

Introduction of Cocoon Mothballing System



ENERGY PROGRESS
エネルギー プログレス



CMS (Cocoon Mothballing System)



What is Cocoon Mothballing System?

The Cocoon Mothballing System is ;-

to protect machines and spares from moisture and dust by using weather-proof, tough, and seamless special P.V.C. and by controlling the humidity inside, using dehumidifier & monitoring system.

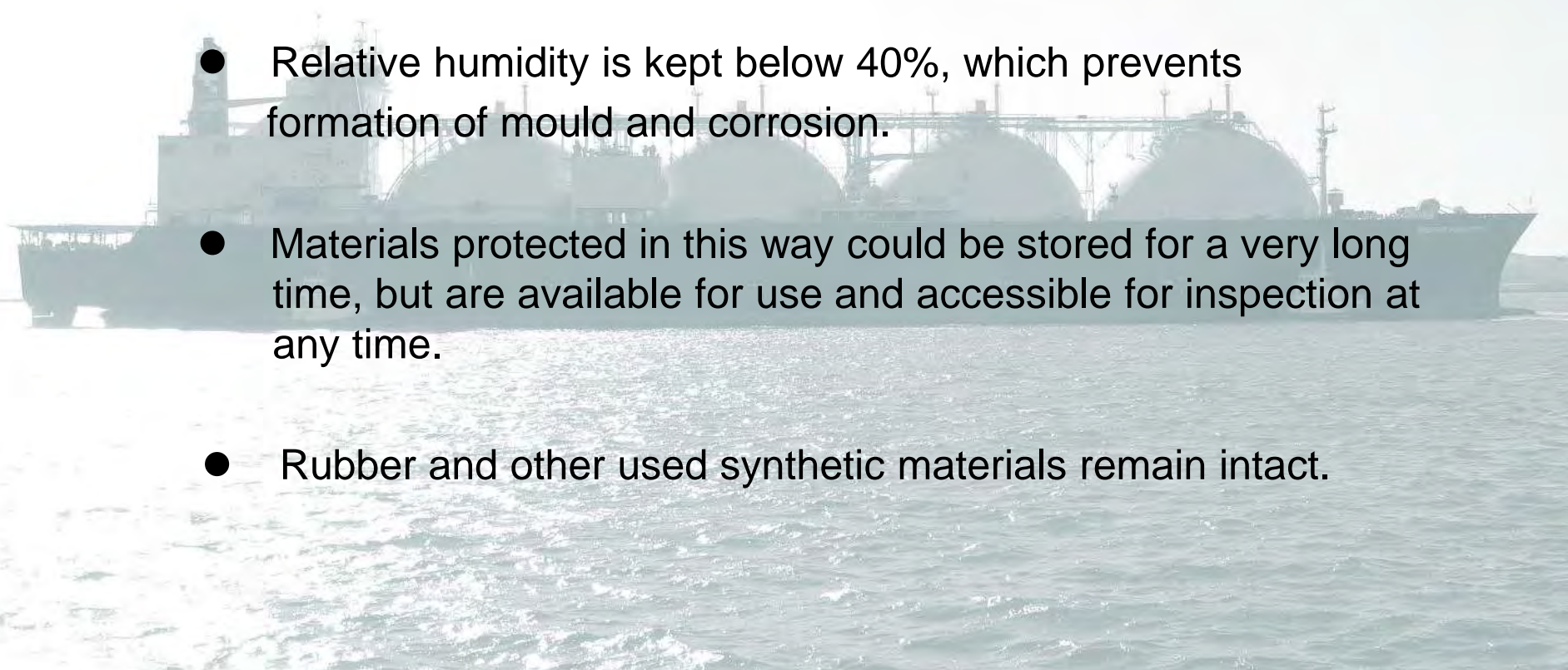


CMS (Cocoon Mothballing System)



What is Cocoon Mothballing System?

- It provides machines and spares to be protected with a weather-proof, tough and seamless Cocoon 'skin', hermetically sealed against moisture and dust.
- Relative humidity is kept below 40%, which prevents formation of mould and corrosion.
- Materials protected in this way could be stored for a very long time, but are available for use and accessible for inspection at any time.
- Rubber and other used synthetic materials remain intact.





FUJI TRADING CO., LTD.



Cocoon Holland BV
Coatings Conservation Mothballing

Introduction:

- Cocoon Holland provides a revolutionary coating product, developed around 50 years ago and still unbeaten.
- Cocoon Holland started in 1960 with mothballing minesweepers for the Dutch Navy after WWII.
- From 1970s, Cocoon Holland extended the service to hospitals, beer factory plant, oil refinery plant, and laboratory, due to its flexibility.
- Cocoon Holland and Fuji Trading Group started to work together since 1989 for NWSSSC project. Since then, Fuji has been providing this system to LNG operators worldwide.
- Fuji & Cocoon has done CMS applications at Yokohama, Kobe, Yura, Moji, Nagasaki, Singapore, Thailand, Dubai, Qatar, and of course in Holland.
- We offer a tested and proven solution for sealing, protection, maintenance and conservation.



CMS Examples



External storage with Cocoon envelop



Heat Exchangers (Inside)

**PLYWOOD WAREHOUSE
28 x 15 x 6/6.5 MTR
WITH 5 MTR x 6.2 MTR
OPENING/DOOR**



CMS Examples

“Tail shaft; Before & After”





CMS Examples



Internal storage in a Cocooned Warehouse (Cocoon finish on the outside)





CMS Examples

Cocooned storage in a Warehouse





Cocoon Mothballing System



CMS is a package of
“Isolation, Dry Air Circulation, & Monitoring”



Cocoon Mothballing System



“Isolation, Dry Air Circulation, & Monitoring”

“Isolation”, by Cocoon’s strong, unique, and special coatings.





Cocoon Mothballing System



“Isolation, Dry Air Circulation, & Monitoring”

“Isolation”, by Cocoon’s strong, unique, and special coatings.



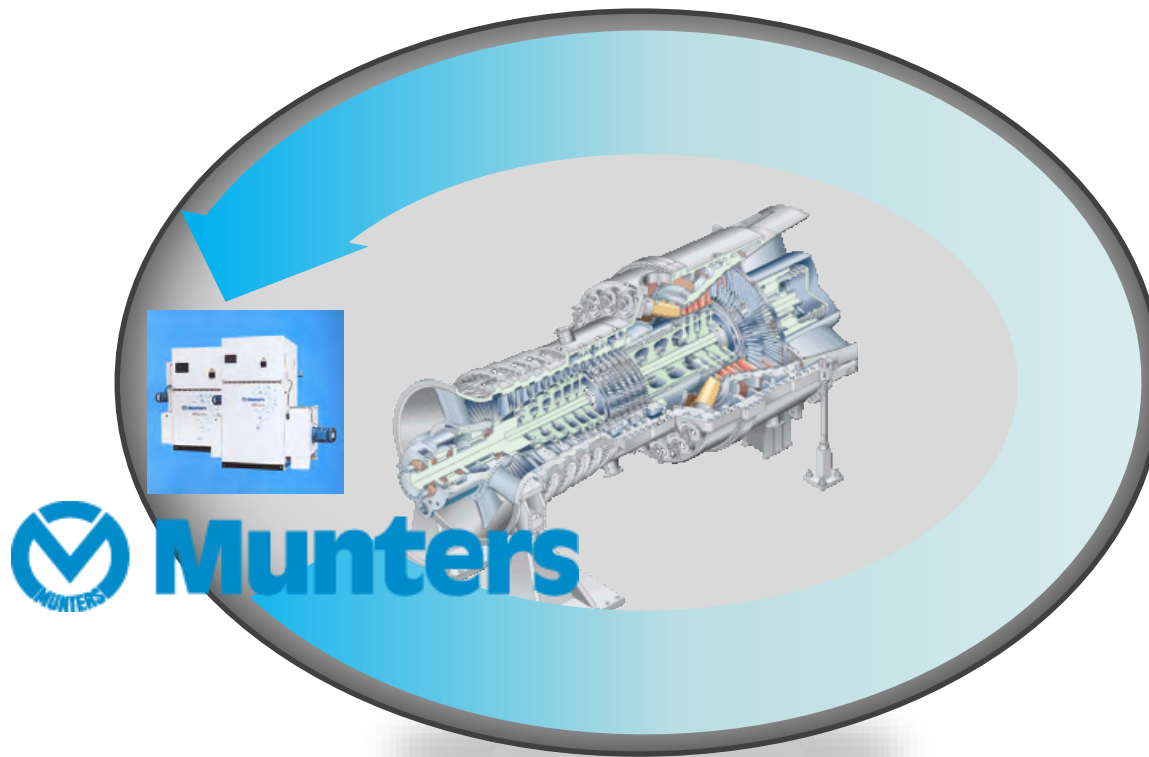


Cocoon Mothballing System



“Isolation, Dry Air Circulation, & Monitoring”

“Dry Air Circulation”, by Munters’ advanced & reliable equipments.





Cocoon Mothballing System



“Isolation, Dry Air Circulation, & Monitoring”

Why “Dry Air Circulation?”

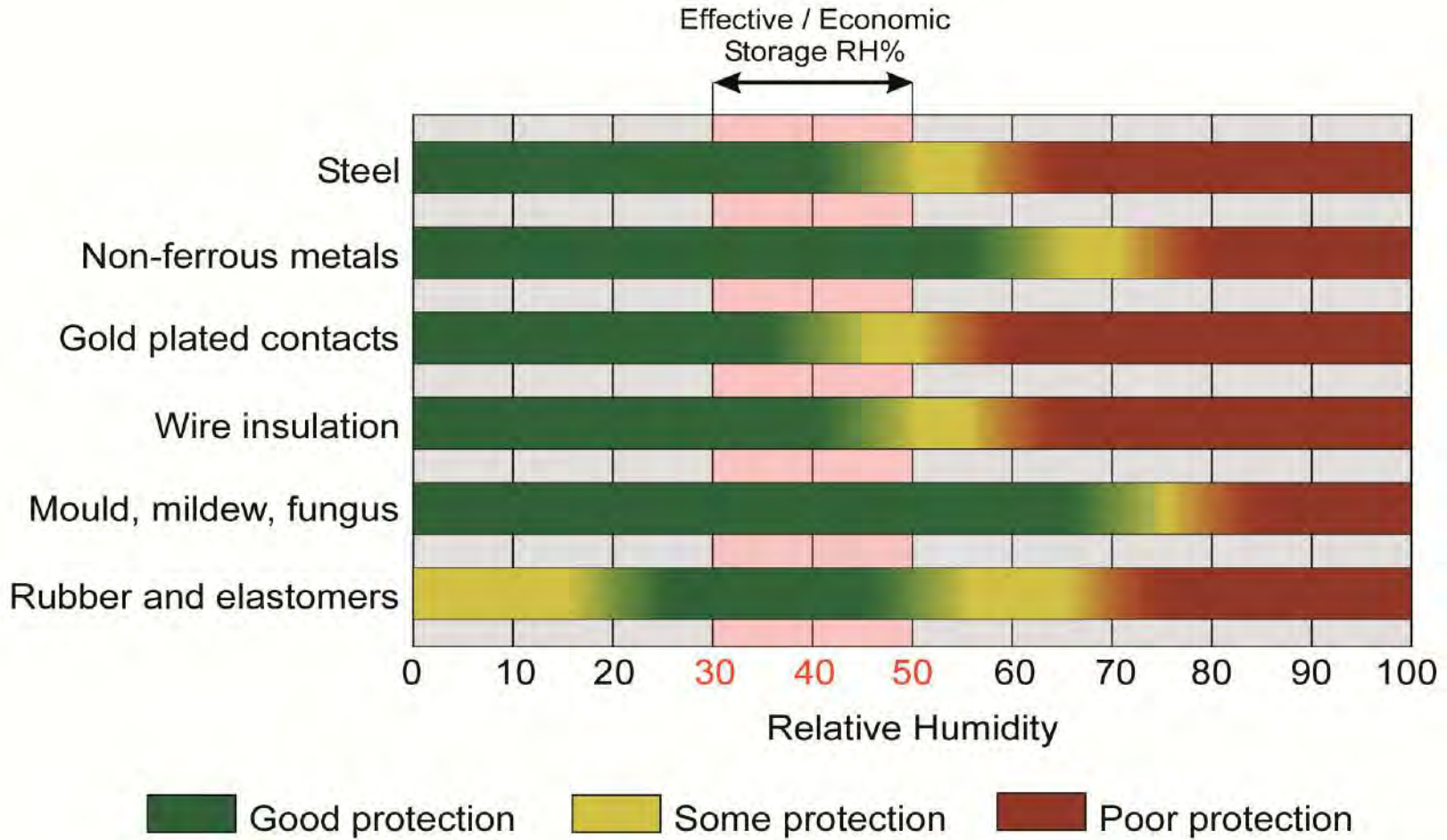
The dehumidication works in a closed loop, therefore, no fresh air is needed in the store room.

This is important if you store product which also contain rubber. Rubber is effected by Ozone and it creates ozone puncture so, if you operate in a closed loop, the ozone content of the air will go down and less damage will occur.

If you use air condition system with a little bit of fresh air supply, you constantly introduce ozone into the store room which will be negative for rubber materials.



Optimal Protection bandwidth of relative humidity percentage



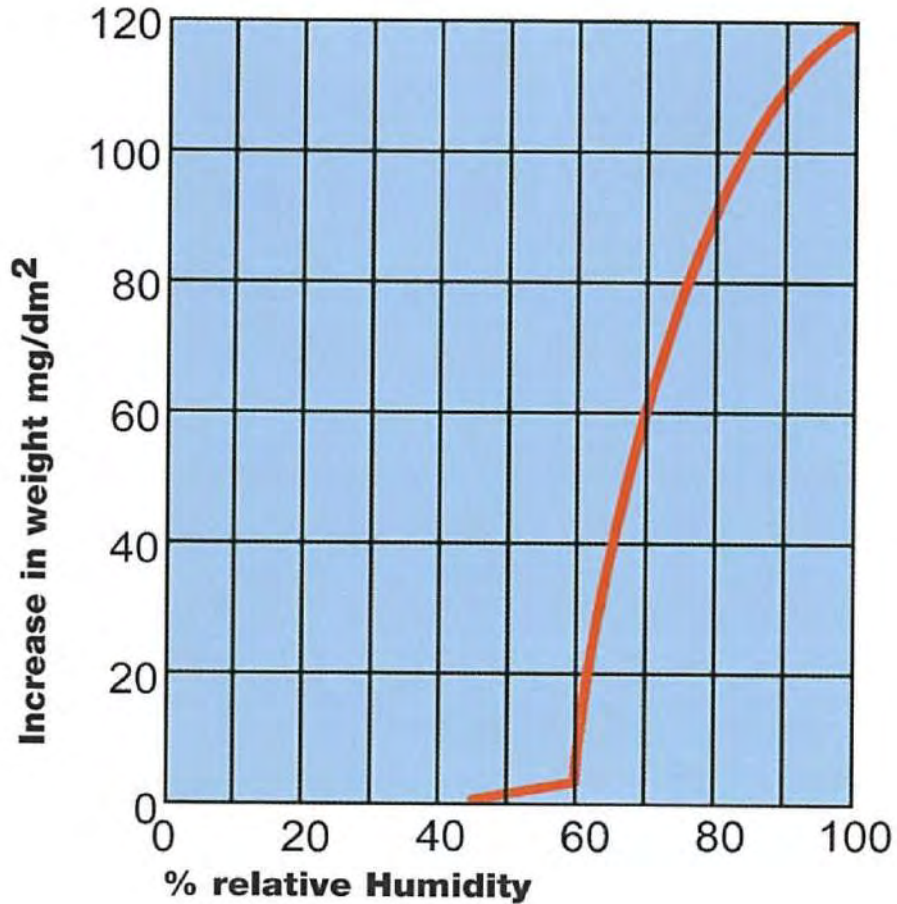
Relative humidity is kept 38-40%, which prevents formation of mould and corrosion.



Steel Corrosion



Steel Corrosion



Conditioned Turbine



Unconditioned Turbine



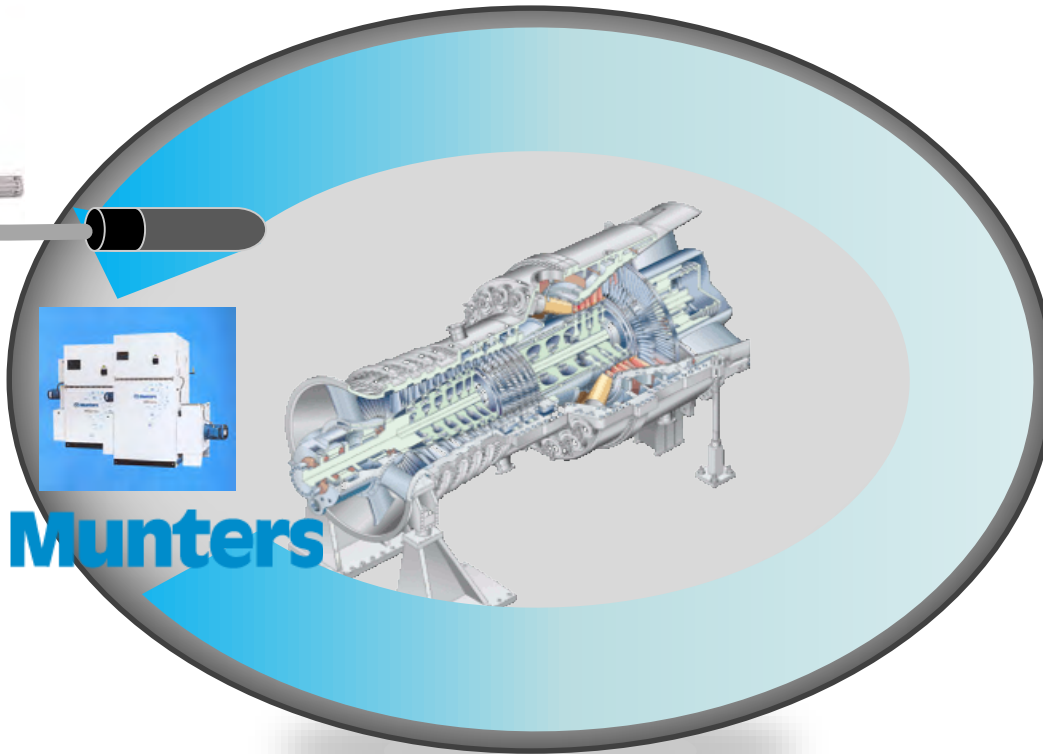
Cocoon Mothballing System



“Isolation, Dry Air Circulation, & Monitoring”



“Monitoring”, for long term safe & reliable operation.

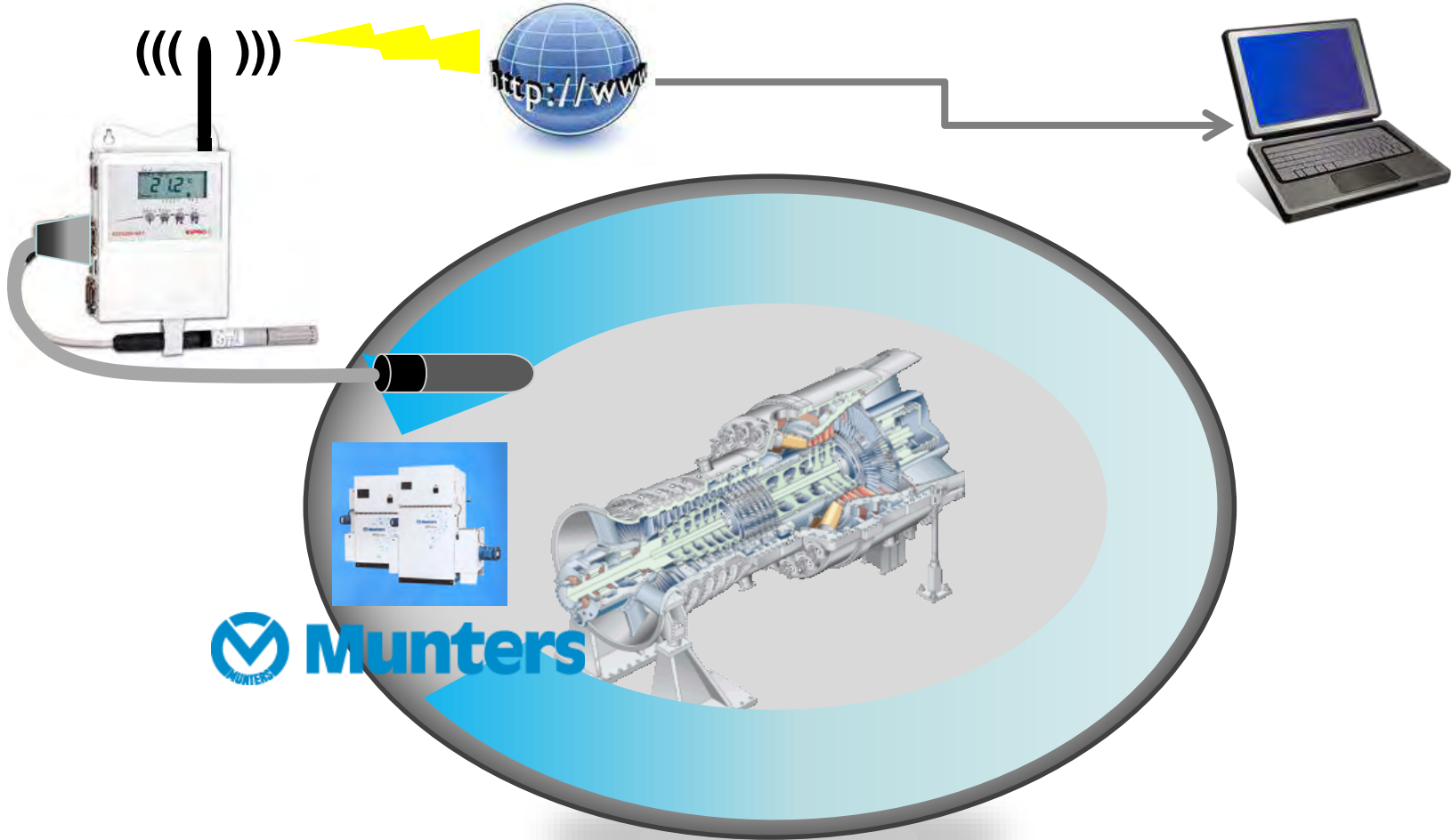




Cocoon Mothballing System



“Isolation, Dry Air Circulation, & Monitoring”



 **Munters**

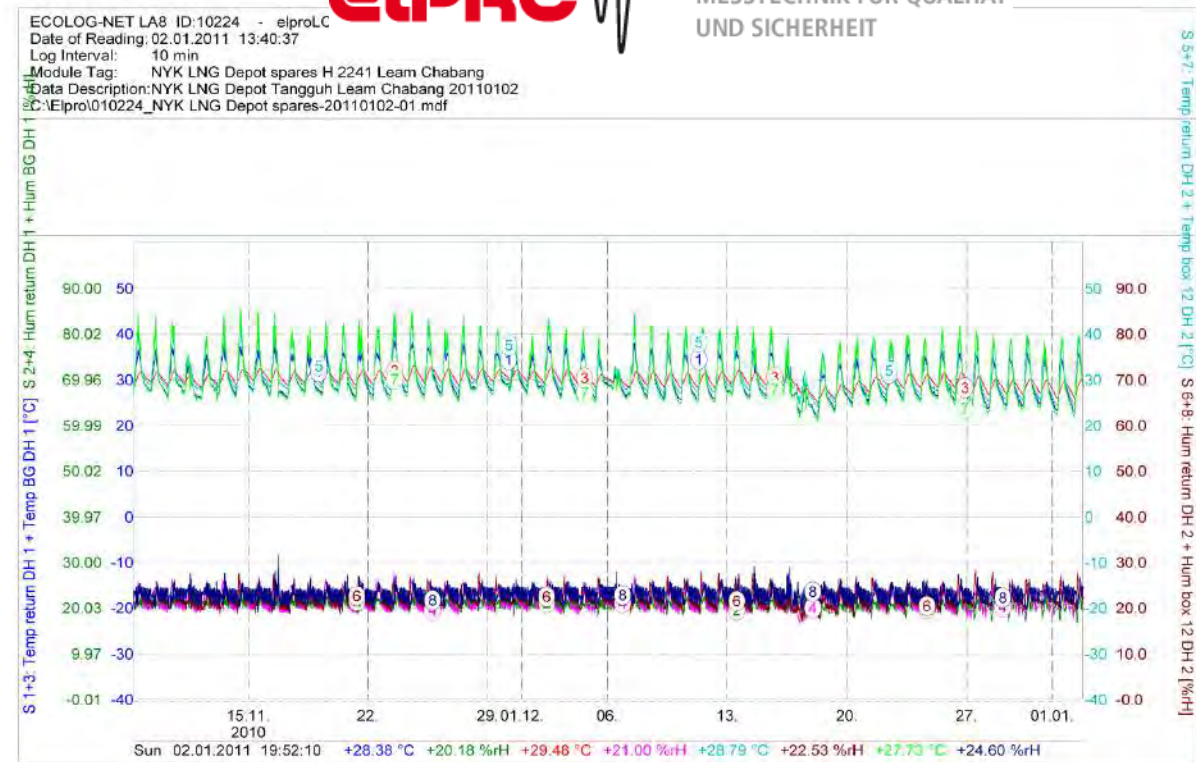
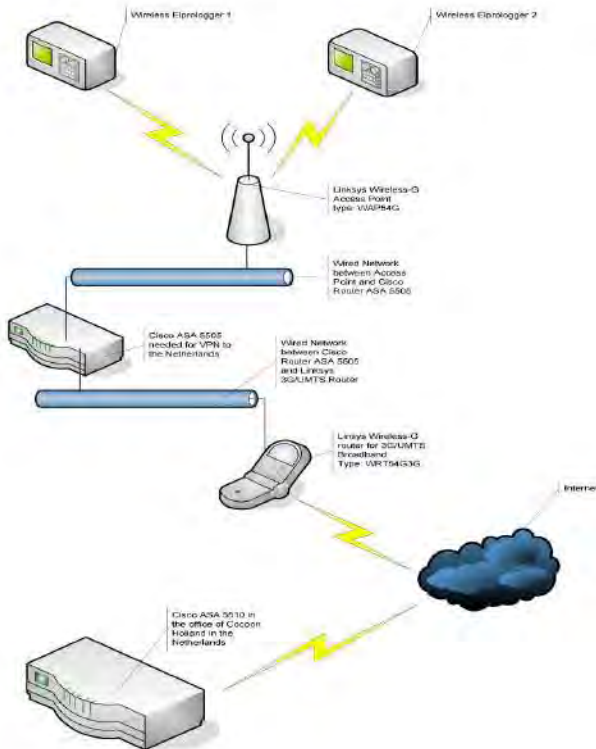


Cocoon Mothballing System



“Isolation, Dry Air Circulation, & Monitoring”

We also deliver a data monitoring system which logs the humidity data 24/7 and when the humidity gets above or below an alarm setting we receive an alarm e-mail, also when we lose a connection because of power failure or loss of internet connection.



Administrator (Cocoon Holland BV), 02.01.2011 / Current Line Chart



Cocoon Mothballing System



“Isolation, Dry Air Circulation, & Monitoring”



Cocoon Holland BV
Coatings Conservation Mothballing



Munters

ELPRG



MESSTECHNIK FÜR QUALITÄT
UND SICHERHEIT

The system is provided and operated by a package of these unique and advanced technologies.



Other applications

“Explanation of examples”

- Specific solutions have been developed for storage of fire fighting materials on oil rigs. These are kept in ‘easy access’ crates, which can be opened in an emergency situation.
- A complete equipment in the plant can be sealed due to heavy maintenance or a temporary reduction in production capacity, as well upgraded due to deferred maintenance.
- Aircrafts can be placed in ‘mothballs’ in its entirety, including engines, electronic equipment and all other systems.
- Ship interiors can be hermetically sealed – the engine room, accommodation, deck housing, as well the funnels and vent post. Deck installations are separately enclosed.
- “Peel-able Cocoon” provides temporary preservation which can be opened easily and equipment to be in operation immediately.
- Some parts of the plant, such as piping joints, sealing joints, can be sealed.
- Seamless, elastic, pore-free, airtight wall and ceiling lining can be provided for facilities like, Theatres, Clean Rooms, Laboratories and Sterilisation Rooms.



Other applications

“Explanation of examples”

- **Wall & Ceiling Finish**

- Most obvious choice in situations where hygiene counts. Due to a pore free structure of the Cocoon product, extremely suitable for Operating Rooms, Clean Rooms and Laboratories

- **Insulation Covering**

- With Cocoon, insulation is enclosed in an airtight extremely damp resistant way
- It delays the formation of condensation and thus conserves both the insulated object as well as the insulation material – this keeps its K-value, also in the long term. As specially for cold insulation.

- **Cocoon Facade Covering**

- Cocoon is extremely suitable for facades with an open structure and unusual shapes
- Is particularly suitable for closing off large Cool Halls



Other applications



“Explanation of examples”

- **Cocoon Seam & Gap Sealant**

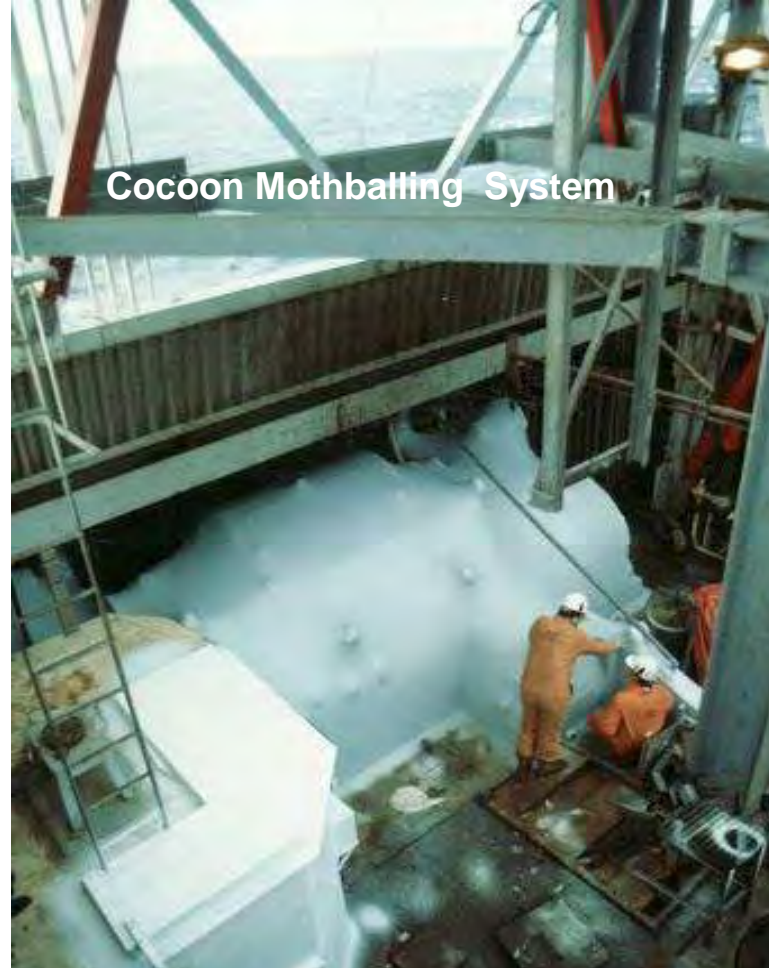
- Cocoon is perfect for sealing against both incoming and outgoing moisture, air and gasses
- For example between gas transporting areas and adjacent residential or switch rooms or creating an air tight seal for pressure operation areas

- **Peelable Cocoon**

- A totally peelable protective layer (minimum thickness of 0.5 mm)
- Large mechanical resistance and protects high quality surfaces against the consequences of grinding and welding in the area. Watertight, not sensitive to weather influences or salty air and resistant to acids and chemical bases.



Other applications



Peelable Cocoon for offshore plant.



Other applications

Cocoon mothballs



Fokkers F100



Mirages M5





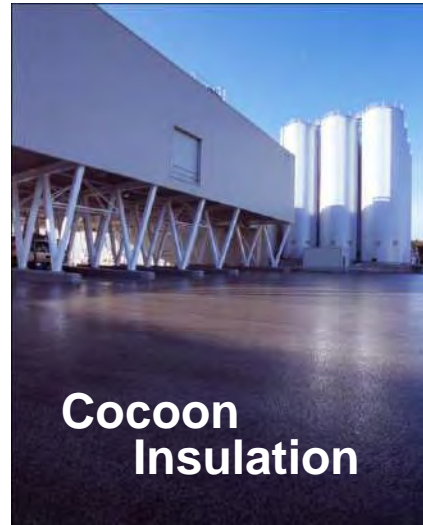
Other applications

Cocoon mothballs



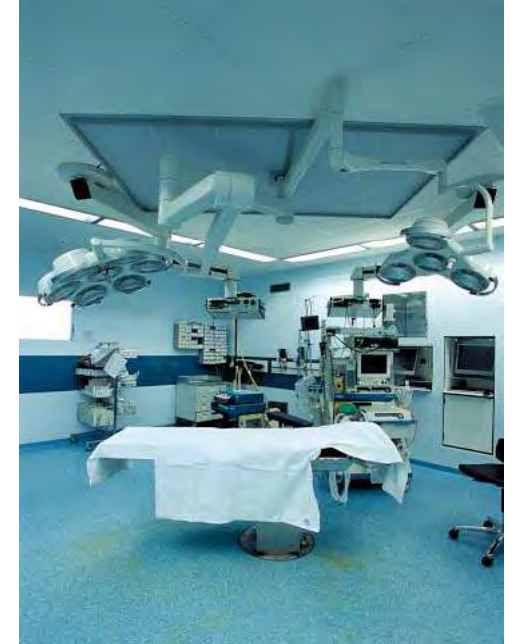


Other applications





Other applications





Cocoon Mothballing System



“Cocoon Qualifications”

- Very efficient and cost saving solution by using dry-air (no N2 nor air condition required), as it is maintenance free.
- Proven and tested concept for more than 50 years for weather resistance, elasticity, durability and strength.
- Various applications in many industries due to ongoing R&D.
- International experience with local and national governments as well as multinationals like Fokker, Akzo, Nobel, Shell, Merck Sharp & Dome, Philips, Aramco, Unilever, Royal KLM, Dutch Navy, Dutch Air force, Belgium Air force, Belgium Navy, German Defense etc.
- Quality and safety standards fulfill international requirements.

Reference List that Fuji worked

1. 1989: 710m²-Warehouse at Kobe, Bull Gear & Tail shaft at Nagasaki, T/G at Moji for Australian LNG Project.
2. 1994: Bull Gear for Malaysian LNG Project at Yokohama.
3. 1997: Bull Gear, Tail Shaft, HP/LP Rotors at Yura(Japan), and a warehouse at Ras Laffan for QGTC Project.
4. 2000: Cone Gauge for QGTC Project at Yura(Japan).
5. 2002: for Qatar Gas LNG Project at Ras Laffan.
6. 2003: Bull Gear & Tail Shaft and a warehouse for Shell LNG Project stored at Singapore.
7. 2004: Bull Gear & Tail Shaft and warehouse for Shell LNG Project stored at Singapore.
8. 2005: Two Bull Gears for Malaysian LNG Project at Johor Bahru.
9. 2005: Tail Shaft for Australian LNG Project at Singapore.
10. 2006: Bull Gear & Tail Shaft, Generator Turbine and a warehouse for Snohvit Project at Amsterdam.
11. 2007: Bull Gear, Tail Shaft ,HP/LP Wheel, LP Quill Shaft for Teekay Project at Doha.
12. 2008: Bull Gear , Tail Shaft, HP/LP Rotors, Gear Wheels and Pinions for NYK London at Amsterdam.
13. 2008: A warehouse for China LNG at Singapore.
14. 2008: A warehouse for HYPROC at Amsterdam.
15. 2008: Bull Gear , Tail Shaft, LP Rotor, HP/LP Wheels for NYK UK at Leam Chabang.

Reference List that Fuji worked - 2

16. 2009: Bull Gear for China LNG Project at Singapore.
17. 2009: Tail Shaft for China LNG Singapore.
18. 2010: Tail Shaft, HP/LP Rotors for Qatar Gas Project at MES Yura(Japan).
19. 2010: Tail Shaft for CPC Project at Jebel Ali in Dubai.
20. 2011: Tailshaft in Thailand, for Tokyo Gas's LNGc built in KHI Sakaide.
21. 2012 : DSME & SHI depot spares for Angola Project, kept at Drachten.
22. 2013 : Main Gear for Stena LNG vessel at Pusan (FGL), Korea.
23. 2013 : Spare parts of Woodside vessel of Teekay at our Drachten (Holland) facility.