



Heat Treatment Services

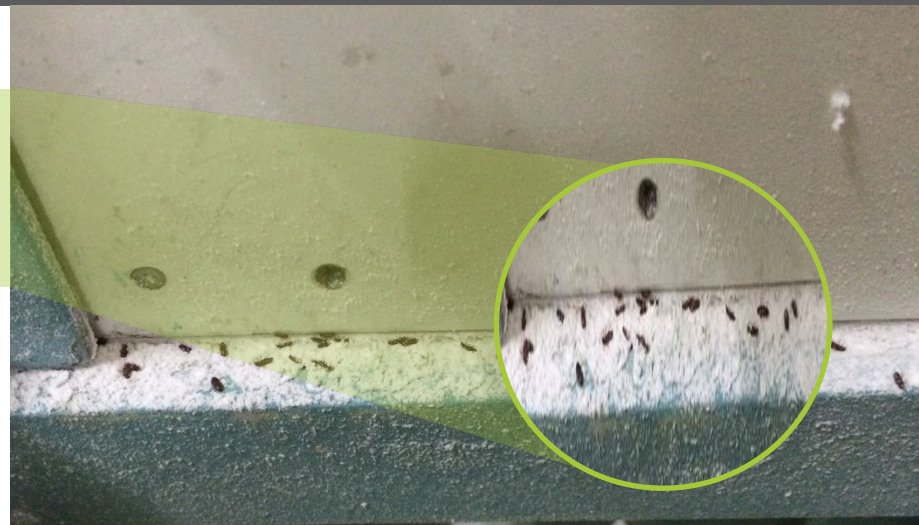
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Does this look familiar to you?



- Pests are well known in the food manufacturing industry.
- Through the optimum surrounding conditions during the whole year, pests have optimum growing conditions.



Pains Needs and Desires in the Milling Industry

- **Food Contamination / Safety:** The usage of several poisonous chemicals for pest control are measureable nowadays on end products and for many clients are not acceptable anymore (e.g. Nestle, Unilever and many others)
- **Laws and Regulations:** Highly efficient hazards are banned by law from the food industry.
- **Shelf Life:** Insect contamination is not accepted anymore.
- **Down Time:** The available time window for pest control is limited nowadays, due to high production load.
- **Personal Safety:** the traditional fumigation with hazards and chemicals is high risk for employees.
- **Sustainability:** Reduction the negative environmental influence and preempting upcoming stricter laws and regulations.
- **Quality of Service:** To find a high quality pest control service provider is difficult. Many service provider don't keep what they promise.

About Termico



Termico Co., Ltd / Thailand started the operation in 2015 in Thailand as pest control service provider for the flour milling industry.

Our Heat Treatment Equipment was **in-house developed** as an poison free alternative to the traditional pest control methods.

Termico GmbH / Germany was founded in 2020 as service hub for the European market.



100 % poison free pest control solution



Hydrogen Cyanide



Traditional and effective poison for all kind of insects.
Duration 48h

Disadvantages:

- Absorbed by finished products.
- Gas concentration need be measured / monitored.
- High toxic for humans.

Phosphine



Effective Poison for pests
2g PH₃/m³
Duration 48h

Disadvantages:

- Building needs to be sealed.
- High toxic for humans.
- Cause corrosion on electronic parts.
(rollermill, scale, colour sorter)
- Connected buildings have to be evacuated

Profume



Alternative to Phostoxin and Methyl bromide
Duration 48h

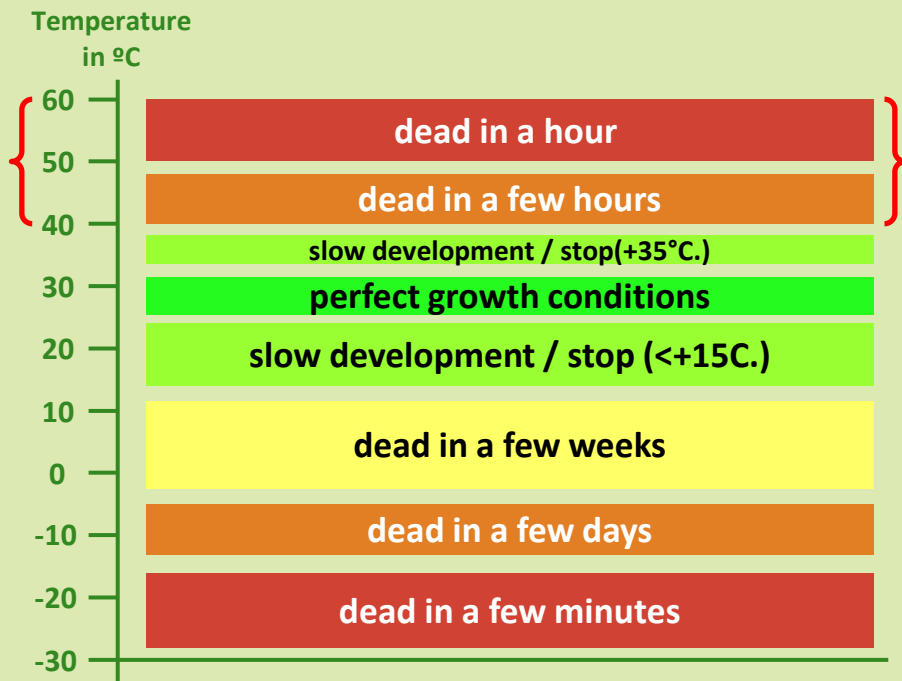
Disadvantages:

- Professional company for treatment required.
- Building need to be sealed air tight.
- Connected buildings need to be evacuated.
- High toxic for humans

HEAT TREATMENT



Pest development in relation to temperature



- The perfect growing conditions for all kind of weevils and bugs are between 18 °C and 32 °C

Example:



Working principle of Heat Treatment

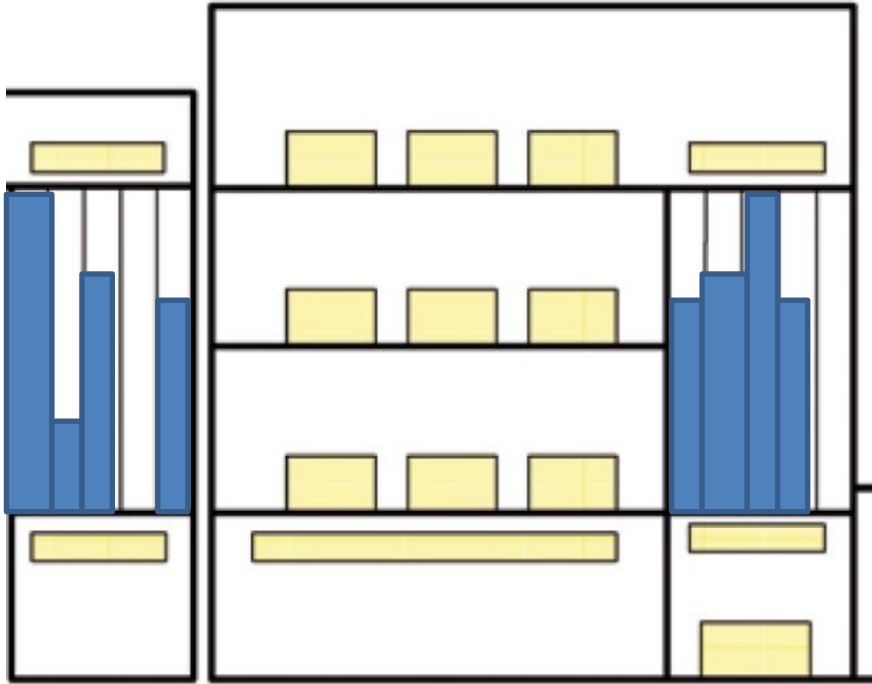
Up to 40° C body temperature, the body proteins are in a good condition.

Over 45° C the body proteins start to coagulate and change the consistence.

Result: Pest in all development stages die

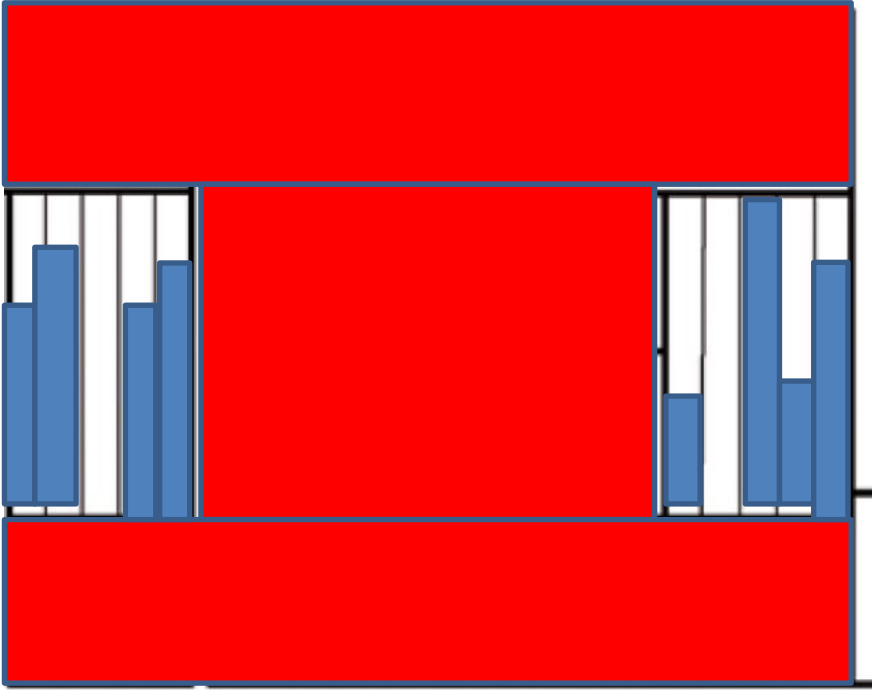


Challenges of heat treatments in flour mills



- **Wheat and flour are perfect isolators, inside the product it remains the ambient temperature**
- **Flour and wheat silos are never complete empty.**

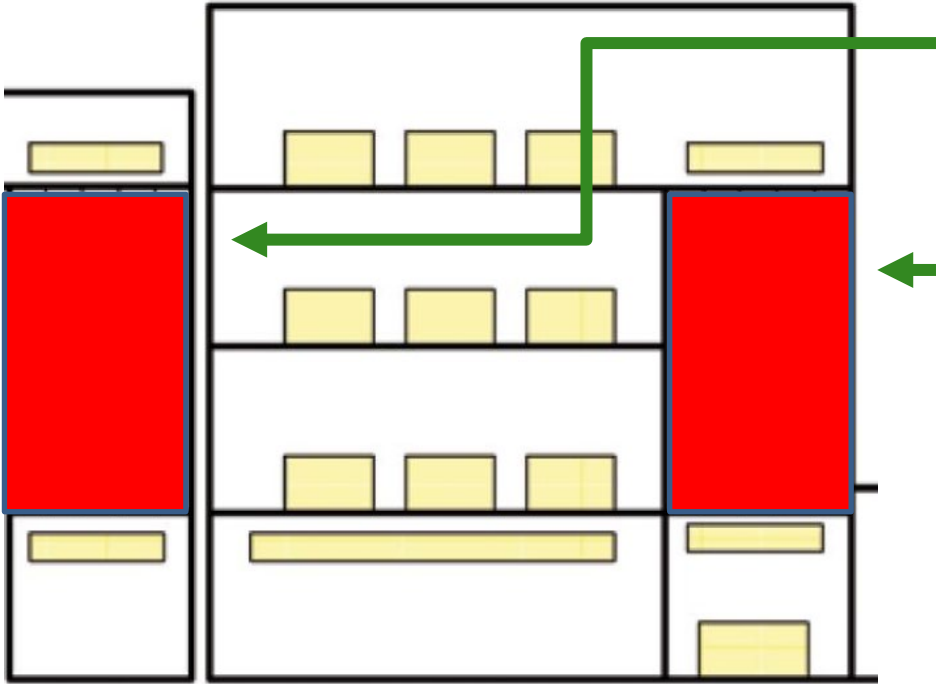
Heattreatment of buildings



Termico Heater

**Treatment of rooms and
entire buildings**

Heattreatment of silos



Termico Silo THT

**Treatment of individual
silos**

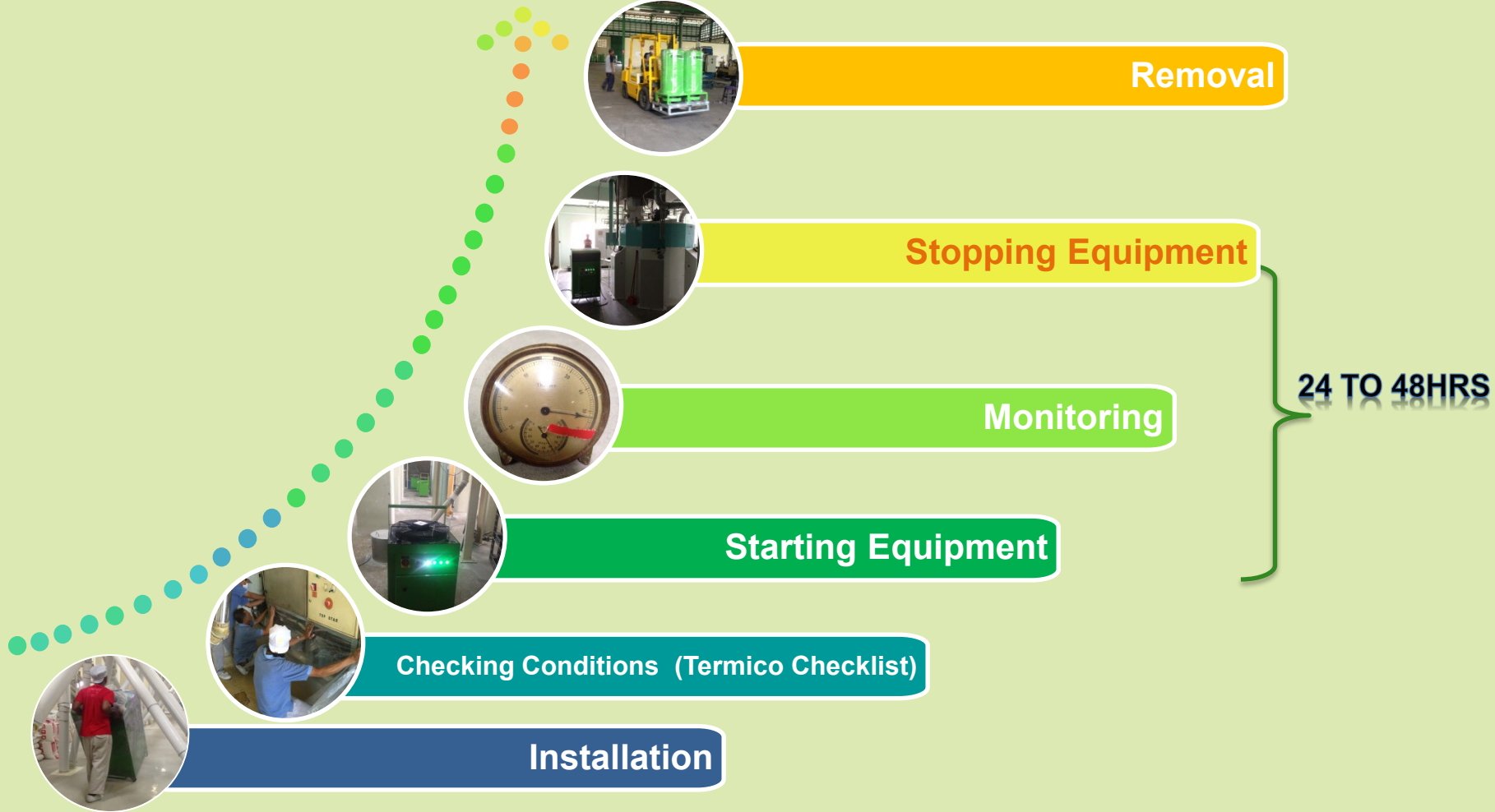
Practical Usecases for buildings



In less than 48 hours

Effective pest control in all stages of development

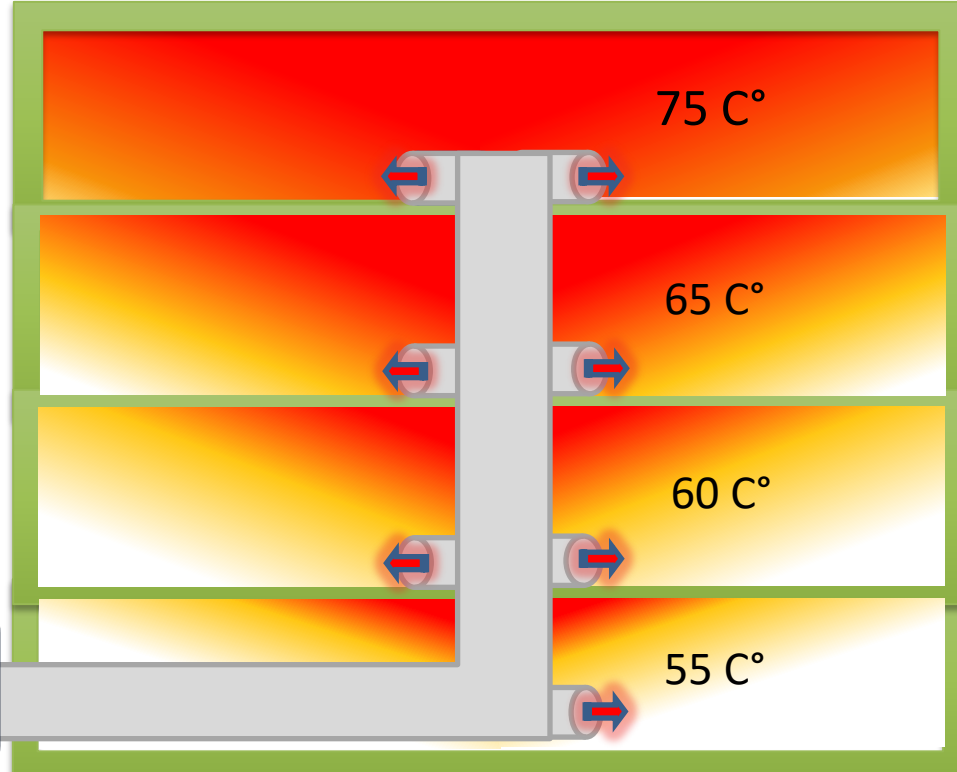
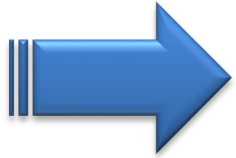
Sequence of Heat Treatment



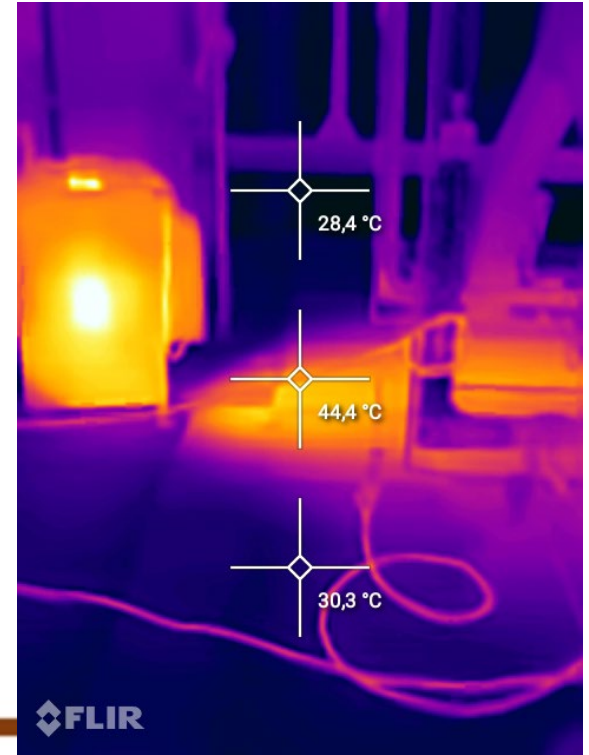
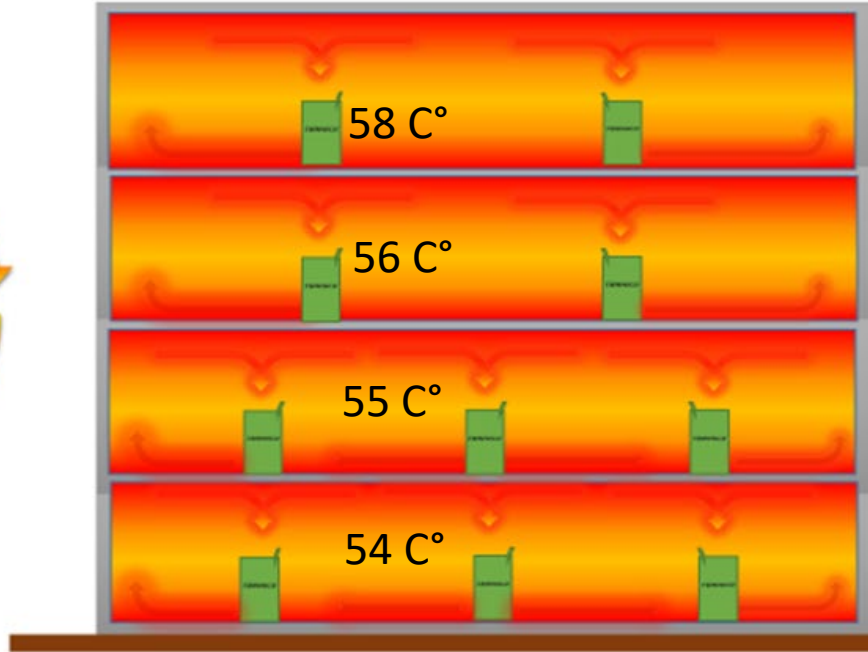
Pressurized Heat Treatment



COOL AIR



Recirculation Heat Treatment



Termico Heat Treatment Equipment

Low Surface Temperature

Low Energy Consumption

Safety Operation

High Flexibility on Temperature adjustment



Delivery and Setup



Initial Stage

- Room temperature: 35°C



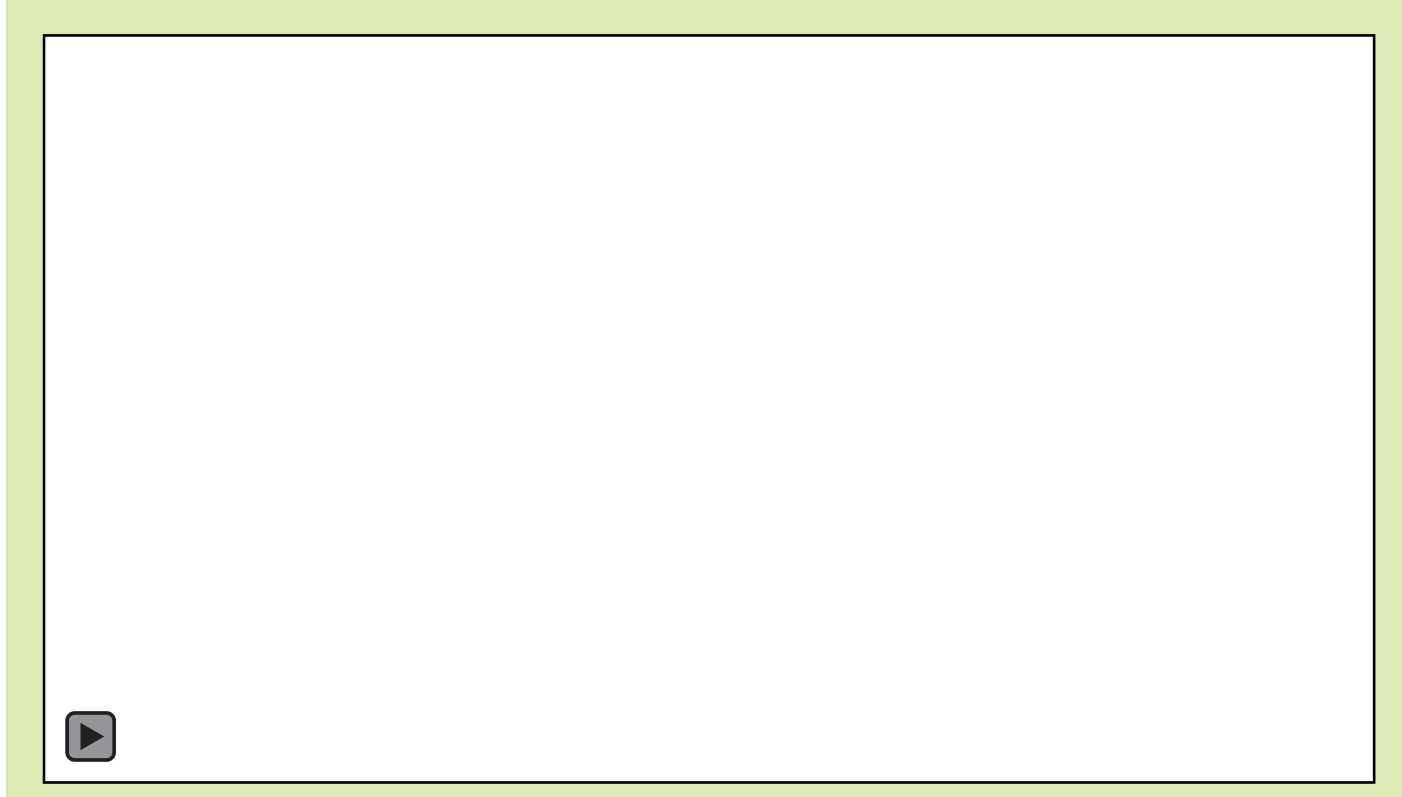
Initial Stage

- Room temperature: 35°C



After 20 hours

- Room temperature: 49°C



After 20 hours

■ Room temperature: 49°C



After 48 hours

- Room temperature: 55°C



All pests in the plant are Dead

After 48 hours

- Room temperature: 55°C



All pests in the plant are Dead



After 48 hours

- Room temperature: 55°C



All pests in the plant are Dead



After 48 hours

- Room temperature: 55°C



All pests in the plant are Dead



After 48 hours

- Room temperature: **55°C**

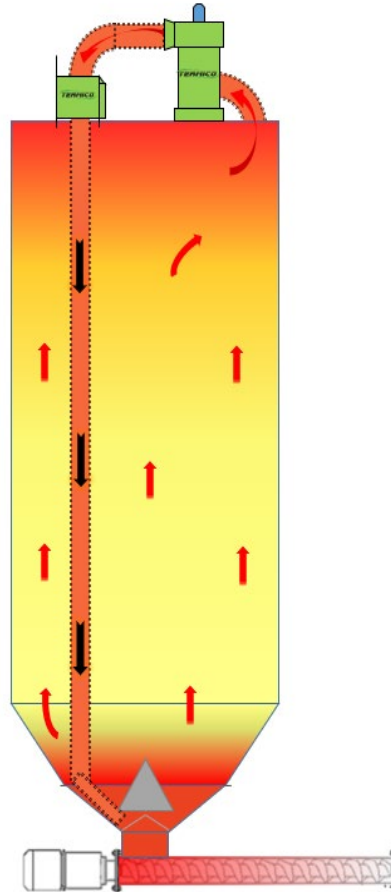


Termico Silo Heating System





- Hot air is blown out at the lowest point of the silo
- The hot air rises within the silo towards the outlet
- Air is filtered and reheated



Installation of Silo Heating System



**Connection of
flexible duct**



Man hole cover



Heater Placement

Installation Process



Silo Heating System Operation



Treatment duration 6-48 hours

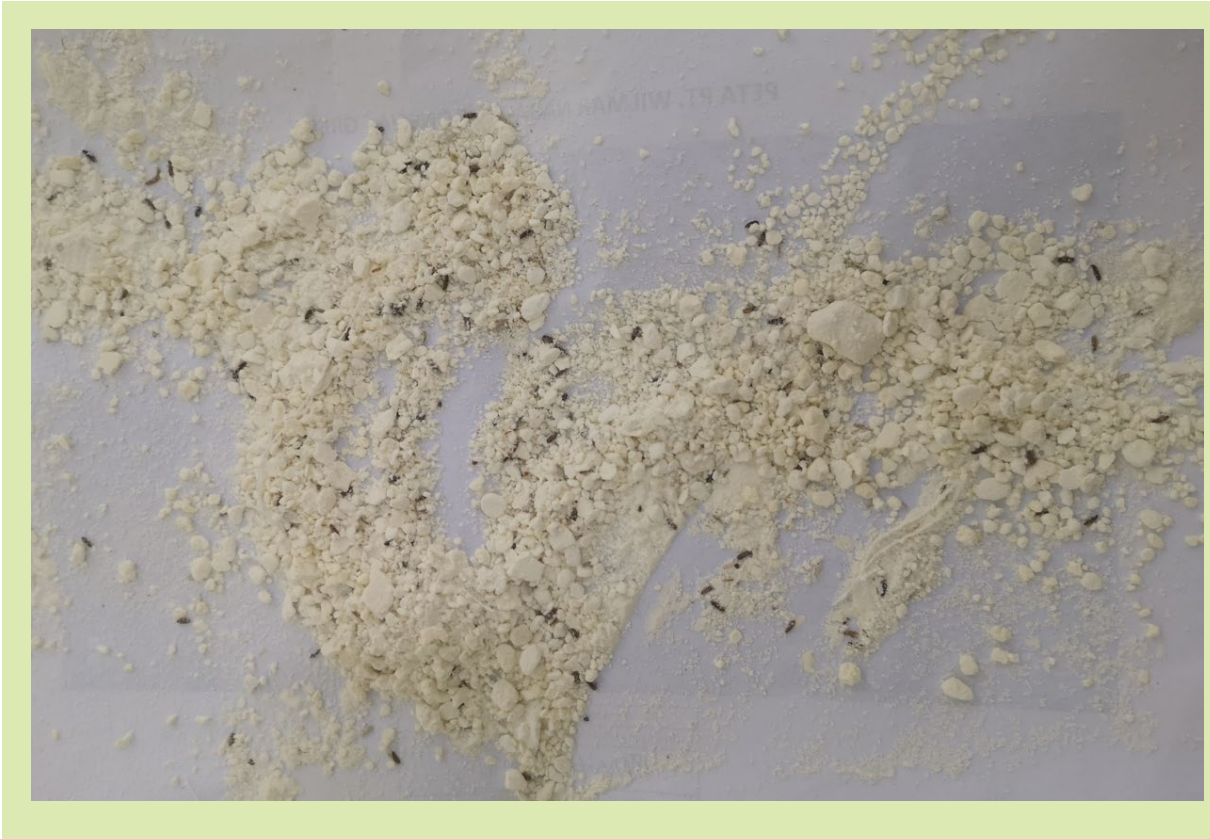


Validation of treatment efficiency



100% Efficiency

Insects on the silo conus



100% Efficiency



Dead Mott insects in the filter unit



100% Efficiency

Advantages of Termico heat treatment



1

Effective pest control in all stages of development

Low Downtime:

It is a single fast and effective treatment.

Safety:

No risk for employees



7



6

Flexible method for different building sizes

2

100 % Free of Poison

The treated areas may again be occupied immediately without insecticide residues and without product contamination. Safe for all employees



4



Non risk for electronic equipment's

5

No permission required

No cooperation with local authorities required



3

Sustainable Solution

In compliance with governments regulations



Termico Heat Treatment Advantages



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