

## Hofmann takes control of Alcan Gove coarse feed filter project

Hofmann Engineering has successfully project managed the manufacture and assembly of new coarse feed filters for Alcan Gove G3. The four filters supplied form part of the Third Stage expansion at the plant.

We were originally commissioned by the Brisbane-based engineering group to undertake the management of the manufacture and the assembly of the filters onsite at the refinery. The filters were to be made overseas.

After examining all the issues, we came to the view that there could be problems in meeting the delivery date if the filters were manufactured overseas at this time. Alcan agreed to our recommendation to undertake the fabrication and the assembly of the filters in Perth and to ship the completed items to the refinery at Gove, in the Northern Territory.

This ensured that we could meet the stringent time frame by exercising complete control over the assembly process as well as the quality of various components provided by local and overseas suppliers. A number of the components, such as the worm drive gearboxes, were manufactured by our own specialists at our Bassendean works.

After the filters were assembled, the mechanical drives were tested before the units were partially disassembled for transport to site. Eight weeks out from the delivery date a complication arose when the client required a major change to the paint specification. Then two weeks out we uncovered a number of design issues with the units. Making these adjustments delayed us by about two and a half weeks but we were still able to deliver the plant on time.

Meeting the delivery date was essential as the crange required for installation would only be available in Gove at that time.

There is little doubt that our task was made easier by our prior experience in manufacturing this type of filter. However, on this occasion by successfully undertaking the management of the entire project we clearly showed our ability to meet stringent deadlines.



*The filters during manufacture in our works*

## Welcome

**Welcome to this, the first issue of our quarterly newsletter.**

As we don't always have the opportunity to meet with you face to face, we hope our newsletter will keep you updated on innovations, products and other developments.

Hofmann Engineering, founded by John and Erich F. Hofmann in 1969 is a successful family owned and run engineering business. The precision and expertise that Hofmann Engineering offers in the manufacturing and refurbishing of precision mining equipment is sought by companies both locally and internationally.

This has been a year of many highlights at Hofmann Engineering. Our new 25m high heavy engineering shop, is now fully operational. We have completed the installation of a Höfler Rapid 2000 form grinder and other equipment, which will enable us to reach new levels of precision. Most rewarding of all, we have come up with many innovative solutions to problems plaguing mining and industry.

As we close off the year, we would like to thank you for the role you have played in our continued growth and success. We would also like to take the opportunity of wishing you and your families a Merry Christmas and a Happy New Year.

**Erich J Hofmann  
Managing Director**

# Forged fabricated girth gears find markets in many countries

In a move to meet the growing international demand for large diameter girth gears, we are expanding our production facilities at our Bassendean works.

In recent times we have won contracts for the supply of four large diameter girth gears to Chile, two to New Zealand, three to Peru and one each to South Africa and Zambia as well as numerous gear sets for the Australian market.

These girth gears are used on grinding mills, kilns, scrubbers and agglomerators forming part of processing plants at mines producing copper, gold, nickel and other minerals.

In the past forged fabricated girth gears have generally been supplied as replacements for failing cast steel gears. However, these gears are now increasingly being installed in new mining projects. This is the result of the significant technical advantages of forged fabricated gears as well as the long lead times associated with obtaining cast blank segments for large diameter gears.

Our facility in Bassendean is currently undergoing a multi-million dollar expansion to increase the capacity for



*This 12-metre diameter girth gear is shown during manufacture in our Bassendean plant. Hofmann Engineering is able to manufacture Forged Fabricated and Forged Fabricated Induction Hardened girth gears to 15m in diameter. We can also offer SG Iron, Cast Steel and Austempered SG Iron alternatives.*

these gears and their complementary drive pinions. A 5,000t vertical plate press will bend forged alloy steel billets up to 220mm thick, while a 15m gear cutter has been installed to supplement our existing 14, 8 and 5m diameter gear cutters and hobbers.

In addition, a new Höfler high-speed, computer controlled form grinder has been installed to grind hardened case-carburised pinions up to 2m diameter and

5m long with large tooth forms up to a 40-module size.

This Division at Hofmann Engineering is headed by open gearing product manager Stephen Hall with project engineers Nick Pyper, Rudi Hauri and Etienne Olivier. They are aided by a skilled production team including Darryl Allie, Russell Gould, David McGladdery, Alan Copleston, Andy Sykes, Rainer Hammerer and many others.

## New training facility is planned

**Hofmann Engineering is planning to establish a new Training Centre. The Centre is designed to set a new benchmark when it comes to equipping apprentices with the highly specialised skills required in precision manufacturing operations.**

The planned facility is the brainchild of Hofmann's founder, John Hofmann, who has already held discussions with Government in order to determine how the new Centre can complement existing apprenticeship training schemes.

Asked why Hofmann Engineering was prepared to invest \$1 million in such a facility, John said that because of the lack of extensive manufacturing operations in WA, existing apprentice training tended to produce technicians more suited to repairs and assembly. Additionally, because of the lack of independent structured testing, there was no way of knowing whether a newly qualified technician came out of the top drawer or

not. "All we are told is whether they passed or failed, not how well they did.

"This pass/fail system is the most damaging aspect of our Australian apprentice training system. It does not give young people the challenge they need to strive for excellence. It does not make us internationally competitive.

"With the specialised training that we will provide we will be able to ensure that they acquire the additional skills needed in a high precision manufacturing environment."

The Centre, which will be housed in premises close to Hofmann's plant, will initially be used to train a group of 10 apprentices. They will spend six months in a controlled environment being trained by a Master Trainer.

In the future the facility will also be available for the training of apprentices employed by Hofmann's customers.

In conclusion he said Hofmann

Engineering had always been fully aware of its responsibility to train apprentices. "In the past seven years we have trained 65 apprentices and of those 43 are valued members of our staff today."

## Congratulations

**Congratulations to all staff who celebrated anniversaries with Hofmann Engineering. Especially to Reinhard Fatzkamper and Rainer Ender who both celebrated 25 years of service recently. The following are also to be congratulated:**

15 years service: John Hall, Gunther Barth & Michael Dyson. 10 years of service: Andreas Voigtlander, Brian Alweyn, Dean Schultz, Dennis Sarich, Dusan Andacic, Gail Winsor, Glen Barnett, Graham Bishop, Michael Hill, Nikola Movre, Peng Wong, Peter Mitchell, Robert Fernandez, Robert Lazarevski, Ross Tucker, Sean Tino, Wayne Bengtsson

# This breakthrough prolongs track pad life

Hofmann Engineering has achieved an induction-hardening breakthrough that will significantly prolong the life of track pads used on production machines in the mining and construction industries.

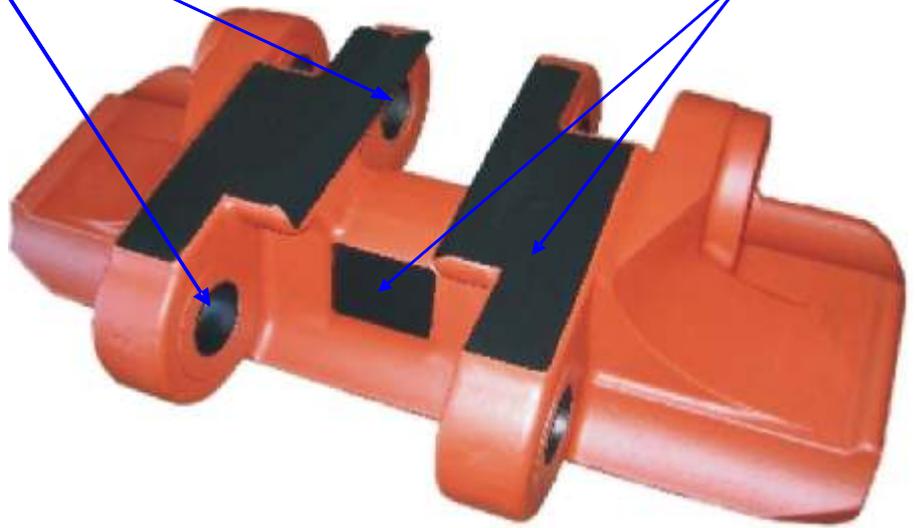
Track pads, which are traditionally made of manganese or alloy steel, are subjected to heavy loads causing the rolling surface to work harden on the manganese steel grade. This can lead to cracking due to the crushing of the thin work hardened layer.

Quench and temper track pads made from alloy steel are subjected to a great amount of plastic deformation that can jam the interconnecting lugs and overload a single point in the track pad, leading to failure.

Induction hardening, on the other hand, improves the surface hardness and generates compressive stresses on the part, increasing fatigue resistance. The result is improved resistance to wear and plastic deformation.

Induction Hardened bores

Induction Hardened Roller path and timing zone



The process involves quenching and tempering alloy steel to approximately 320-340BHN. This is followed by induction hardening of the track pad's roller path, timing zone and bores, significantly increasing the life of the track pads.

In addition to the pads we can further improve overall life by induction hardening the track pad's pins, rollers and drive sprockets. Alternatively, the track pad bores can be fitted with case hardened bushes made from 17CrNiMo6 and hardened to a depth of 3mm if required.

## Hofmann supplies gears to Escondida

What started off with the appointment 12 months ago of a shovel parts agent in Chile has culminated in Hofmann Engineering winning a contract for the supply of 10.5m gears to the famed Escondida copper mine in the resource-rich South American country.

Hofmann won the contract for the supply of three gears to the mine in the face of strong competition from leading multinationals.

Colin McKay and Steve Hall, two of our gear specialists, recently returned from Chile where they oversaw the installation of the first gear. The second is due for installation this December and the third is currently being manufactured in our plant in Bassendean.

The installation of the gear was preceded by three days of training at the mine, during which our people became part of the mine's own team. The entire exercise was videotaped as part of the mine's safety enhancement program.

We were chosen to undertake the project because of the package of



The famed Escondida copper mine in Chile

services offered, which included our design capabilities. This mine has always stuck to using cast gears. We were able to convince them of the advantages of moving to the use of fabricated gears. In this we were well supported by evidence of the success achieved by our fabricated gears in mining applications over many years.

Our Chilean agent, Adam Clarke, played an important role in securing the contract. Although Adam was born and bred in Australia, he has now adopted Chile as his home. He speaks Spanish fluently and has a Chilean wife.

It just goes to show that we in WA often underestimate our ability to compete on overseas markets. In this case it took a good agent and our own expertise in this particular area to land this contract with one of the world's best-known copper producers.

## Award for James

Congratulations to 3rd year apprentice James Kendrick on winning the Metal Engineering Fitting Silver Medal for 2005. On the 25th November 2005 James and Bill Rossi (Master of Apprentices) attended the presentation ceremony at the Burswood.



Erich J Hofmann congratulating James Kendrick. Bill Rossi (master of apprentices) looks on.

# Dragline productivity increased

Hofmann Engineering has played a key role in a project designed to improve the productivity of BHP Mitsubishi Alliance's fleet of Bucyrus Erie I370W and Marion 8050 draglines.

The project named UDD (Universal Dig and Dump) has already resulted in a significant productivity increase in the four BEI370W machines over the past four years, utilising a unique hoist drum and gearbox designed and manufactured exclusively by Hofmann Engineering.

Shown in the picture is the Marion 8050



UDD hoist and drag arrangement, utilising the unique hoist drum and latest in gear technology.

The upgraded Marion 8050 features an input stage with accurately ground, case hardened input pinions and a forge fabricated, through hardened gear. The output features zero-gap, self-aligning pinion technology and a mechanically re-rimmed, through hardened, increased face width bullgear.

The new gearboxes are of a modular, fully enclosed design and lubricated via a recirculating filtered oil lubrication system, which supplies the lubricant to the gear meshes and bearings.

The second of the Marion 8050 UDD hoist and drag arrangements is currently being manufactured for installation in the first quarter of 2006.

## New apprentices

The apprentice selection process concluded with nine applicants due to start in January 2006. We look forward to welcoming these fresh new faces into the Hofmann team.

## Sporting pursuits

Rudy Keswick participated in the 24th International Masters Hockey Championship in Melbourne 2005. Australia was relentless against England and scored to win the match 4 Nil and was declared the champions for 2005.



**Rudy with the coveted trophy**

Amber Harvey was in the 21 and under WA State netball team, which won the national championships in Canberra at the beginning of October. It was the first time WA had won in 33 years.

Amber is also a member of the Perth Orioles squad for 2006.

## When only the best will do

**Steam turbines are high integrity items. It is therefore essential that these and associated components are only refurbished by people with considerable experience in this area and expertise in high precision machining.**

In order to minimise costly delays it is important to ensure that your rotors are refurbished by someone with the resources to meet your deadlines.

Recently we successfully completed the refurbishment of rotors for Western Power's Kwinana Power Station and an iron ore mine end user.

At Kwinana the Parsons 120MW turbine was showing signs of possible asymmetric creep. If left unchecked asymmetric creep can lead to variations in steam flow and will result in costly wear, damage, noise and ultimately failure.

Having been given a limited window in which to rectify it, our inspection revealed that the problem was most likely caused by site issues rather than asymmetric creep. Refurbishment of the bearing journals completed the modified scope of repair, in which four individual white metal bearings were manufactured to ensure alignment and runout integrity.

The iron ore mine end user's rotor (Ø2.4m x 4m long) came to us in dire



**Rotor repair under way in our plant**



need of a blade changeout. This involved removal of the damaged blades by machining, and installing and machining new blades required to get the turbine back into operation.

We can also supply and fit all the required associated components such as seals and labyrinths.