



# Mining & Tunnelling





# An introduction

## Who we are

Cavotec is a multi-national group of companies serving the following industries: mining and tunnelling, ports and maritime, steel and aluminium, energy and offshore, airports, general industry and automation. In the early 1960's our main focus was the design and production of motorised cable reels primarily for manufacturers of tower cranes, harbour cranes and mining equipment. Today, Cavotec is connecting mobile equipment around the world in many diverse applications.

## Where we are

The Cavotec Group consists of 7 manufacturing "Centres of Excellence" located in Canada, France, Germany, Italy, Norway and Sweden and by 5 local manufacturing units located in Australia, China, Germany and the USA. For the distribution of products and providing support to customers Cavotec has 27 sales companies which, together with a network of distributors, serve more than 30 countries in five continents. The ultimate objective is to be perceived as "local everywhere".

## How we work

Our aim is to work closely with our customers in order to build long-term partnerships. To achieve this aim we have created a working environment that attracts the best people, encourages them to stay and brings out their best qualities. By producing totally reliable systems and backing them with efficient service, we strive to create true customer satisfaction.



## Our experience in the mining and tunnelling industry

The Swedish mines were the first field of activity for the Cavotec Group more than 30 years ago. There we carried out the electrification of drilling rigs and other mining equipment such as, drilling jumbo's, roof-bolting units, scaling machines, self-loading trains, stackers, reclaimers and trippers used in the stock yards.

During the last 15 years, a lot of development has taken place in tunnelling technology, especially in the use of full-facers and other sophisticated mining equipment for which Cavotec has developed a range of special tunnelling reels for the power supply of these machines. Over the years the Cavotec Group has supplied this equipment and a range of other types to many of the world's leading tunnelling and hydro-electric contractors.

## Our major customers in this market segment are:

- Atlas Copco
- Herrenknecht Lovat
- Krupp
- Longyear Boart
- Normet
- Putzmeister
- Robbins
- Rowa
- Roxon
- Sandvik Tamrock
- Voest Alpine



## Local throughout the world

As shown here the Cavotec Group is organized to support its customers around the world through its manufacturing units and sales companies. Each Cavotec manufacturing company, no matter where it is located, aims at being a market leader in its field by providing innovative and reliable products to Group customers. Each Cavotec sales company, in the 27 countries where they operate, aims at better serving its local market following the Group philosophy "to be local everywhere".

### MANUFACTURING NETWORK

#### Centres of Excellence

##### France

**Cavotec RMS**  
Spring Driven Reels

##### Germany

**Cavotec Alfo**  
Spring Driven Reels  
Slipring Columns

**Cavotec Fladung GmbH**  
Aircraft Support Systems  
Security Systems

##### Italy

**Cavotec Specimas**  
Motorized Cable Reels  
Panzerbelt Cable Protection  
Slipring Columns

##### Norway

**Cavotec Micro-control**  
Radio Remote Controls

##### Sweden

**Cavotec Connectors**  
Electrical Plugs & Sockets

#### Local Manufacturing

##### Australia

**Cavotec Australia**  
Motorized Cable Reels

##### China

**Cavotec China**  
Product Assembly

##### Germany

**Cavotec MoorMaster**  
Automated Mooring Systems

##### Sweden

**Cavotec Sweden**  
Product Assembly

##### USA

**Cavotec USA**  
Product Assembly

#### Group Partners

##### Belgium

**Gantry**  
Crane Rail Systems

##### Italy

**Brevetti Stendalto**  
Cable Chains  
**Prysmian (Pirelli)**  
Flexible Cables  
**Tratos Cavi**  
Flexible Cables

##### New Zealand

**Mooring Systems Ltd**  
Automated Mooring Systems

### SALES NETWORK

#### Cavotec Sales Companies

Cavotec Australia  
Cavotec Belgium\*  
Cavotec BeNeLux  
Cavotec Brazil\*  
cavotec Canada  
Cavotec Chile  
Cavotec China  
Cavotec Denmark  
Cavotec Finland

Cavotec France  
Cavotec Germany  
Cavotec Hong Kong  
Cavotec India  
Cavotec Italy  
Cavotec Korea  
Cavotec Latin America  
Cavotec Mexico  
Cavotec Middle East

Cavotec Norway  
Cavotec Russia\*  
Cavotec Singapore  
Cavotec South Africa  
Cavotec Sweden  
Cavotec Turkey\*  
Cavotec UK & Ireland  
Cavotec USA

\* Branch Office





## Cable Reels

Cavotec Specimas cable management systems form the most important range supplied by the Cavotec Group for mining and tunnelling. Each unit is used in a variety of mining operations supplying power, air and water to mobile drilling machinery.

Cavotec Specimas has established its reputation in this market segment by supplying systems that are innovative, robust and compact with specialised engineering staff to provide support where needed. On these pages we show the systems developed by Cavotec Specimas for use in mining and tunnelling.



*In the harsh atmosphere of underground mining, rock-drilling is the heart of the whole operation. It requires however a number of essential means and men to advance at the tunnel-face. Of vital importance is the supply of compressed air and electricity. The Cavotec Group facilitates face-drilling by supplying both compressed air and electricity to moving equipment at work not only deep underground but also in many surface mining applications.*

*One of the most common mining applications for Cavotec equipment is supplying power to tunnelling rigs for high capacity tunnelling operations.*



Due to its unique patented design, the Cavotec Specimas hydrodynamic system provides a simple and rational solution for many cable and hose reel applications. The system is based on a torque unit in which reduction gear, clutch and brake are built into one closed unit. Furthermore, thanks to the clutch acting directly on the main drum shaft, an even torque output is guaranteed. This allows an even recovery of any type of cable independent of clutch slip or reeling speed. The Cavotec Specimas hydrodynamic cable reel is driven by a standard squirrel cage motor but can also be supplied with a hydraulic or pneumatic motor. Another major advantage is that the torque can easily be readjusted on site. This way, the tension of the cable may be reduced or increased according to the actual requirements.

*To guarantee maximum support to its customers Cavotec Specimas has a team of specialised engineers for 24/7 service demands anywhere in the world.*





## Power Connectors

The Cavotec Power Connectors, manufactured in Sweden, have been present in the field of industrial power supply for more than 20 years starting in the harsh environment of the Scandinavian mines and hydro-electric tunnels.

The high quality, robustness and integral safety of the Cavotec Connectors have set the standard concerning high and low voltage power supply to many different types of equipment used in mining and tunnelling. Two families of Cavotec power connectors are used in mines and tunnels: Low voltage connectors up to 1100 V and High voltage connectors up to 25000 V.



*In open pit mines, such as shown above, where electricity is to be distributed to applications at varying distances from the main source, the role of power connectors is very important. They must allow for fast connecting and disconnecting and withstand extreme ambient influences such as dust, water and frost. As Cavotec Power Connectors are made using only high-grade bronze and stainless steel, they are fully up to the task of supplying power in mining applications above or under the ground.*

*Heavy-duty power connectors are often used for supplying high voltage power to applications such full-face drilling machines and other large tunnelling equipment.*



Cavotec Connectors for low and high voltage applications are robustly designed, with a standard IP 66 protection and a standard maximum temperature of 80°C. The range of low voltage power connectors, available in a variety of sizes, are made in two different operation systems:

1. The "Push & Pull" system is preferred when the connectors have to be disconnected manually or automatically several times a day.
2. The "Screw Ring" system has special connectors fitted with screw rings for applications with manual disconnections on a day-to-day or weekly basis.

Cavotec power connectors provide a flexible, convenient and reliable means of extending cables from fixed or mobile power sources to mining and tunnelling equipment. They are often used also for portable junction boxes either in above or underground applications. In order to help to reduce the number and the frequency of temporary splices made in trailing cables, Cavotec offers a range of specially designed "trailing cable connectors". The high quality, robustness and integral safety of the Cavotec Connectors have set the standard concerning high and low voltage power supply to many different types of equipment used in applications around the world.

*A Cavotec panel mounted on an Atlas Copco shotcrete machine.*





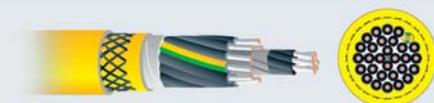
## Cables and Hoses

In order to supply a comprehensive selection of high quality cables specially adapted to the harsh working environment in mines and tunnels, the Cavotec Group decided to select specialised manufacturing partners enabling Cavotec to guarantee the very highest level of productivity and safety.

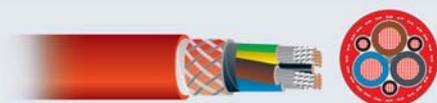
Among the specialised cable manufacturing partners represented by the Group, and who share the Group philosophy concerning the quality level and the service to the customer, we can mention such companies as Americable, Baude, Gore, Palazzo, Pirelli and Nexans. For more detailed information please consult our Flexible Cables brochure.



Heavy duty low voltage power cables



Light-weight low voltage control cables



Medium voltage power cables



Medium voltage power cables with FO

*Cavotec Specimas cable reels working together with heavy duty power cables deep underground in a mining operation.*



All the cables offered by the Cavotec Group are divided in low and medium voltage. Low voltage cables are further divided into power or control cables as each single cable is designed to deal with specific applications. Medium voltage cables, on the other hand, are all power cables but the majority can be supplied with integrated fibre-optics as an option. The selection of cables is such that Cavotec can supply any type of cable for specific application in either underground or open-pit mining applications.

In addition, the Cavotec Group also supplies different types of hoses for the supply of water and air. These hoses are often used in mining and tunnelling operations where providing sufficient clean air and water is an absolute necessity.



*Cavotec cables are at work daily around the world in the most extreme working conditions.*





## Radio Remote Controls

Cavotec Micro-control, a full member of the Cavotec Group since 2004, has been involved since 1984 in the development and production of advanced radio remote control systems, including the latest unit for use in areas where explosions could occur.

All systems have a high level of flexibility and are made from standard modules allowing for full customisation to meet specific customer requirements. Cavotec Micro-control radio remote control systems meet the most stringent safety and quality controls and are fully ATEX and IEC approved.



The MC 3000Ex provides a secure and flexible control of many different types of machinery in complete safety. Everything, from simple control functions to complete process supervision, can be done from the same system. This unit can solve most of the direct hydraulic and electric control functions and provide serial communication with most known PLC and frequency converters, if necessary using the TCP/IP protocol. In addition, this unit has the option of

cable control besides the standard radio control, providing an extra failsafe against shutdown. All units can be delivered with simplex or duplex communication.

The base unit can be delivered with a serial interface for the most common bus standards on the market today. The base unit comes standard with EEx protection and with an intrinsically safe battery.



*The MC 3000Ex is the first ever explosion proof RRC to obtain a full ATEX approval.*





## Spring Driven Cable Reels

Established in 1991 to manufacture spring driven reels and slipping columns, Cavotec Alfo in just five years, became a leading manufacturer in its sector and market-leader in Germany.

Such a fast growth is the result of combining high quality components, cost-effective management and the use of standard materials produced in large numbers. This effective combination enables Cavotec Alfo to serve the market and meet both standard and special requirements at competitive prices and with short delivery times.

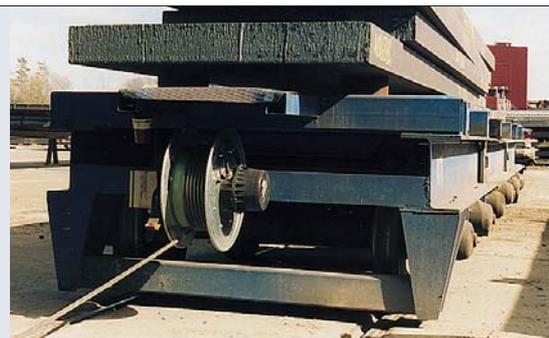


The Cavotec Alfo standard spring reels are built from modular components which allow a great number of combinations covering most common requirements. The clever design of the Cavotec Alfo spring driven cable reels guarantees the highest reliability even in the most difficult and demanding applications. Each unit features a well dimensioned shaft and bearings which accommodates an easy and fast exchange of springs. The cable feeding point can be placed on either side of the drum allowing for easy adaptation for horizontal or vertical applications.

The springs are made from high-grade special steel and are mounted inside a housing in order to avoid friction and wear. The slipping assembly is mounted in a solid glass-fibre reinforced plastic housing which withstands corrosion and mechanical wear.

Every unit meets all applicable IEC norms and standards and follows the latest EU requirements (CE-marking). All reels and slipping assemblies have a protection grade of IP65/66.

*Cavotec Alfo offers a complete range of spring driven cable reels for many varying applications. For more information please consult our product specific brochure.*



Head Office

**Cavotec MSL Holdings Ltd.**

Cavotec MSL is listed on the 

Corporate Office

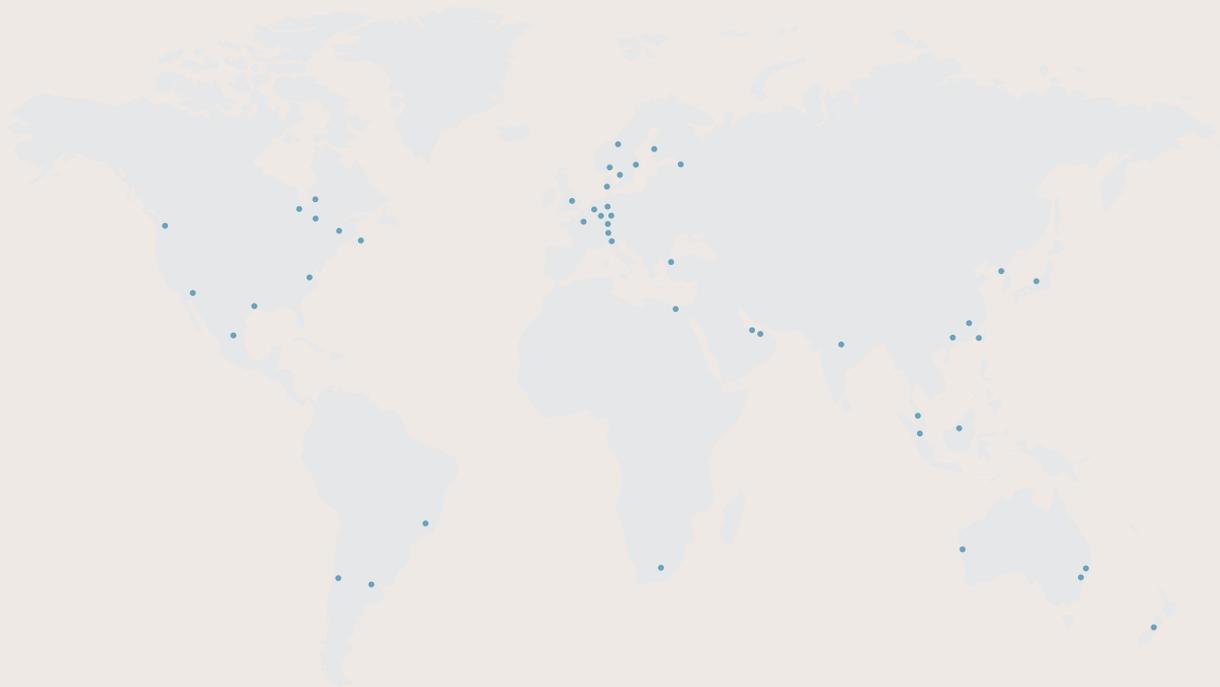
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*We are present in*

Argentina  
Australia  
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Germany  
Hong Kong  
India  
Indonesia  
Ireland  
Italy  
Japan  
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