**Preparing for a Pellet Tide**

As coal stations in England migrate to wood pellets, the country's ports are racing to develop robust storage and handling infrastructure. By Tim Portz | July 16, 2013

UNLOADING THE WARNOW MARS: Grab-by-grab, 26,003 tons of North American wood pellets were unloaded in early May at the Port of Tyne, which was among the first ports to invest in pellet infrastructure and is currently the market leader amongst British PHOTO: TIM PORTZ

While moored at the Port of Brunswick in late June, Dutch cargo vessel Koningsborg filled its cargo holds with nearly 7,500 tons of wood pellets and prepared for a 10-day trip to England. Once full, the vessel slipped quietly under the Sidney Lanier Bridge, and set an azimuth to take the vessel around the southern coast of the island nation and up its eastern shore, to a waiting port complex built upon the Humber Estuary. The estuary is among the busiest port complexes in all of Europe, positioned near robust road and rail infrastructure and within a 4-hour drive of 40 million people and over 60 percent of the nation's manufacturing capacity. Nearly 25 percent of all of the United Kingdom's seaborne trade passes through one of the estuary's ports, and the bulk of energy products that move in and out the ports of Hull, Grimsby, Immingham and Goole illustrate the story of the incredible energy transformation underway in the U.K.

▫Once a vital component of the U.K.'s coal export business, the ports have adjusted as the nation's coal exports continue a steady decline that began just before World War I. As the U.K. embarks on its ambitious plan to halve its greenhouse gas emissions—from its 1990 levels—by 2025, its ports are once again evolving to support the country's energy strategy.

▫Responding to a policy environment that has simultaneously placed a price on carbon and incentivized the production of renewable energy, the first wave of the U.K.'s largest coal-fired power producers have begun their conversions from carbon-dense coal to wood pellets. The largest of these converters, also one of the largest coal-fired power plants in all of Europe, is a 3,960-MW power station in Drax, owned and operated by the Drax Group. This massive facility, responsible for the production of nearly 7 percent of all the electricity produced in the U.K., was at one time the largest single-site consumer of coal in the kingdom. Already, the power station has converted one of an eventual three boilers to burn wood pellets. This conversion project, initially planned to be fully complete in 2016, is ahead of schedule and will consume nearly 7 million tons of pellets per year. Nearly all of these pellets will be sourced from foreign suppliers, arriving in the U.K. at a handful of ports with rail lines connecting them to Drax.

▫In the late 2000s, long before construction crews began work to convert Drax's first boiler to wood pellets, the Drax Group began readying its infrastructure partners to handle the massive quantities of woody biomass pellets, a feedstock the ports were largely unfamiliar with.

▫In November 2009, the Port of Tyne and the Drax Group signed an agreement that would guarantee the Port of Tyne shipments of up to 1.4 million tons of wood pellets per year. This agreement provided the surety the port needed to transform itself into a facility capable of handling this new feedstock. Commenting on the agreement at the time of its signing, Port of Tyne CEO Andrew Moffatt noted, "There is some fairly extensive work to be done to accommodate the specific requirements of this project, and we are investing over £16 million ($23.8 million) to ensure everything will be ready in time for the Port to be able to handle the new biomass cargo."

▫Since the signing of the agreement, the Port of Tyne has made investments in offloading infrastructure, a 70,000-metric ton covered storage facility, a rail car loading silo, and two state-of-the-art mobile pellet hoppers, which effectively eliminate the fugitive dust created when pellet vessels are unloaded. The investments now exceed £20 million, and Moffat considers his facility a leader in the space, saying, "By increasing our throughput capacity and investing in the infrastructure to meet the growing demand from the power industry, the Port of Tyne is now one of the first ports in Europe to be handling the import of wood pellets on this scale."

▫**Immingham/Grimsby**

▫Assuming pellets arrive at England's ports predominantly in vessels capable of carrying between 15,000 and 25,000 tons, Drax's demand alone will result in the berthing and offloading of anywhere between 280 and 465

vessels per year. With other power facilities having already converted to wood pellets or contemplating doing so, neither Drax nor the country's other producers can risk having only one port capable of handling wood pellets. To guarantee an uninterrupted stream of pellets, pellet infrastructure would have to be built at more than one port.

▫The Humber estuary and its complex of ports, owned and operated by the Associated British Ports, lies just over 120 nautical miles south of Port of Tyne, both of which enjoy direct rail access to the Drax Power Station. In April, the Port of Immingham, already the U.K.'s largest handler of dry bulk cargo, announced it had contracted with Graham Construction to design and construct the Immingham Renewable Fuels Terminal. The facility will consist of over 1 kilometer of covered conveyors, four storage silos able to hold nearly 100,000 tons of pellets, road and rail load-out facilities and extensive safety systems that will establish the port as a major player in the U.K.'s pellet supply chain, boasting abilities to handle more than 3 million tons of pellets each year.

▫Putting the investment in context of the port's energy history, John Fitzgerald, ABP port director at Grimsby & Immingham said, "Immingham has always been an energy port ever since it opened just over 100 years ago, so it is fitting that the U.K.'s largest, most technically advanced biomass handling terminal will be built here."

▫Just north across the Humber estuary lies the port of Hull, also owned and operated by the ABP. In late April, the residents of Kingston-Upon-Hull witnessed a concrete silo rise from the port, one of the most visible components of the new pellet handling facilities. When complete, it will bring Hull's annual pellet capacity to 1 million tons.

▫The silo is just one aspect of the state-of-the-art pellet handling systems being constructed by Hull's own Spencer Group. When finished, the silo will facilitate the loading and unloading of rail wagons in a continuous and uninterrupted loading methodology. Using an innovative array of magnets and pneumatic switches, specially designed rail wagons will open, accept a full load of pellets, and close without any spillage. Once operational, this facility will be able to load a 30-wagon trainload of cars with 1,500 tons of wood pellets in just 45 minutes.

▫Together, the ports at Immingham and Hull are poised to make the most of the opportunity presented by the U.K.'s increasing appetite for wood pellets. Explaining how each port brings important characteristics to the opportunity, Mike Sellers, deputy port manager at Hull says, "The Humber is an ideal location for imports of biomass ,given the close proximity to the power stations. Immingham can serve deeper draughted vessels at the Humber International Terminal, and Hull has significant spare rail capacity. This makes the Humber ports an attractive proposition."

▫Within the first days of July, the Koningsborg completed its journey to Hull and offloaded its load of pellets. Now able to handle shipments of pellets, the Koningsborg was unloaded by conventional dry-bulk unloading systems in the shadows of equipment being used in a race to finish the pellet terminal there. Like its counterparts in the region, the Port of Hull knows that the Koningsborg and vessels like it will soon return, laden with a feedstock that figures largely in the U.K.'s aggressive low-carbon energy strategy. If the U.K.'s pellet play is to deliver the results policymakers hope it will, England's ports must be ready. ▫▫*Author: Tim Portz*▫*Executive Editor, Pellet Mill Magazine*▫*651-398-9154*▫tportz@bbiinternational.com