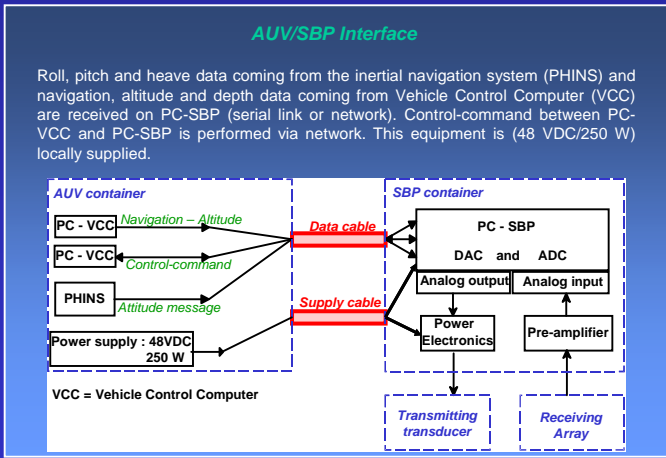
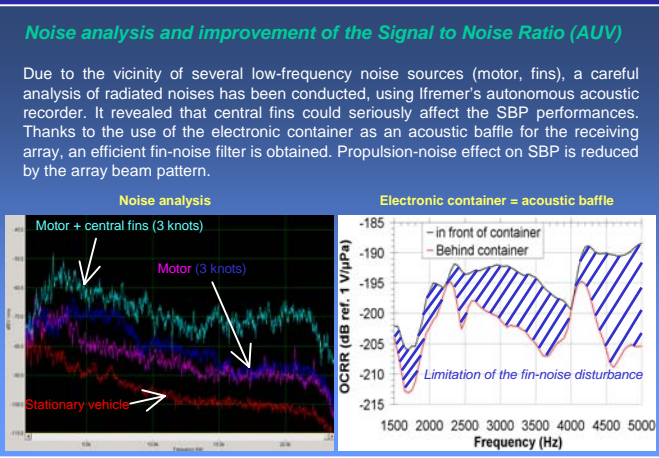
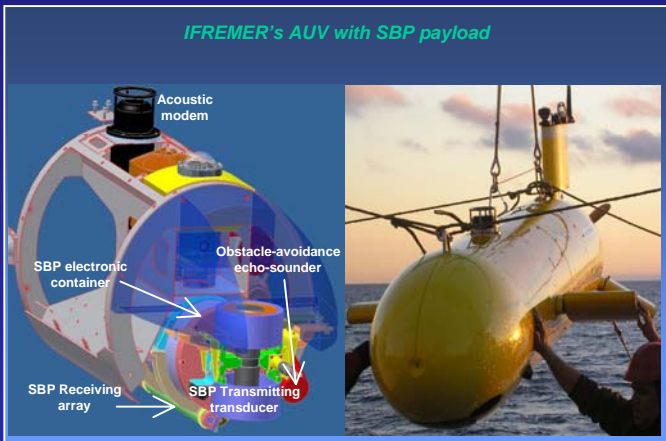
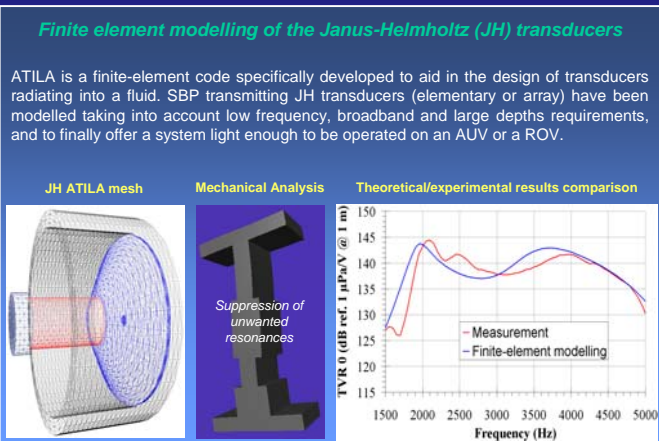


# Ultra-deep low-frequency sub-bottom profiler for AUV and ROV

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Acoustical techniques for ultra-deep sub-bottom exploration are still little investigated. IXSEA and IFREMER have launched in 2006 the development of a new deep-sea low-frequency sub-bottom profiler (SBP), working up to 6000 m depth. Based on the Janus-Helmholtz broadband technology, two acoustic sources have been modelled, built and characterized in-tank and at-sea : a single transducer, and a three-transducer array. In both cases, vertical resolution is better than 20 cm. Power electronics and impedance matching unit have been specifically optimised to deliver a sound level of 190 dB (ref. 1µPa @ 1m), compatible with a 50 m penetration. The receiver is a three-hydrophone array with a loss of sensitivity lower than 1 dB between 0 and 600 bar.



### Electro-acoustic characteristics & performances

**Frequency band :**

- [1,8, 6,2 kHz] (single transducer)
- [2, 8 kHz] (three-transducer array)

**Sound Level :**

- ~ 190 dB (ref. 1 µPa @ 1 m)

**Power amplifier :**

- Pulse Width Modulation (PWM)
- Max. power : 1 kVA
- Efficiency : > 80 %
- Harmonic distortion : < 3 %
- Duty cycle : < 20 %

**Signal length :** 20 ms < T < 50 ms

**Vertical resolution :** ~ 20 cm

**Penetration :** 50 m typical

