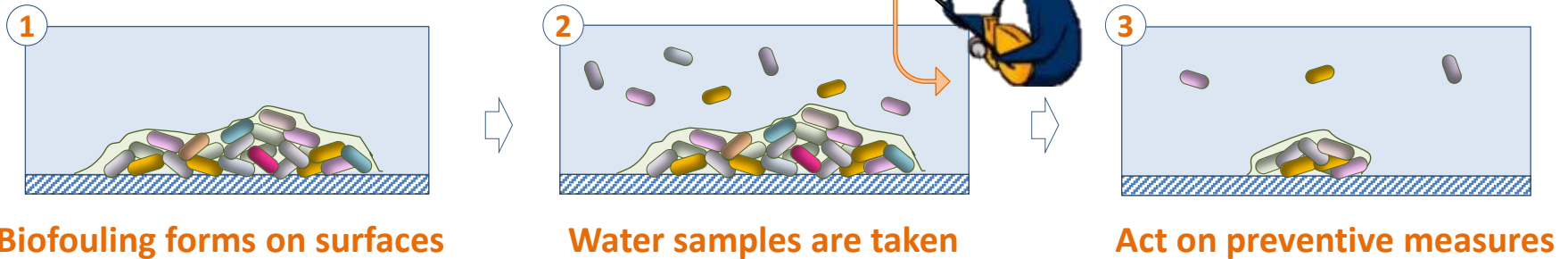


DSS: Monitoring Biofouling Tendency on the way to *Legionella* Prevention

Ana Pereira, Jorge Martins

4th ESGLI Conference, 22 - 23 September 2016, Amsterdam, Netherlands

Biofouling vs Traditional Cooling Water Management

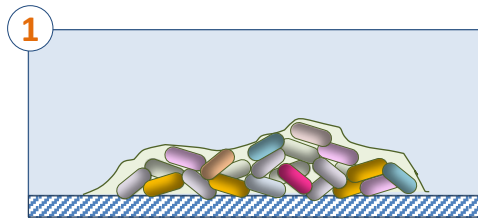


↓
Biofouling is a host for
Legionella

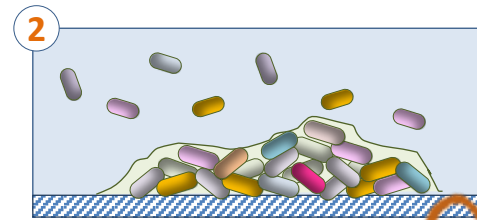
↓
Looking to the water

↓
**The water is not representative of what
happens at the surface**

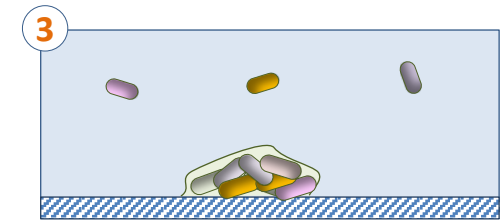
Biofouling vs Traditional Cooling Water Management



Biofouling forms on surfaces



Water samples are taken



Act on preventive measures



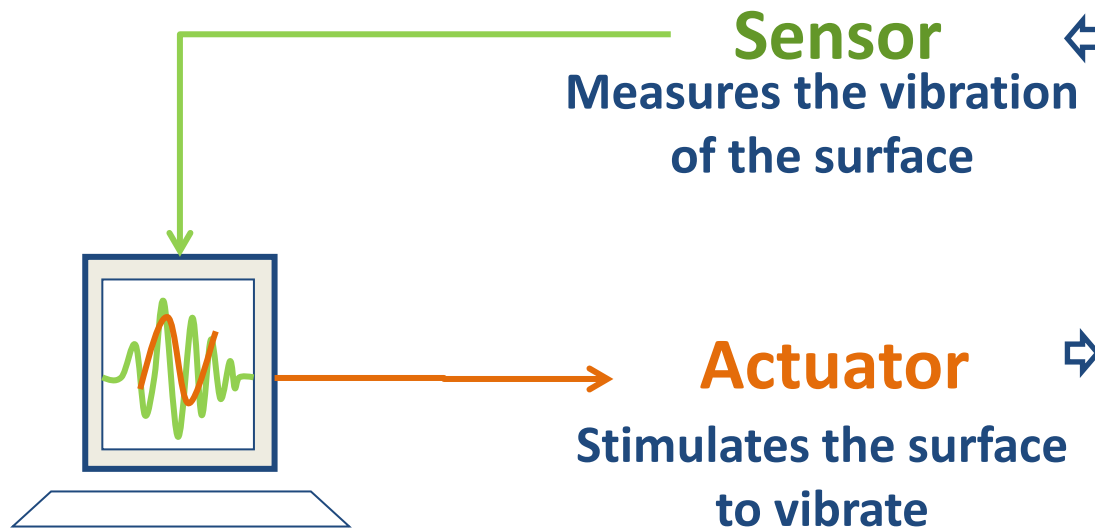
Looking to the Water + Feeling the Surface

DSS

Fouling and Cleaning Monitoring Tool

Introducing DSS – Fouling and Cleaning Monitoring Tool

Let's Consider

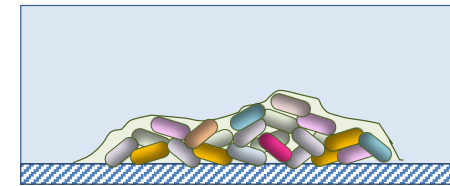
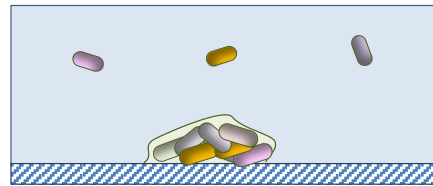
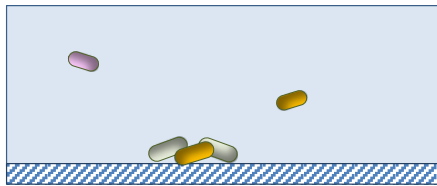


Watching for...

...the acoustic wave propagated along the monitored surface
(changes according to the deposit-surface (inner) interactions)

DSS

Follow the interactions that occur on the inner surface of the monitored tubing



- Different interactions on the inner surface
 - Vibration propagation is different
 - Different Output
 - Information about the biofouling tendency of the system



Case-Study

- Food Industry Cooling Water System
- System with historical *Legionella* positivities
- DSS is placed in by-pass of the main system (water from the Cooling Tower return)

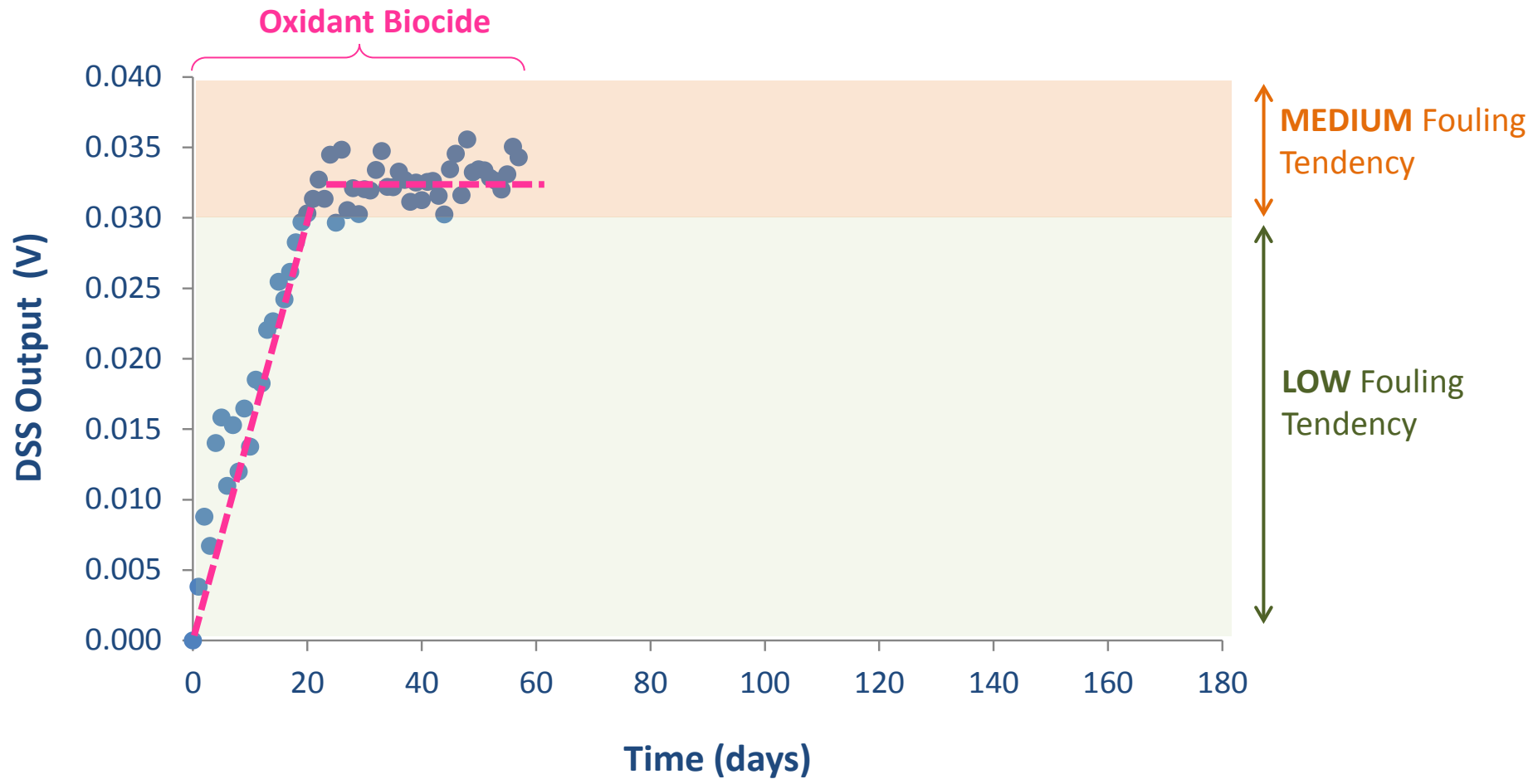
Working Plan

Assess the fouling tendency of the system with DSS

1. Establish the fouling tendency (without acting on the physico-chemical counter-measures);
2. Optimize the preventive counter-measures and evaluate their efficacy
3. Evaluate the *Legionella spp.* and *pneumophila* 2 times/ month

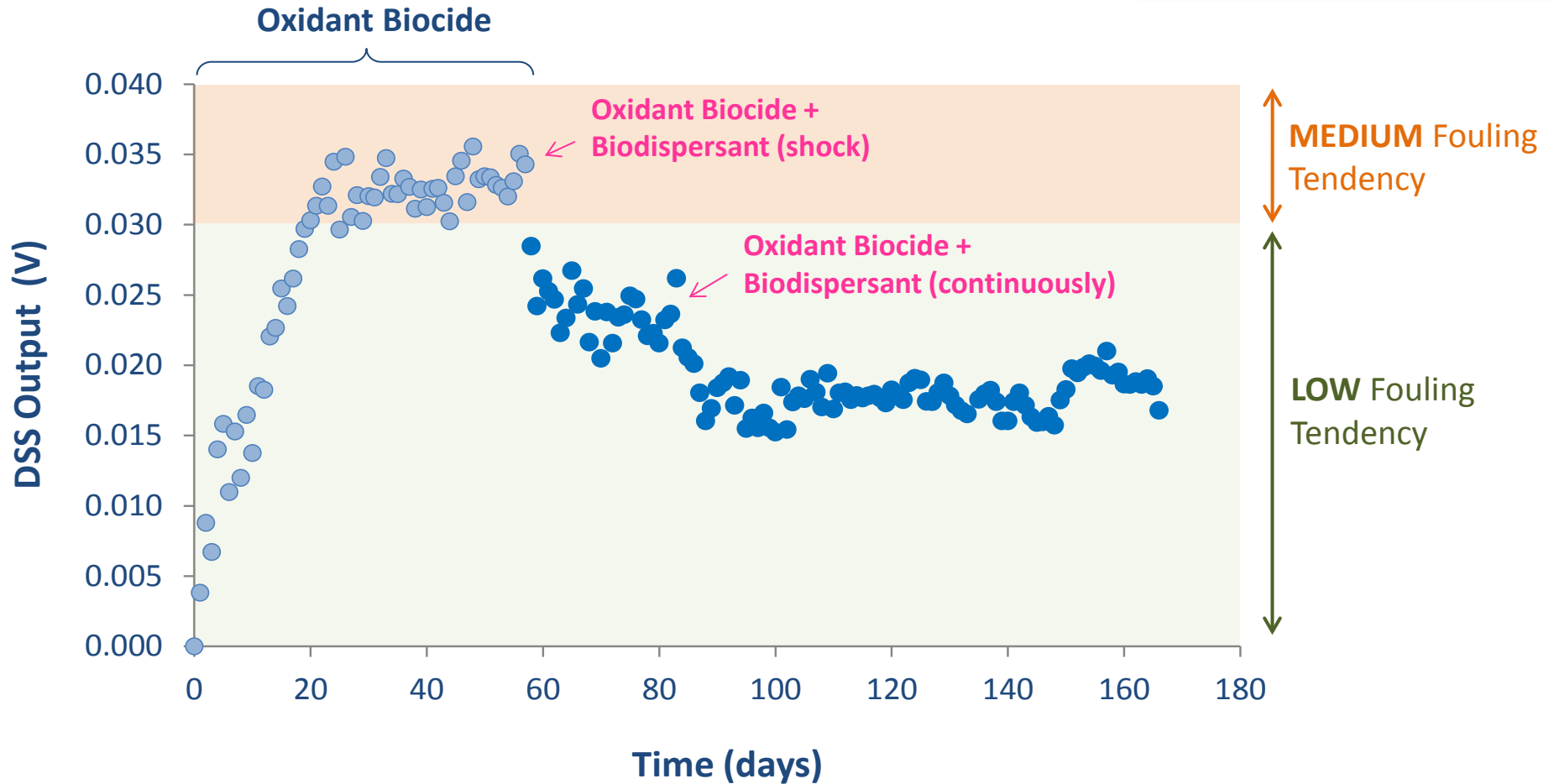


Without Acting on preventive measures



- Increasing slope is very pronounced
- Plateau relies on 'MEDIUM Fouling Tendency' Threshold

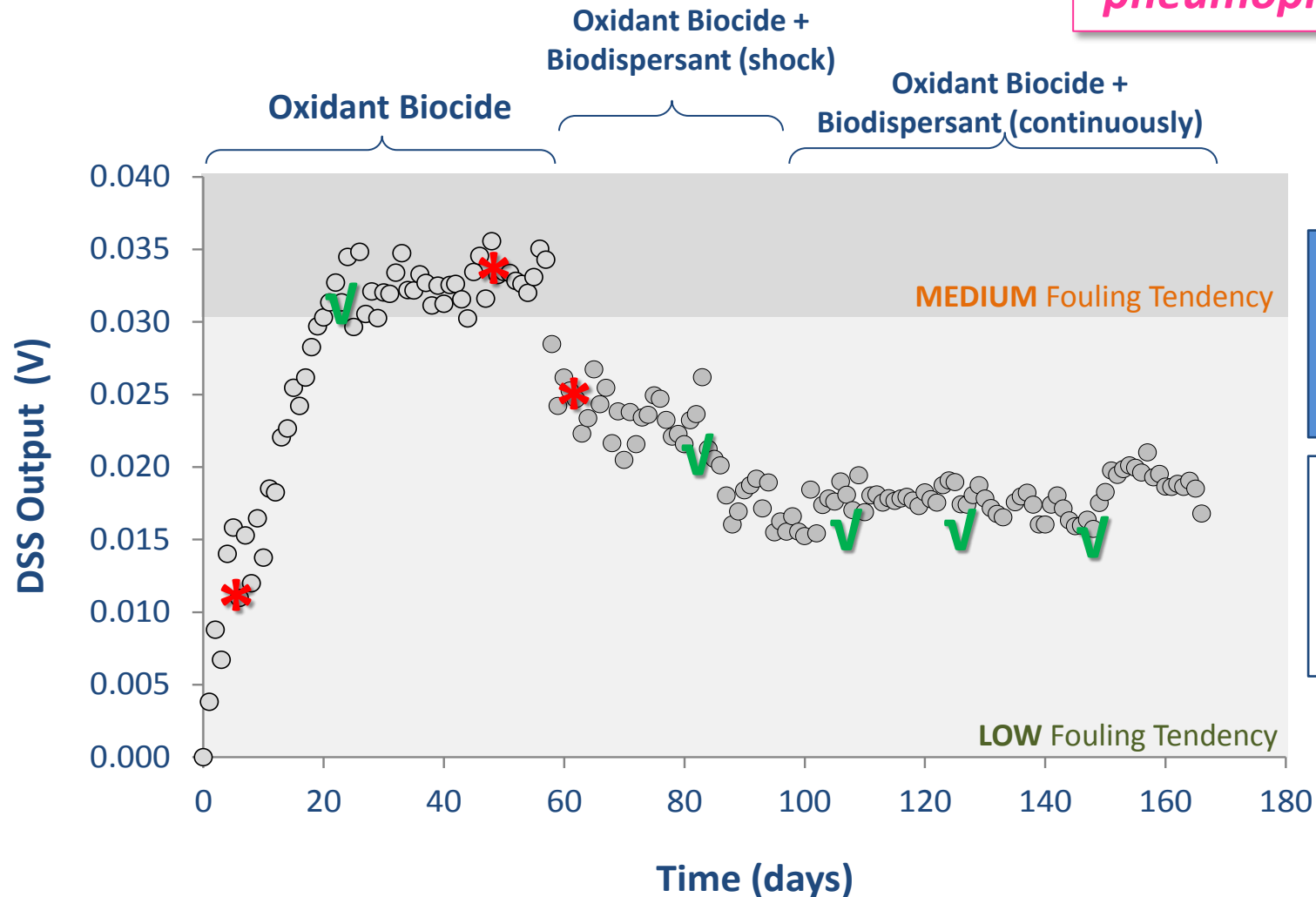
Acting on preventive measures



The introduction of biodispersant decreased significantly the DSS output, to a 'Low Fouling Tendency'

Fouling Tendency vs *Legionella* positivities

Legionella spp. & *pneumophila* positivities



Legionella was analyzed 2 times/month

- * Positive for *spp* & *pneumophila*
- ✓ No *Legionella* spp

The change on the preventive measures, led:

→ to a decrease on the system Fouling Tendency

→ no *Legionella* was found in the routine analysis

Wrapping-up

Assessing Biofouling
in Water systems



Timely and informed
Pro-active Management
of the systems



Mitigate
Legionella risk

DSS vs *Legionella* Prevention

- assuming that *Legionella* proliferation is directly conditioned by the biofouling existence
- pro-active assessment and mitigation of such biofouling layers might contribute to the mitigation of the risk of *Legionella* proliferation



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ADDING VALUE TO YOUR WATER