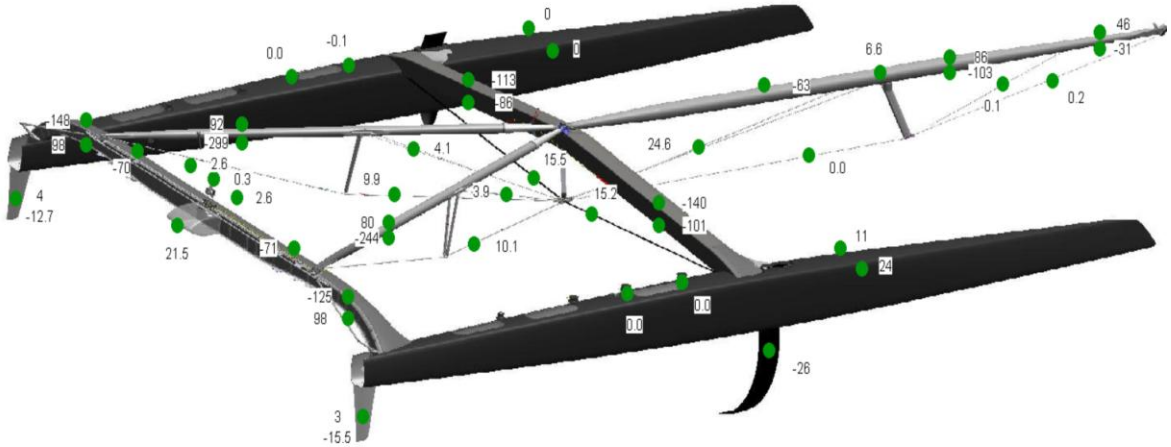


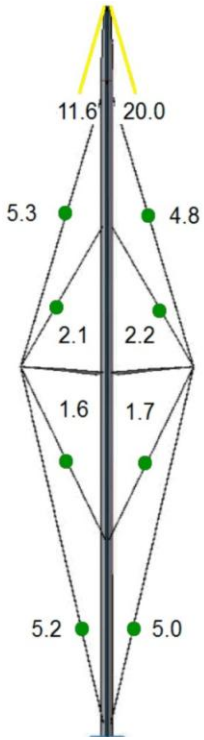


Team Alinghi – Alinghi 5 Multi-Hull

Applications

- CFRP Rigging Loads
- Spars Strains
- Rudders and Boards Loads
- Hull and Beams Strains





Team Alinghi

“Team Alinghi began working with Daniele Costantini and Micron Optics through its technical partnership with the EPFL.

The various applications of fibre optic sensor systems where an integral part of the structural and performance monitoring programmes leading to the victory of Alinghi in the America’s Cup in 2007.

After 2007 Daniele joined Alinghi and created an unprecedented structural monitoring system for the huge catamaran Alinghi5.

The accuracy and reliability of Daniele’s system and Micron Optics interrogators were critical to the operation and development of Alinghi5.”

Grant Simmer (CEO & Design Team Coordinator)

Team Alinghi - Summary

- Team Alinghi has successfully implemented optical sensing on their boats. The data has proven invaluable both for design validation, performance development and for real-time monitoring during racing.
- Micron Optics instrumentation and FBG embedded sensors have survived the almost daily sailing routine of a International America's Cup Class winner for over 5 years