Filling of corrosive household products: Why is long-term investment still a preferable option?

When having to invest in a new filling machine, manufacturers of corrosive products such as bleach or descaling agents are confronted with a particular issue: machine lifetime.

On one hand corrosion can drastically reduce the operational life of standard machines, on the other, the acquisition cost of corrosion-proof equipment is significantly higher. Manufacturers thus have to decide between short-term and long-term investment, the final choice depending mostly on profitability and market adaptation criteria. Serac details in this article why it still believes that long-term is a preferable option in terms of reliability, TCO (Total Cost of Ownership) and flexibility, as long as machines are developed in close partnership with the end-user.

Corrosive formulas are unlikely to vanish soon

Despite different evolutions on mature and emerging markets, sales of household cleaning products are still growing at reasonable pace on a worldwide scale.

Although environmental concern might affect the sales of some specific products in favor of « natural » cleaning agents, the efficiency benefit remains on the side of more corrosive formulas which will still be around for a long time.

Among this corrosive products, bleach is the one that probably has the most promising future: first, it can enter a majority of households in countries where hygiene level is still under development and where consumers look for cleaning and sanitization functions at an affordable cost; second, it meets the expectations of households affected by a loss of purchasing power by offering a multi-functional solution that favorably replaces different task-specific cleaning products.

For all these reasons, the future of corrosive household cleaning products seems not blurred enough to stop considering their manufacturing on the long term.

New packaging combine safety and ease of use

Acquisition cost has to be balanced with TCO and OEE

Aggressive products can significantly reduce machine's lifetime if they are not designed to be corrosion-proof. Spilled liquids can seep in the machine body and spread corrosion across components, thus generating high maintenance costs and machine downtime.

When properly designed and built to withstand contact with corrosive products, a filling machine can generate yearly maintenance costs that represent less than 1% of the acquisition cost. With less breakdowns and maintenance operations, the overall availability of the machine is obviously higher and production can be conducted without trouble over a longer period.

Corrosion-proof design not only means to use chemical resistant materials for sensitive parts. Higher robustness must be sought after for all components, through specific materials, coatings, and protection methods (such as overpressure for electrical parts and mechanical drives). Minimizing the number of welds in the machine design also contributes to extend its lifetime.

Proactive protection of the equipment is essential as well since it avoids repeated contact with corrosive products where not intended. Proactive protection is obtained through a clean production environment (less drips, for example), full mastery of corrosive fumes, operational reliability and high cleanability.

Operators' safety is essential as well

Machines that are specifically designed for corrosive products can include a whole array of options to secure that operators are not exposed to harmful substances.

Serac's RC filling machine range offers for example a totally closed and tight cabinet equipped with proven extraction mechanisms to avoid the propagation of vapors, and an automatic cut-off system connected with doors opening.

Filler-capper made of corrosion resistant materials

Customized design better suits specific product requirements

Corrosion depends on several parameters, such as chemical composition, temperature, abrasiveness, pressure or fluid velocity, which can vary significantly from one product to another.

Since various corrosion-proof materials can be used in the building of the filling machine, and no single combination proves ideal for every product, design should always be carried out in close partnership with the end-user. With his own parameters in mind, he will be able to guide the machine manufacturer towards the proper choice of materials for the environment considered and thus benefit from the longest possible lifetime for his machine.

Corrosion-proof materials used by Serac in its RC filling machines include polyethylene or polypropylene, 316L stainless steel, titanium and even Hastelloy.

Serac also proposes Halar coated stainless steel tanks that offer higher resistance to mechanical stresses, chemicals and temperature. Such tanks are particularly suited for highly viscous products that require overpressure and applications dealing with hot fluids or hot cleaning agents.

As we can see, from ROI point of view, several arguments plead in favor of machines specifically designed to withstand corrosion over a long operational lifetime. However, to win the final decision, such machines still have to be flexible enough to make sure they will be able to adapt market evolutions over the long term.

With undisputed experience gained through its long term collaboration with HPC industry leaders, and mastery over all kinds of packagings (angle or straight necks, complex caps...) and formulas (concentrated, scented...), Serac positions itself as a reliable partner for developing machines with a long-term business overview.

Angle neck recipients filling

When designing its RC filling machine range, Serac has also emphasized flexibility by using the Plug-On® technology for format changes. Plug-on change tools enable the production of multiple formats on the same machine, with quick dismantling and assembling.

Combining profitability with market adaptation, Serac's RC filling machines definitely offer all the benefits required for investing in a long-lasting production equipment.

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