BHP Billiton’s Carbon Steel Division had a major expansion at the Illawarra Coal, Appin Colliery. This included the installation of 4500m of 1000mm wide ST6000 FlexSteel Conveyor belt from Goodyear by December 2003.

Goodyear, as the general contractor had guaranteed the splices for 15 years. With exacting standards for splice performance the first vulcanizer supplied from FC Manufacturing was not able to pass Goodyear’s tests for temperature accuracy. The belt splicing contractor Sandvik Material Handling, asked Shaw Almex Pacific, a division of Shaw-Almex Industries based in Australia, to produce a large sectional vulcanizer to replace the existing unit.

Due to the problems with the previous vulcanizer the project had been significantly delayed. Shaw-Almex was asked to build and ship the vulcanizer in a record 19 days and airfreight it from Canada to Australia. The press model SV5P 27662 with a platen area of 276” x 62” (7010mm x 1570mm), and a splice length of 263” (6700mm), operating pressure of 200 psi (14 kg/cm²) was delivered on time tested and certified by Goodyear. The Almex press was also found to operate well within + -5 degree celsius requirements set out by Goodyear and heated and cooled in record times.
The Collahuasi mine, the fourth largest copper mine in the world is situated in Northern Chile. 17 km of 72" (1829 mm) wide ST 6300 conveyor belts were used, conveying highly abrasive copper ore at a rate of 200,000 tons per day over a distance of 8.5 km.

The Overland Conveyor System was designed by Krupp Canada, with belting supplied by Phoenix AG, Germany and conveyor belt vulcanizer supplied by Shaw-Almex Industries, Canada.

The Almex Sectional Vulcanizer model LHK4D 13278R chosen to ensure the best splices possible is comprised of 4 platen sets covering a platen area of 132” x 78” (3353 mm x 1980 mm) with a splice length of 118” (3000 mm). Operating pressure 200 psi (14 kg/cm²).
Almex Sectional vulcanizer splicing an ST 6800 high strength steel cord belt in Chile.

The Overland Conveyor System was designed by Krupp Canada, with belting supplied by Phoenix AG, Germany and conveyor belt vulcanizer supplied by Shaw-Almex Industries, Canada.

The Almex Sectional Vulcanizer model LHK10D 28071 chosen to ensure the best splices possible is comprised of 10 platen sets covering a platen area of 280” x 71” (7110 mm x 1800 mm) with a splice length of 63” (1600 mm). Operating pressure 200 psi (14 kg/cm²).
Vulcanizing of Steelcord Belts
More Effective by Use of Frame Style Presses

In the mining industry, the standard procedure for conveyor belt splicing was the utilisation of sectional presses; vulcanizing presses, which consisted of parts portable by hand: bars, bolts and nuts made from light alloy, a great number of cables and hoses to provide pressure and heat to the heating platens and several control boxes for controlling and monitoring the splice during cooking. Even today, there are many circumstances where this technique still has to be used: if the site is narrow and underground, if there is no possibility to use machine lifting equipment or cranes. Here you have to accept long erection and installation times, which means long non-productive interruptions of production.

For the first time in Europe, now there was a press presented – 3.4 x 2.6 m of size – which was made out of two frames parts only and equipped with the ALMEX-pressure bag system, including silicone heating elements fitted in flexible Aluminium heating platens with integral water cooling. With this system it is possible now to erect the system within one hour. The dismantling time after the cure may be even shorter.

While, up to now, the operators of open pit mines helped themselves and screwed together the sections to frame style ones, they are now offered a press, which consists of only 3 parts: upper frame, lower frame with pressure bolts, and energy- and control-box. Available around the clock, this system can be transported to the site on platform trailers or modern hook-up containers. At first, the lower frame is put between the roller frames of the conveyor belt by a crane and erected with all necessary working tables and gangways. As soon as the energy-box is installed, the lower platens can be preheated, making the cure preparations easier during the cold time of the year.

The container for the energy-box also contains all necessary additions and tools, e.g. the splicing tent, edge irons etc.

After preparation of the splice the upper frame is put into place and the pressure bolts can be pushed up. The bolts are to be tightened by hand only – a feature of all ALMEX-presses – and they are slim, because the pressure of this press can be lower than on other press systems.

The pressure bolts are hinged in the lower frame and the carry load for the man is only 25 kg max., this may be tolerable for the

Effektives Vulkanisieren von Stahleisgurten mit Kompaktpressen


Erstmalig in Europa wurde nun eine Kompaktpresse aus Stahl mit 3.4 x 2.6 m Heizfläche mit dem ALMEX-Druckkesselsystem und Silikonheizmatten, eingebettet in flexible Alu-Heizplatten mit integrierter Wasserkühlung, hergestellt. Damit ist es möglich geworden, innerhalb 1 Stunde das Vulkanisiergerät aufzustellen und anzuschließen. Der Abbau kann sogar noch schneller erfolgen.

Haben sich bisher die Betreiber von Tagebaubeständen selbst geholfen, indem sie Traversenpressen mit Bordmitteln zu größeren Einheiten verschraubten, so wurde jetzt eine Presse vorgestellt, die aus nur 3 Teilen besteht: Oberrahmen, Unterrahmen mit Zugankern und Energie- und Steuerbox.

Auf Plattformanhängern oder Abrüllcontainern jederzeit abrufbar wird zu allererst der Unterrahmen vor Ort gebracht und mit einem Kran in der Bandanlage zwischen den Rollenstühlen installiert. Sobald auch die Energie- und Steuerbox verfügbar ist, können die Unterplatten bereits vorgeheizt werden, um die Verbindungserstellung, insbesondere in der kalten Jahreszeit, zu erleichtern.

Der Container für die Elektro-Box enthält auch sämtliche zusätzliche Teile wie Rückschienen, Laufstege, Arbeitstische, Vulkaniserwerkzeuge, Karten etc.

Nach Fertigstellung der Rohverbindung wird der Oberrahmen aufgesetzt und die Zuganker – 11 Stück an jeder Seite – hochgekoppelt. Die Zuganker werden wie bei allen ALMEX-Pressen nur von hand angezogen und können wegen der niedrigen Drücke, mit denen die Presse arbeiten kann, relativ schnell gehalten werden, als unteren drehbar gelegener Kurztülken ausgeführt beträgt das zu bewegende Gewicht maximal 25 kg; das ist
short moment of lifting the bolt. The advantage of a large num-
ber of bolts is the uniform stress distribution in the frame – good
for safety. The total load of the press with 160N/cm² is about
1,442 tons, resulting in a frame bent of only 2 mm.

It is no secret that the extraordinary results of the splices – with-
out oil-hydraulics – are due to the flexible platen system: water
pressure bags made out of textile reinforced rubber do press
the belt while curing; because of the platens' flexibility the uni-
form pressure is load directly from the bags into the belt. These
platens are thin and fully provided with cooling channels, so the
cooling time is the shortest of all commonly known vulca-
nizers.

A really new adjustable edge iron fixing system keeps the irons
in position.

The energy- and control-box contains the water tank for pres-
ursing and cooling, the heat exchangers, the compressor for
blowing out the cooling water after cooling, the pressure
pumps, the power supply for the heating platens and the elec-
tronic temperature control.

The upper and lower platens are three each, so there are 3 con-
trollers each for the upper and lower frame. The accuracy of
controlling reaches ± 3 °C and underlines the quality of the sys-
tem.

Fast pressurizing, short heating times and fast cooling are the
highlights of this press, which has really low masses of heating
and cooling elements: so the power consumption is extremely
low.

Also important for every user is the fact that this press has a
constant Amp flow during the heat-up time: so all network in the
mines are normally strong enough to run this press without the
need to install stronger electric power systems.

den Bedienungspersonen für den kurzen Moment des Hoch-
klappens zuzumuten. Ein weiterer Vorteil der großen Bolzenan-
zahl ist die ausgewogene Spannungsverteilung im Rahmen und
die Betriebssicherheit. Bei 160 N/cm² Druck – also etwa 1442
Tonnen – liegt sich der Stahlrahmen lediglich um 2 mm durch.

Daß man mit dem Druckkissenprinzip – hier werden die Heiz-
platte vollflächig von gewebeverstärkten Gummidruckkissen
mit Druckwasser beaufschlagt – so hervorragende Ergebnisse
ohne jegliche Ölhäulen ziet, liegt an der Kombination mit fle-
xiblen Alu-Heizplatten: nur 30 mm stark sind diese extrudierten
Aluplatten inkl. Stellhornhaut und Isolierung, also dünn
genug, um jegliche Stärkenunterschiede der Gurt elastisch
auszugleichen und dabei gleichmäßigen Druck an jede Stelle
des Gutes zu bringen.

Ein neuerartiges, einstellbares Kaisersystem bringt und hält die Kan-
teneisen in Position.

Die Energie- und Kontrollbox enthält den Wassertank für Druck-
egnung und Kühlung, nebst Wärmetauschern, den Kompressor
zum Ausblasen des Kühlwassers, die Druckpumpen und die
Stromversorgung mit elektronischer Temperaturregelung.

Dabei sind obere und untere Heizplatten jeweils 3 geteilt, so
daß auch je 3 Regler für oben und unten vorhanden sind. Eine
Regelgenauigkeit von ±3 °C unterstreicht die Qualität der An-
lage.

Die schnelle Druckgebung, kurze Aufheizzeit und schnelle Kühl-
zung sind weitere Merkmale dieser Presse, die mit geringen
Massen zum Aufheizen und Kühlen (sehr gute Plattenisolierung)
auskommt und daher auch vom Energieverbrauch her einen
großen Fortschritt darstellt. Ein konstanter Stromverbrauch über
die gesamte Aufheizzeit hält die Ansprechwerte gering, so daß
jedes Stromnetz im Tagesbau dafür ausreicht, und alle 8 Heiz-
platten gleichzeitig aufgeheizt werden können.
The Los Pelambres Overland Conveyor System is comprised of three, 1800 mm, ST 7800, conveyors which run downhill through a series of tunnel systems. The overall length of the system is 12,700 m with the longest section being 5,630 m in length. The conveyor has a full running capacity of 8,700 mtph.

The design of the system was carried out by Krupp Canada, belting supplied by Phoenix AG, Germany and conveyor belt vulcanizer supplied by Shaw-Almex Industries, Canada.

The Almex Sectional Vulcanizer was chosen as the press of choice to ensure the best splices possible. Sectional Model LHK10D 35178R is comprised of 10 platen sets covering a platen area of 78” x 351” (1980 mm x 8915 mm) with a splice length of 280” (7100 mm). Operating pressure for the world's strongest belt is 200 psi (14 kg/cm²).

The unique Almex flexible platen, pressure bag and temperature control system provided uniform pressure over the entire splice area giving the strongest splices.
Shaw Almex custom designed a unique Aluminum Frame splicing press, model RAB4-14484 to complete the eleven splices. With a platen size of 144" (3657 mm) by 84" (2133 mm) this press is capable of splicing a belt 72" (1800 mm) wide with a splice length of 130" (3300 mm) in a single cure.

Its two-piece frame design greatly reduces press assembly and disassembly time and the integral platen water cooling system allows for the fastest hot vulcanized splice possible. The unique Almex pressure bag and flexible heating platens ensured uniform heat and pressure.

The top frame of the vulcanizer was easily lifted up out of the way as the splice was prepared in position on the bottom frame.

The vulcanizer platens also provide an integral water cooling system which quickly cools the splice, after the curing stage, to further shorten the splice cycle.

Two splicing crews working around the clock completed all eleven splices in a fast, efficient manner, thereby minimizing the downtime for Molycorp.

At Shaw Almex, we believe that as the marketplace changes, suppliers and industry must unite their ideas and skills to find innovative solutions.

This project at Molycorp is just another example of Shaw Almex working to be...

Your Partners for Success!
Molybdenum is an essential ingredient in the production of many high strength metal products and serves as an alloy in almost every phase of the production of iron and steel.

Molybdenum has been mined and milled at Questa, in Taos County of Northern New Mexico, for over 60 years. In 1965, an open pit mine was developed. As ore in the open pit mine was being depleted, exploratory efforts determined that large, deep ore reserves were also located on the Questa property. A $200 million dollar expansion, in 1983, established underground mining operations.

An opening was driven 6,600 feet at a 10° slope from the mill area to a location beneath the ore body. A 48" (1200 mm) wide belt conveyor system was installed in this inclined shaft to bring the ore to the surface.

MolyCorp worked in partnership with the belt supplier, Contitech of Germany, the belt installation contractor, Conveyor Services Corporation of Pennsylvania and the vulcanizer specialists, Shaw Almex Industries of Canada, to provide a fast efficient solution.

In June of 1998, the belt was replaced with a 48" (1200 mm) wide, ST 3600 steelcord belt. These belts were shipped from Germany on 10 elliptical spools with 1500 ft. (457 m) of belting per spool which reduced the number of splices required.

The belt installation and splicing team designed unique handling and processing equipment within the splice station to minimize the time required for splicing and handling procedures.

The procedure for this installation was to splice the 15,000 ft. (4572 m) of belting above ground and lay it in a trough. The entire belt would then be pulled onto the conveyor structure in one pull and the final splice completed in position on the conveyor structure.

At Shaw Almex, our commitment is to be a partner with you in the success of your bulk material handling operation. A recent belt installation at Molycorp Inc. in Questa, New Mexico, is an example of that commitment.

**Challenge:**
A vital incline conveyor required a new, high strength steelcord conveyor belt. This new belt had to be installed as quickly and efficiently as possible to minimize downtime.

**Solution:**
MolyCorp Inc., a subsidiary of UNICAL, operates a large underground molybdenum mine at Questa, New Mexico.

In June of 1998, the belt was replaced with a 48" (1200 mm) wide, ST 3600 steelcord belt. These belts were shipped from Germany on 10 elliptical spools with 1500 ft. (457 m) of belting per spool which reduced the number of splices required.

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The Almex Sectional Vulcanizer was the press of choice based on ultimate portability, and splicing performance. Overland Conveyor System designed and carried out by Canada Conveyor Belt Ltd., belting supplied by Goodyear, Canada.

Sectional model LHK12D 312112 is comprised 12 platen sets covering a platen area of 312” x 112” (7924 mm x 2845 mm) with a splice length of 285” (7256 mm). Operating pressure for this 94” (2400 mm) wide ST7000 belt is 200 psi (14 kg/cm²).

The unique Almex flexible platen, pressure bag and temperature control system provided uniform pressure over the entire splice area giving the strongest splices.