

Dredging

What Two Small Countries Are Really Big In

206

[EWALD PIRONET]

Take a good look at the commercial contours of the Low Countries and you'll notice a striking difference between Dutch and Belgian companies. The Netherlands has more multinational businesses that catch the imagination with whole strings of products. Take Philips, for example: active around the world in consumer electronics, light bulbs, and communications and medical equipment. Or Unilever with its wide range of consumer products, including such well-known brands as Dove soap, Lipton tea, and many more. You rarely find companies like this in Belgium.

Belgian multinationals do exist, of course, but they usually focus all their energy on one type of product. Take Bekaert, which has its headquarters in Belgium and is active from Venezuela to China. This multinational produces steel wire – in hundreds of varieties, of course, but even so: steel wire for car tyres, steel wire for cutting solar panels, steel wire shaped into crucial bra components. Belgian companies may not be champions when it comes to diversity, but they do extremely well in detail. Imec, a world player in the world of nanoelectronics and nanotechnology, is a perfect example. Another is Stageco, a company that builds stages for the very biggest concert tours of groups like U2. With their products they form a small but indispensable cog in a much larger machine. While Dutch companies provide ready-made end products, Belgian enterprises tend to be subcontractors.

But there's one other interesting feature on the economic landscape of the Netherlands and Belgium: both countries are world leaders when it comes to dredging. And dredging is big business. The worldwide dredging market today has a turnover of ten billion euros a year on average. The US, China and Japan together account for half of those sales, but they are closed markets. No foreign dredging company is ever given a contract there. This may raise some eyebrows, particularly with regard to the US as the champion of the free market, but in those countries waterways and harbours are regarded there as strategically important, so foreign companies cannot be made responsible for their maintenance. This policy is even enshrined in law in the Jones Act. As a result, however, American dredging companies are lagging behind technologically because of the lack of competition.



In the other, 'free' half of the dredging market, European companies account for 85 percent, with Belgian and Dutch companies taking up three-quarters of that amount. Between them they also have the largest and most modern dredging fleet in the world. Royal Boskalis Westminster, a Dutch company with some 8,000 employees, is generally regarded as the world's largest dredging business. Another Dutch company, Van Oord (4,500 employees), and the Belgians Jan De Nul (4,300 employees) and Deme (3,500 employees) are among the world's largest dredging firms. But there are also hundreds of small companies in the Low Countries that work regionally or locally. The world players often compete with each other for contracts, leading to fierce conflicts on more than one occasion. But they're also increasingly aware of the need to cooperate in order to bring major projects to a favourable conclusion.

©Boskalis.

Queen of the Netherlands.
© Boskalis.



From mud mill to steam dredger

It's not surprising that the Low Countries are such mighty dredgers. Throughout their history the Netherlands and Belgium have constantly had to defend their land from water and flooding. And the Netherlands in particular has also reclaimed land from the sea and held back the water to maintain polders and habitable areas. About one-quarter of the Netherlands is below mean sea level, and that says everything about the importance of dredging in those regions.

Over the centuries, the Low Countries have had to struggle with an endless series of floods and breached dikes, so since the early Middle Ages the inhabitants have been forced to think about how to control the water. Dikes were erected, but in addition lakes were drained, harbours built, waterways dug and deepened, and land reclaimed. And it always came down to dredging.

For a long time dredging was done by hand. Silt and sewage were removed from rivers and watercourses by means of some kind of scoop net, often consisting of a long stick with a leather bag attached to it known in dredging jargon as a *baggerbeugel* or dredging brace. Canals were dug with shovels and spades. Wheelbarrows always played a major part. But at the same time, of course, people were constantly thinking how they could make dredging more efficient.

In the sixteenth century especially, when technological innovations were taking place in Europe in countless other areas, great progress was made in dredger development. One of the best-known designers was Joost Janszoon Bilhamer (1541 – 1590), a military engineer, surveyor, sculptor, engraver, cartographer and master builder. In 1575 Bilhamer invented a mud mill. This consisted of two flat-bottomed barges with a conveyor-belt sort of construction fixed between them which was powered by a treadmill. Mounted on the belt

Widening and deepening of the Pacific entrance
and South approach of the Panama canal. w © Deme.



were a whole series of buckets that scooped up the mud from the sea- or river-bed. Later on the brothers Tymon and Adrianus Kater produced a new version of the mud mill that could dredge to a depth of five metres.

In the earliest designs, the treadmill was operated by four strapping fellows (sometimes these would have been convicts). But the deeper the dredging went the more energy was required, so horses were substituted and were given a brief rest after every hour's work. Later versions used steam power, and later still diesel engines were used. The history of dredging and the development of dredgers through the centuries is beautifully illustrated in a permanent exhibition in the Baggermuseum, or Dredging Museum (www.baggermuseum.nl), in the Dutch town of Sliedrecht, which is generally regarded as the cradle of dredging in the Low Countries.

In the Middle Ages dredging operations were the result of local or regional initiatives, but in the sixteenth century they increasingly became the responsibility of the provincial or national government. The great leap forward was made by King Willem I of the Netherlands (1772 – 1843), also known as the 'Merchant King', a man with a reputation for commercial insight. He saw that the Netherlands was lagging behind and attempted to stimulate the Dutch economy on several fronts. To this end he developed an economic policy that relied heavily on the creation of a solid infrastructure. From 1820 on he devoted a great deal of attention on the construction of canals and on making the harbours of Ghent, Amsterdam and Rotterdam more accessible.

Willem I was also personally involved in the development of a steam-driven dredging machine. In 1824 the first steam dredging mill was completed, and the king put it straight to work deepening the harbour of Antwerp. Not long afterward, however, the boiler exploded, and even after it was repaired the

mill never worked properly. Until the mid-nineteenth century dredging was still mainly a manual operation and the dredging brace was the tool most frequently used.

The Belgian Revolution of 1830, which would result in an independent Belgium, put an end to the great infrastructure projects. The Dutch coffers were empty and political entanglements caused the national debt to rise, bringing the development of the dredging industry in the Low Countries to a temporary halt. Even so, the nineteenth century saw the construction of hundreds of kilometres of canals, the creation of numerous polders and the dredging of many harbours and rivers so that ever larger ships with ever greater capacity could make their way inland.

Since the Middle Ages the Dutch have been renowned for their expertise in water management, and even then foreign monarchs were seeking their advice on the reclamation of marshy areas or the draining of wetlands. In the eighteenth century Dutch engineers travelled to Germany, France, Italy, Spain,

Offshore wind farm, Ostend, Belgium. © Deme.



England and Russia to help build dikes and reclaim land. They then expanded into other continents such as South America and especially Asia, where the Dutch were particularly interested in their overseas territory, the Dutch East Indies.

In spite of dredging's early internationalisation, Dutch dredging companies didn't really begin to make headway internationally until the end of the nineteenth century. According to specialist historians, it was only then that the policy established by King Willem I took effect, partly because at that time the Dutch economy was picking up. Bigger and heavier ships were being built, with a consequent demand for deeper harbours. In addition, the Dutch now knew how to construct steam engines that didn't explode. So in the nineteenth century small-scale manual labour in the dredging sector was slowly but surely pushed aside and replaced by wealthy firms that were able to deploy large dredgers. Internationalisation was rapid during that period: between 1890 and 1900, Dutch



dredging firms received commissions to work in India, China, Japan and South Africa. A great deal of money could be made on such international projects, making it possible to invest in better and better dredgers. As a result, Dutch dredging companies gained a headstart on their foreign competitors, from which they still profit today.

Dubai Palm Island.
© De Nul.

International growth in the dredging sector stalled with the outbreak of the First World War in 1914, revived somewhat during the period between the wars, but came to a standstill again in the recession of the thirties and the Second World War that followed. So for the dredging industry the first half of the twentieth century was a turbulent and often depressing period. Things didn't really pick up until after the Second World War. Until then, dredging was largely confined to large infrastructure projects such as the construction of canals, the deepening of rivers and the building of sluice complexes. But after 1945 methods were developed for transporting sand over long distances through pipelines. The result was the development of a new kind of dredging activity: the raising of land levels by means of sprayed sand.

Creating land at sea

During the same period, dredging companies were also being asked by the oil and gas industry to construct pipelines overland or under rivers. And when oil production in the North Sea began in the 1960s, dredging companies with their dredging experience and maritime expertise had all the work they could wish for. They were hired for such tasks as securing pipelines to the seabed and then safely running them to the shore.

In the seventies there was another successful episode. The environmental problem was gaining public attention, and dredging companies were asked to clean up the pollution. Every now and then, however, the companies



Alexander von Humboldt
rainbowing. © De Nul.

themselves got into hot water for allegedly harming the environment, for instance by disturbing underwater life during the dredging process or disposing of the polluted silt improperly.

Another activity for which dredging companies have been consulted more and more since the seventies is the creating of land in the sea. At first this mainly involved creating islands for oil production or building new industrial zones. Starting in the nineties, however, larger land creation projects were launched, mostly for the construction of airports and other infrastructural elements. The creation of the partly artificial Chek Lap Kok island, on which Hong Kong International Airport would be built, is probably among the best-known of these projects. Certainly it was described at the time as 'the dredging contract of the century', and Dutch and Belgian companies worked on it together. Then in the Middle East interest began growing in large-scale land reclamation and in the creation of artificial islands for the purpose of tourism. The most well-known of these are perhaps the megalomaniacal projects in Dubai, where islands known as The Palm and The World were created.

This new development went hand-in-hand with significant technological progress in dredger design. Until the 1960s, the bucket dredger was the work-horse of choice for dredging companies. This vessel had a long, continuous chain of metal buckets that – with a great deal of noise – scraped up sand, clay, solid ground and even large stones from the seabed and transported them to the surface. But as demand grew for ways of moving large amounts of sand easily and quickly, a new type of dredger – the trailing suction hopper dredger, or TSHD – became the focus of interest and investment. The first TSHDs had been built after the invention of the centrifugal pump in 1851, but they didn't

really take off until a century later. The TSHD works by pumping up the sand from the seabed and depositing it in a hopper. A variant of the TSHD is the cutter-suction dredger, which appeared in the seventies. The cutter-suction dredger has a cutter that breaks up hard clay or rocky parts of the seabed into fine fragments, which can then be removed.

As already noted, the big dredging companies of the Low Countries undoubtedly owed their great international success to the fact that their home market offered them so much interesting work, enabling them to build up a vast amount of experience over the centuries. Another significant aspect of this development was that in the late nineteenth century the Dutch government encouraged dredging companies in a variety of ways to invest in dredging equipment. Until the beginning of the twentieth century, dredgers were often second-hand ships with cobbled-together equipment, but from 1900 on the dredgers were increasingly better designed, and today they're technological masterpieces full of computers.

United we stand, divided we fall

All this naturally requires enormous investment, which makes the dredging world highly capital intensive. As a result, internationalisation and economies of scale are absolutely essential to keeping the whole thing running: today a dredging company with aspirations has to have a large, versatile fleet at its disposal, and has to be able to deploy those dredgers at a number of places in the world simultaneously to justify the capital outlay. But the risk involved is immediately evident: if the world economy comes under a bit of pressure and the demand for dredging drops, then the dredgers – with their astronomical price tags – are used less frequently and dredging quickly becomes less profitable.

That's why all the dredging companies, including those in the Low Countries, are anxiously watching developments in China, as are all companies currently active in the international market. The skyrocketing Chinese economy is in need of more and more land, quays and waterways, and that, of course, means more work for dredgers. The Chinese dredging market has traditionally been closed to outsiders, but there is so much work to be done there that the Chinese companies cannot manage it on their own. Some Dutch and Belgian companies have already been active in China, but almost always in a supporting role. They're hoping that China really will open up its dredging market, and that they too will be able to benefit handsomely from the Chinese economic miracle.

The four top dredging companies in the Low Countries – Boskalis Westminster, Van Oord, Jan De Nul and Deme – are all world leaders in the field, and they are all in competition with each other. Sometimes things have got pretty rough. But today the jobs are often so big and challenging that a temporary partnership is set up, in which companies work together in various combinations. For the dredging companies are well aware that small countries can only be big in something if the companies concerned don't destroy each other but engage in healthy competition, which actually makes each of them stronger – and, when necessary, to shake hands on a collaborative deal that is to their mutual benefit. ■