



# Reduce risks on site with packaged plant

When building owners make a significant investment in an infrastructure project they expect a few guarantees. This is especially the case with large-scale capital investments such as building comfort cooling, where they might be spending millions on a new central plant with a 25-30 year economic life.

With chilled water plant projects the largest challenge is most likely assessing risk. Risk in component selection, supplier reliability, labour availability and operating costs once the system

is commissioned and operational. Given all of the risks in pursuing large-scale, central plant schemes, it is understandable that owners and construction managers will seek to mitigate as much project risk as feasible.

The traditional approach to buying, constructing, commissioning and operating a central plant involves clearly identifiable risk factors. First you start with a client's engineer or engineering design firm who designs the plant and specifies a certain operating efficiency. Next a gener-

al contractor is hired who then bids out all of the components with detailed specifications.

Bids are received, reviewed and selected largely on a lowest cost basis within design specifications. All the different components – and there could be well over a 1,000 for a large central plant construction project – are then ordered and shipped to the site and must be inventoried and stored. There is a logistical cost and risk associated with administratively managing each central plant construction project.

With the complexity of custom designing, specifying, ordering, scheduling delivery and managing a component parts inventory there is also the issue of minimising the financial and schedule impact associated with changed orders. Change order risk must be effectively managed with all projects. The more firms you have in your supply chain directly correlates to your risk exposure.

Once the components are ordered, the contractor must then secure skilled labour to build the central plant. Labour availability and skill-sets vary across cities and regions. Labour rates also vary significantly around the globe and in order to maintain a high level of quality construction you should have experienced site management and rigorous quality controls.

If the plant is being constructed on site, the project will be vulnerable to potential weather delays, which should also be factored into the project schedule.

Additionally, all contractors should consider the risks associated with site safety, with all the workers, cranes and large components that are integral to any construction project.

If your complex requires multiple plants, such as with large campuses or district cooling projects, you will need to ensure consistent construction across all of installations. Achieving



Peter Armstrong, director, TAS

consistency in field-constructed projects may be challenging.

Finally, when the new plant is commissioned, what assurance is there that the operating efficiency will be consistent with the original design?

There is an alternative – it's called packaging. By using a sole source solution from a firm that has invested in pre-engineering standard product designs and provides a factory-controlled environment, a contractor will be able to effectively manage its total project risks while providing the client with an efficient central plant.