seanergy
17›18 June, 2025
Paris • France

Poster n°17

Remote Real-Time Monitoring Sensor for Marine Growth Without Human Intervention

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Context and objectives

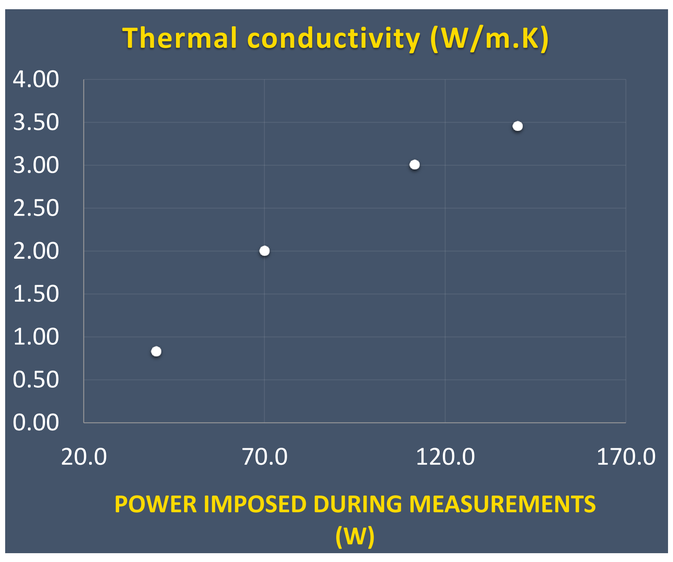
Marine Growth is The **Hidden Threat** that increases weight, hydrodynamic drag and accelerates corrosion.

These effects **reduce the reliability and life span.**

Current solutions (ROVs, divers) **lack real-time data** and are **highly limited by weather conditions**.

This project delivers a **real-time monitoring solution** that:
- **Eliminates** the need for **human intervention**,
- **Enhances safety** for personnel and assets,
- Enables **continuous data collection (density and thick.),**
- Allows **timely intervention** to **reduce maintenance costs**,
- **Reduces CO_2 emissions** linked to inspection activities.

Natural Colonisation of mussels within 2 years



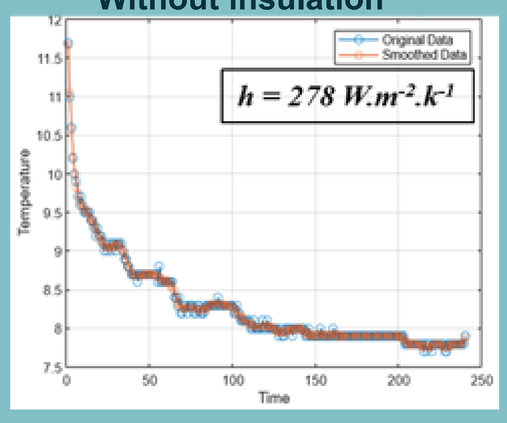
Patented innovative sensor: autonomous, real-time, and remotely operated

Test of the sensor in a real environment, in the sea at La Turballe West of France.

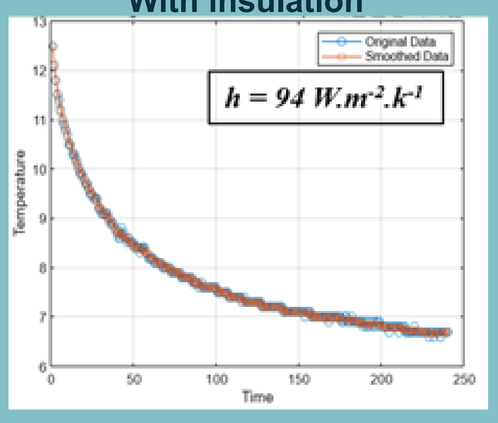
Foam insulation (to simulate mussels growth) on submarine cable

Results

Without insulation



With insulation



Heat transfer coefficient reduced by a factor of 3 !

Sensor tested on real Mussels

- **Heat transfer coefficient reduced by a factor of 3 for with and without colonization.**
- **Thickness of mussels estimated is 110 mm.**

Conclusion

- **A patented, autonomous, real-time, and remotely operated sensor has been developed to monitor marine growth.**
- **Prototype tested in laboratory – Mid 2024**
- **Validated in real conditions – January 2025**
- **Technology Readiness Level (TRL): 6/9**

Perspective **Install the sensor on a real plateform to achieve TRL 9/9**