

Technology Fusion and PE Licenses

BY DAISUKE UEMURA, P.E.



It has been five months since my big move from Tokyo to San Francisco, where I now work as a development analyst for AMB Property Corp.

As a development analyst and as the president of the Japan Society of Professional Engineers, I have experienced and enjoyed learning about the similar and different technologies used in the U.S. and Japan. Just looking around my desk, there are some technologies that are not commonly used in Japan, such as compact fluorescent light bulbs and handheld smart

for trucks to reach the upper floors. These spiral ramps require very highly skilled design and construction.

On the other hand, most U.S. warehouses are one story and have wide, square floors because land is cheaper and more available than in Japan. Layout and design of these warehouses are comparatively simple, but one unique construction method, the tilt-up wall, is often used. This design method can be used only in wide warehouses because the walls are fabricated on the floor then lifted and positioned by cranes. These examples—spiral ramps and tilt-up

Another good example of technological fusion over time comes from the Roman Empire, which prospered due to advanced civil engineering. The empire's core infrastructures were the fusion of Greek architecture, Etruscan architecture, and the traditional technologies of the Roman Empire. Villas in the empire, some of which still exist, were the fusion of the orders of Greek architecture and Roman concrete. These cross-cultural fusions resulted in advancements for generations to follow.

So what does it take to sustain intellectual trading within these culturally bound and somewhat guarded nations? In order to develop technology fusion between different countries, we must have common foundations and basic engineering standards. Otherwise, these kinds of fusions may cause defects and inefficiencies. We must also have a global view and high moral integrity. Otherwise, technology fusion will cause friction and opposition.

In these senses, professional engineering licensure plays a pivotal role when joining techniques to create global standardization. It is also understandable why PE license holders should behave ethically and have a vast knowledge of engineering standards in order to create these kinds of successful technological fusions. This kind of knowledge sharing is partly why international conferences of like-minded individuals are so beneficial.

The 2008 NSPE Annual Conference in Portland, Oregon, brought about a rich international flavor as flags of the U.S., Brazil, Canada, Korea, and Japan shared the main stage. I was introduced to a new generation of NSPE members and was given the opportunity to speak and share my ideas. These kinds of opportunities to communicate with diverse groups of engineers certainly bring about room for technological fusion.

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phones with PC functions. On the other hand, the construction of a high-speed rail system between San Francisco and Los Angeles was approved this November, but the Japan's bullet train was constructed more than 40 years ago.

These technical differences have many reasons, such as the history of our people, climate, and geography. Therefore, it does not make much sense to compare and contrast the technology levels of the two countries. Each country is unique.

It makes more sense for both countries to share and intertwine concepts to create innovative technologies. What each culture brings to the table is very different but also very beneficial to each other's advancement. By combining the technologies of each country—technologies that were created to fit within their homeland constraints, such as land size and cost—we can create state-of-the-art technologies. It's a process I like to refer to as a "technology fusion."

While working on warehouse construction for teams in both the U.S. and Japan, I experienced this kind of fusion of intellect and skill. For example, due to the high cost of land in Japan, warehouses are often multi-storied and have spiral ramps

walls—were developed to fit within the constraints of each country. However, it is not impossible to combine them into one warehouse. This type of "technology fusion" will benefit both American and Japanese construction models.

Another example of technology fusion is the Tokyo Sky Tree, which is now under development in downtown Tokyo and expected to be completed by 2010. The building is projected to be slightly over 2,000 feet high, making it the tallest tower in the world. Generally, skyscraper technology is more advanced in the U.S. than in Japan, but because Japan is more prone to earthquakes, seismic design and construction technology is very advanced in Japan. The Tokyo Sky Tree is under way with the fusion of advanced skyscraper technology and advanced seismic design.

Throughout history, it is apparent that, over time, a fusion of technological ideas has resulted in the evolution from ancient towers to today's advanced sky-scrapers. The Tokyo Sky Tree is a good example of this combination of ancient and contemporary techniques. Its design originated from an ancient tower in Japan that has survived more than 1,000 years.