



Fire Protection



Industry



Mining & Tunneling



Snowmaking



General

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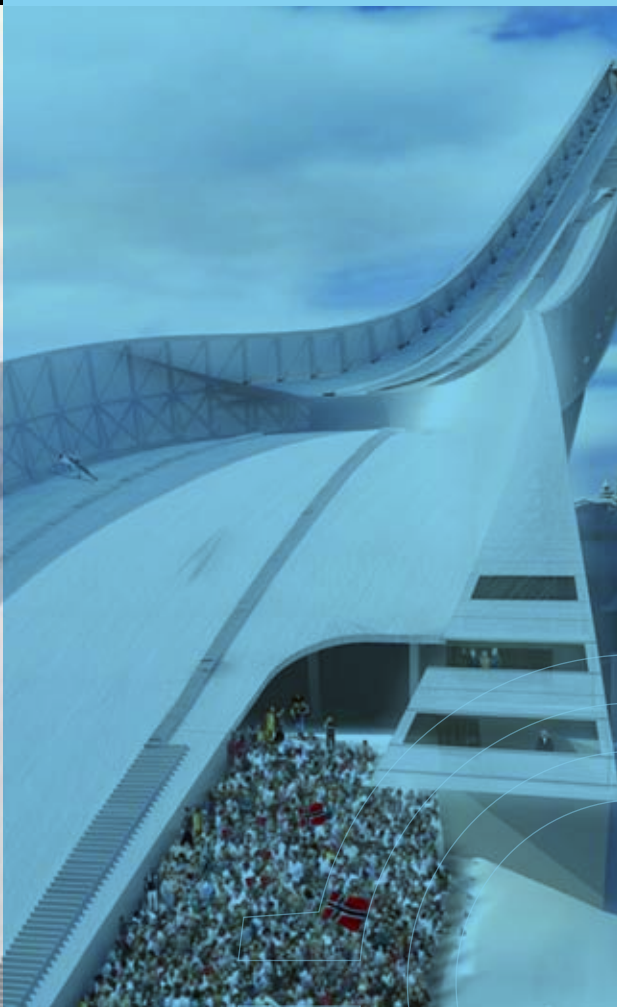


Photo: JDS Architects

Reference projects



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 public concern over conventional nuclear power, and the global warming, 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



Freeport McMoRan Copper Mine



Photo: Alvenius

FACTS: Country:..... USA
 Dim:.....24" (610mm)
 Media:..... Ferric cure line

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

Phelps Dodge 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 Phelps Dodge decided to use Alvenius thermo plastic coated pipes in their leaching operation.

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.



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



Snowmaking



Photo: JDS Architects

Holmenkollen, Oslo

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

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

In the years 1930, -66 and -82 the Nordic Skiing World Championships were held in Holmenkollen. In 1952 Oslo hosted the Winter Olympic Games. Starting 2009 the Holmenkollen ski area, which is the most popular ski resort for the people of Oslo, is undergoing a total renovation.

The old take-off ramp will be 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.

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: JDS Architects



Snowmaking



Photo: Alvenius

Krasnaya Polyana, Sochi

FACTS: Country:.....Russia
 Dim:..... 10" (273mm) to 8" (219mm)
 Media:.....Water

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.

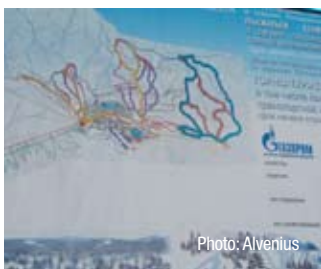


Photo: Alvenius



Photo: Alvenius



Snowmaking

Les Trois Vallées, The Three Valleys



Photo: Alvenius

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 km² of groomed runs. Les Trois Vallées has 183 ski lifts, which can transport 260,000 skiers per hour.

Les Trois Vallées contains of the ski resorts Courchevel, La Tania, Méribel, Brides-Les-Bains, Les Menuires -Saint Martin, Val Thorens and Orelle. 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 30-40km 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.



Photo: Alvenius



Photo: Alvenius

Fire Protection



Ringhals Nuclear Plant

Fire water protection

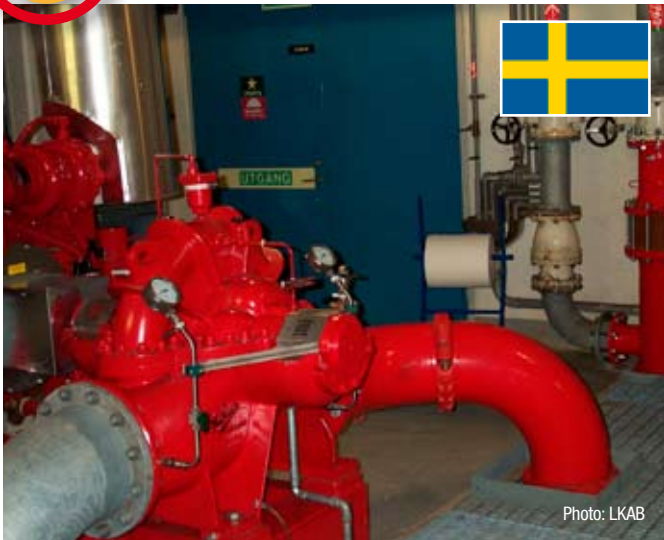


Photo: LKAB

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. Ringhals AB has around 1,500 employees and an annual turnover of just over SEK 5 billion.

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



Katanga Kamoto Mine



Photo: Alvenius

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: Alvenius



Mines Ireland



Photo: Alvenius

FACTS: Country:.....Ireland
Dim:..... 1 1/2" (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: Alvenius



Mines Zambia

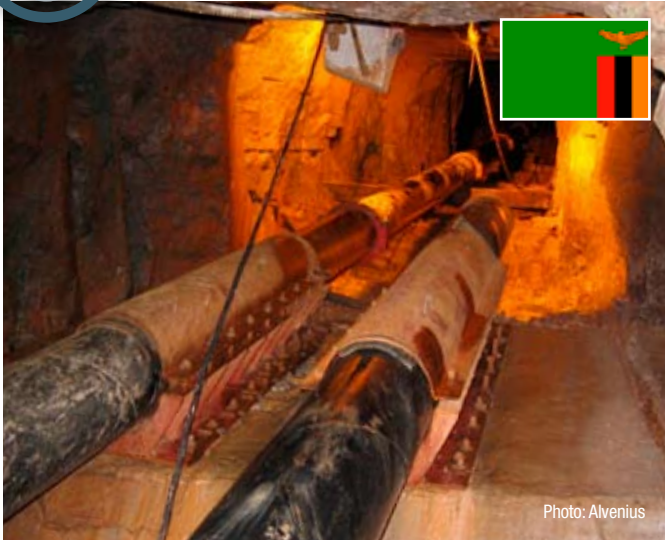


Photo: Alvenius

FACTS: Country:..... The Philippines, Asia
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



Somincor Mine, Neves Corvo



Photo: Alvenius

FACTS: Country:..... Portugal
Dim:..... 1 ½” (48mm) to 14” (355mm)
Media:..... Water and air

Somincor, 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 Somincor Mine in Neves Corvo, owned by Lundin Mining. Alvenius delivers galvanized pipes for daily maintenance in the mine, but also once thermo plastic coated pipes for the copper treatment plant.

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

Tests and certificates



General tests

Salt spray testing to ASTM B-117/85.
 Accelerated weathering testing to ASTM G53-88.
 Electrical resistance to BS 476: 5 (1979), 6 (1989), 7 (1987).

Fire tests and fire fume certificates

United Kingdom: BS476 Pt.5-7, NES 713
 USA: NFPA 258
 France: NF C20-453-454, NF P 92-501

Water and food contact approvals

EU: Directive 90/128/eec
 United Kingdom: WRC BS 6920 DWI
 Germany: EU rules 89/109/EWG and BGA
 Hong Kong: Office of the water authority - potable water
 Belgium: NBN S-29-001
 France: Directive DGS and standard AFNOR XP P 41-250-1/2/3



AB Alvenius Industrier, P.O. Box 550, SE-631 07 ESKILSTUNA, SWEDEN
 Phone: +46 16 16 65 00, Fax: +46 16 12 26 34, Email: info@Alvenius.se
 www.alvenius.com