

Touchless, Holographic HMIs Prevent Disease Transfer



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The New York State Health Department's June 30, 2009 Hospital-Acquired Infections [Report](#) has drawn serious attention of healthcare professionals and the public to the daunting challenges faced in eliminating contamination and disease transmission rampant in hospitals and other healthcare facilities. Unfortunately, this report and others spawned such Earth-

shattering recommendations as the importance of washing hands while at work in healthcare facilities. While useful, that procedure was part of the syllabus for the health merit badge I earned on the way to becoming an Eagle Scout in the '50s. A much younger person might say "hello?"

We all have friends who've returned home from hospitals with serious infections contracted for reasons unrelated either to their reasons for seeking treatment in the first place or their medical procedures. My personal favorite is a now-deceased friend who entered a local hospital for implantation of a pacemaker and returned home with a staph infection in her foot. Regrettably, many laudable suggestions on ways to reduce the spread in healthcare facilities of diseases and infections, particularly in our virus and H1N1-laden world, however well-intended, can best be described as "feel good" measures akin to the ubiquitous anti-bacterial lotion dispensers we've all seen metastasizing in healthcare facilities and various public facilities. As I understand it, washing hands is important but useless unless pursued vigorously for at least 30 seconds. Sadly, many measures suggested as cheap or simple ways to reduce transmission of contamination and disease are destined to be unproductive because they either require overworked, distracted or disinterested people to do still one more thing or necessitate use of additional equipment or supplies that are not efficient, however well advertized.

Fortunately, touchless, holographic human-machine interfaces offer a simple solution that doesn't require people to do more than they already do – they need only pass a finger through a holographic image, floating freely in the air, of what would otherwise be the keys or buttons of equipment to be operated. These HMIs for electronics and electro-mechanical equipment offer inexpensive and intuitive ways to bypass transmission of contamination, dirt and disease because there's nothing to actually touch in using them. Touchless, holographic HMIs have only three essential and simple components: a full-color hologram of what would otherwise be keys or

buttons of the equipment laminated on the back of an acrylic plate, an [LED](#) behind the acrylic plate that projects the hologram's image into the air and a wave source sensor, usually infrared, also behind the acrylic plate, that is focused on the center of the freely floating holographic image. When a finger enters the holographic image, the sensor sends an actuation signal to the device. For example, take a look at the lowly, metal mushroom on the hospital wall that family, patients and staff elbow, hit, punch or shoulder to actuate the mechanism that opens exit doors. Not only is that device crawling with whatever was on the body, clothing or hands of all previous users (seldom if ever cleaned) but it must be regularly replaced due to heavy use and abuse. By contrast, touchless, holographic switches have no moving parts to fail under heavy use and only passing a finger through their colorful, holographic images, suspended in the air, is needed to open the doors. These components can be easily customized to a wide variety of [electronic](#) and electro-mechanical devices such as medical equipment, kiosks and doors, whether in primary hygiene sites such as operating rooms or less directly invasive venues such as healthcare facility corridors, examining rooms and public areas.