

A new force in fluidised bed

A new company in the fluidised bed field, Sumitomo SHI FW, has been created from the acquisition by Sumitomo of Amec FW's fluidised bed interests.

MPS interviewed Tomas Jeanty, CEO of the new company.

The acquisition of Foster-Wheeler

MPS: Please spell out what part of Amec-FW has been bought by Sumitomo Heavy Industries.

TJ: The acquisition comprised the whole of Amec Foster Wheeler Power Group's fluidised bed business, including all of the entities, all the technologies and IP, as well as the existing contracts and commitments. The product line includes fluidised bed boilers, gasifiers and scrubbers, fabric filters and specialised metallurgical waste boilers.

MPS: In the press release it was specifically FW Energie BV that was named as the acquired entity. To what does that name refer?

TJ: FW Energie BV was a legal holding company located in The Netherlands, not an operating company. All contracting and project execution is done through our four operating units which are located in China, Poland, Finland and the USA, with our Finnish company being the headquarters of Sumitomo SHI FW (SFW).

MPS: Why was Sumitomo interested in AFW fluidised bed?

TJ: There has been a long term co-operation and friendship between AFW's fluidised bed business and SHI which has been a licensee of AFW's CFB boilers for over 15 years. In that time SHI's CFB business has developed to be the core of their energy and environment group. SHI has delivered 67 CFB boilers under their licence and that is not an insignificant number when you consider that both companies together have delivered a total of 482 CFBs.

MPS: Can you say how the two companies started in terms of their technologies?

TJ: In FW's case the technology was developed on biomass to start with, by a Finnish company called Ahlstrom. In 1995, Foster Wheeler, which was also in the CFB business, acquired Ahlstrom's CFB business, Ahlstrom Pyropower, which had operations in Finland and the USA.

By acquiring Ahlstrom, FW became the market leader. Since then FW, then Amec-FW, and now SFW have kept that position.

To remain in the top spot, we had to both advance and scale the technology into new markets. For example, we currently have the world's most advanced ultrasupercritical coal fired CFBs in commercial operation in Korea, and the

longest running supercritical CFB in Poland. At the same time we have brought biomass firing CFBs to the utility scale: in Poland we brought on line the largest operating biomass CFB plant in the world at more than 200 MW with one boiler and we are constructing a 299 MW biomass boiler in Teesside in the UK.

MPS: During the 15 years when it held the licence did Sumitomo undertake any development of the FB technology?

TJ: We in FW found the two companies to be a good fit technologically, and the business philosophies are very similar. We'd developed our own proprietary technologies and Sumitomo, as the licensee, was very actively involved in all the development: but they have also taken small biomass CFB technology to a high level of performance and competitiveness when serving their domestic Japanese market. With this combination, while FW has focused mainly on larger size boilers whether for biomass or fossil fuels and bringing the CFB to utility scale, it was gaining good traction in becoming a more widely deployed base power technology. That is now combined with Sumitomo's area of development, which has been on smaller biomass, and we see the combination benefiting the business globally to a very large extent.

MPS: Can you tell me what the Sumitomo technical approach is, what they've been doing so far – biomass seems to be an area of major interest.

TJ: SFW plans to continue to be the CFB technology as well as market share leader and whereas Sumitomo has operated predominantly in the Japanese market in the biomass business this acquisition allows them to deliver on their strategy of global expansion. So for SHI the acquisition is about technology, it is about access to new product markets, but also it is the access to the global market and the global delivery network that SFW has.

The future

MPS: Can you set out for me what you think is the future of FB as a major player in the energy transition?

TJ: It's plain that economic activity and GDP growth have to date been the drivers for energy consumption and therefore for energy technology, but there are parts of the global market where we see now that the traditional drivers are not necessarily



present. However there are a couple of mega-trends that affect the market, namely energy efficiency and decarbonisation. While the traditional drivers may seem to some to be working against energy technology companies, we see it as an opportunity to provide the tools to benefit from firing renewables, whether they are biomass, or fuels from recycled materials, in units of baseload generation size. It also provides an opportunity to significantly reduce, up to 50%, the CO₂ emissions of more conventional generation at large utility size when we bring in fuel-flexible high efficiency supercritical CFB that can co-fire biomass. So we see an opportunity to increase CFB's share of the total market. Even if the overall solid fuel market were not growing, we could see CFB taking a larger share of the total through its ability to provide fuel flexibility and high efficiency combined.

MPS: Do you see positive signs already of a greater take up of CFB?

TJ: We see them in both renewables and fossil fuels. Renewables sources were at first generally forestry waste, and on a small scale. Now with pelletised biomass and locally sourced biomass we see projects like Teesside in the UK appearing, and we are able to win that type of project, which does demonstrate that biomass is taking up a bigger share of baseload generation. At the same time the market is widening in geographical terms – biomass having been a small scale business in Western countries is now growing as the fuel of choice in Asia. We're looking at Korea which has already developed a good amount of biomass generation. We have been very successful in Japan, and also in other Asian countries that are looking into biomass.

On the conventional power side we have broken through into supercritical based generation, first in Europe with Lagisza (Poland) followed up by the 4x450 MW plant that is, as we speak, in commercial operation in Korea. And then we have another agreed contract with a European utility for 2x550 MW units, so we have been able to demonstrate CFB's ability to take a broader share of the market.

I should also mention the lignite market and CFB's ability to burn lower ranked fuels. For various reasons many countries are seeking to develop indigenous fuel sources including hard-to-fire fuel such as lignite or anthracite coals and CFB can provide solutions in those markets.

MPS: *Do you see the ability to burn difficult fuels as a major driver for CFBs going forward?*

TJ: Yes. The point here is that we can provide a reliable and high efficiency solution, utilising domestic energy sources, that has been used before. But the technologies then employed struggled with those two aspects, reliability and efficiency.

So whether it is domestic fuel or it is imported, fuel flexibility, allowing fuel pricing arbitrage, is the key; that combined with demonstrated reliability and efficiency up to that of ultrasupercritical advanced technology is what we bring to the market as a CFB supplier.

As an example, Turkey imports almost 80% of its primary energy needs and CFB gives it the opportunity to leverage domestic energy sources such as lignite which exists in large quantities in Turkey – as in Thailand and similarly in Vietnam, so fuel arbitrage, using, for example, Indonesian coals, becomes an option.

Performance

MPS: *Can you elaborate on the reliability aspects of CFB that for many years have been questioned in some quarters?*

TJ: Looking at availability data from independent third parties, and looking at CFB plant availability you can see higher availability of those plants that utilise SFW CFB technology than plants in general. It is true that years ago, or decades ago, as with any emerging technology there were issues that may have impacted the overall reputation of the technology but when we look at the third party data we can see that our claim holds, the plant reliability is on average much higher with the SFW CFB than with other plants.

We would have had no success if we couldn't provide reliability together with the fuel flexibility, and the efficiency, that delivers the performance.

MPS: *In the past there has been another major problem with selling CFB. The cost.*

TJ: I know that decades ago there may have been such a perception, but if you



Fortum's Zabrze plant, a 145 MWt/75 MWe CFB based CHP unit currently under construction by Sumitomo SHI FW in Poland

look at the cost of the product you have to understand that our competition is other technologies, and if we can win against other competitive technologies it means that the cost and performance is what the buyer is looking for. And especially when it comes to supercritical units we are the only company on the global market offering supercritical technology with CFB technology.

On reliability, data that has been compiled by the NARC (North American Electric Reliability Corporation), VGB and the World Energy Council comparing CFB with all other boilers, on all fuels including lignite between the years 2000 and 2015 shows that CFBs and our own SFW CFBs have been consistently better in terms of availability.

For example for bituminous coal it was 90.8% for SFW's CFBs as against 87% for all other boilers in the NARC region and 85% in the VGB area. Remember too that a CFB doesn't need back end equipment in most scenarios; you don't need to install an FGD or SCR with its associated cost, and looking at it from a lifecycle standpoint, as opposed to only the capex, CFB shows up as far superior in lifecycle plant economics. But that is not enough – we have to be competitive financially in capex terms as well as in operating costs. The operators also make their choices on the overall cost, and it's clear that CFB needs to be competitive against any alternative technology in order to win the business. And I think we've demonstrated that whether it is small biomass with recyclable fuels or large biomass, conventional fossil generation or ultrasupercritical we're able to deliver the level of performance, reliability and cost that is expected, and our global delivery and execution network provides that.

MPS: *You mentioned Teesside in the UK. Teesside biomass plant is supported by subsidies and I'm wondering if you feel that biomass in general can do business without much in the way of support, directly or indirectly.*

TJ: Biomass has survived in certain applications without subsidies and still does. In certain other applications as with all renewable technologies, whether biomass or wind or solar, subsidies are in place.

Achieving reliable power simultaneously with meeting environmental targets is necessary, and whereas other renewables are more intermittent by their nature, biomass fired generation is not. In very many applications around the world biomass is utilised on market terms.

MPS: *How do you see the relationship with SHI going?*

TJ: An important point for us is that we truly find that SHI is a very good home for our business – the company is very technology focused, as is SFW; SHI considers the CFB product, the business and the market to be very mainstream in what they do and obviously that is a very good place to run a business when the owner's focus is very much where your business is. So we are very happy about this combination and we really look forward to its benefits through increased competitiveness in all of our markets.

MPS: *The combination does seem to be a good fit.*

TJ: The good fit comes from the long time partnership and friendship between SHI and the former FW, working side by side in developing the product and selling it to the market. The organisations are very familiar to each other, the key individuals know each other and that's a very strong basis for us to go forward and to build integration.