HYGIENIC DESIGN IN THE FOOD INDUSTRY

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SUMMARY

Hygienic design aims at designing equipment in such a way that contamination by micro-organisms or by cleaning and disinfectant chemicals can be prevented (Luning et. Al., 2002). In fact, if agri and food processing equipment is of poor hygienic design then more severe cleaning procedures, more aggressive cleaning chemicals and longer cleaning and decontamination cycles are required (Curiel et al, 1993, cited by Luning et al, 2002).

Legislative aspects of hygienic design have been enacted at different levels:
- At international level, the World Trade Organisation (WTO) is responsible for regulations with respect to food hygiene.
- At European level, since January 1995 all new equipment must comply with the Machinery Directive 89/392/EC.

Furthermore, several international and national standard organisations produced standards for, amongst others, hygienic design of food equipment like ISO (International Organisation for Standardisation), CEN (European Committee for Standardisation), EHEDG (European Hygienic Equipment Design Group) (ex. in Table 1).

Organizations need to introduce systems to ensure the proper management of their operations and the audit ensure support thru appropriate control mechanisms properly applied.

<table>
<thead>
<tr>
<th>Criteria for construction material at product contact side</th>
<th>Criteria for geometry and lay-out of equipment</th>
<th>Criteria for installation</th>
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</thead>
<tbody>
<tr>
<td>• Non-toxic • Non-absorbent • Resistant to process conditions • No crevices and imperfections • Roughness surface $R_s \leq 0.8 \ \mu m$ • Specific materials used</td>
<td>• Self-draining • No dead ends • No sharp corners • Joints and seals bacteria tight • Free of imperfections • Avoid misalignment • Metal-to-metal joints continuously welded • Insulation or by vacuum or such that soil and water cannot remain on surface</td>
<td>• Minimise risk of condensation • Equipment directly sealed to floor/wall without gaps • Otherwise adequate space for cleaning and inspection</td>
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Table 1. Major hygiene design criteria as recommended by EHEDG (Luning, et al. 2002).

BIBLIOGRAPHY