SonoSteam®

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SonoSteam, FORCE Technology

Factory Trials and Evaluations of Steam-Ultrasound (SonoSteam®) Decontamination of Broilers.
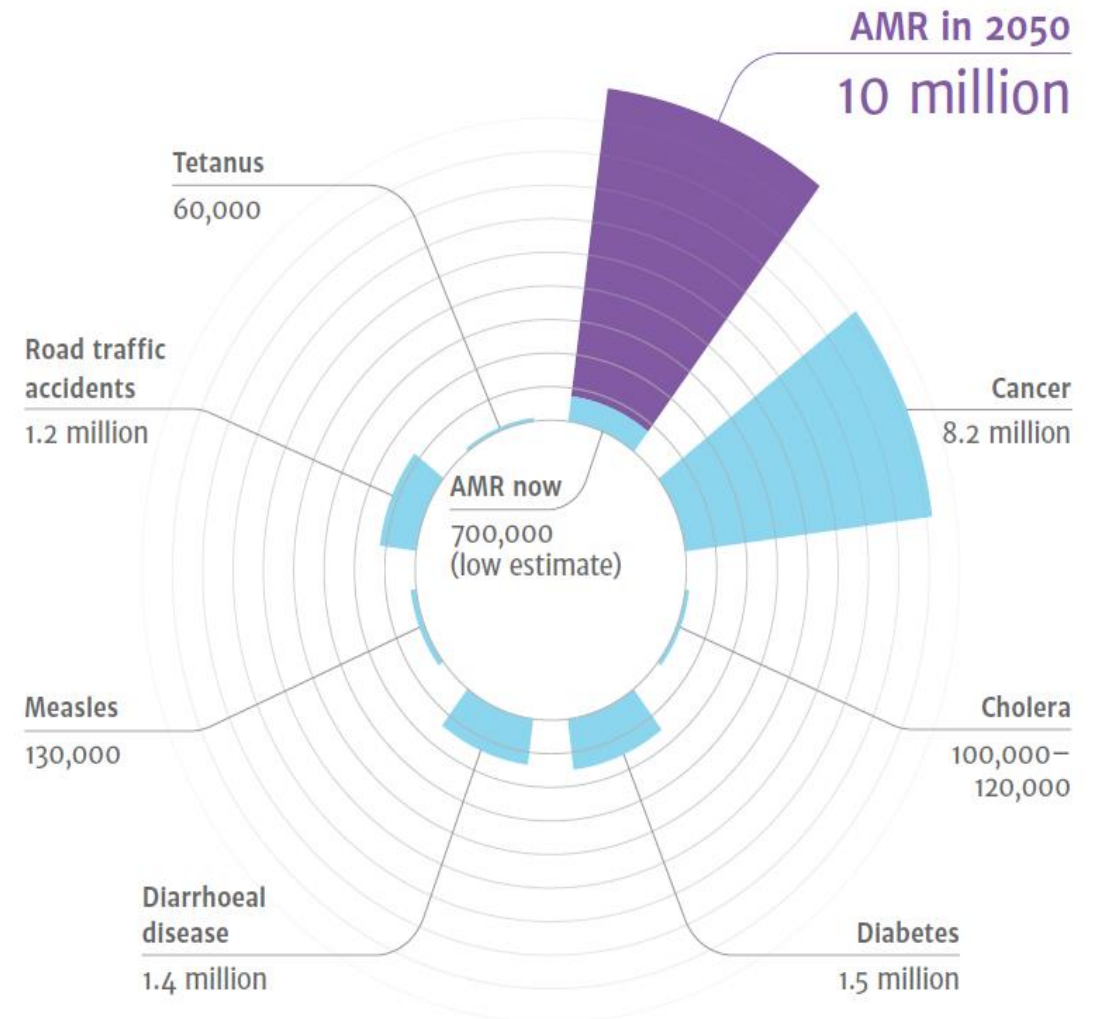
Future Foodsafety Situation

Superbugs identified in poultry!

AMR in 2050
10 million

Tetanus
60,000

Road traffic accidents
1.2 million

AMR now
700,000
(low estimate)

Cancer
8.2 million

Measles
130,000

Cholera
100,000–120,000

Diarrhoeal disease
1.4 million

Diabetes
1.5 million

What is SonoSteam?

... and how does it work?

What is SonoSteam?

SonoSteam nozzles

- Combined effect of steam and ultrasound
- Ultrasound intensified the treatment.

The combined effect offers:

- **Few seconds of treatment**

- **No chemicals**

- **No adaptive resistance of microorganisms**

- **Effective against bacteria, viruses, fungi and yeast**

- **Protects the food product from thermal damages**

Principle of work for SonoSteam®

Why is the combined use more effective than steam alone?

Ultra Sound

Intensified molecular oscillations

Microorganisms
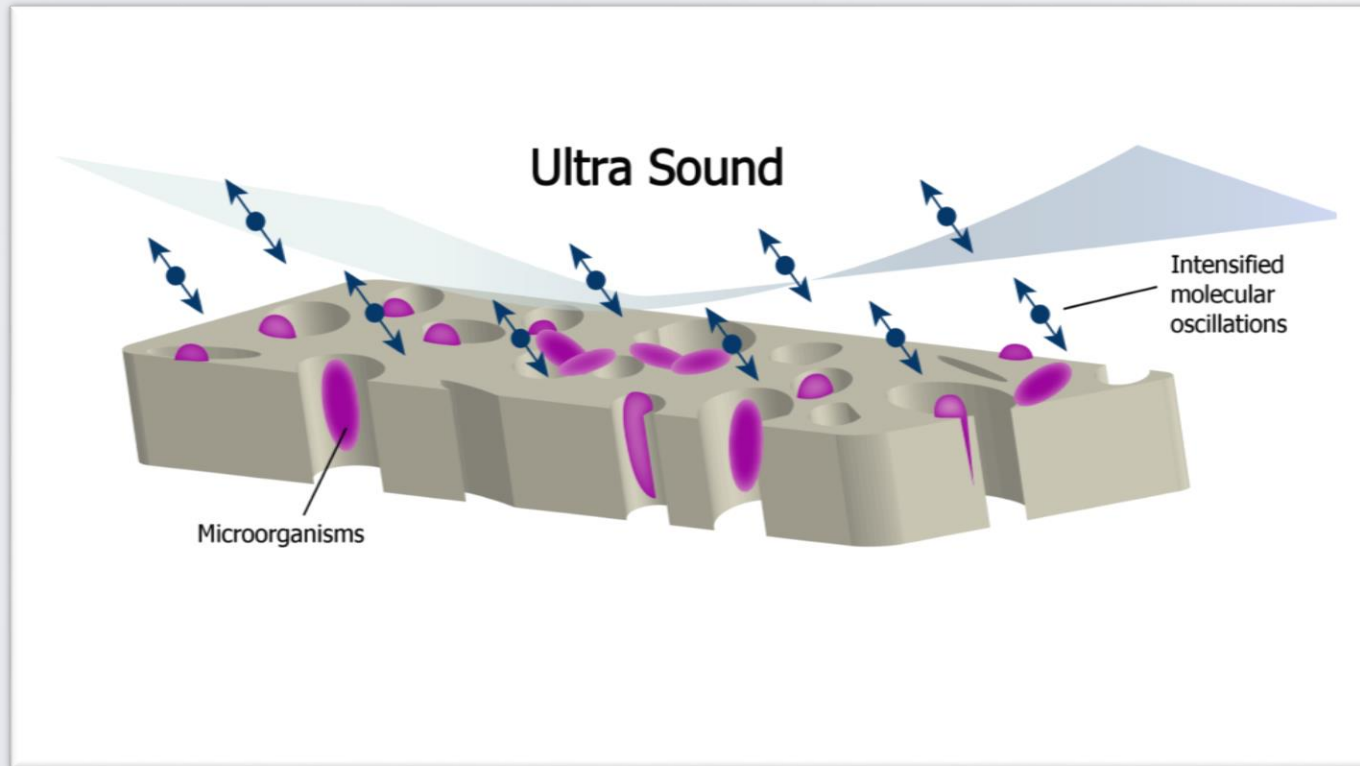
The Laminar Layer

The ultrasound sets the air of the laminar zone in a state with intensified molecular oscillations. This results in a destruction of the laminar boundary layer.

**Destruction of a laminar boundary layer
by ultrasound**

Industrial Application

- Full scale application
- 6000 -14.000 birds/h
- First installation was in 2014
- In total of 5 installations exist today
- Three different slaughterhouses
- Ongoing trials every week since 2014
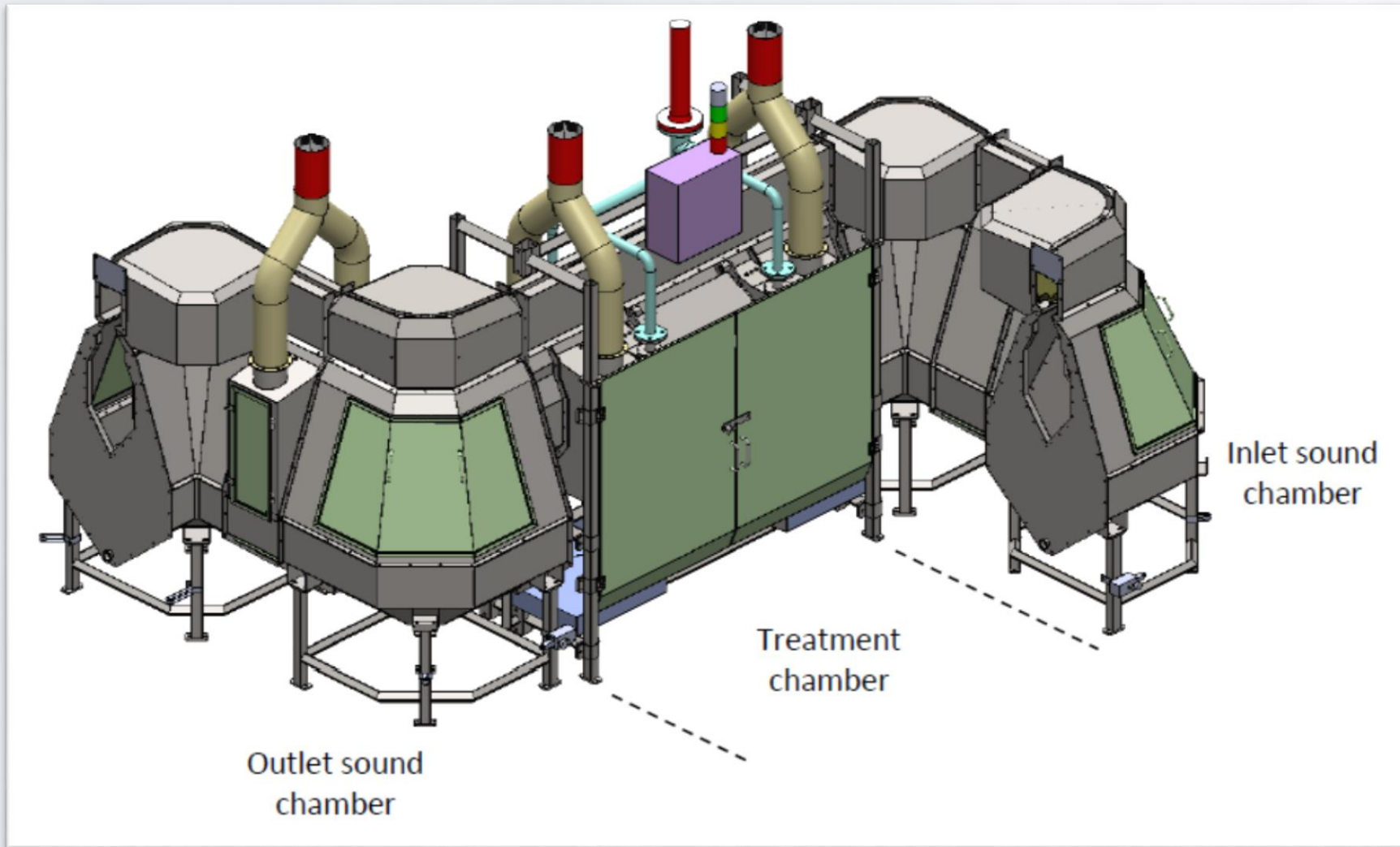- Ongoing optimization and close cooperation with the users

Process Chamber

SonoSteam Nozzles

Full-Scale Application for Broiler Disinfection

IA Poultry II

Inlet sound chamber

Treatment chamber

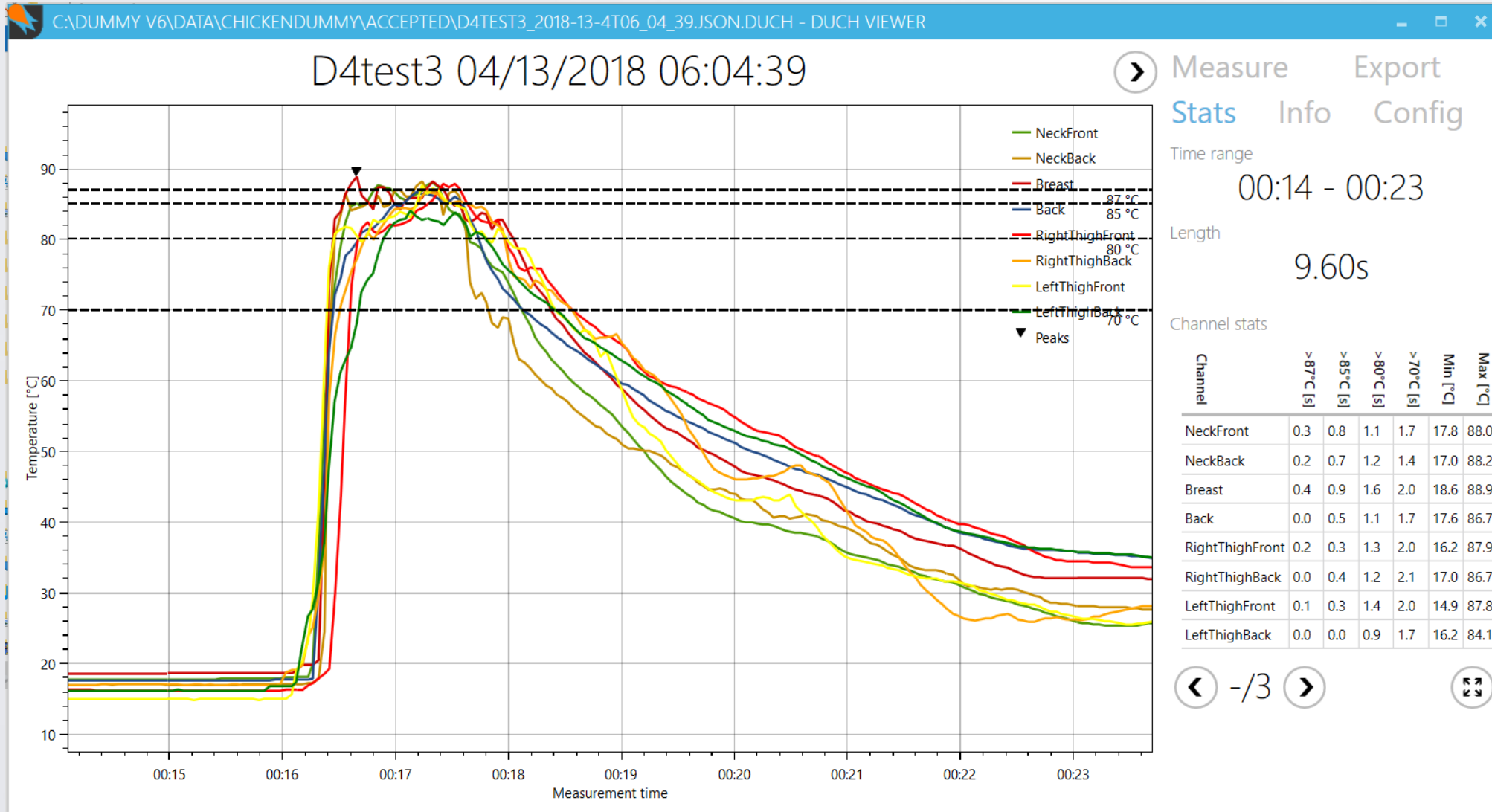Outlet sound chamber

Process Control and Adjustments
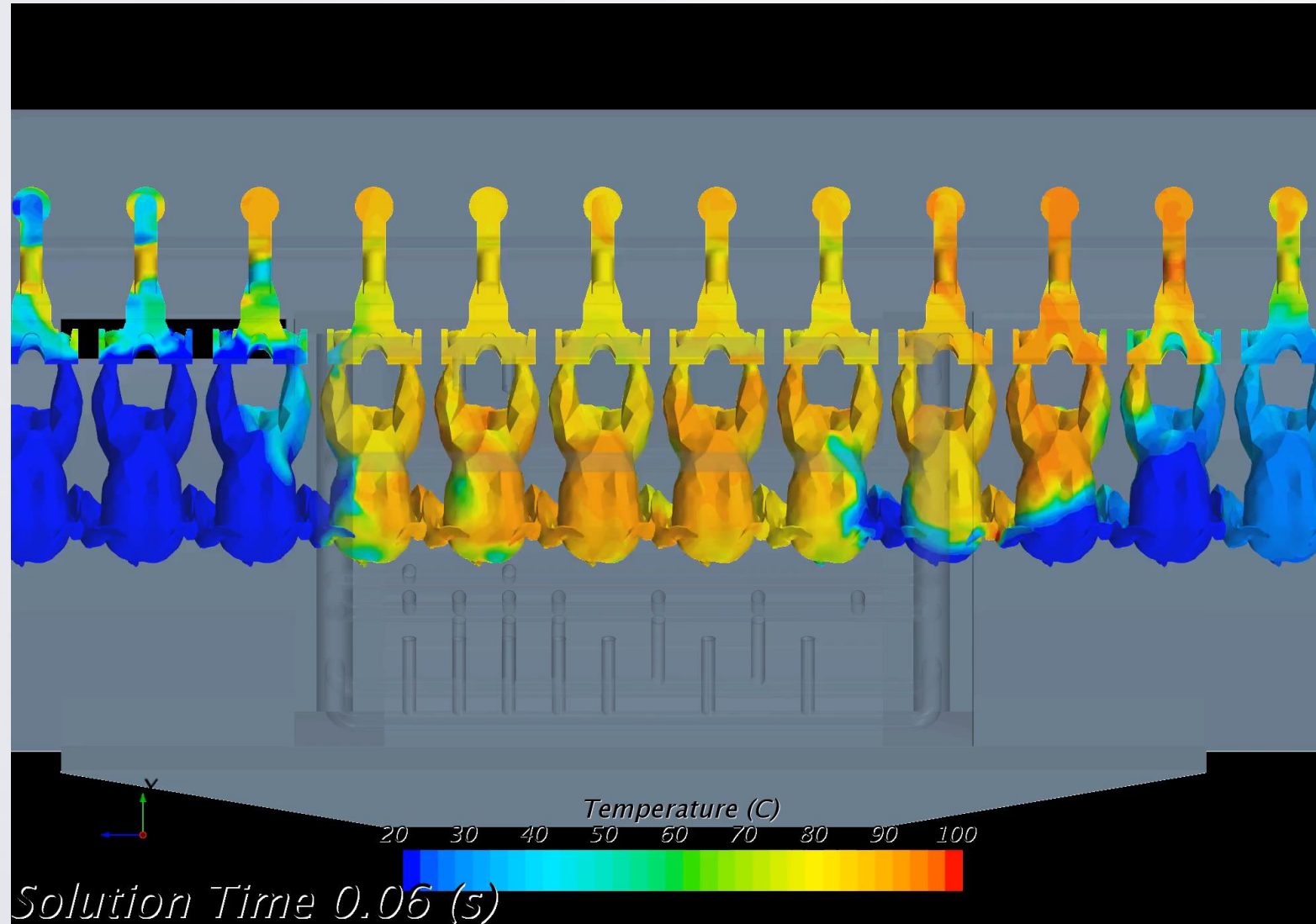
The Chicken Dummy – aTool to Test/Optimize Process

The Dummy Chicken – a Tool to Test/Optimize Process

Dummy Chicken Temp. Profiles

CFD Simulation of Flow and Temperatures

Temperature (C)

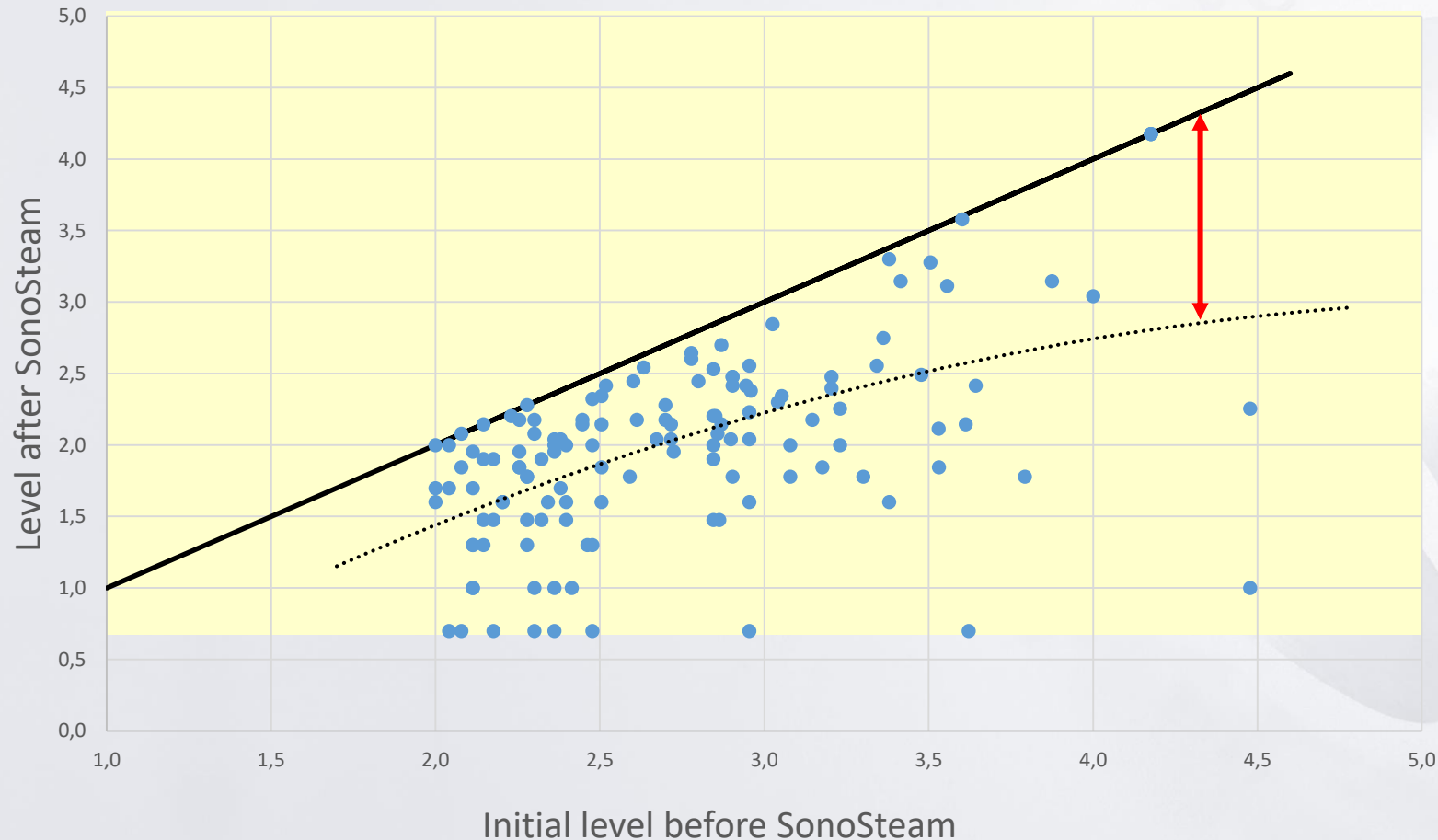20   30   40   50   60   70   80   90   100

Solution Time 0.06 (s)

Factory Results

Inline Data from IA Poultry
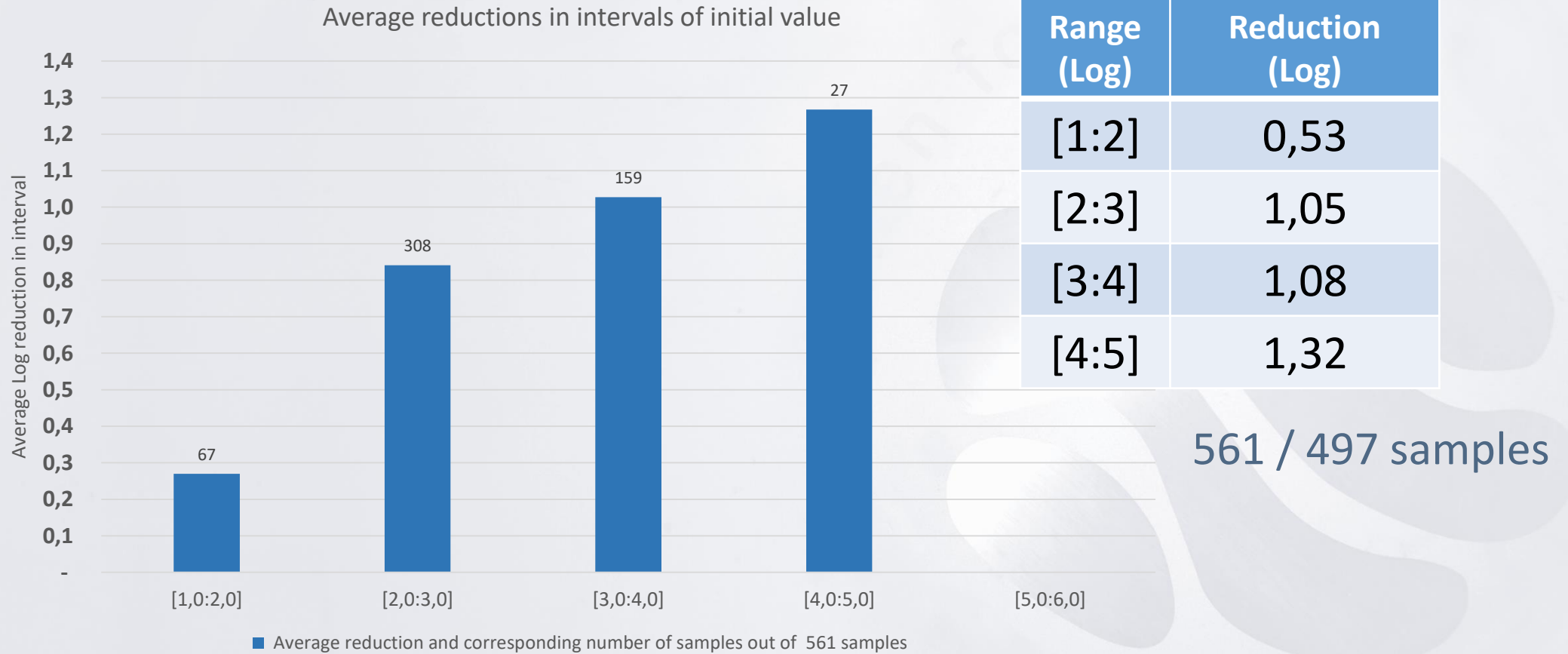
Levels before and after SonoSteam

Higher initial levels gives higher absolute reductions

Dot line:

Trend line. Distance to solid line equals achieved reduction

All paired neck flap samples. High variations due to the neck flap

Inline data from IA Poultry II

Average reductions in intervals of initial value

Range (Log)	Reduction (Log)
[1:2]	0,53
[2:3]	1,05
[3:4]	1,08
[4:5]	1,32

561 / 497 samples

■ Average reduction and corresponding number of samples out of 561 samples

FSA survey published March 14th 2017

- 17% decline in reported human cases
- Estimated overall 100,000 fewer human cases
- Estimated to a direct saving of over £13 million
  (in terms of fewer days off work and NHS costs)

Next Step - Poultry Cut Parts and Whole Eggs

New applications are currently being produced
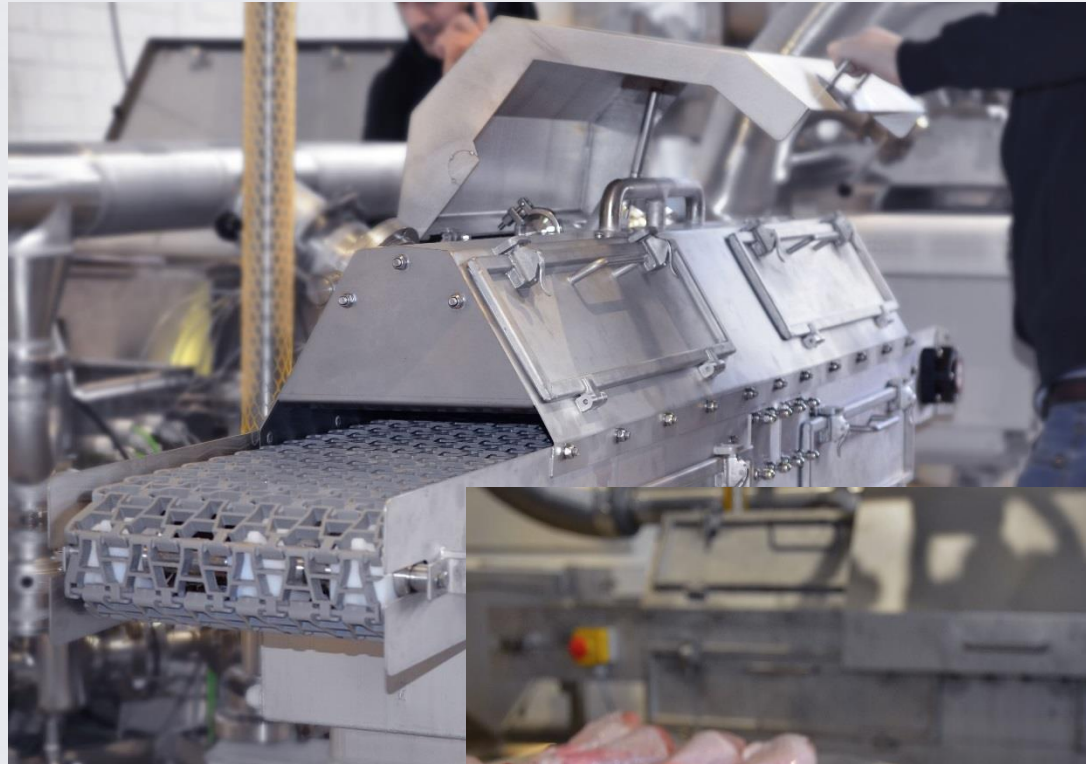
More Information? Visit our website SonoSteam.com

Thank You!