



Fire Protection



Industry



Mining & Tunneling



Snowmaking



Miscellaneous

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# Reference projects

*Swedish Manufacturer of Steel Pipes Since 1951*



**ALVENIUS<sup>®</sup>**





## Fire Protection



Photo: Alvenius

### Nynas Refining

Fire water protection

**FACTS:** Country:.....Sweden  
 Dim:..... 6" (168mm) to 12" (323mm)  
 Media:.....Brackish Water

Nynas refining are a global supplier of premium naphthenic specialty oils and one of the leading suppliers of quality bitumen. The product range also includes marine and specialty fuels.

Nynas refining is located in Nynäshamn just at the coast of the Baltic Sea. Tough climate, with a lot of wind and rain as well as quick changes in temperature, is common for the area.

In 2007 Nynas decided to upgrade their old pipe systems for fire protection. Alvenius thermo plastic pipes were considered as the best alternative for this installation, the impressive durability of the coating as well as the flexibility of the couplings are both important technical advantages.

With a significant length of pipes the upgrade will be made in a few steps. In 2009 Alvenius delivered the third system since 2007.



## Fire Protection



Photo: Alvenius

### Öresund Tunnel

Fire water protection

**FACTS:** Country:.....Denmark  
 Dim:.....4" (114mm) and 8" (219mm)  
 Media:.....Brackish Water

The bridge and tunnel between Sweden and Denmark was ready in 1999. The fire protection pipe system was originally stainless steel. These pipes could not withstand the tough environment. During 2006-2007 the pipes was replaced by Alvenius thermo plastic coated pipes.

The Öresund link, with a total length of 16 kilometers, is one of the most important infrastructural achievements in Scandinavia. It consists of three sections: a tunnel, a bridge and a manmade island.

The Öresund Tunnel is the largest immersed tunnel in the world. It is 3.7 kilometers long with four highway traffic lanes, two railway tracks and a service tunnel. Alvenius delivered two pipe systems to protect the tunnel in case of a fire. It is an impressive installation, pressure tested at 172 bar, with a working pressure at 120 bar.

This project is a good example of the Alvenius systems impressive durability and corrosion resistance combined with quick connections and high pressure.



Photo: Alvenius



Photo: Alvenius



# Alvenius Sprinkler Systems

**FACTS:** Countries: Sweden, Norway, Denmark and Finland  
Dim:.....2 1/2" (76mm) to 12" (323mm)  
Media:.....Water



Photo: Alvenius

Sprinkler systems are today an important part in the design of warehouses, shopping malls, office buildings and other types of construction.

Alvenius introduced spirally welded, roll grooved pipes for sprinkler systems only a few years ago. The pipes are manufactured from hot rolled steel coils for pressure vessel applications to create a high strength product with unique properties in terms of roundness, straightness and low weight.

The low weight of the pipe is an advantage during installation and greatly reduces the work load for the fitters. Only a few years after introduction the spirally welded pipes are a favorite among many installation companies.

### Ergonomic advantage – better overall economy

The wall thickness of Alvenius spirally welded sprinkler pipes is only between 2.0–4.0 mm to be compared to 2.9–7.1 mm which is common for ordinary sprinkler pipes. An Alvenius sprinkler pipe with OD 168 mm and wall thickness 2.5 mm has only half the weight of other pipes commonly used in the market today. This is equal to a weight reduction of 50 kg per pipe (6m).

Using Alvenius lightweight sprinkler pipes will reduce costs for handling, resulting in a better overall economy. Despite the smaller wall thickness third party tests (made by Swedish Institute SP) shows the life span of the Alvenius pipe is comparable with any competing sprinkler pipe.

### 200.000m roll grooved pipes annually

Today Alvenius supply approximately 200.000m of roll grooved sprinkler pipes in the Nordic countries every year. Standard dimensions and lengths are usually shipped from our stock.

Alvenius also have the flexibility to offer pipes in lengths up to 9m (12m for pipes OD 168 up to OD 323). Surface treatments offered are untreated, painted or galvanized.

Among the installations with Alvenius roll grooved sprinkler pipes you will find the likes of IKEA, MECA, Bonnier and Nokian to mention a few.

Alvenius intention, in the market area of Fire Protection, is to grow further in the Nordic countries. The success of Alvenius unique products in the Nordic countries shows great possibilities also for the rest of Europe.

### Certificates

Alvenius roll grooved pipes are approved with the required certificates for supply to sprinkler installations in the Nordic countries: SBSC (Sweden), FG (Norway), DBI (Denmark) and FKL (Finland).



Photo: Alvenius



Photo: Alvenius



## Fire Protection

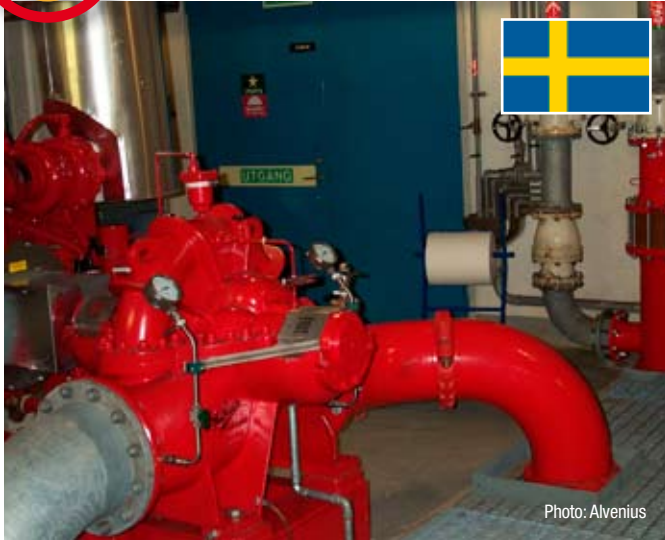


Photo: Alvenius

### Ringhals Nuclear Plant

Fire water protection

**FACTS:** Country:.....Sweden  
 Dim:..... 6" (168mm) to 12" (323mm)  
 Media:.....Water

Ringhals produces 20 per cent of all the electricity used in Sweden. The nuclear power plant is one of the few in the world to have both boiling water and pressurised water reactors.

The reactors were commissioned between 1975 and 1983. The four reactors at Ringhals produce around 28 TWh in a normal year – sufficient to supply six cities the size of Gothenburg with electricity. The total power output is approximately 3690 MW.

As part of the FIMP (Fireprotection Improvement Programme) Alvenius supplied thermo plastic coated pipes with Victaulic joints to Ringhals during 2005-2007 in dimensions covering from DN150 up to DN300. The shipments included both pipes and spools.

The TP-coated pipes and fittings combined with Victaulic couplings result in a quick assembled system with an impressive durability.



Photo: Alvenius



Photo: Alvenius



## Fire Protection



Photo: Alvenius

### Arlanda Rail Link

**FACTS:** Country:.....Sweden  
 Dim:..... 4" (102mm) to 6" (152mm)  
 Media:.....Water

The Arlanda Link Consortium, ALC, built a railway link for highspeed trains and commuter trains between Stockholm City and Arlanda, Stockholm International Airport.

The ALC Consortium formed the company A-Train AB, responsible for the construction and operation of the railway. ALC built a total of 10 km of railway tunnels.

Three underground stations were built at Arlanda; two for the shuttle, Arlanda Express, and one for Intercity Trains.

Permanent firefighting pipes were laid in the tunnels to facilitate fire fighting. The pipes lie under the track bed in the tunnels. There is one fire hydrant every 50 m. The fire fighting pipes shall withstand an operating pressure of 25 bars, be electrically insulated and have excellent corrosion resistance. Alvenius thermoplastic coated pipe system fulfilled all these requirements.



Photo: Alvenius



Photo: Alvenius



## Industry

### Changuinola Hydro Power Plant



Photo: Alvenius

**FACTS:** Country:.....Panama  
 Dim:.....1 1/2”(48mm), 4”(102mm) & 6”(152mm)  
 Media:.....Water and air

The EU-funded Vleem-2 (Very Long Term Energy-Environment Model) project has made a global study of hydroelectric power. It suggests that beyond 2020 new technologies and increased renewable energy must be put in place.

This will require massive investments in renewable energy. Especially developing countries should see hydropower becoming the fastest growing renewable energy source.

The construction of the Changuinola Hydro Power Plant in Panama is Scheduled for finalization in 2011. The 158MW Changuinola 75 hydroelectric facility is located in the Changuinola River Basin, about 220 miles northwest of Panama City in the Province of Bocas del Toro.

During the construction of Changuinola Alvenius delivers pipes for water and air during the construction works and building of tunnels. The high quality, the ease of assembly and the possibility to re-use all of the components are all important facts for the decision to use Alvenius pipes in this project.



Photo: Alvenius



Photo: Alvenius



## Industry

### EDC, Geothermal Production Fields



Photo: Alvenius

**FACTS:** Country:.....the Philippines  
 Dim:.....6” (152mm)  
 Media:..... Various, see below.

Alvenius are the major supplier of steel pipes and fittings to the Energy Development Corporation (EDC) in the Philippines. EDC has four major production fields and supply approximately 30% of the total energy in the Philippines.

The pipes are used for transportation of water, wastewater, geothermal fluids and air. Water is needed for drill rigs, concrete during construction, as well as cooling towers and condensers in the operational stage of the plants.

The geothermal energy generation process also generates wastewater and geothermal fluids. To protect the environment it is necessary to re-inject both the wastewater and the geothermal fluids to the geothermal reservoir.

The Alvenius pipe is well adapted to the needs of EDC in these rough installation environments. Pipelines are often laid directly through the jungle and in remote areas. The ease of assembly and the possibility to re-use all of the components repeatedly is an economical advantage of the Alvenius Pipe System.



Photo: Alvenius



Photo: Alvenius



## KK4, LKAB Pelletizing Plant



Photo: LKAB

**FACTS:** Country:.....Sweden  
 Dim:.....2" (60mm) to 16" (406mm)  
 Media:.....Water

Pellets is important for the LKAB mine, it makes their iron ore specialized and competitive. KK4 is the latest pelletizing plant, and the sixth in operation, at Swedish Mine LKAB.

KK4 has the world's largest sintering machine of the grate-kiln-cooler type, with a yearly capacity of about 5 million tones pellets. KK4 was built in 2007 and was at the time the biggest building construction in Northern Europe.

The total pipe length inside KK4 is 17km, where Alvenius pipes are used for bigger dimensions. Alvenius delivered both galvanized pipes for process water and thermo plastic coated pipes for the fire protection system.

LKAB has many years of experience with Alvenius pipes, both galvanized pipes for underground works but also thermoplastic coated pipes for one of the other pelletizing plants, MK3, built in 2005.



Photo: LKAB



Photo: LKAB



## Somincor, Neves Corvo Mine



Photo: Alvenius

**FACTS:** Country:.....Portugal  
 Dim:.....1 1/2" (48mm) to 14" (355mm)  
 Media:.....Water and air

Neves Corvo is an operating underground copper and zinc mine in the southern part of Portugal.

Alvenius is the major supplier of steel pipes to the Mine, owned by Lundin Mining. Alvenius delivers galvanized pipes for daily maintenance in the mine, but also thermo plastic coated pipes for the copper treatment plant. The media in these pipes is acidic water.

The mine had problems with build up inside the pipes in the copper treatment plant. These problems did not occur after the installation of Alvenius thermo plastic coated pipes.

The advantages of the thermo plastic coated pipes are also the reason for the decision of a brand new 1,5km 14" Alvenius pipe line in green color coating. The new pipe includes plenty of special fittings, elbows, flanges and reducers and is scheduled for installation early 2010.



Photo: Alvenius



Photo: Alvenius



## Mines Zambia

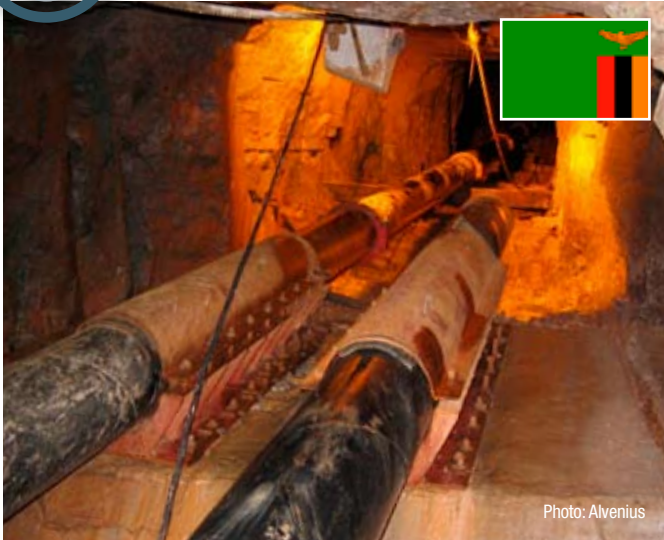


Photo: Alvenius

**FACTS: Country:**..... Zambia  
**Dim:**..... 1 ½" (48mm) to 6" (152mm)  
**Media:**..... Water and air

Alvenius have supplied galvanized pipes and fittings to the Copperbelt in Zambia since the beginning of the 1950's. The pipes have been used mainly for water and compressed air.

To supply the large Zambian market Alvenius use a consignment stock on site in Zambia. The high quality combined with short delivery time are reasons for Alvenius success in Zambia.

The Mines also have a demand for pipes in their leaching processes. These applications require pipes with excellent corrosion protection.

With experience of delivering thermo plastic pipes to leaching processes in both Saudi Arabia and the USA, Alvenius got a contract for delivery of thermo plastic pipes to the Mopani Copper Mines in Zambia.

Technical advantages, as the excellent corrosion resistance in combination with a low total installed cost, were important for the decision. Most of the pipes in DN 300 are used for pumping the acid water to the surface.



Photo: Alvenius



## Mines Ireland



Photo: Boliden

**FACTS: Country:**..... Ireland  
**Dim:**..... 1 ½" (48mm) to 10" (273mm)  
**Media:**..... Water, slurry and air

Since early 1980's Alvenius are the major supplier of galvanized steel pipes to the mines in Ireland: Tara, Lisheen and Galmoy.

The annual consumption for the mines in Ireland is about 30km of galvanized pipes and fittings, with Tara mines as the biggest consumer.

Boliden Tara Mines is the biggest zinc mine in Europe. Some 2.7 million tonnes of ore are mined annually, which yield zinc and lead concentrates containing up to 200,000 tonnes of zinc and 40,000 tonnes of lead metal.

The workforce numbers around 690 permanent employees, with a large number of contractors also employed at Tara Mines operations.



Photo: Alvenius



Photo: Boliden



### Boliden Aitik Mine

**FACTS:** Country:.....Sweden  
 Dim:.....6" (152mm) to 20" (406mm)  
 Media:.....Water

The Aitik mine is one of Europe’s largest producers of copper, and also a major producer of gold and silver. Aitik is an open-pit mine, situated near Gällivare in the northern part of Sweden, it mines some 18 million tonnes of ore annually.

At the moment Boliden is finalizing an expansion project called Aitik 36, with the aim of doubling the production level. The expansion in Aitik is the biggest investment in Boliden’s history (SEK 6 billion).

The mine is 3x1km and is at the moment approximately 350m deep. The Aitik 36 investment will increase the area of the mine. Since the mine is situated in the northern part of Sweden the winters are long and a lot of snow and ice will melt into water once the weather changes.

Kilometers of Alvenius galvanized pipes are installed for pumping the water from the bottom of the mine to the surface level and further to the dams. The pumps and pipes are dimensioned to transport the water at a rate of about 250 m<sup>3</sup> each hour.



Photo: Boliden



Photo: Alvenius



### Freeport McMoRan Copper Mine

**FACTS:** Country:.....USA  
 Dim:.....24" (610mm)  
 Media:.....Acidic Water

Corrosion is costing the Mining Industry worldwide vast amounts of money yearly.

Freeport McMoRan Copper Mine in Miami, Arizona, USA tested Alvenius thermo plastic coated pipes in a ferric cure line in their copper leaching operation in a place where stainless steel, 316L, started to leak after a couple of weeks due to the very aggressive corrosion from the cure solution.

Based on the excellent outcome of this test Freeport McMoRan decided to use Alvenius thermo plastic coated pipes in their leaching operation and an order for a pipeline in diameter 610mm (24") was installed.

The demands of these pipes, used for transportation of a solution containing approximately 100g/l sulphuric acid with a pressure of up to 28 bar (406 psi) in the tough Arizona climate with temperature rating from below freezing point up to above 40deg C, are very high.

An other advantage of the white coating is that it will keep the pipes cold even when the sun reaches its peak.





# Katanga Kamoto Mine



Photo: Katanga

**FACTS:** Country: DRC (the Democratic Republic of the Congo)  
Dim: ..... 1 1/2" (48mm) to 12" (318mm & 323mm)  
Media: ..... Water and air

The Kamoto underground mine is Katanga's primary sulfide ore source. It entered operation in 1969 under the DRC's state-owned mining company Gécamines.

During the 1980s it produced an average of three million tonnes of ore per year. Prior to its restart under Katanga's ownership, the mine had produced a total 59.3 million tonnes of ore, with an average copper grade of 4.21% and an average cobalt grade of 0.37%.

The mine has two six by six meter ramp declines, a service shaft and a 11,000 tonnes per day production shaft. Following initial maintenance to the pump station, ventilation, crusher and winder, as well as a brand new underground mining fleet, the mine restarted operations in March 2007 and is currently ramping up production.

Alvenius delivered pipes to the Katanga Mine already at the start of operations in 1969, numerous of Alvenius galvanized pipes have survived all the years when the mine was closed down. When Katanga started operations again it was obvious to use Alvenius pipes also for new pipelines.



Photo: Katanga



# Store Norske Spitsbergen Grubekompani



Photo: Alvenius

**FACTS:** Country: ..... Norway (Svalbard)  
Dim: ..... 2 1/2" (76mm) to 10" (254mm)  
Media: ..... Water and air

The Store Norske consortium is the most northern coal producer in the world, with two operational mines based on Spitsbergen, Svalbard. The entire field is estimated to contain 72.5 million tonnes of coal.

Spitsbergen lies far within the arctic circle, the Sun is continually above the horizon from late April to late August. From 26 October to 15 February the Sun is always below the horizon, and from 12 November to the end of January there is civil polar night, during this time artificial light must be used at all times.

Svalbard covers an area of approximately 63,000 km<sup>2</sup>, and around 60% of this area is protected nature. There is relatively little sign of long-term industrial enterprise on the archipelago, the coal mining use only a very limited area.

During the years Alvenius have delivered more than 20 000 m of pipes to the mines in Spitsbergen. It is the most northern pipe system supplied by Alvenius, under toughest ambient conditions with outer temperatures below -40°C.



Photo: Alvenius



Photo: Barentsphoto.com



# Tirek – Amesmessa Gold Project



**FACTS:** Country:.....Algeria  
 Dim:..... 100km of 6” pipes  
 Media:..... Corrosive Water

In the beginning of 2006 decisions were taken by ENOR Spa to increase their output of gold ore on two mine sites, Tirek and Amesmessa, in the southern part of Algeria.

One part of this project was to supply these mines with process- & drinking water by pipeline. Earlier tank trucks supplied the mines with water.

The mines are situated in the middle of the Sahara desert. The lack of skilled labour posed a serious problem. ENOR Spa also found the water to be corrosive. These two problems convinced ENOR Spa that Alvenius Thermo plastic coated pipes with quick connected couplings were the best solution. During 2007 and 2008 Alvenius supplied a total of more than 100km of 6” pipes and fittings to ENOR Spa.

Mr Ken Norris, Manager: -We had one defect pipe out of 10000 at the first deliveries, impressive when you consider the transport all the way from Sweden to site in Algeria. What impresses me the most is the flow characteristics of the spirally welded Alvenius pipe, we calculated to pump at 31 bar but ended up at only 17 bar.



Photo: Alvenius



Photo: Alvenius



# Channel Tunnel/Euro Tunnel



**FACTS:** Countries:.....United Kingdom - France  
 Dim:.....4” (102mm) and 6” (152mm)  
 Media:.....Water and air

The British companies, Balfour Beatty, Edmund Nuttall and Taylor Woodrow built the three parallel tunnels between France and England, a distance of 52 km.

11 TBMs, 160 locomotives and over 1100 items of rolling stock were used at a cost of over £ 8000 million. While building these tunnels pipes were needed for dewatering and for supply of air and water to tunnel face.

The pipes had to be easy to handle and they were moved and used over again. The price, weight, product range and availability resulted in a over 3 years cooperation between the channel tunnel consortium and Alvenius. Over 20 000 m Ø 102x2 mm pipes and 45 000 m Ø 152x2 mm pipes and accessories were used and reused. All pipes and accessories were hot-dip galvanized for optimal corrosion protection.

The successful cooperation resulted in more important tunnel projects for Alvenius in the UK, including Honour Oak, Croydon and Heathrow Tunnels.



Photo: Alvenius



## LKAB Mines



**FACTS: Country:**..... Sweden  
**Dim:**..... 1 ½" (48mm) to 14" (355mm)  
**Media:**..... Water and air

LKAB is an important supplier of iron ore in the world. The mines in Kiruna and Malmberget are two of the richest mines on earth. The dominating ore is magnetite with an almost maximum content of iron.

LKAB has, for more than 40 years, used Alvenius piping system since it has proved to be perfect for the rational way that LKAB works. Alvenius have delivered more than 500 km of pipes with fittings to the mines of LKAB. The hot-dip galvanized pipes are used for distribution of water and compressed air.

During 2009 Alvenius delivered plenty of large diameter pipes (DN300) in lengths of 12 meters for rubber lining and final delivery to LKAB. These will be used at the new main levels currently constructed in both Kiruna (at 1365m level) and Malmberget (at 1250m level).

Alvenius are proud to use the Swedish steel, most probably made out of ore from the LKAB mines, in the production of steel pipes. When LKAB supply pellets to SSAB and once Alvenius use the Swedish steel to produce pipes it finalizes a small lifecycle.



## Snowmaking Eastern Europe

**FACTS: Country:** .....All Eastern European Countries  
**Dim:**.....3" (89mm) to 12" (323mm)  
**Media:**..... Water

The ski resorts in some Eastern European countries may not be as famous as the ones in France, Austria or Italy but there are some really good resorts and potential for a lot more.

Many of the ski equipment suppliers see the huge future potential in these countries. Alvenius is proud to be a part of the development of the ski resorts in Eastern Europe.

Since many years Alvenius is a well know and sought after brand in Eastern Europe. Important for the success is of course the low weight, the ease of assembly and the high quality.

Among important projects you will find the biggest ski resort in Czech Republic, Spindleruv Mlyn, the biggest resort in Slovakia, Jasna, the more than 13.000m pipes installed in Pamporovo, Bulgaria, the pipe system distributing water to the Cross Country World Cup resort Liberec in Czech Republic and many more.





## Snowmaking



### Holmenkollen, Oslo

**FACTS:** Country:.....Norway  
 Dim:..... 2 ½" (76mm) to 10" (273mm)  
 Media:.....Water



Photo: Snowtech

Oslo has a long tradition as a winter sports venue. Already in 1892 the first ski jumping competitions were held in the Norwegian capital, Holmenkollen has the oldest ski jump in the world.

In 2011 it will be the home for the Nordic Skiing World Championships.

Starting 2009 the Holmenkollen ski area, which is the most popular destination for tourists in Norway, is undergoing a total renovation. The old take-off ramp is replaced by a new spectacular construction, designed by the Danish company JDS Architects.

Alvenius thermo plastic coated pipes are used for the supply of water to the new snowmaking system in Holmenkollen installed in 2009. The system includes 21 connection points on the cross country trail, on the take-off ramp and on the landing slope.

Alvenius won the contract in competition with cast iron pipes, important technical advantages are the low weight and the larger inside diameter (better flow characteristics).



Photo: JDS Architects



Photo: Snowtech



## Snowmaking



### Krasnaya Polyana, Sochi

**FACTS:** Country:.....Russia  
 Dim:.....4" (114mm) to 10" (273mm)  
 Media:.....Water



Photo: Rosengineering

Krasnaya Polyana is currently one of the most rapidly developing ski resorts in the world, as a result it is decided as the 2014 Winter Olympics venue.

The resort occupies more than 52 000 hectares of mountains at the Black Sea coast near the city of Sochi.

As a result of an impressive reference list from the French Alps Alvenius was rewarded the contract for the supply of more than 15km of thermo plastic coated pipes in 2008. The pipes will make sure to deliver high pressure water to the snowmaking systems in Krasnaya Polyana.

Mr. Eduard Lazarenko at company Rosengineering explains: -It is very important for us to use high quality products. Our customers and the snowmaking systems require pipes with a pressure rating up to 80 bar. Alvenius gave us Swedish quality, reliable deliveries and a close relationship. Rosengineering will for sure use more Alvenius pipes in future projects.

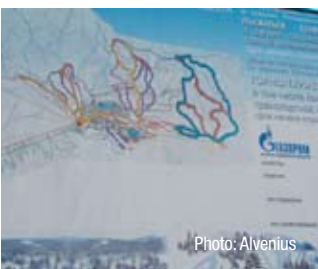


Photo: Alvenius



Photo: Alvenius



Photo: Caratelli

## Les Trois Vallées, The Three Valleys

**FACTS:** Country:.....France  
 Dim:.....3" (89mm) to 12" (323mm)  
 Media:.....Water

Les Trois Vallées or the Three Valleys is the largest ski area in the world which is connected solely by ski lifts and slopes.

It has today more than 600 km of ski slopes, resulting in 18.5 km<sup>2</sup> of groomed runs. With more than 180 ski lifts, the resorts have a capacity of approximately 260,000 skiers per hour. The snowmaking equipment used by the operating companies includes more than 2000 snow guns.

Les Trois Vallées contains of the ski resorts Courchevel, La Tania, Méribel, Brides les Bains, Les Menuires, St Martin, Val Thorens and Orelle. Most of them are well known for their modern snow making equipment and their reliable long seasons.

Since early 1980's Alvenius have supplied pipes for snowmaking systems in the French Alps. Today the annual usage of pipes for Snowmaking in France is about 30-40 km each season. The ski resorts of Les Trois Vallées are among Alvenius most reliable costumers.

The combination of low weight, quick connections and impressive flow characteristics together with pressures up to 80 bar and dimensions up to DN300 are all explanations of the success for Alvenius pipes in the French Alps.

Among the famous ski resorts using Alvenius pipes you will also find Tignes, Les 2 Alpes, Chamonix, La Bresse and Val d 'Isere.



Photo: Alvenius



Photo: Caratelli



## Snowmaking

### Sälen Skiresorts



Photo: Snowtech



Photo: Lenko



Photo: Snowtech

**FACTS:** Country:.....Sweden  
 Dim:.....3" (89mm) to 12" (323mm)  
 Media:.....Water

With more than 100 slopes, where most of them use modern snowmaking equipment, Sälen is the biggest ski resort in the Nordic Countries in terms of visitors and areal.

Sälen is one of the most common destinations for Swedish families during the winter season, located only about 4 hours from the capital of Stockholm, this is part of the reason why the resort attracts more than 1 million visitors every season.

With 169 days with snow guarantee for their costumers it is important for Sälen to ensure their snowmaking equipment is in good shape. This results in continuous extensions and upgrades of the slopes and snowmaking systems.

During the years Alvenius have delivered many kilometers of pipes to the resorts in Sälen.

One of the latest installations is a new riser pipeline with dimension 323mm and maximum pressure 65 bar, a first step to increase the capacity of the complete resort.

## Miscellaneous



### Waste Handling Systems



Photo: Eleiko



Photo: Eleiko

**FACTS:** Country:.....Sweden  
 Dim:.....16" (406mm)  
 Media:.....Waste

Recycling and waste handling are important in today's environmental focusing world, as a result there are specialized companies working with complete waste handling systems.

Waste systems offers simplicity, better hygiene and working environment. The result is an improved overall economy for refuse handling in both large and small buildings.

Waste is transported through the pipes by vacuum. The garbage is thrown into inlets inside and outside the building. These garbage inlets are emptied automatically. The garbage is transported into a central refuse station, where it is pressed into a vacuum firm container. The container can easily be picked up and emptied.

Since a few years Alvenius offers special pipe solutions for waste handling systems. The product range includes untreated or thermo plastic coated pipes and can be offered prepared for welding or with quick couplings for a quick assembly. Quick couplings are ideal when the pipes and fittings are assembled in existing buildings.



**Some other important references from Fire Protection:**  
Felbertauerntunnel (AT), Stockholm Metro (SE), Olkiluoto OL3 (FI),  
Hutton Oil Platform Removal Project (UK)



**Some other important references from Industry:**  
Stora Enso Gruvöns Bruk - Sewage Water (SE), Fortum Högdalenverket - Waste Water (SE),  
Sydvatten - Water Supply (SE), Norwegian Pavilion World Expo 2010 Shanghai - Drainage System (CN),  
Condriil Libya - Casing Pipes (LY), Lidingö - Potable Water (SE), Jönköping - District Cooling (SE),  
Ånge Energi - Sewage Water (SE)



**Some other important references from Mining & Tunneling:**  
ABB Mining (MN), Aljustrel (PT), Bell Common Tunnel (UK), Boliden Garpenberg Mine (SE),  
Boliden Kristineberg Mine (SE), Boliden Renström Mine (SE), Bulghah Gold Mine (SA),  
Dannemora Mineral (SE), Deutsche Steinkohle AG (DE), Ellhnikos Xrysos (GR),  
Ethiopian Mineral Development (ET), Hallandsas Project (SE), Heathrow Terminal 5 Tunnel (UK),  
Hitura Mine (FI), Honour Oak Tunnel (UK), Lissabon Metro (PT), Lørentunnelen (NO),  
Malmö Citytunnel (SE), Midroc Gold Mine (ET), Nordkalk Oy (FI), Northern Iron Sydvaranger Iron Project (NO),  
Philex (PH), South Crofty Mine (UK), Zinkgruvan (SE)



**Some other important references from Snowmaking:**  
Trysil (NO), Åre (SE), Zermatt (CH), Boi Taull (ES), Arinsal (AD), Madonna di Campiglio (IT),  
Obersdorf (AT), Levi (FI), Idre (SE), Otepää (EE), Sheregesh (RU), Cortina (IT), Verbier (CH),  
Vasaloppet (SE), Hafjell/Lillehammer (NO), Jaworzuna Krynicka (PL), Ski Mont Saint-Bruno (CA),  
Brasov (RO)



**Some other important reference from Miscellaneous:**  
Böhler - Powder Capsules (AT), Erasteel - Powder Capsules (SE)



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