



“The nuclear renaissance has created a very dynamic environment!”

In light of a renewed interest in nuclear power, several utilities around the globe have either committed to, or are considering, the deployment of Westinghouse’s AP1000™ Generation III+ nuclear power plant to meet burgeoning energy demands. We met with Mr. Earl Barlett, sourcing specialist within Westinghouse’s Nuclear Power Plants Supply Chain organization, and asked him about both the challenges he faces sourcing valves for the AP1000 and what Westinghouse expects from potential valve suppliers.

By James Chater and Esther Aiking-Martensen

Mr. Barlett has been working with the Westinghouse AP1000 group for two years as a procurement specialist. To date, his primary responsibilities have focused on developing a responsive supply chain that is capable of delivering a variety of both safety and non-safety valve hardware to meet the AP1000 technical, commercial, and project requirements. In order to support Westinghouse’s transition from plant design to project delivery, “Westinghouse has employed a traditional approach to supply chain management; focusing not only on the immediate equipment suppliers, but identifying opportunities within second- and third-tier suppliers that can be capitalized in order to provide exceptional long-term benefits for the plant owners and operators.”

“Relative to valves, the AP1000 is essentially an evolutionary design. Although the technical requirements are both rooted in, and reflective of, a few decades worth of installed history and industry research, the current technical

requirements also reflect the Generation III+ system requirements. Additionally, because the AP1000 has been designed as a standard plant to support a global deployment, technical requirements necessitate equipment qualification testing to the most stringent requirements. As such, Westinghouse has engaged various tiers of its supply base (appurtenance suppliers, test laboratories, and valve manufacturers alike) to encourage collaboration and ensure that the proposed hardware is delivered on schedule.”

Mr. Barlett has placed special attention on some of the large, highly engineered valve commodities, in particular Main Steam Isolation Valves (MSIVs) and on the so-called “squib” valves. These valve styles have not been previously manufactured, for nuclear applications, to the sizes required by the AP1000. According to Mr. Barlett, “The AP1000 MSIVs and squib valves are perhaps the two most interesting valve styles in the plant based on their size, complexity, and criticality of function. On the one

hand, the MSIVs are over 17 feet in height, 3 feet in diameter, and are expected to close in three to five seconds. On the other hand, the squib valves are a pyrotechnically actuated, leak-tight set of valves that serve a critical role in the AP1000’s passive safety system.”

Procurement challenges

When asked to name some of the issues he comes across in this day-to-day activities as a procurement specialist, Mr. Barlett says that the procurement challenges he faces generally fall into three categories: “The first category consists of the basic macro-economic challenges with which many procurement specialists in the nuclear industry struggle, to include raw material price volatility and extended lead times, security and availability of supply, fluctuations in global currency exchange rates, and ironically escalating energy costs.”

The next category consists of the technological challenges presented by





Main Steam Isolation Valves. Photo: Flowserve.

the Generation III+ plant designs to include greater megawatt output and increased design conservatism. Mr. Barlett states, "The design requirements and operating conditions for the new plants typically encroach upon or exceed the technical specifications of the commercially available product offerings today. From a sourcing perspective, the trick is to try and source equipment from suppliers who not only have a demonstrated and proven technology, but who also have the ability to evolve their existing technology to meet the current market demands."

The third, and final, category consists of commercial requirements specific to a project and/or customer. Mr. Barlett says, "Because the AP1000 has been designed to support a global deployment, Westinghouse is simultaneously supporting a variety of both construction contracts and market inquiries that individually have their own unique commercial intricacies. Some markets, for example, have emphasized the need for technology transfer and/or minimum requirements for local content. As a leader in technology transfer, Westinghouse has successfully transferred design and manufacturing capabilities to many countries including

France, Japan, Korea, and most recently China. In support of this objective, Westinghouse continues to search out those suppliers who are capable of establishing a global reach while maintaining a local presence. Flawless execution is also imperative."

Valve procurement

With respect to valve manufacturing, Westinghouse is not currently vertically integrated. This means that the company looks to external suppliers who are capable of meeting the AP1000 functional requirements. When asked how these valves are sourced, Mr. Barlett explains that Westinghouse is in the process of establishing both a Qualified Supplier List (QSL) and an Approved Supplier List (ASL). "Our goal is to establish a QSL first and eventually an ASL. We have a very holistic approach to sourcing, particularly with valves. First, we conduct extensive market research, reading trade magazines and industry reports, attending industry conferences, requesting customer input, searching through annual reports, and evaluating our own database of supplier utilization and performance. Next, we make the initial contact with suppliers, to introduce our team and our interests. If, after an initial chat, both companies are interested in pursuing additional opportunities, we execute a two-way confidentiality agreement and bring all the experts to the table. In particular, our supply group has its own team of dedicated professionals who perform overall supplier evaluations. Westinghouse will perform various levels of evaluation from interest and capacity surveys, to on-site follow-ups and quality audits. We want to know as much as possible about our potential suppliers: What industries do you serve? Where are your geographical locations? Where are you installed? Who are your customers? What kind of experience do you have? What certifications do you

possess?" All this, he says, typically culminates in an eventual hardware solicitation and bid evaluation. At this point suppliers can be generally added to the QSL. "However," Mr. Barlett continues, "the evaluations do not end here. We continue to evaluate the supplier's ability to adhere to our technical and quality requirements and deliver on time and on budget. Only then can a vendor be added to the ASL."

Dynamic environment

When asked what will happen in the next five to ten years with the AP1000 plant, and how this will affect procurement for this design, Mr. Barlett says he expects a lot of new opportunities and challenges alike in support of both the US and global markets. "As the AP1000 has a 60-year design life, one can reasonably expect a fairly substantial support business that spans many decades!" He continues, "We also have to look even further into the future. As reactor plans take such a long time to bring to the market, while we are building one design, we must also begin to prepare for the next-generation plant designs yet to come. The design evolution won't stop with the AP1000, and we need to make sure that we will have the dedicated suppliers lined up to support the Generation IV plants, which will have even higher flows, higher temperatures and higher pressures. What we need today are suppliers with a global reach and a local presence, who can be both dynamic and flexible, and who can bring creative solutions to the table." He concludes: "The nuclear renaissance has created a very dynamic environment. The challenges and opportunities alike will abound for many decades only if we prepare today and flawlessly execute tomorrow."



Earl Barlett.

