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ESCUELA TÉCNICA SUPERIOR DE INGENIEROS DE MINAS Y ENERGÍA

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BLASTING SOLUTIONS

DYNAMITE

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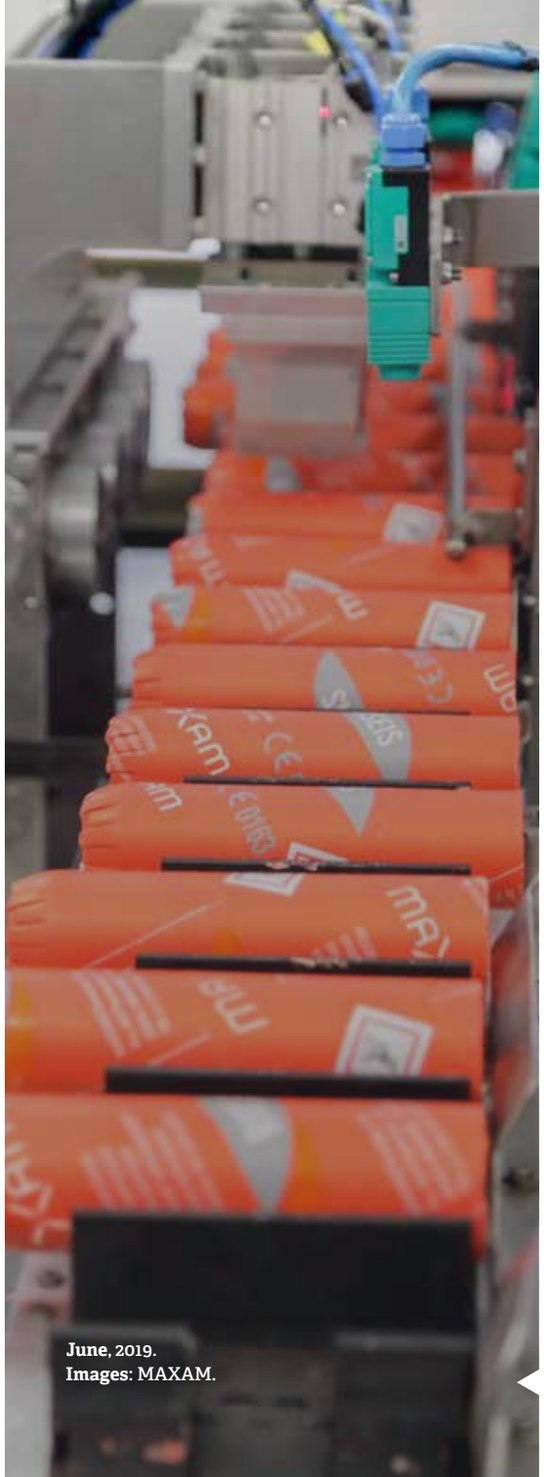

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Images: MAXAM.

DYNAMITE

The invention of dynamite marked the start of an era of major mining projects and infrastructure construction. The use of energy from explosives would quickly become one of the most efficient techniques in rock excavation work. In 1866, Alfred Nobel discovered how to stabilize nitroglycerin by mixing nitroglycerin –invented 20 years earlier by the Italian chemist Ascanio Sobrero– and diatomite, an absorbent substance, thus allowing this energy material to be handled and used safely. This mixture turned out to be dynamite, the first stable high-performance explosive.

A few years later, in 1875, Alfred Nobel would innovate further by achieving a more stable nitroglycerin mixture, this time in nitrocellulose. A mouldable explosive, easy to use and handle, known as gelatine dynamite or jelly.

THE ENERGY THAT CHANGED THE WORLD

Industrial production of dynamite started in Spain in 1872, after Alfred Nobel founded Sociedad Española de la Pólvora Dinamita, Privilegios A. Nobel in Galdácano (Bilbao). Ever since it was invented, demand for dynamite has grown exponentially, opening the world to the era of large infrastructure projects: railway lines, ports, bridges, roads, tunnels and mining developments, all of which have almost always required blasting operations.

Gelatine dynamites take their name from their gelatinous consistency.

The mix of nitroglycerin and nitrocellulose is even more energetic than nitroglycerin itself, since the nitrocellulose provides ammonium nitrate as the predominant element. Its consistency also gives it excellent water resistance and high density.

These characteristics, along with high detonation power and speed, make them suitable for blasting medium-hard and hard rocks, charging the bottom of blast holes, and carrying out underwater blasts.

Dynamite is also suitable for blasting in places with large amounts of water, contour blasting, and both indoor and outdoor work.

Moreover, the composition of powdered dynamites includes an element that triggers an explosive reaction, and this, as with gelatine dynamites, is usually nitroglycerin. However, some products such as ligamite contain trilite, in addition to nitroglycerin. Given its consistency, it offers poor water resistance unless a waterproofing product is added.

This kind of dynamite tends to have less power, density and detonation speed than gelatine dynamite, which means it is generally the best explosive for blasting semi-hard or soft rocks. In general, its use is restricted to blastholes without the presence of water.

Contact MAXAM if you wish to add value to your mining project by choosing the ideal energy materials.