

COLTPOST

Ventilation Heavy Industry

INTRODUCTION BY ANDREW ROSS

Andrew Ross - Group Director, Overseas Operations

One of Colt's core activities over the last 80 years of the company's existence has been providing solutions for industrial natural ventilation applications, both in new and in existing buildings. Several years ago we set up a team to serve the aluminium smelter market, providing ventilation solutions on a global basis for a fast-growing industry.

Recognising the potential benefits of a global approach in the delivery of large scale industrial projects, we have now taken this a step further, creating a Heavy Industry team with representation in the Americas, Europe, Middle East, South East Asia and Australia, ensuring that we are able to best service our customers' requirements regardless of their location.

The team is backed up by our own technical experts, who have a vast knowledge of ventilation design, and can provide tailored solutions using Colt's in-house design tools and CFD programs.

Heavy industry buildings are constructed in countries with widely varying conditions. This means dealing with very different types of challenges. For example, when developing a ventilation system for a building in Iceland, we had to deal with high winds; in Canada it was the snow; in Saudi Arabia the heat. Our global approach and dedicated specialist team means that we have the products and the expertise to do that.

We are embracing change and challenging the norm by recognising that the success of this initiative is based on strong partners who bring market and cultural knowledge to the team. As a result we have created strategic alliances with partners around the globe to ensure that we can deliver any project effectively at a local level.

Furthermore, our manufacturing facilities in the Americas, Europe, the Middle East and China allow us to be cost and lead time competitive.

This newsletter aims to give you a flavour of what we can offer. I hope that you will find it interesting and informative.



ALL WEATHER VENTILATION FOR ARCELOR MITTAL FACTORY

Arcelor Mittal's factory in Duisburg, Germany, produces 450 different grades of steel, mostly for the automotive industry. It needed a smoke and day-to-day ventilation system that would be equally effective in all weather conditions. Colt provided the solution with a system comprising more than 140 attenuated ECO/Weatherlite weathered ventilators.



A HEALTHY & PRODUCTIVE INTERNAL CLIMATE

Colt can create a healthy and productive internal climate

Does your existing facility suffer from high heat, stagnant air conditions and poor indoor quality? Or, are you planning an expansion and are unsure of the best ventilation approach?

We can provide solutions to your ventilation problems, with ventilation designs provided free of charge at no obligation to you.

We offer you peace of mind

When you work with Colt, you can count on full peace of mind in every phase of the project and for the full life cycle of your system, as we:

Look at the complete picture: we know how a building works and have extensive in-house expertise in a broad range of technologies, including smoke control and performance louvre solutions and systems.

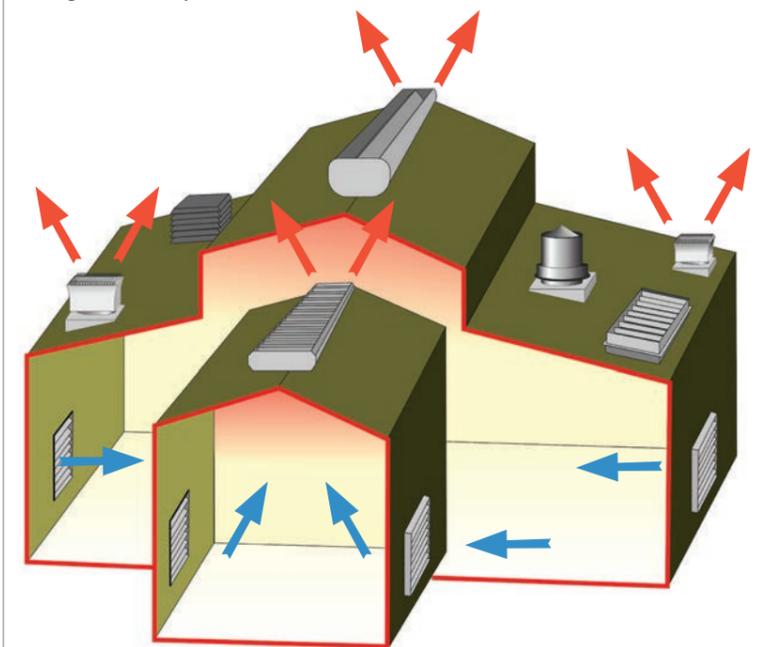
Design the most cost-effective, no-nonsense solution engineered to meet your needs and any prevailing regulations, relying on our full in-house technical resources such as CAD and CFD.

Customise our products to fit the exact requirements of your project and, where necessary, have them specially tested at our R&D facility.

Supply our high quality products, manufactured at our facilities quality certification and tested to rigorous international standards.

Install your system: our experienced, professional project management teams will take care of everything.

Maintain and service your system to ensure it keeps working at its most efficient throughout its life cycle.



NATURAL VENTILATION FOR EXTREME CONDITIONS

ArcelorMittal Jubail Tubular Products is a 51% joint venture agreement with the Bin Jarallah Group of companies for the design and construction of a seamless tube mill in Saudi Arabia.

This state of the art facility is located in Jubail Industrial City, north of Al Jubail on the Persian Gulf. Now that it is up and running the mill has a capacity of 600,000 tonnes of steel per year. The total area of the building is 118,000m².

Colt designed, engineered, supplied and installed a natural ventilation scheme, comprising 4,750m² labyrinth roof ventilators and 484 FCO controllable wall ventilators including 12 control panels for operating the FCO ventilators.



RUBART ELECTRIC GENERATING STATION, ULYSSES, KANSAS



A scheme of MoffittVent ventilators measuring 288" x 108" (88m x 7.3m) is being installed at this new facility. These ventilators include 6 motorized dampers so as to shut off the units when they are not in operation.

COLT CONDITIONS AT ENCORE WIRE

The Encore Wire aluminium wire mill in McKinney, Texas, is a tall building which used to have a very high ceiling and a hot, dark and smokey interior, so serious ventilation was needed. Moffitt, Colt's North American distributor for natural ventilation, was called in to provide the solution. Moffitt supplied two Labyrinth natural and smoke ventilators with the result that the interior of the building is much lighter and the working environment more comfortable.

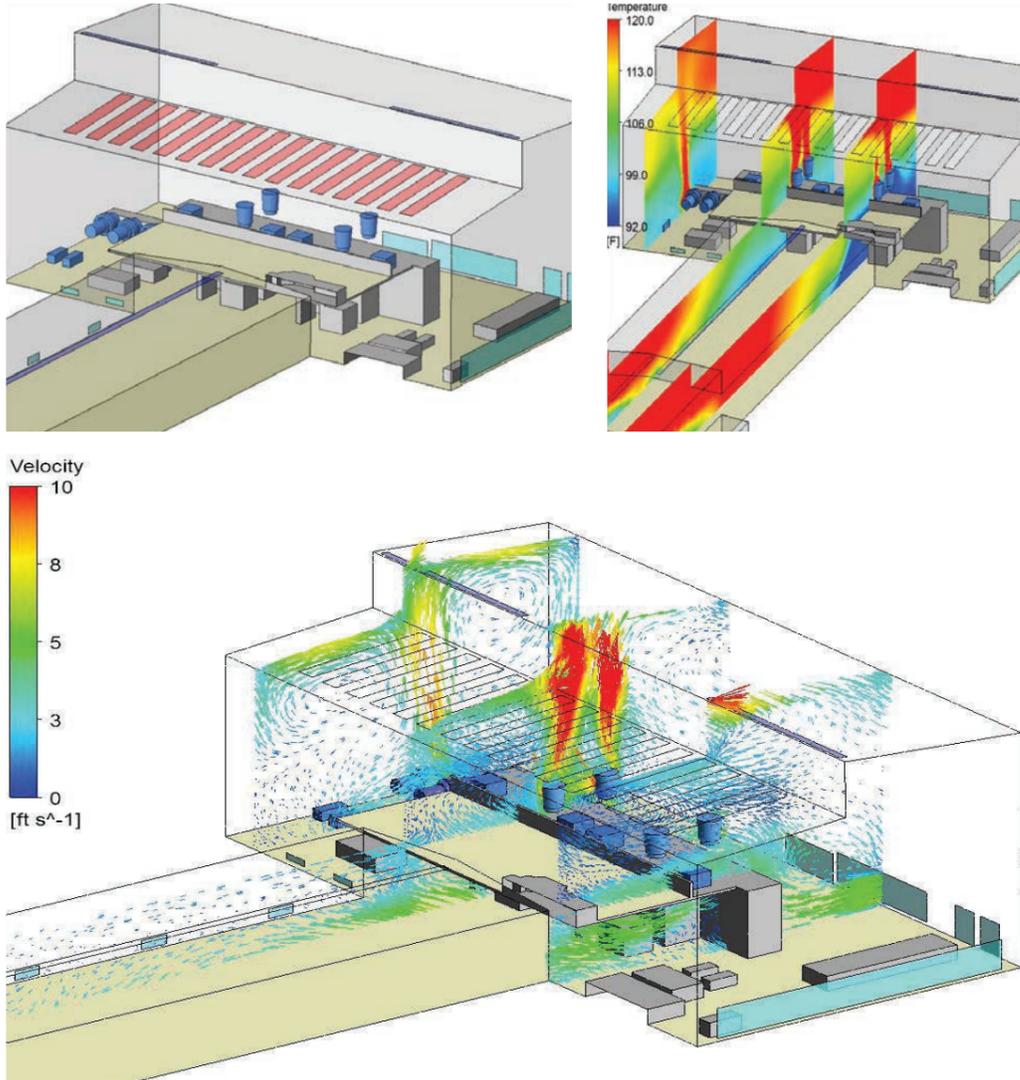


TECHNOLOGY TO CREATE COLT CONDITIONS

Colt has relied on Computer Fluid Dynamics (CFD) to investigate ventilation designs for over 20 years.

To assist with designing effective design conditions, we use in-house CFD and other design tools to simulate flows and heat transfer within buildings. This knowledge enables us to design tailor-made concepts fully suited to every specific situation.

The advantage of having these tools in-house is that we have gathered a lot of experience in modelling a variety of different challenges in ventilation design. Backed up by practical validation, this ensures very accurate results for any similar project to be modelled in the future. Measurement of the actual performance of the installed equipment is a key element to verify the accuracy of the "digital prediction". We are also able to compare the predicted results from CFD modelling with empirical test results on Colt products carried out in our own R&D centres. All of this gives you, the customer, peace of mind that our modelling is robust and based on real life situations.

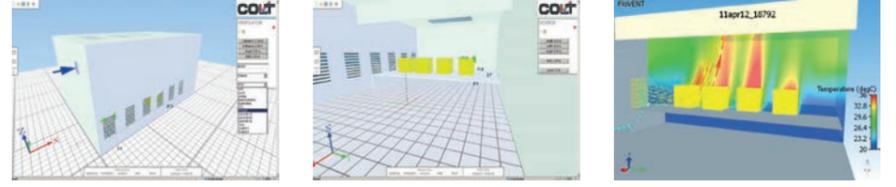


CFD MODELLING WITH ORCA IS ABOUT TO GET EVEN BETTER

Computer Fluid Dynamics is an extremely valuable tool to simulate airflows and heat exchange within a building, and to model how they will be affected by different design approaches. Up to recently it required one of our small team of highly skilled CFD engineers to input the data correctly and use the program, which created a bottleneck.

Our team started the ORCA project to resolve this issue, creating an easy-to-use interface that anyone designing a ventilation scheme could use. This means that they will be able to get a better understanding of the results of any design changes. The new interface also brings the benefits of this exceptional tool closer to our customers, enabling our teams to provide them with models of the proposed solution much faster and show them the simulations on site using a CFD viewer that shows the outputs with intuitive graphics.

Since its introduction ORCA has proved to be as valuable a tool as we had anticipated, and it is about to get even better. We have launched an upgrade, Version 2.0 that brings better visuals and new functionalities. It replaces ORCA's core technology with a very reliable and stable game-engine to support the 3D graphics. Version 2.0 also extends the library so that the functionalities will include additional products, sources of welding fumes, and also scenarios showing fire and smoke movements in a wide variety of buildings.



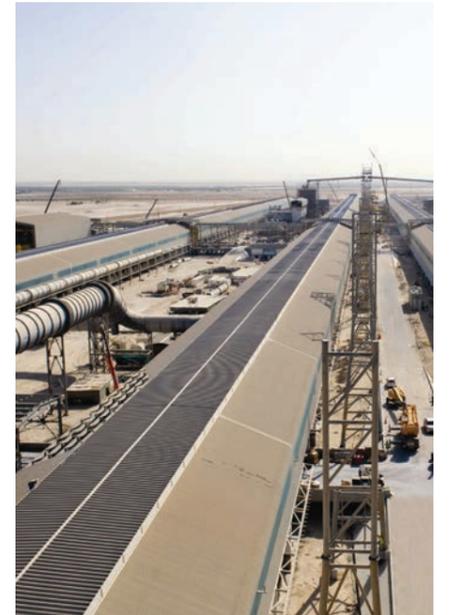
VENTILATION FOR WORLD'S LARGEST SINGLE SITE SMELTER

EMAL is a joint venture (JV) between Dubai Aluminium Company Limited and Mubadala Development Company (Mubadala). The world's largest single site aluminium smelter is being constructed at Al Taweelah, Abu Dhabi, UAE. When it is complete the facility will produce 1.4 million tonnes of aluminium per annum.

Colt was awarded the contract for design, engineering, supply and installation of a natural ventilation scheme. Colt supplied Labyrinth natural ridge ventilators in the pot rooms, baking furnaces and cast houses. The four pot rooms each measure approximately 1,250 m long.

EMAL is already benefitting from lowered temperatures on the operating floor through high efficiency ventilation.

Uniquely, the Labyrinths have been installed using a purpose-built 'roof car.' A vehicle is driven over the opening of the roof, which means that this method of installation is not only far safer than conventional methods, but also results in reduced time required for installation as well as minimal disruption to activities within the building.



MADE IN COLT CHINA MANUFACTURING COMPANY

In 2006, Colt established a manufacturing unit in China to support its worldwide controlled expansion strategy: Colt China Manufacturing Company (CCMC), a joint venture with our long-standing Hong Kong distributor, was born. Based in Shenzhen, in the South of China and just 50 km from Hong Kong, CCMC is ideally located: it has excellent links to mainland China and neighbouring countries, as well as the main trading routes by land and sea to the rest of the world. It is also close to a wide supplier base for the metal components and key production services, such as powder coating, that it needs.

CCMC offers its worldwide customers a full service, from design through to production and logistics. Although its sister manufacturing units in Europe provide some technical support, it has developed product design capabilities of its own.

CCMC manufactures a wide range of products, which currently includes Universal Louvre, and Labyrinth, EuroCO, Meteor and Kameleon ventilators. All products are manufactured to European quality standards and the factory has achieved ISO 9001 certification. Further, CCMC runs stringent quality, strength and life cycle tests on all components it purchases locally to ensure that the risk of product failures is minimised.

CCMC's customers have experienced the excellent service and quality delivered by CCMC at very competitive prices, due to local sourcing of components.



A NEW LIFE IN SHENZHEN

Bjorn van Schijndel joined Colt in the Netherlands many years ago and, being part of the Ventilation Heavy Industry (VHI) team, has visited the Colt China Manufacturing Company (CCMC) in Shenzhen many times. The VHI team is one of the factory's biggest clients, as CCMC manufactures ventilators such as Labyrinth that are most effective in industries where processes generate high levels of heat.



Bjorn van Schijndel

Most recently, Bjorn was involved in the big Ma'aden smelter project in Saudi Arabia. Throughout this project, he visited CCMC every month and got very involved with the manufacturing process, for example building up separate assembly tables for the "Ventura" GRP gratings.

Since Bjorn was spending so much time with the CCMC production team and getting so deeply involved with its workings, Andrew Ross, Group Director Overseas Operations, felt that there was a good opportunity for Bjorn to develop CCMC further within the Colt network. And who better than Bjorn could make it happen? So the agreement was made for Bjorn to move to Shenzhen for at least three years to carry out various tasks.

These will include the factory completing the process to upgrade to European standards, identifying efficiencies in purchasing and manufacturing, making use of Colt's standard drawings, and identifying which products to manufacture at CCMC for its principal customers.

MANUFACTURING GENERAL

We recognise that we need to manufacture as close as possible to our customer, in order to reduce transportation costs and to ease logistics. That is why we manufacture in Australia, Brazil, China, Europe, Saudi Arabia, and the USA.



WHEN THE HEAT IS TOO MUCH, ONLY COLT WILL DO!

The Stözlze-Union glass factory in Hermanova Hut in the Czech Republic has a rich history dating back to 1907. Entirely rebuilt after a devastating fire in 2009, it is today reputed to be one of the best production sites for pharmaceutical packaging glass in Europe. It also runs a regenerative furnace remarkable for its very low energy consumption and optimized nitrous oxide emissions.

The manufacturing process generates extremely high levels of heat and it takes a particularly robust ventilation system to provide a comfortable environment for the people working in the factory. When Stözlze-Union found that the system they initially installed couldn't do it, they called on Colt. They felt confident that we would have the solution, as Colt had already installed a cooling system at Stözlze's glassworks in Austria.

When Colt team carried out a survey, they immediately saw that the existing system would not be able to provide efficient ventilation, even with modifications to improve its performance. They designed a solution using Labyrinth ventilators built into the roof too release the hot air produced by the manufacturing process. In addition, they suggested fitting the Labyrinth ventilators with attenuators to reduce the noise escaping from the facility, as the factory is very close to a residential area.

The factory produces 120 tons of amber glass a day – if you want to picture what this means, it corresponds to 700 million glass containers for pharmaceuticals a year! To keep up with such a busy production schedule, it was important that the installation of the ventilation system do not disrupt the factory's manufacturing activity. This was not a problem for Colt, as we are used to work around our customers' work schedule, and our team completed the installation with no interruption to production, to Stözlze-Union's delight.



COLT PORTUGAL TRUSTED PARTNER

There is no doubt that Colt Portugal knows how to satisfy its customers, as shown by two big industrial concerns, Continental and Crisal Glass, who have recently returned for more ventilation systems.

Continental has expanded its tyre factory and warehouse in Lousado, in the North of Portugal, and turned to Colt to provide EuroCO and FCO units for natural daylight, day-to-day ventilation and smoke ventilation. The relationship with Continental Portugal dates back to 1994 and has come back to Colt again and again – in fact, over the years Colt has supplied and installed more than 650 ventilators in their facilities.

Crisal Glass produces glass tableware in Marinha Grande in central Portugal. Having relied on Colt for day-to-day ventilation for their first furnace, they have now come back for more for their second furnace. In both cases we provided a system with Labyrinth ventilators for heat extraction and FCO units for air inlet. Another satisfied customer who keep turning to Colt Portugal for good, reliable support.



SIBERIAN CONDITIONS AT SMELTER REQUIRE THE COLT TOUCH

United Company RUSAL, the biggest producer of aluminium in the world, runs a huge smelter complex in Bogouchany, in Siberia. The plant, which produces 750,000 tonnes of aluminium, needed a natural ventilation system that could cope with both the high levels of heat generated inside the building by the smelting process and the extreme conditions created by the harsh Siberian weather: outside temperatures between -47°C to +25°C; a snow load that can be as high as 1000 N/m²; wind speeds that can reach 45m/s; heavy rainfall that can be as much as 75 mm/h. In these conditions, it may take a ventilation flow rate as high as 55.000.000 m³/h to provide a comfortable working environment inside the plant.

Such huge numbers might have challenged a lesser team, but having completed a detailed survey of

the site, our team carried out comprehensive calculations and came up with the solution: a scheme of Labyrinth gravity ventilators, where each of the four 1,200-metre long pot rooms will be fitted with a 7m wide unit.

The unique design of the Labyrinth that will be used for the project has been developed to meet the very special requirements of smelters. Made of aluminium, it is very light, has high performance, it is highly resistant to corrosion and is low in maintenance. The customer also appreciated its low profile, which significantly reduces the wind load – a particularly important feature in the high wind conditions of the Bogouchany plant.

The customer was so delighted by the solution provided by our team that they went on to order 1,200 VO inlet ventilators to complete the project.



CUIJK FACTORY PASSES INSPECTION WITH FLYING COLOURS

At the end of last year the production team in Cuijk, the Netherlands received one of the largest orders in its history, when Colt was awarded the contract to supply 484 FCO inlet ventilators and almost 1.6 km of Labyrinth natural ventilators for a new ArcelorMittal mill in Saudi Arabia (see the article in ColtPost April 2011). Because of the magnitude of the order, delivery is staggered in 4 phases.

ArcelorMittal demands the highest quality standards and, to ensure these are met, carries out a detailed inspection of each delivery before it leaves our factory. During the initial inspection in June, we explained our manufacturing and quality control processes to the customer's inspector, who then visually inspected the Colt ventilators. At the end of the day, the inspector pronounced himself extremely impressed with our quality and production, and signed off on the quality of the first delivery.

The Cuijk manufacturing team also passed the second and third inspections with flying colours.

AMTPJ		QUALITY ASSURANCE INSPECTION RELEASE FORM		Date: June 28th, 2011
P.O. No.	P.O. ITEM			
COMBANT: COLT		LOCATION: SAHJUK (NETHERLANDS)		
MANUFACTURER/VENDOR:		CONTACT: PIET DE KIEPTE		
SUBCONTRACTOR:		PHONE: +31 481 39 94 99		
CONTACT: M. DELTRAMB		LOCATION:		
EQUIPMENT DESCRIPTION: Labyrinth and FCO units for ventilation		PHONE:		
FAX:				
REFERENCE DRAWINGS (NO):				
RELEASE TYPE				
<input type="checkbox"/> FULL	<input checked="" type="checkbox"/> PARTIAL	<input type="checkbox"/> CONDITIONAL		
<input type="checkbox"/> Other Complex	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
REMARKS: First shipment from COLT to AMTP JUBAIL, first shipment inspected.				
Supply of ventilation units "Labyrinth" and "FCO".				
Goods are already on pallets, spot controls have been done.				
3/30000 from LAB-25 25 damaged on pallet n°7 already replaced but still present.				
Take care to "free parts", possibility of lost or damage.				
Check with COLT Int DUBAI for shipping specification, especially for labelling and packing.				
No problems observed, COLT can continue with final packing of goods.				
RELEASE FOR SHIPMENT				
TITLE	NAME (Print)	SIGNATURE	DATE (MM/DD/YYYY)	
QC Inspector:	FULITO Bruno	<i>[Signature]</i>	28/06/2011	
Vendor Representative:	DIRK HOUBEN	<i>[Signature]</i>	28/06/2011	
Vendor Project Engineer/Manager:	PIET DE KIEPTE	<i>[Signature]</i>	28/06/2011	

OUR PRODUCT RANGE FOR HEAVY INDUSTRY

Labyrinth natural extract ventilator

- Lightweight and low profile - ideal for retrofits
- Continuous weatherproof ventilation for continuous extraction
- Suitable for inlet or extract
- No operating costs
- Durable aluminium

Options

- Shutter to reduce heat losses or to regulate airflow
- Sound baffles to reduce noise



MoffittVent natural extract ventilator

- Highest efficiency
- For either ridge or slope
- Continuous weatherproof ventilation for continuous extraction
- No operating costs
- Durable aluminium or steel

Options

- Shutter to reduce heat losses or to regulate airflow
- Sound baffles to reduce noise



Vast Opening (VO) natural controllable inlet ventilator

- Controllable facade ventilation
- Highly aerodynamically efficient
- Suitable for any framed opening

Options

- Aluminium, galvanised steel or stainless steel
- Manual or pneumatic controls
- Bird guards
- Sound baffles



Universal Louvre fixed inlet louvre

- Highly aerodynamically efficient
- Third party performance tested
- Enhanced rain defence performance

Options

- Aluminium, galvanised steel or stainless steel
- Bird and insect guards
- Sound baffles
- Either mill finish, polyester powder painted, pre-coated or anodised blades
- Louvre panels can incorporate mitred corners, special shapes and louvre doors



Sandtrap fixed ventilator

- Effective at keeping sand out of the building, so obviates any need for filters
- Third party performance tested
- Durable aluminium

Options

- Aluminium, galvanised steel or stainless steel
- Bird and insect guards
- Either mill finish, polyester powder painted or anodised blades.



THE COLT IN ACTION AT THE MA'ADEN PROJECT



The Smelter Team supplied a natural ventilation system for a new smelter in Saudi Arabia. The facility is part of an Aluminium Complex being built in Ras Al Khair, 90km north of Jubail on the coast of the Arabian Gulf. The smelter is now producing 740,000 metric tons per year (mtpy) of aluminium. We asked Niek Menting, the Ventilation Heavy Industry Sales Director, to tell us about the project.

Why do you think the customer chose Colt for this important project?

On such a big project the customer wants to be confident that the supplier is strong enough to handle such a big commitment and deliver on time when they are operating on a very tight schedule. We were able to show to their satisfaction that Colt fits the bill. We have the technology, the knowledge of how a smelter works, we have the financial solidity to carry such a big project, and we are able to provide them with a performance guarantee for our ventilation system in line with their requirements. This customer also appreciated the fact that, not only did we carry out a CFD model to show how our solution would work, but we provided them with the parameters so that they could verify the accuracy of our model. They were impressed with the quality of the technical information in our CFD model.

Looking at the location of the project, it looks like you had to deal with some rather extreme conditions. What kind of considerations does this entail?

First of all, ambient design temperature: our system has to deal with extreme heat in the summer, when temperatures can reach up to 55°C. Then, our products has to deal with marine and dusty conditions. And we realised that it would be very important to use high quality aluminium and stainless steel fasteners that can cope

with these extreme conditions.

How have you ensured efficient ventilation in these conditions?

We completed a CFD simulation to predict the conditions inside the pot room when the aluminium production process is active and show the capability of the Labyrinth roof ventilators. The model simulates the flows, heat transfer and temperature at different levels within the building. This way we were able to determine how to maintain low temperatures on the operating floor during the production process at different times of year, ensuring good working conditions for the employees. We provided low level air inlet grilles to direct airflow and protect the workers from electrical hazards. The smelter process uses high voltage electricity, so it is important to make sure employees can't touch any metallic parts by accident. This is an important safety issue, and Colt came with a very cost effective and efficient solution with "Ventura" protective grating, made of reinforced fibreglass composite, that we manufactured at our factory in China.

What were the issues around the installation of the equipment?

For a project on such a big scale, we had to meet a very tight schedule and so we adopted a different approach to the installation in order to minimise the disruption to the construction work within the building. We assembled the modules of the Labyrinth roof ventilator at ground level, then lifted them to the roof for installation. This was possible because of the unique design of the modules, which made it possible to fix the ventilators to the supporting steel structure from the outside. This way, we didn't need to do any work inside the building, leaving it free for construction of the internal systems.

TRIMET ALUMINIUM 30 YEARS COLT LABYRINTH WITHOUT FAILURE



In 1980 Colt was required to replace existing mechanical HVAC equipment at Trimet aluminium in Essen, Germany in response to changing needs, and supplied a scheme of natural/gravity ventilation. This scheme consisted of a Labyrinth Ventilation system and wall louvres. Now, after more than 30 years of operation the system is still in a very good condition and shows no sign of destructive corrosion.

HIGH COMPLEXITY AT SOSTANJ POWER ISLAND



For their Sostanj power station, Slovenian power company TES needed one supplier who would take responsibility for supplying and project managing the installation of a complex scheme of natural inlet and extract ventilation, smoke ventilation and heating.

We in Colt Germany Region South have joined with a Slovenian company, Esotech Sro, to supply Labyrinth and FCO ventilators for inlet and extract, as well as an instrument and control system.

The boiler house ventilation system will provide air inlet from the enclosure of the steam generator as required when it is in operation. It will extract the heat generated and keep the supply air frost free inside the building. The ventilation system will recycle the heat and transfer it to the steam generator's combustion air intake. We will maintain temperatures in the building between +5°C and +50°C, provide smoke control, prevent noise outbreak from the ventilators and maintain pressure in the room within an agreed range.

WINNING THE HEAT CHALLENGE IN AUSTRALIA

Providing ventilation to factories which contain processes that generate high levels of heat can be a challenge, but not for Colt, because we have the right product for every situation: Labyrinth, Universal Louvre, Seefire, Securex, just to name a few.

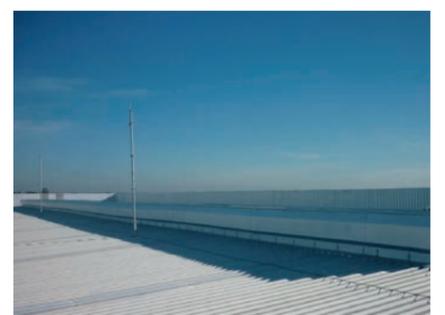
Colt New South Wales recently received an order to design and install a Colt Labyrinth system at the Ravensworth North Coal Handling Preparation Plant for a coal mine expansion in the beautiful Hunter Valley region. This type of facility typically consists of collectors, cyclones, centrifuges, dewatering screens, motors and pumps – all of which generate heat. Our solution is providing the ventilation to ensure the equipment operates efficiently and personnel work comfortably.



THE RIGHT PARTNERS TO SPREAD COLT CONDITIONS IN BRAZIL

Having addressed product sourcing by setting up a production facility, Colt Brazil has turned its attention to distribution. We are now working with Krieger Metalurgica Ltda, who have the right experience and technical knowledge to extend the benefits of Colt systems to our customers.

Krieger is a manufacturer of industrial process ventilation based in Blumenau, south west of São Paulo, and an excellent fit for Colt Brazil's operation. They are experienced in air movement, and have good territorial coverage of the country. Krieger not only sells Colt products, but also manufactures some of them under license. They are very proactive and soon after signing on with Colt, they supplied a natural ventilation system for Flexoprint's factory with Labyrinth ventilators made by themselves.



THE COLT HEAVY INDUSTRY TEAM GLOBAL COVERAGE LOCAL KNOWLEDGE

We are in the unique position of being able to offer our customers a complete solution: we have the expertise needed to advise them on the best way to ensure efficient ventilation at a very competitive price, we can show them how our proposed solution works with computational fluid dynamics (CFD) modelling, and we can deliver high quality products. Also, Colt is a bigger company than most of its competitors, so customers know that by choosing us, not only are they getting the best advice and the best deal, they are also minimising their risks.

Heavy industry buildings are constructed in countries with widely varying conditions. This means dealing with very different types of challenges. For example, when developing a ventilation system for a building in Iceland, we had to deal with high winds; in Canada it was the snow; in Saudi Arabia the heat. We have the products and the expertise to do that.

We can rely on our Pegasus test centre in Germany for load, wind, rain and snow testing. We are very experienced at using CFD modelling to see how our solution will work in practice. Our natural ventilation solutions are very cost effective for our customers, in terms of installation, running and maintenance. And we are able to reduce our customers' costs due to our global manufacturing approach and the focus on delivering high quality equipment at competitive prices.

