BIONI SYSTEM
The Coating Experts

BIONI SYSTEM FOOD

The unique solution against mold and bacterial contamination in the food & beverage industry

PATENTED BY
Fraunhofer Institute Chemical Technology ICT
& BIONI SYSTEM

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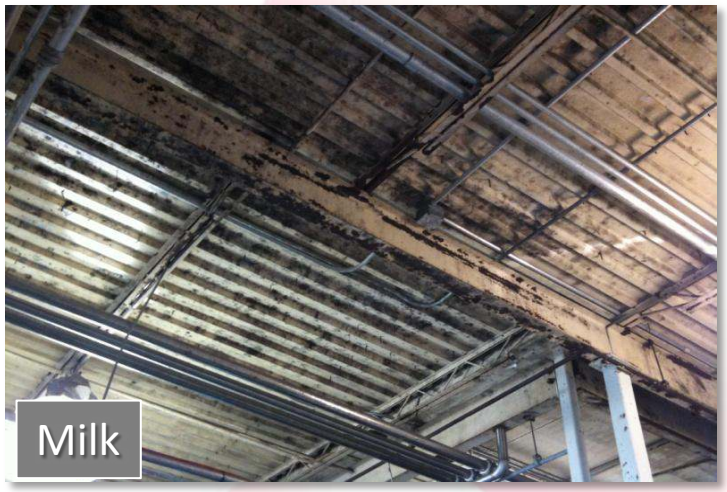
The reality of the food and beverage manufacturing facilities



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The reality of the food and beverage manufacturing facilities

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The main cause for mould growth in Interiors is **moisture !**

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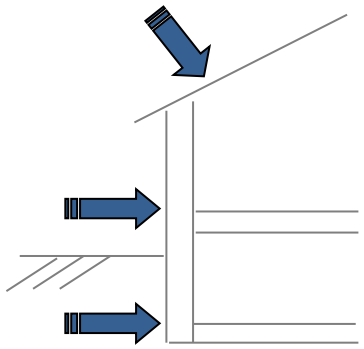
Moisture sources

Moisture sources at the building

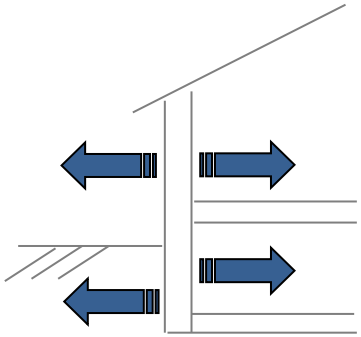
Moisture penetrating from **OUTSIDE**

- Rain, snow, ice
- Driving rain
- Splash water
- Surface water
- Seepage of water
- Damaged insulation
- Ground water
- etc.



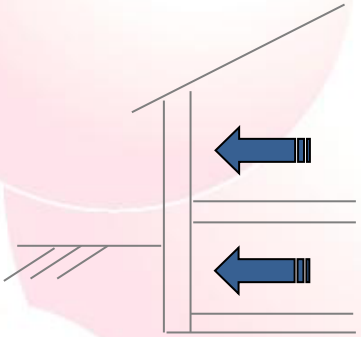
Moisture coming from the **construction/substrate**

- Water damage
- New construction moisture
- etc.



Moisture penetrating from **INSIDE**

- Hygroscopic moisture
- Water vapor diffusion
- Condensation
- Capillary condensation



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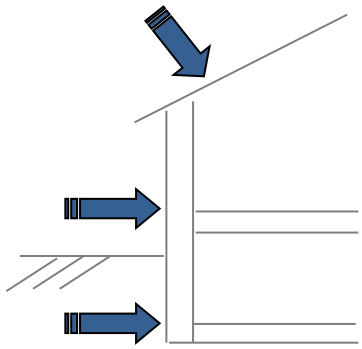

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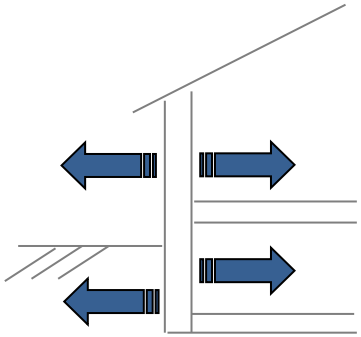

Moisture penetrating from **INSIDE**

Main CAUSE for mold growth in the FOOD INDUSTRY

Explanation:

- high „moisture production“ due to repeated **cleaning**
- condensation due to extreme (room-)climate conditions (i.e. **cold surfaces** as a result of cooling and development of **water vapor** during the pro-duction proceess)

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Moisture sources

Moisture sources at the building

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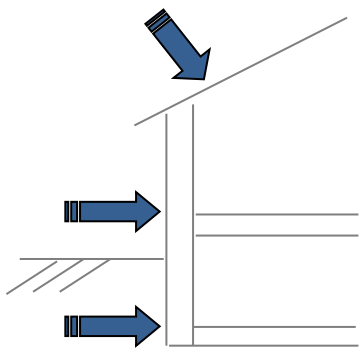

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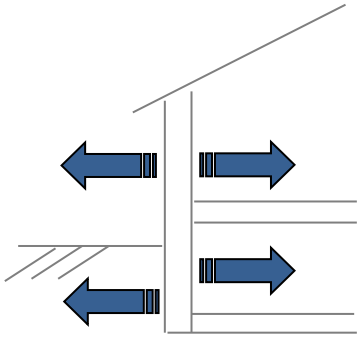

Moisture penetrating from **INSIDE**

Main CAUSE for mold growth in the FOOD INDUSTRY

Conclusion:

In food and beverage manufacturing facilities mold and fungus find ideal living conditions!

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Conventional „mold-solutions“

Number Category	MOULD – Existing renovation concepts	Disadvantages
1)Paint	„Anti-fungus“ paints with film-preservatives (biocides & fungicides)	• toxic for humans and the environment • limited effectiveness (mould growth after a few weeks or months) • negative effect on indoor air quality (VOC = Volatile Oraganic Compounds) 
2)Paint	Pure mineral based systems (natural protection through high alkalinity)	• limited effectiveness (decrease of pH) • poor chemical resistance and durability
3)Paint	Photo-catalytic effect (TiO_2)	• limited effectiveness in interiors
4)Plaster (boards)	Moisture regulation (i.e. moisture absorbing boards or plasters)	• not applicable in areas which are permanently moist
5) Polystyrene boards	Thermal insulation from outside (higher inside surface temperature)	• very expensive • not applicable at any building
6) Ceramic tiles Sandwich panels	Ceramic tiles and/or sandwich panels (durable, easy to clean)	• very expensive • hiding of the problem and „joint problem“

BIONI SYSTEM SOLUTION

MOLD – The **BIONI SYSTEM SOLUTION**

Silver

- the oldest disinfectant known by mankind (Silver coins, Romans)

- Bioni System uses this principle in form of a specially developed Silver-Complex, which has been jointly patented with the **Fraunhofer Institute (ICT)**

Fraunhofer ICT Institut Chemische Technologie

BIONI SYSTEM SOLUTION

BIONI

Fraunhofer ICT Institut Chemische Technologie

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SYSTEM SOLUTION **FOOD**

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- **Silver** has as excellent effectiveness against **germs and bacteria**

…but!

- a **durable protection against mold growth** is not possible without taking „moisture“ into consideration
- BIONI SYSTEM combines the advantages of **silver** with optimized **moisture regulating properties**:
  - ✓ moisture absorption caapabilities
  - ✓ fast drying of the surface

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Mold Renovation

Technically correct would be:

- ✓ removing of all „contaminated“ layers
- ✓ chemical pre-treatment / disinfection
- ✓ subsequent reconstruction (plaster, coating)

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Mold renovation

Problem:

- Mold growth often starts in areas which are difficult to reach such as **high ceilings**
- The removing of all affected layers of the substrate i.e. by cemical/mechanical measurements is therefore
  - ✘ technically almost impossible (sometimes >10 layers of old paint/coating)
  - ✘ uneconomical since too time-consuming
  - ✘ within the typical given timeframe (weekend only) not managable
  - ✘ not allowed due to hygienic aspects (i.e. by power-washing spores will be distributed in the entire room, deterioration of the situation)

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Solution:

- BIONI SYSTEM relies on a 2-phase System
- Base Coat (Phase 1) + Top Coat (Phase 2)

Base Coat	Top Coat
• will be applied directly over existing mold • no disinfection necessary • old mold-biomass will be enclosed	Preventive protection againts microbial growth by patented silver-complex

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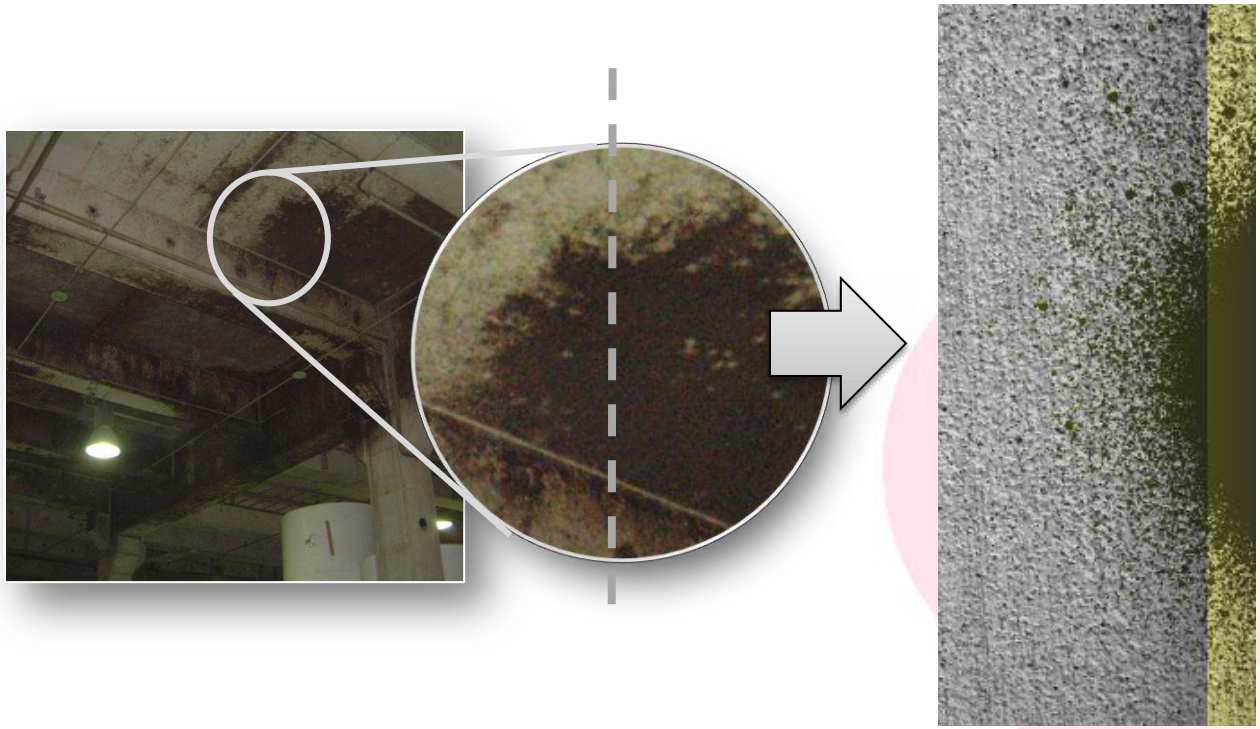

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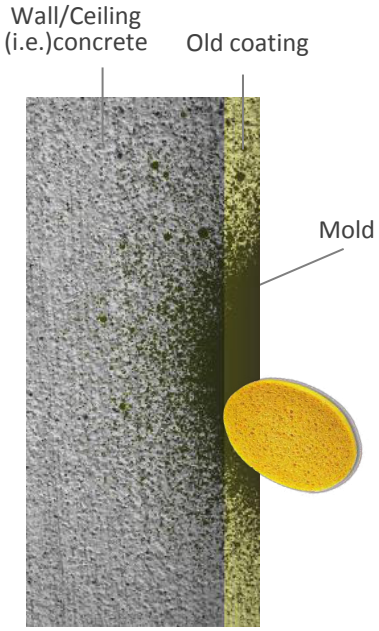
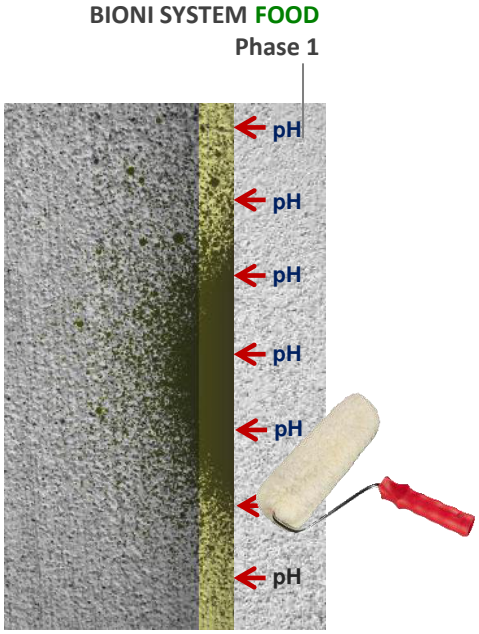
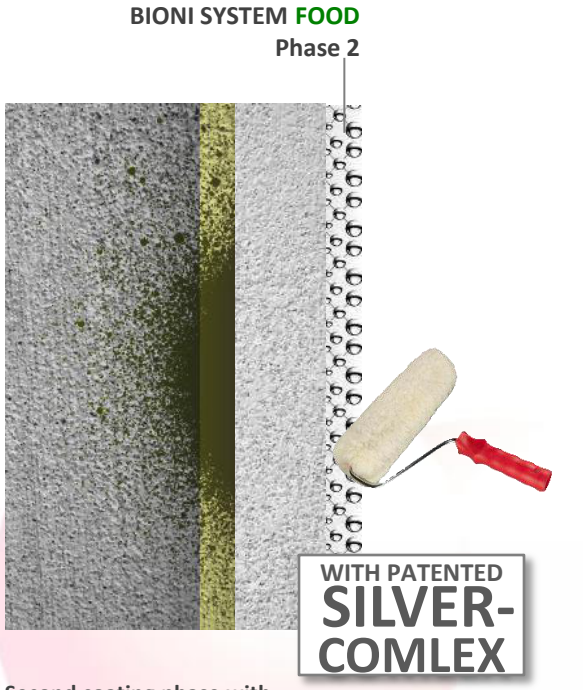


Wall or ceiling areas affected by mold or bacteria
The mold or bacterial contamination of building areas is oft en only partially Visible as spores and old mold are also found in the deeper layers of the base such as old coatings, plaster or concrete. If necessary (very dirty surface or heavy mold layer) the surface will be cleaned with water.



First coating phase with BIONI SYSTEM FOOD
The mineral layer is applied directly to the mold-infested surface. There is no requirement for disinfection.



Second coating phase with BIONI SYSTEM FOOD
On the following day, the patented final coating is applied.

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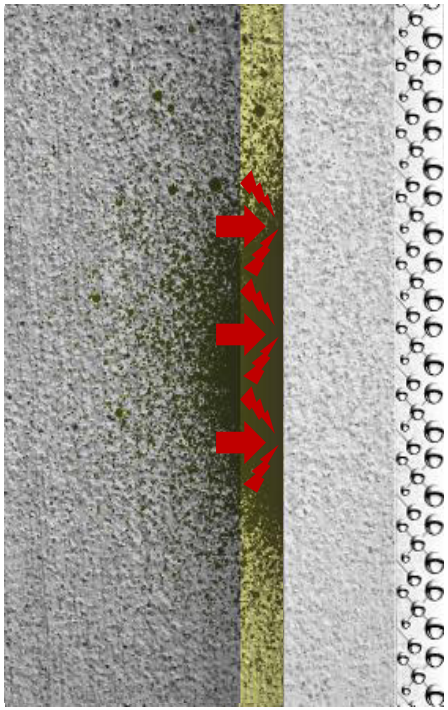
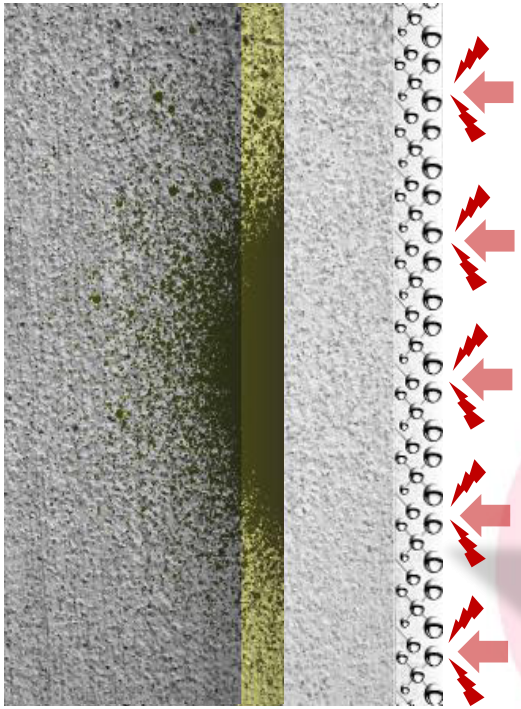
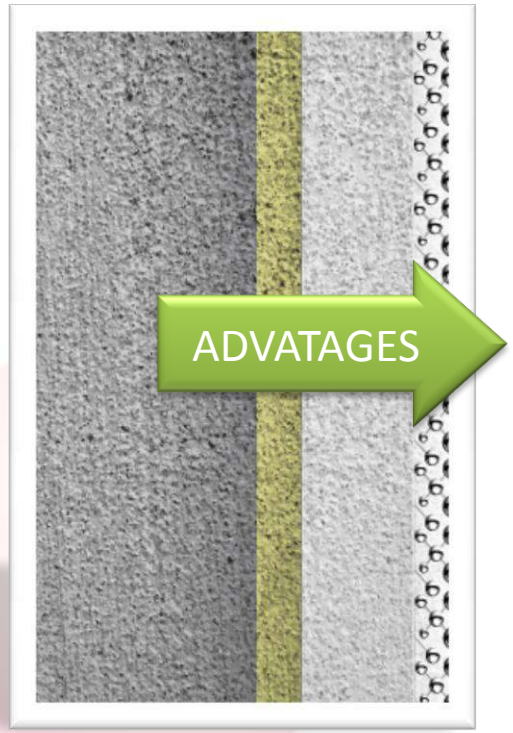


The existing fungal biomass is permanently enclosed by means of an alkaline environment provided by the Base Coat. A migration of the mold to other sensitive areas from the subsurface is therefore impossible.



The Bioni System is durably protected by means of silver-complex integration and optimal moisture regulating characteristics and provides preventive action against renewed mold and bacteria infestation.



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Benefits

- durable protection against mold and bacterial contamination
- no removal of stable bases such as plaster/ old coatings necessary
- significant time saving in surface treatment
- considerable reduction in costs

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System properties

- tested and approved as food-safe (TUV – technical inspection association)
- low-emission (VOC), free of solvents, no chemical and toxic mold removers
- resistant to disinfectants and cleaning
- non-flammable
- environmentally friendly
- water vapor permeable, water resistant
- no odor (no stoppages, immediate usability of the room)
- nearly all substrates can be coated
- can be used in high-moisture areas

Indoor Air Quality

Certificates Indoor Air Quality

TUV RHINELAND LGA:

„The product can be used in areas where food is manufacturerd or stored.“

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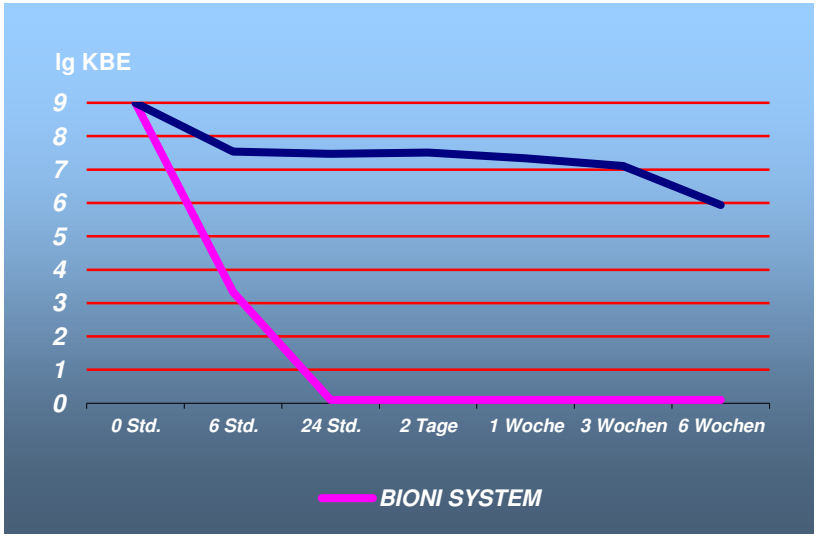
Bacteria & Germs

99,999% (5-log)-Reduction

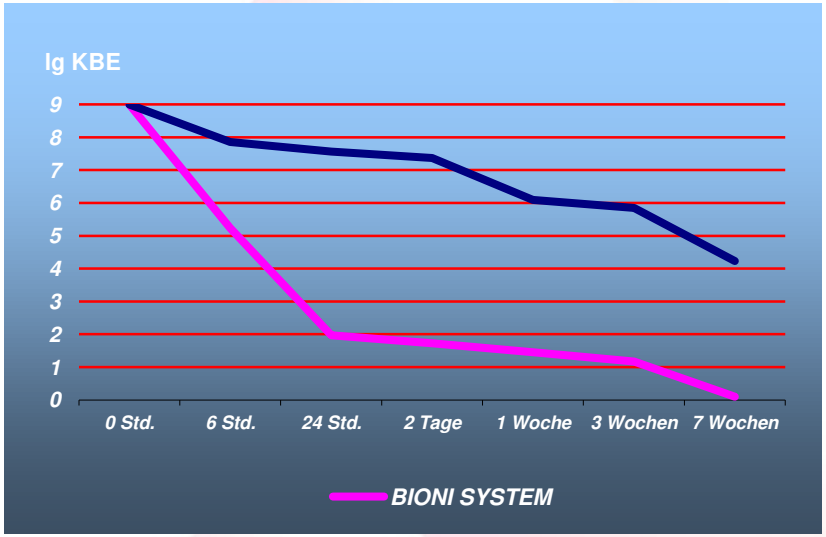
of drug-resistant bacteria

Institute for Hospital Hygiene and Infection Control

Enterococcus Faecium



Staphylococcus aureus



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Bacteria & Germs

BIONI SYSTEM has an superior effectiveness against

- Escherichia Coli (E. Coli)
- Pseudomonas aeruginosa (P. aeruginosa)
- Listeria monocytogenes (L. monocytogenes)

GISSEL INSTITUT
FÜR BAKTERIOLOGIE UND HYGIENE
ÜBER 50 JAHRE IM AUFTRAG DER GESUNDHEIT
LABORATORIUM FÜR BAKTERIOLOGIE UND LEBENSMITTELHYGIENE

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DAP-PL-1096.00

Bioni CS GmbH
Lessingstraße 21

46149 Oberhausen

Sehnde, 31.03.2011

Untersuchung des Produktes: Innenfarbe Farbmuster HX2: Bioni Hygienic

Tagebuchnummer:	**H1100724-A**
Eingangsdatum:	14.01.2011
Verpackung:	Kunststoffbehälter
Anzahl der Proben:	1
Eingangstemperatur:	Raumtemperatur

Prüfauftrag:

Die Probe wurde vom Auftraggeber an das Institut eingesandt, um zu überprüfen, ob die trockene Oberfläche des Erzeugnisses das mikrobiologische Wachstum von E.coli, Pseudomonas aeruginosa und Listeria monocytogenes hemmt.
Die getrocknete Probe wurde dazu mit Keimsuspensionen beimpft und das Wachstum 1 Stunde, 24 Stunden, 48 Stunden sowie 4 Tage nach Beimpfung überprüft.

Untersuchungstag : 14.01.2011 **Untersuchungsende:** 31.03.2011

Bakteriologische Untersuchung
Die bakteriologische Untersuchung wird ausschließlich nach standardisierten und validierten Untersuchungsmethoden durchgeführt.

aerobe Gesamtkeimzahl	< 1,0 x 10 ¹	KbE/g

Methode: Plate-Count-Agar, 3 Tage bei 30 °C

Sonstige Untersuchungen

siehe Anlage

Auf Richtigkeit und Plausibilität geprüft:

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Substrates

- concrete
- old (matte) Coatings
- old (glossy) Coatings
- Sandwich-Panels
- Plaster/stucco
- Ceramic tiles
- Gipsum boards
- Wood
- *etc.*

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Substrates

Meat manufacturing - Concrete ceiling

BEFORE

AFTER

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Substrates

Meat manufacturing - mold affected concrete

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Substrates

Meat manufacturing - mold affected concrete

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Substrates

Meat manufacturing - mold affected concrete

The **BIONI SYSTEM Base Coat G25.1** will be directly applied on existing mold biomass. (**no cleaning, no** surface **disinfection**)

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Application

1. Survey

2. Prepare

3. Mix

4. Coat

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Application

BIONI SYSTEM Technicians
at work

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Application

BIONI SYSTEM application

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before - after

Dairy company - mold affected sandwich-panels

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before - after

Mold affected
concrete ceiling

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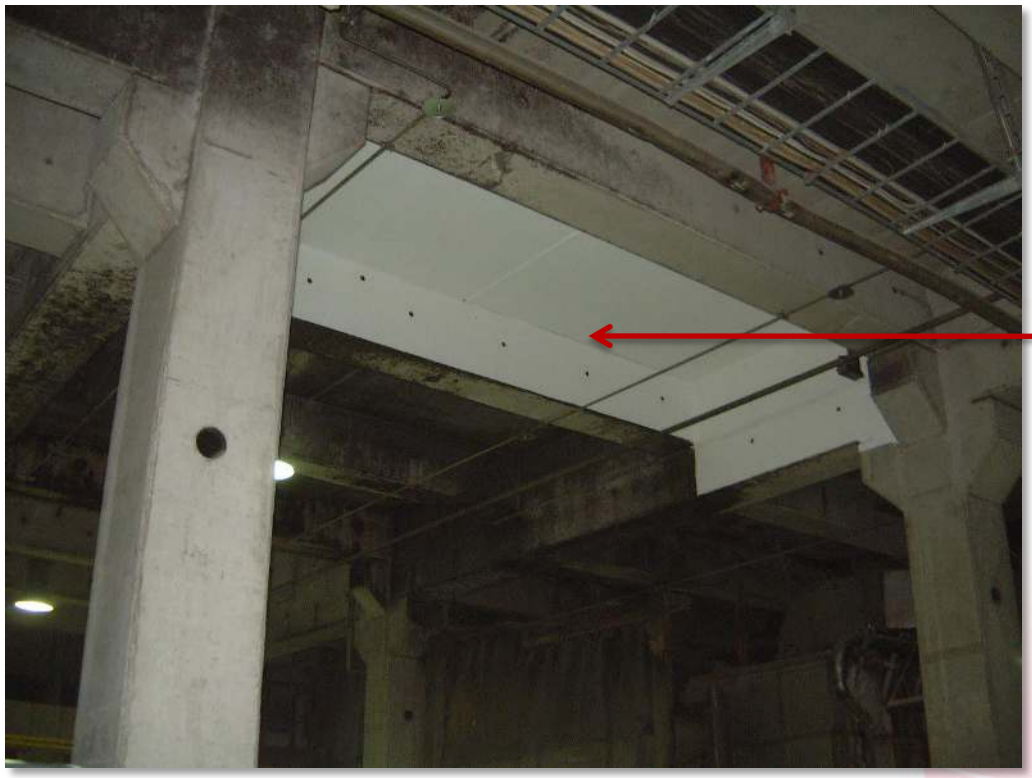
before - after



Mold affected concrete ceiling 1 year after the application of **BIONI SYSTEM**

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before - after

Bakery - mold affected blockwork

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before - after

Cheese manufacturing facility –
mold and rust affected ceiling

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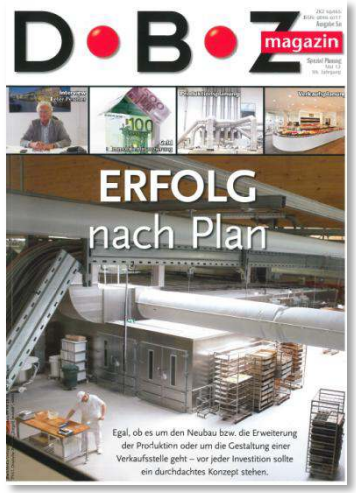
Press



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