

BWE DEVELOPS GROUNDBREAKING CARBON CAPTURE AND OXY-COMBUSTION TECHNOLOGY IN DENMARK

With the acquisition of the Danish company BWE, Uruguay's Berkes Group is transforming the world's leading producer of boilers for complex biomass into a green pioneer of CO₂ capture and oxy-combustion.

By Tech Relations for BWE

It all began in the 1980s, when Denmark decided to support the development of energy technology for burning straw. Since then, BWE (Burmeister & Wain Energy) have built upon and improved these advancements. Today, the company is a global leader in boilers designed for burning wheat straw, rice straw, corn stalks, cotton stalks, palm leaves, as well as sunflower seed shells, almond shells, and other by-products from food production.

Each biomass type requires its own combustion technology.

»There are generally three types: biomass from forests and parks (wood), biomass from industry, and biomass from agriculture,« explains Carsten Sogaard from BWE. »Wood is uncomplicated, while the other two types of biomass are more challenging. Agricultural biomass is the most complex of them all—it's abundant worldwide and places the highest demands on boiler design and combustion technology. This is where we play a leading role.«

In 2021, BWE was acquired by Berkes Group, a major global player in energy, industry, and construction, headquartered in Montevideo, Uruguay. Since then, the workforce has grown from 28 to 38 employees, with plans to hire even more engineers for numerous upcoming projects.

»Our boilers are able to do what solar and wind energy cannot: We can remove biogenic CO₂, i.e. CO₂ that biological materials absorb from the atmosphere during their life cycle,« explain Carsten Sogaard (right) and Steven Bimson from Berkes/BWE. Photos: Jeppe Carlsen.

Steve Bimson from Berkes Group explains: »We offer boiler technology that provides on-demand power and heat for large communities and major industrial companies by utilizing complex biomass types. Additionally, we have an edge over solar and wind: We can remove biogenic CO₂ – CO₂ that biological materials absorb from the atmosphere throughout their lifecycle.«

Need for more engineers

BWE's plants are receiving a growing amount of attention along with the increasing focus on sustainability and the environmental health of our globe. As a consequence of the war in Ukraine, the view on natural gas has shifted. That means a large number of industrial companies that use natural gas in their processes are looking for alternatives. This is where BWE enters the stage with their facilities for transforming industries' own by-products into fuel or producing it from local annual bioresources such as straw.

»An example is our collaboration with the French company IDEX: We are building a plant for the brewing giant Heineken that burns grain waste and supplies energy to the brewery as an alternative to natural gas,« Steven Bimson explains. »This strengthens the brewery's efforts in sustainability and circular economy.«

Among other BWE projects is a straw-fired combined heat and power plant for a large paper mill in Lachendorf, Germany. BWE is also in the running for what will be the world's largest straw-fired power plant in La Robla, Spain. This facility will be the first of its kind to combine a straw-fired boiler with a carbon capture plant and hydrogen production, as well as a unit that produces methanol from hydrogen and CO₂.

Oxy-combustion

According to Steven Bimson and Carsten Sogaard, the future of biomass combustion and carbon capture lies in oxy-combustion. This combustion technology, in brief, eliminates the energy- and capital-intensive process of purifying and capturing CO₂ by shifting the purification directly to the combustion plant. This means the facility



It all began in the 1980s with straw burning. Now, BWE is a global leader in energy technology for biomass from agricultural production.

produces not only green power, green heat, and biogenic CO₂, but also purifies the CO₂ to a minimum of 85% purity. By channeling surplus oxygen from hydrogen production back to the combustion plant, substantial savings can be achieved in the implementation and operation of carbon capture.

»We have a good grasp of this technology already,« Carsten Sogaard explains.

»We have the concept, calculations, and drawings. What we're currently missing is an investor willing to fund the development of a pilot plant to demonstrate the concept, much like the political support for developing straw-fired facilities back in the 1980s. That's what we're working on. We certainly see a demand for this combustion technology, from the EU and the USA, as well as from Danish energy project developers.«

BWE – a part of Danish industrial history

The history of the company dates back to 1843 with the founding of Burmeister & Wain, whose diesel engines powered nearly half of the world's oceangoing vessels at the beginning of the 20th century. In the late 1970s, the energy crisis spurred a shift in focus toward biomass-fired boilers for electricity and district heating production. Today, BWE is part of the Berkes Group and has offices in Montevideo, Allerød, New Delhi, and Madrid. BWE is a global market leader in boilers for biomass from agricultural production.

We are always on the lookout for employees with skills relevant to the technical challenges we encounter in our efforts to contribute to the green transition.

Contact us at: hrrr@bwe.dk



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