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Featured Projects

How Electro-Osmotic Pulse Technology Works

By Ben Craig

The electro-osmotic pulse technology (EOP) is able to prevent moisture intrusion by applying an electrical field that blocks moisture from seeping through concrete or soil. "It is basically a moisture-transfer mechanism, more than anything else," said Orange Marshall. The EOP system consists of a controller that converts standard alternating current to direct current, a wiring system, and electrodes that are embedded in concrete.

According to Marshall, the system works like the inner workings of a light bulb. "The electrode/concrete combination acts like a light bulb. As long as there's moisture in the concrete or the filament is intact, electric current can flow and water will move through the concrete, i.e., the light bulb will light. But as the moisture dries out, it would be similar to your light bulb's filament burning out-the system would stop working. And when the moisture comes back, it's like putting in a new light bulb-the EOP system would start up again."

EOP systems offer an alternative to conventional water control techniques that usually require excavation around a facility. The EOP systems have a low power requirement and can maintain a low level of relative humidity. For instance, it is estimated that the relative humidity of the storage facilities at Fort A.P. Hill will be maintained at less than 55 percent after the EOP installation.

Marshall noted another advantage to the system-its low operating costs. "Typically, operating an EOP system to protect a 1,200 square-foot basement requires the same power as a 100-watt light bulb," he said. EOP systems can be installed in certain porous building materials. For example, Marshall explained that they are effective in concrete, masonry, soil, clays, and some types of stone.