

Don't be misled by IP ratings, warns Schneider

Poor understanding of 'IP' ratings is leading to inappropriate specification of enclosures, according to Schneider Electric. The company's Darren Hodson also warns that some IP ratings do not have an international meaning and so may not be relevant, in some cases.

"The system of IP ratings is misleading many specifiers and resulting in higher costs than are strictly necessary," says Hodson.

"The common mistake is to assume that the higher the IP rating, the better the equipment inside the enclosure will be protected against weather conditions," he explains.

He makes the point that the degree of protection offered by an enclosure has to be considered in conjunction with the precise performance requirements of the application.

IP ratings are defined in the IEC 60529 standard 'Degrees of protection



provided by enclosures', published in the UK as BS EN 60529. Degrees of protection are then specified by the letters IP, followed by two or more digits.

The first digit, a number 1 to 6, reflects the degree of protection against the ingress of objects, as well as the

protection of persons against contact with live parts of the equipment within the enclosure.

The second digit, a number from 1 to 8, relates to the protection of equipment within the enclosure against harmful ingress of water. Either digit can be 'x' for an unspecified condition.

According to Hodson, one of the most common misconceptions relates to enclosures rated IP69K. "This actually stems from a German national standard and has no international recognition," he points out.

And he adds: "The IP69K test specification was initially developed for electronic equipment on road vehicles as a rating for high-pressure and high-temperature wash-down applications... The result is that enclosures rated IP69K can vary between manufacturers and might not even pass the tests for lower IP codes."

Impeller mixing upgrade doubles capacity

By upgrading the agitator assembly in an existing two-tonne process vessel, shampoo processor Herb UK reckons it will see a return on its investment in less than eight months.

Factory manager Brian Crouch explains that the improvement also reduces energy consumption and solves product aeration issues.

"Our shampoo was taking three days to mix and is the most challenging product to produce," comments Mark D'Arcy, Herb UK's operations manager.

"Our existing mixing equipment, with large blade impellers, was also leaving too much air in the product, causing delays at the bottling stage."

He says the firm experimented with recirculation pumps, but increased power consumption, product aeration and inconsistent results led it to look at improving the agitator.

Ekato UK managing director John Smith says his company used CFD (computational fluid dynamics) to assess the options and recommended its Viscoprop agitator.

The unit provides for variable speed



and reverse, effectively 'pulling' liquids off the floor of the vessel and distributing them evenly through the batch.

"Variable speed gives the operator better control," insists Smith. "And, for smaller batch sizes, it helps minimise splashing."

Crouch confirms the improvements. "We have been able to reduce process time by 50%. We can achieve 100,000 tonnes per manufacturing year. In

addition, the new process is removing much of the air, reducing bottling time and the need for a recirculation pump."

Interestingly, Ekato's Smith says that the multi stage Viscoprop impellers also helped to solve another issue at the Herb UK plant. Correcting the pH value is normally done by adding an adjuster at the end of the process, but, being thinner and lighter, this tended to float on the liquid surface. Typically, more would be added to ensure consistent values through the batch.

But Ekato's multi-stage impellers distribute the adjuster through the entire batch, resulting in better consistency from top to the bottom of the vessel.

"Mixing different densities of constituents can be a real issue, increasing mixing time that is not value added," says Smith.

Herb UK is benefiting in other ways, too. "The new impellers are much smaller," says Crouch. "This makes the tank more accessible for removing the product and a shorter cleaning process reduces changeover times when we switch from shampoo to activators."