



OKI

All Set to Take on the World

Asia Pulp & Paper (APP) has often made it abundantly clear that its ambition is to be the No.1 supplier of pulp and paper around the world. The company's latest 2.8 million tonnes a year pulp development, OKI, is a signal that those ambitions remain firmly in place. ANDRITZ supplied what is now the world's largest recovery boiler to the mill, which is right at the center of the greenfield development in the province of South Sumatra, Indonesia.



The recovery boiler at OKI is the world's largest boiler today. The unit could easily supply power to a European city of one million inhabitants with an output of 10,000 – 12,000 MWh per day.



The steam drum in the OKI recovery boiler is the largest in operation today. It weighs 270 tonnes with a length of 23 m.

APP's OKI mill has seemingly sprung up from out of nowhere to become what is now one of the world's largest pulp mills and is a real force with which to be reckoned in the global pulp and paper industry. It is a hugely ambitious and impressive development near Palembang, the provincial capital.

General Manager of the OKI mill development, David Kerr, says of the positioning of the mill, "There is an old cliché in our business: there are three reasons for where you put up a pulp mill: location,

location, location. In the case of OKI the location is very close to our natural resources, raw material, and close to our market. It is also in a perfect position for obtaining our skilled labor force from the Palembang region."

The mill uses two types of plantation fiber as its main source of raw material for pulp, mainly due to their fast-growing nature and end-quality properties. Kerr says, "We use two species of acacia here, crassiparva and mangium, which grow to maturity in five to six years and have

great physical properties when refined and developed. In fact, our pulp suits all end uses for products, printing and writing, packaging board, and tissue – it is an extremely versatile pulp."

OKI'S JEWEL IN THE CROWN – THE WORLD'S LARGEST RECOVERY BOILER

Dominating the whole mill complex and visible along the skyline for some miles before arriving at OKI is the jewel in the crown at the mill – the ANDRITZ supplied HERB Recovery Boiler, which is the world's

largest by some measure. The design capacity of the boiler is about 50% more than any other recovery boiler operating around the world today with a total capacity of 12,000 tonnes of black liquor dry solids per day (tds/d). To give an idea of the daily recovery boiler output at OKI, the unit could easily supply power to a European city of one million inhabitants with an output of 10,000 – 12,000 MWh per day. Ordinarily, two recovery boilers would have been needed for a mill with such a large capacity, which would have led to higher capital expense.

The boiler also has the world's top steam data – 515°C at 110 bar as well as the latest technologies and features for maximizing power to heat ratios, allowing the mill to maximize green power generation.

So why go for such an ambitious target? Kerr explains, "The newer recovery boilers being designed nowadays are extremely reliable and have many interlocks and permissives that guarantee safe operation. In addition, this boiler at OKI gives us economies of scale because of its size – basically it gives us much more efficiency at a lower cost.

"We went for the HERB technology because ANDRITZ has a proven track record with its recovery boilers and it has been shown that they get excellent performance and energy-saving results."

Faizur Rahman, ANDRITZ's Start-up Manager for the OKI project, says, "In general, the pulp manufacturing process is a highly energy-intensive one. The mill's capacity of 8,000 tonnes of pulp per day calls for an energy-efficient operation to minimize operating cost. The proven HERB technology from ANDRITZ supplied with this OKI boiler brings huge savings by producing higher specific steam output thus

maximizing power to heat ratio. The green power from this boiler more than meets the entire demand of the mill – in fact, there is a large surplus of generated energy that OKI can use for further expansion purposes."

This surplus energy will undoubtedly be put to good use. APP is installing four new woodyard lines to add to the nine it already has at the OKI mill, as well as a

"This recovery boiler project was really phenomenal for ANDRITZ, because it is the world's largest boiler."

FAIZUR RAHMAN
Start-up Manager
ANDRITZ



large tissue manufacturing complex in the near future at the mill.

The boiler's features also include collection and burning of all foul gases emanating from the pulp mill operation. This makes the mill an environmentally-friendly unit.

THERE WERE CHALLENGES

Contracts were signed for the boiler after the pre-engineering phase in November 2013 with the liquor firing and start-up taking place in December 2016. ANDRITZ took on all the project management, as well as engineering, including pressure parts, the boiler building, the main steam pipe, main auxiliary equipment, piping and ducting, and all training and commissioning.

Obviously with such a large project, there were challenges, but that is what comes with such high ambition, and both OKI and ANDRITZ took on the project with relish. In terms of dimensions, the recovery furnace floor area is around 500 m² and the building height is approximately 100 m. The steam drum alone weighs some 270 tonnes and is

the largest in operation. The total length of the tubing to construct the boiler at the site is over 800 kilometers.

Of the construction, Kerr says, "Any greenfield pulp mill project has its own unique challenges; fortunately, we had a great team of skilled Indonesians working with international experts who made the project a tremendous success."

Rahman adds, "When we started up with the commissioning of this boiler, we were given a very tight schedule. In order to meet the customer's demand, we had to revisit our standard commissioning plan to execute various activities in parallel without affecting quality. ANDRITZ management provided additional resources and OKI responded by providing sufficient skilled manpower in different disciplines to accomplish the task."



DAVID KERR
General Manager
OKI

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STARTING UP TO SMOOTH OPERATION

Kerr says of the start-up, "The OKI mill was started up in two phases; the recovery boiler came online with the first fiberline and as we tuned and brought it up to speed the recovery boiler followed very closely. Then shortly after we started the second fiberline and we ramped up the recovery boiler to near full capacity. It actually all went very smoothly."

Rahman adds, "Initially, the boiler was operated on a low load for about five months since only one fiberline was started up. This meant that we had to devise suitable operating parameters to minimize the impact on performance and equipment. This we did successfully with the support of the ANDRITZ recovery boiler experts in Finland.

"With commissioning of the second fiberline, the boiler load was ramped up steadily and we have achieved up to 90% capacity now, this also went very smoothly."

ALWAYS MORE WORK TO DO

As OKI continues on its journey to reach full capacity and take on new expansion, there is always ongoing work to be done. Kerr says, "The mill is now running at near full capacity and we are focusing on fine-tuning each individual area throughout the mill to get the best performance. It is our continuing aim at OKI to make the best products at the highest rate of

production and at the lowest cost. We are well on our way to achieving those aims."

As for the world's largest recovery boiler, work continues to keep it as the most efficient as well. Rahman concludes, "We are now tuning up the boiler operation at a higher load, and also observing the performance for optimizing at

the micro level. Added to this ongoing optimization work, we are implementing the ANDRITZ Advanced Process control system for the boiler."

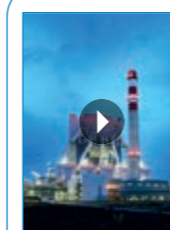
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COMPONENTS AND TECHNOLOGY

ANDRITZ also supplied major components and technology for the nine complete chipping lines installed in the woodyard at the OKI mill. The scope of supply included equipment for nine debarking lines including horizontally fed XL size HHQ-Chippers with feeding and discharge systems, wood breakage recovery systems, and log receiving decks with unique sand and stone separation features.

ANDRITZ also supplied 10 special bark crushers that ensure good particle size for the boiler operation specifically designed for acacia bark, which is stringy and can be difficult to handle.



For more information about OKI and the world's largest recovery boiler, view the video on your smartphone.

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