

Steel giant for iron miner



George Petley, Pacific Industrial's Business Development Manager stands in front of huge ore loader.

Steel-based machines don't come much bigger than those manufactured by Western Australian steel fabricating company Pacific Industrial.

The company recently manufactured an enormous, 900-tonne ship ore loader – for the northern port of Dampier as part of Hamersley Iron's \$685 million port expansion plans – for global mining equipment company Voest-Alpine.

The size of the loader matches its loading rate; more than 8000 tonnes of iron ore can be poured into a ship's hold every hour.

The Dampier expansion will increase capacity from 74 million tonnes to 116 million tonnes a year. The first stage of the project, started in January 2004, includes relocation and modifications to stockpiles, extensions to the existing wharf, creation of a new sea wall, and installation of the loader.

A family-owned company, Pacific Industrial specialises in all aspects of steel fabrications and construction, including design, engineering, procurement, installation, commissioning and related electrical, instrumentation and civil works.

The company's state-of-the-art facilities and proven expertise made them the logical choice to manufacture the new ship loader.

"We put together a detailed bid for the project, and this, combined with Pacific Industrial's previous experience with this class of work, guaranteed our success," George Petley, Pacific Industrial's Business Development Manager, said.

"This type of machine is as complex as it gets. As well as being huge and heavy, the fabrication is incredibly technical. There are not many companies that could have taken this task on as successfully."

For the project, Pacific Industrial erected about 800 tonnes of individual steel components, such as the booms, control car, tripper car, slew deck, bogies, ladders and platforms, pulleys, hydraulic components, and mast, which were all fabricated and painted in Kwinana, WA.

The components were then transported to the Australian Marine Complex at Henderson, where the ship loader was assembled on the 15,000 tonne load out wharf, using Pacific Industrial's own 300 tonne crawler crane.

Electrical installation and testing was done by the end of February, and the loader was then transported 1800 km by sea to Hamersley Iron's load out terminal in Dampier. The ship loader was transported in one piece on the deck of a heavy lift ship and placed directly on the wharf at Dampier by the ship's cranes.

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The loader is 112m long, the boom is 52m from tip to centre, and the whole structure stands 28m high.

"This was a big job for us," Mr Petley says. "It was very complex in terms of steel fabrication, and required a lot of man hours, technical expertise, space, large capacity cranes, and intensive machining and testing."

According to Mr Petley, this particular ship loader represents the "Rolls Royce" of its kind.

"It's a huge investment for Hamersley Iron," he says. "This loader is expected to have a working life of 25 years, working around the clock.

"And as it's located in a very corrosive environment, it was crucial that it be built of the very highest quality material."

Pacific Industrial stipulated 800 tonnes of 350 Grade XLERPLATE® steel from BlueScope Steel.

"We selected 350 Grade to meet Voest-Alpine's exacting criteria – providing strength, while remaining light," Mr Petley says. "Keeping the weight of the loader down was integral to reducing transport costs and minimising wharf loadings.

"The work proceeded well, thanks to our 300 tonne Demag crawler crane, and experienced workforce. The major challenge on the project was the sheer technical nature of the work."

A good steel supplier is critical to Pacific Industrial's operations, Mr Petley says. "All of our projects run to very tight timeframes, so it's essential that our suppliers are capable of working to our level of demand," he says.

"For jobs like this, we can't afford to take the risk with overseas steel. The quality of XLERPLATE® steel is exceptional – it sets the benchmark worldwide."

"BlueScope Steel has a strong relationship with Pacific Industrial," one of BlueScope Steel's West Australian State Sales Managers, Elly Pilkadaris, said.

"This ship loader was an important element in the Dampier port upgrade, and our ability to provide the required technical support to the Pacific Industrial team throughout the project was a key part of our market offer."

Panelling keeps a lid on loud music

Some of the world's best (and loudest) bands have given an Australian invented sound attenuation system the thumbs up.

The unique panelling, made from wheat straw, covers the roof of the recently completed Gold Coast Convention and Exhibition Centre in Queensland – and has already passed the loud-sound test of 10 major groups.

Spiderbait, UB40 and Harry Connick Jnr are among the entertainers who've played the new centre without exceeding the 120dB sound leakage restrictions placed on the venue.

Bendigo-based Derek Layfield, the principal of Ortech Industries, has spent seven years perfecting the system made from wheat straw which would otherwise be burned during harvesting.

The compressed panel system also works with compressed rice straw, which Ortech is now using as Australia's drought devastates wheat farmers.

Each assembly of up to 100 sq m is held within a frame made of steel from BlueScope Steel, and craned onto a building with a special lifting frame also developed by Mr Layfield.

The system is now attracting world interest.

Ortech has signed a licensing agreement in the US and is planning to open a factory in Sri Lanka before December.

The massive Gold Coast Convention and Exhibition Centre is the company's biggest job so far – and has already led to the Durra board panel being chosen for Auckland's Giant City Arena in New Zealand and the Australian Synchronion project.

On the Gold Coast, Ortech's Durra board panels are framed with ZINCFORM® G300 steel, fixed beneath Stramit Speed Deck Ultra® roof decking rollformed from COLORBOND® Ultra steel.

It provided constructors Multiplex with a cost-efficient alternative to building complex birdcage scaffolding, and delivered faster completion time.

The system (below) was engineered off-site, assembled on the ground and then lifted and bolted to the primary structure, with steel safety rails already attached.

Trades were able to walk and work on the Durra board.

According to Mr Layfield, tests at Melbourne's RMIT have indicated the lightweight acoustic structure provides sound attenuation equivalent to 60cm of solid concrete.

"Our next plan is to become major providers of prefabricated high performance cinema wall systems using Durra board and Durra beam steel studs from BlueScope Steel," he said.

Ortech will work closely with BlueScope Steel on the project.





Help for injured horses

The world's first equine hyperbaric oxygen chamber is now helping Australian horses to recover from injury.

Designed by Melbourne company Fink Engineering – on research provided by another Australian company EquiiOx – the first chamber was installed at Flemington in Melbourne, and has already proven successful in speeding up the healing process for more than 350 prize-winning race horses.

EquiiOx, established by a team of veterinarians and scientists, contacted Fink Engineering to design and develop the technology for the project. EquiiOx is a combination of the Latin word for horse (equus) and Ox (for oxygen).

The rectangular equine chambers each hold as many as three horses simultaneously, and use specially designed masks providing 100 per cent pure oxygen to stimulate new collagen and decrease swelling on injured tissue.

The innovation provides the same hyperbaric oxygen treatment used in hospitals around the world to accelerate healing of difficult and problem wounds.

The treatment can speed up treatment of acute and chronic injuries in horses by as much as 70 per cent.

Fink Engineering has a long association with hyperbaric chambers; it designed its first chamber

for human use in 1996, and has since transformed the way hyperbaric medicine is practised.

While the company has designed and built nine hyperbaric chambers for hospitals around the world, it's now building four more equine chambers for export to Europe and the Middle East.

The first equine chamber took six months to design, but Fink Engineering's Managing Director, Eric Fink, says his company can now build them at a rate of one a month. The potential global market for the chambers could be as high as \$100 million.

"A number of round equine hyperbaric chambers have been used in North America, but these haven't been as user friendly, for humans or the horses," Mr Fink says. "The rectangular shape is far more suitable for horse and other large animals."

Mr Fink says he was determined the chambers would be Australian-built, and Coffs Harbour (NSW)-based engineering company W.E. Smith Hudson was licensed to build them using various grades of XLERPLATE® steel from BlueScope Steel.

"W.E. Smith Hudson was the obvious choice because it is one of the best pressure vessel shops in the world," Mr Fink says.

Each chamber uses 12 tonnes of 460R XLERPLATE® steel, supplied by the local OneSteel Metaland supplier.

"Super" steel for Asia

BlueScope Steel's ability to meet the needs of the expanding Asian market has taken another step because of an agreement with Japan's Nippon Steel Corp.

At the centre of the agreement is SuperDyma Steel – a highly corrosion resistant coated flat steel building product designed specifically to meet Asian needs.

SuperDyma Steel's coating contains zinc, aluminium, magnesium and silicon specifically blended to perform well in severe acidic and alkaline corrosive conditions and in constantly wet environments.

A compact layer of magnesium oxide is formed when the area is washed to act as a tight protective film on the steel.

BlueScope Steel will market SuperDyma steel through its network of Asian rollforming and sales and marketing offices, and in other agreed markets.

SuperDyma Steel is rolling out through BlueScope Steel in Thailand and China, and will be progressively introduced in other countries throughout this year.

LYSAGHT BONDEK® takes the heat

Unique and advanced fire testing has proven that LYSAGHT BONDEK® has superior composite performance during fire. The testing, conducted by the Centre for Environmental Safety and Risk Engineering at the Victoria University, Australia, was the first of its type anywhere in the world.

The tests found that no additional fire reinforcement is required for LYSAGHT BONDEK® in composite slabs with fire resistance up to 90 minutes, and that there is no need to adjust the slab thickness for fire design.

Most importantly, the recent tests on LYSAGHT BONDEK® have shown that composite performance – the action between the concrete and the deck embossments – is actually a far more critical parameter than yield strength, when it comes to designing for fire resistance.

Developed by BlueScope Lysaght, LYSAGHT BONDEK® is the original steel formwork system that revolutionised concrete construction.



Steel drives home Eco message

A new Eco Smart home aims to set an Australian record by cutting energy consumption by as much as 80 per cent.

Jan Brandjes, a leading Victorian environmental building consultant, plans to have the Eco Smart home built by October this year as a guide to all members of the building industry.

The steel framed home will be situated in the Solar Precinct, Australia's largest residential development of solar homes, on the Jacksons Hill Estate, Sunbury.

Steel framing, cladding, fencing, roofing and rain water solutions are all used to drive home the message that fully recyclable materials are the way of the future.

Mr Brandjes aims to achieve total consumption of no more than 20Watts/square metre – half that of an Eco Home he built in 2002, and in which he now lives.

"A normal home will allow for 100Watts/square metre energy consumption for its heating or cooling needs," he said.

"This new Eco Smart home could go as low as 15."

The key to Eco Smart's energy saving is the

elimination of cracks and unintentional airways, or as Mr Brandjes puts it "sealing the building envelope".

"The prevention of air exchange (from inside the house to outside) retains a stable internal environment and substantially reduces the need for energy use," he said.

Typical Victorian homes have a 6-9 times turnover of air every hour, according to Mr Brandjes.

Yet he maintains research in the USA indicates it is necessary to replace the air fully in a home only once every three hours.

"The balance between indoor air quality and energy wastage is the key to producing an eco-efficient home," he said.

"The average home has up to 1.5m of unintentional air passages, cracks and holes which allow leakage.

"However, it's possible to design a home which is so tight that it becomes unhealthy.

"There's a balance which needs to be achieved, and that depends to a degree also on the number of people who will be resident."

BlueScope Steel products are at the heart of the Eco Smart project.

Pre-fabricated steel framing from BlueScope

Steel reduces construction costs and eliminates waste.

"I estimate a building crew will erect the home in two days, compared with 5-6 days for other prefabricated solutions," Mr Brandjes said.

"But steel framing will also eliminate a lot of moisture from the house, which will improve relative indoor air quality.

"Moisture works against a building when relative humidity climbs to more than 55 per cent, and steel is theoretically at 0 per cent.

"Because the steel frame is so stable it also presents a much better foundation for sealing the building envelope."

An upside to the dryer home with better air quality is that it also helps allergy sufferers.

Mr Brandjes has specified roof cladding in light coloured COLORBOND® steel to ensure summer heat is not retained, and to ensure maximum water run-off is captured by the home's AQUAPLATE® steel rainwater tanks.

"The difference in run off is weighted better than 10 per cent in favour of steel over tiles, which tend to absorb water," he said.

Once built, the Eco Smart home will be open for inspection for two years, and can be booked for small conferences and seminars.

Fielders eyes world record

Mobile rollforming mill pioneer, Fielders, has commissioned two new purpose-built trailers to service its fast-growing continuous long length roof sheet business.

According to Fielders, business modelling indicates the potential for demand to double by the end of the decade.

Fielders introduced long-length mobile mills to Australia seven years ago, and now has seven units placed strategically around the country.

The Australian record for the longest continuous sheet length is 101.5 metres of BlueScope Steel COLORBOND® steel on Canberra Airport's VIP hangar, installed by one of Fielders' Approved Contractors, Northside Roofing in the KingKlip® profile last year.

"The world record is 124m on Britain's Royal Mail building, and we're keen to beat it," Fielders' National Commercial Products Manager, Barry Morgan said.

Fielders has locally developed three concealed fix profiles, KingKlip, WideKlip and HiKlip, each using robust clips, instead of screws to fix the sheets.

Fielders exclusively uses BlueScope Steel products in its applications.

Advantages of the system include a significant reduction in both transport costs and handling damage as well as the ability to work more accurately on site.

Recent mobile mill successes include a 35,000 sq m roofing project at the new Adelaide Airport, clad in COLORBOND® steel in the colour Surf Mist, and a 25,000 sq m assignment in the Brisbane Airport Industrial Park.

Currently, Fielders is rolling a number of projects on site, including Ikea's new warehouse in Adelaide using 15,000 sq m of ZINCALUME® steel rollformed in KingKlip® profile.

"Architects are increasingly specifying continuous, long-length roof sheeting not only because of the economy involved but also to eliminate potential corrosion," Mr Morgan said.

"Part of the success of the system is having skilled operators on site, and purpose-building each Mobile Mill to suit the task.

"Several of our mill units are configured differently to ensure they best suit the sites on which they'll work."

Fielders' two new custom-built "goose neck" trailers have been designed with a five tonne Hiab crane on board, facilitating rapid coil changes and the flexibility to move the mill where it is required on site.

Shopfronts shout for steel can recycling

One in 20 more people in Australia are thinking about recycling steel cans thanks to a recent supermarket campaign.

The first-time partnership between Coles Supermarkets and the Steel Can Recycling Council, supported by BlueScope Steel and canned food manufacturers, Edgell Corn and SPS Ardmona, reminded shoppers that steel is one of the few 100 per cent recyclable packaging materials.

Research conducted before and following the campaign showed that general awareness of steel can recycling rose 5 per cent to around 82 per cent of people, with Coles patrons having significantly greater awareness over those who shop elsewhere.

Coles gave away 50 hampers of food packaged in steel cans during the campaign, the contents kindly donated by some of Australia's top can-using brands.

Local councils also got involved by running contests in local media, such as a 'Name the Steel Can Dog' competition, and shopping centre displays. These activities created an extra 'buzz' outside Coles stores and gave shoppers the chance to speak with waste educators about recycling where they buy goods in steel cans.

Councils are also broadening the types of steel cans accepted at kerbside or drop-off facilities.



"We have seen a 12 per cent increase in the number of councils who now accept aerosol cans and a 39 per cent increase in those taking paint cans," Chair of the Steel Can Recycling Council, Joe Stefano said.

"We are also delighted that all metropolitan councils on the Eastern Seaboard now collect steel cans at kerbside."

For more information about recycling of steel packaging or to find out whether your council collects steel cans, please call the Cansmart Team on 1800 073 713 or visit the website at www.cansmart.org.



VIP hangar at Canberra Airport using 101.5m long sheets.

School's fresh facade

Melbourne's Faulkner Secondary School has been so impressed with new building facade cladding made from COLORBOND® and ZINCALUME® steel that it has decided to extend the replacement program throughout the school.

The brief to Insite Architects included replacing part of the school's 1950s masonry tile facade with COLORBOND® steel cladding in a combination of striking colours, including Deep Ocean®, Pale Eucalypt®, Paperbark® and Manor Red®.

Project manager, Kevin Crehan, said the façade design included several different profiles and had been praised by the school community.

"Other areas of the school have also been clad using the corrugated profile, with the intention of replacing all the facades with this durable, low maintenance and economical product," Mr Crehan said.

Faulkner Secondary College's Principal, Kerrie Heenan (right), and Katie Shinkfield, from Insite Architects, in front of the new facade.



Austdoor helping to garage Vietnam

Growing demand for cars in Vietnam has led to BlueScope Steel helping a national company develop a new business – in garage doors.

The garage door business has substantial potential in the country, judging by the number of motor vehicles appearing on the nation's roads.

Hanoi's cars have tripled in the last decade to about 150,000, and are expected to triple again, but this time in only five years.

There are now more than 600,000 cars on Vietnam's roads, and while growth is artificially restrained by heavy taxes, 27,000 new cars are expected to be registered this year.

Recognising this exploding market, local trading house Hung Phat Co formed a garage door company called Austdoor in 2003.

Austdoor currently sources rolling steel doors in CKD kits from Gliderol out of Taiwan, each employing a curtain made from recently improved Clean COLORBOND® steel.

By the end of this year, however, the company expects to open its own plant in Vietnam, coinciding with the commissioning of BlueScope Steel's own new factory there.

Mike Courtnall, President Asian Building & Manufacturing Markets, BlueScope Steel's President, Asia, Mike Courtnall, last month travelled to Vietnam to formalise a partnering agreement with Hung Phat Co in recognition of their ambitious plans.

"Our commitment to Austdoor is to supply Clean COLORBOND® steel to match the company's output of 2500 garage doors," Scott Beasley, Vice President Marketing of BlueScope Steel, Vietnam, said.

"The commissioning of our own plant means we will be able to provide Austdoor with shorter lead times on smaller volumes and increase our level of technical service."

With Vietnam's construction industry expanding at 15 per cent a year, there is big demand also for rolling steel doors for industrial and commercial application.





Future roof on the ground

Risks associated with working at heights when installing a roof could become a thing of the past following a recent development that allows steel framed and clad roofs to be built entirely on the ground and lifted into place.

Pioneered by building frame company Custom Steel Frames of Dubbo, NSW, the idea involves the entire steel roof frame being assembled on the house slab or floor, then covered with COLORBOND® steel, before being lifted aside by crane to allow the walls to be assembled.

Once the walls are up, the roof is returned, positioned and fastened.

This roofing method now means 95 per cent of all roof work is carried out on the ground, dramatically lessening the chances of personal injury.

The development comes as part of a broader drive by Custom Steel Frames to innovate and improve traditional building practices, eradicate risk where possible, and introduce other operational and commercial benefits to everyone involved in roof construction.

This new method also speeds up roof installation.

Working at ground level is significantly more productive than working at heights, and results in faster completion of the steel building frame and faster securing of the steel roofing sheets.

According to the Director and Engineer at Custom Steel Frames, Arthur Hosking, this

innovation is possible because steel building frames have a higher strength-to-weight ratio than frames built using other materials.

"We are enthusiastic about this work method because it has such an impact on on-site safety and productivity," Mr Hosking said. "Labour time and associated installation costs are cut dramatically.



"Builders across Australia should be keen to embrace this practice just for the safety aspect alone."

One project where the innovation was recently demonstrated was at a Custom Steel Frames project in Medowie, near Newcastle, NSW. A 405 sq m roof using steel framing and sheeting was built on the house slab, before being installed by crane.

"In this instance, we were lifting a 6.8 tonne

roof into place and it went very smoothly," Mr Hosking says.

"This project with only three men took 30 per cent less time than conventional framing, despite being hampered by intermittent rain and high winds. Steel framing makes this possible, giving it a huge advantage as a modern building material."

Steel building frames offer a number of key benefits to builders including strength, durability and ease of construction. Also, they offer increasingly appealing, longer-term benefits to home builders, including protection from termites, bushfires, rot, warping and sagging.

"Because building a house is such a big investment, many home owners need to feel sure that the structure will not be damaged by nature's elements," Mark McCarthy, Market Development Consultant for BlueScope Steel, said. "That's why we offer up to 50 years' warranty for buildings framed with our coated steel – something Australian home owners are really responding to."

The protection steel building frames offer is enhanced with roofing made from COLORBOND® steel – which helps protect homes from extreme weather, including hail storms.

"Steel roofing provides home owners with important thermal efficiency benefits, impressive design flexibility and a range of 20 designer colours to suit all styles of home, from the traditional to the modern," Mr Hosking said.

Lysaght Referee remakes it for the new century

The first Lysaght Referee of the 21st Century is about to be published.

The most sought-after pocket reference book in the building industry is now 108 years old, and this will be its 31st edition.

"It's probably the most complete remake in its history," Lisa Carrick, of BlueScope Lysaght, and *Referee* project manager, said.

"It's been effectively six years in the making, taking into account vast improvements, and changes in products and product references.

"This latest *Referee* is the result of all BlueScope Steel Business units working together, and the inclusion of information useful to the wider building and construction industry.

"A whole table of new contents bring the *Referee* very much into the 21st Century with sections on today's issues, particularly environmental concerns."

The *Lysaght Referee* was always far more than a product manual.

In the 19th Century, it was devised as a "how-to" guide, especially for farmers and country folk, on everything from building a fence to animal husbandry.

A lot of that information is still in the latest edition – although somewhat updated to encompass modern techniques.



This edition even gives a ready guide to how to build a country air strip – with contacts for relevant air safety authorities.

"The explosion of available information in just the last three years could have led us to producing several volumes," Ms Carrick said.

"Instead we've devoted a section to the most pertinent Web sites we could find, so our Internet-savvy clients can access a wide variety of information."

Even then, the *Lysaght Referee* still runs to more than 300 pages.

Over many years, the *Lysaght Referee* has become something of a steel-bible to people in the building and construction industry as well as plumbers, farmers and students of many disciplines.

The *Referee* is available only through Lysaght – and, as always, availability is limited.

"The *Lysaght Referee* has been a collector's item for as long as anyone can remember," Ms Carrick said.

"Apart from the good advice it gives on steel, it's essential reading if you want to know the mass of a typical haystack (1.5tonnes) or the gestation period of a doe (147 days).

"We wanted to maintain what is the essence of the *Lysaght Referee* in the interesting information contained that is not necessarily associated with the building industry."



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Metal roofing course a huge success

Fourteen students from a BlueScope Steel/DET funded TAFE pre-vocational course in metal roof installation have been apprenticed following completion of the course.

This fully subsidised course has been considered a tremendous success and is likely to be replicated in selected TAFE's in NSW.

The course consisted of eight weeks theoretical instruction in the TAFE and another five weeks of onsite work experience.

Graduates also received a metal roof installer tool kit to the value of \$500 to start them in their apprenticeships.

The pre-vocational programs – run at TAFE campuses including Gympie, Mt Druitt in Sydney, and at Maitland in the Hunter Valley – were aimed

at school leavers looking to kick start their trade apprenticeship in the building and construction industry.

In conjunction with TAFE, BlueScope Steel supported the program due to the need to address the growing market for COLORBOND® steel in the residential market. This initiative also aimed to address the shortage of qualified trades people.

NSW Metal roofing apprentices attend a three-year apprenticeship at TAFE, and graduates from the pre-vocational program will flow straight into that course.

"Trained roof installers can earn a good living while enjoying working in the outdoors and getting plenty of time to enjoy the fruits of their labour," Sarah Najdek, of BlueScope Steel said.

"It's an ideal job for ambitious apprentices."