Coal is a solid fossil fuel made primarily of carbon. It can be classified as lignite, a coal with a low carbon content; bituminous coal, often used in electricity production; and anthracite, with a high carbon content. Despite the competition from new and more sustainable sources of energy, from the first Industrial Revolution to 1960, coal was the most commonly used energy source in the world. China, the United States, India, Australia, Indonesia and Russia together represent more than two-thirds of the global coal production. The year 2015 was a complete exception as it was the first year since World War II that the trend of constant increase in coal volumes produced worldwide was broken. In Italy, the only significant carboniferous resources are concentrated in the Sulcis Iglesiente area, in south-western Sardinia. This mining basin reached its peak production in the 1950s, when it exceeded 1 million tonnes per year, before closing in 1972 and re-opening in 1997. Nevertheless, in 2014, the Sardinia Region acknowledged a decision by the Council of the European Union that ordered its Member States to facilitate the closure of uncompetitive coal mines, anticipating a halt to production in Sardinian sites by the end of 2018 and their redevelopment by 2027.
Proprietà e applicazioni

Scoperto nel 1600, venne inizialmente impiegato come fonte di calore alternativa al legno, la cui forte richiesta aveva causato gravi disboscamenti, soprattutto in Europa. A partire dai primi anni del 1700, e soprattutto con lo scoppio della Rivoluzione Industriale, divenne la fonte di energia più utilizzata nelle rudimentali macchine a vapore che azionavano pompe, mulini e magli; in seguito, si affermò come principale combustibile per la generazione elettrica, ruolo che, seppur ridimensionato, mantiene tutt’oggi. A partire dal 1800 mostra altre importanti potenzialità, tra cui l’impiego “chimico” nella trasformazione del ferro, nella preparazione industriale del carbonato sodico e del cloro, e quindi nel lavaggio dei tessuti e nella disinfezione delle acque. Anche il gas e il catrame derivati dal carbone iniziano ad essere impiegati in diversi settori: il primo nell’illuminazione, nella produzione di fertilizzanti, solventi e prodotti farmaceutici nonché nella fabbricazione di esplosivi; il secondo nel trattamento del legno e nella chimica.

Curiosità

Quando nel 1800 l’utilizzo del carbone si diffuse nei paesi occidentali, emerse il problema dei sottoprodotti inquinanti che residuavano dalla sua lavorazione e combustione: il più problematico risultava essere il catrame. Contro ogni previsione, fu scoperto che la composizione chimica di quest’ultimo permetteva di riutilizzarlo in diversi ambiti quali la pavimentazione delle strade, l’impermeabilizzazione del legno, la produzione di sciampo, saponi e pomate ad uso medico, il trattamento nella cura di numerose dermatiti e la sintesi del paracetamolo.

Properties and applications

Discovered in 1600, coal was initially used as an alternative heat source to wood, the great demand for which had caused serious deforestation, especially in Europe. Beginning in the early 1700s and especially with the outbreak of the Industrial Revolution, it became the most widely used energy source for the rudimentary steam machines that drove pumps, mills and steam hammers; later, it was established as the main fuel for electricity generation, a role that, although somewhat reduced, it still plays today. Beginning in 1800, it showed other important potentials, including its “chemical” use in transforming iron, in industrial preparation of sodium carbonate and chlorine, and then in washing fabrics and disinfecting water. The gas and tar derived from coal also began to be used in different fields: the former in lighting and the production of fertilisers, solvents, pharmaceutical products and explosives; the latter in wood processing and in chemistry.

In 1800, when the use of coal spread through the western countries, the problem arose of pollutant by-products that were residual to its processing and combustion: the most problematic was tar. Completely unforeseen, it was discovered that the chemical composition of tar allowed it to be re-used in various fields such as street paving, wood waterproofing, the production of shampoos, soaps and ointments for medical use, the treatment of different types of dermatitis and the synthesis of paracetamol.