Process Engineering Division

Niro

Removable Insulation of Drying Chambers

The reason for insulating and cladding drying chambers is to reduce the heat loss and thus improve the thermal efficiency. However, the insulation material has sometimes caused bacteriological hazards due to crack in the chamber wall, and old wet insulation material is often the reason for powder deposits in the drying chamber due to cold spots.

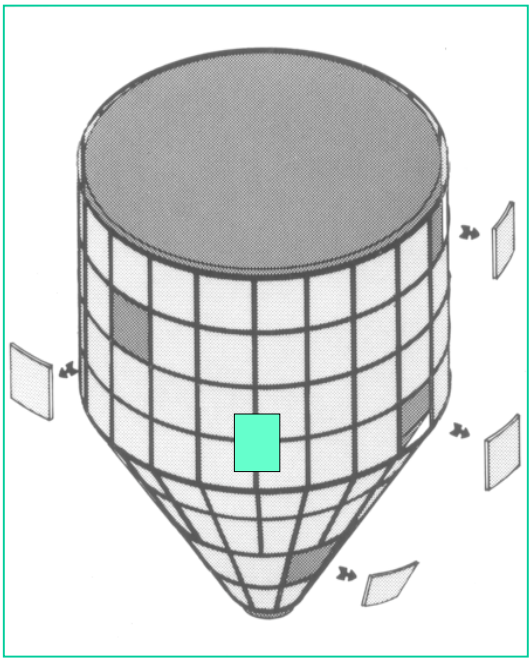
The most radical way to avoid any problems is to remove the insulation completely – however the drawbacks are:

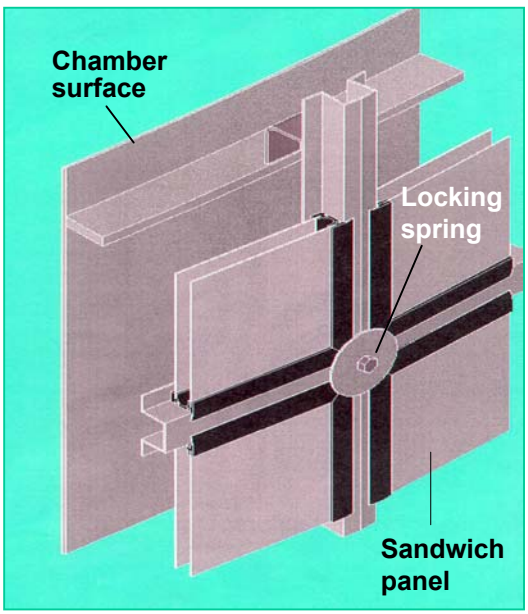
a) The evaporative capacity drops by up to 10% due to higher heat loss.

b) The temperature in the dryer room can in some cases exceed 40° C and is thus to be considered a very unpleasant working environment.

In view of the above, Niro has developed removable insulation panels with an air gap between the chamber wall and the panels. This makes it possible to inspect, on a regular basis, the outside of a spray drying chamber in order to detect any leaks or cracks, which could be a bacteriological hazard to the powder production.

The air gap design means that traditional insulation material is substituted by air. This prevents a bacteriological growth in the insulation, if a leak or crack should occur. Cold spots from wet insulation material is avoided and the drying chamber is furthermore protected from contact with chlorides from traditional insulation.





Each panel consists of a sandwich panel of stainless steel. The panel is supported by a framework and a locking spring will keep the panel in place. The panels are mounted at a distance from the drying chamber surface.

When the drying chamber has to be inspected the panels are simply lifted out by hand and each part of the cylinder and cone can be inspected. Further the panel support structure is only supported in the top and bottom of the drying chamber thus preventing cold spots or thermal bridging. Industrial installations prove that outlet air temperature can be reduced without product deposit formation.

GEA Process Engineering Division
Niro A/S
Niro A/S . Gladsaxevej 305 . PO Box 45 . DK-2860 Soeborg . Denmark . Tel +4539 5454 . Fax +4539 5800
E-mail: food.dairy@niro.dk . Website: www.niro.com