

## Sealing Options for Encoders

Due to the fact that many encoder manufacturing companies are international suppliers of shaft encoders with manufacturing plants world-wide, they use the international standards when it comes to specifying the sealing qualities of the units. NEMA ratings are valid, but for the most part, they apply mainly to the USA market place. Clarification between the two standards helps explain their differences.

**NEMA 4** ratings call out protection against rain, splashing water, or hose-down. However, the testing criteria are not specified. Whereas, **IP** ratings also include the testing criteria, so a customer can get a better understanding as just exactly what degree of protection he or she is getting.

The definition of the different IP ratings on encoder products are as follows:

**IP50** ratings mean that the unit is sealed against dust. The testing utilizes talcum powder with particle size no larger than 75 microns. The testing is done in an environmental chamber where the internal air pressure is alternatively decreased and increased over a period of up to eight hours. After removal from the test fixture, the item must not show any ingress of dust. IP50 concerns solid foreign objects only, it does not have anything to do with protection from liquids.

**IP64** is a step up from IP50. First, the test for dust has to be passed. Then the object is subjected to a spray of water onto all sides of the object from top to bottom. This spray test can take up to ten minutes and the flow rate of the water is about two gallons per minute.

**IP65** is a little more stringent. The testing requires spraying the unit from all directions with water at three gallons per minute through a nozzle with an opening of one quarter inch diameter. The distance from the nozzle is maintained at ten feet. The testing time is for a minimum of three minutes.

**IP66** is the most stringent encoder sealing option offered. The testing criteria are very similar to IP65, but the spray test is done with 25 gallons per minute through a nozzle with an opening diameter of one half inch. The testing time for this is for a minimum of three minutes, also. The main difference is the volume and pressure of the water used in the testing.

When comparing different encoders, it becomes clear that the international standardized IP ratings mean considerably more than the old NEMA ratings. It is for this reason that many encoder companies utilize the IP standard ratings.