

New Nuclear Power Plant Construction: Building Airplanes, Not Airports

When discussing the future of nuclear power plant construction, there is general agreement that to control costs and risks there is a need to build a fleet of standardized designs. The 2024 US DOE Liftoff report clearly states a committed order book of 5–10 deployments of a single reactor design is the first essential step for catalyzing commercial liftoff in the US as overnight costs are largely expected to decrease based on repeat building and learning by doing.

Poor project delivery experience has sometimes led to an airline analogy to stress this point – that the nuclear industry needs to **build airplanes, not airports**.



Source: Pexels.com

At first glance this analogy makes good sense. Focus on repeating existing designs with as much factory build as possible to use the same supply chain and labour force like airplane manufacture and avoid the often-disastrous one-of-a-kind infrastructure mega projects that are airports. But is it really as simple as that?

It is true that the airline industry has got building airplanes right (not considering current safety issues at Boeing). Both Boeing and Airbus deliver hundreds of planes to their customers every year from their factories. But it's also important to remember that building airplanes without airports is pretty much pointless.

And while thousands of airplanes are travelling around the world from airport to airport every day, each and every nuclear plant is a permanent infrastructure project with its inherent challenges in securing approvals, navigating regulations, and gaining public acceptance. While maximizing factory assembly is a laudable goal, nuclear projects will always require a considerable amount of onsite construction using local resources.

On the other hand, airports serve as crucial infrastructure and gathering places in communities with thousands of people moving through them daily. This often requires unique designs that emphasize architectural beauty and make a statement about the city in which they are located. Conversely, as purely industrial facilities nuclear plants can be standardized in appearance and layout, which can increase the repeatability of the plant design.

We have long been advocates for standardization and the benefits that accrue in terms of lower costs, less risk and enhanced safety. Just as modern airplanes are designed for mass production and global deployment, nuclear plant standardization allows for streamlined manufacturing processes, easier regulatory approvals, and more predictable

performance outcomes.

However, for project success, we can never forget about the local element of a nuclear project. The processes to secure local support and transfer knowledge to the local workforce must always be top of mind. In essence, new nuclear projects are about both airplanes **and** airports.