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Front Cover: In this Issue: Exposed architectural steel (see pages 15 – 26 for more)

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OFFICIAL JOURNAL OF THE SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION



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editor's note

irstly I would like to thank Spencer for taking over as acting editor for the last issue of Steel Construction in 2014 while I have been ill. He and our lay-out artist, Sandra



Addinall did a great job in record time!

Is it just me or does everyone feel like days, months and years pass in a blur?

Some scientists blame age for reasons from remembering the past as more recently than it actually happened to a very technical theory claiming that stress causes your telomeres (Google it!) at the end of your chromosomes to become frayed and thereby accelerating aging.

Others blame social media and technology (that is supposed to give us more time for fun stuff). They claim that because we can do all these wonderful things in a jiffy, we cram our days with too much to do, and we end up not having time for anything.

At the Institute we want to communicate with you regularly, telling you what's new in the industry and to take part in our activities, through channels that are familiar and comfortable to you. But we do not want to add to your stress levels and thereby accelerating your aging.

Regarding the survey we included in Steel Construction Vol. 38 No. 5 2014 we firstly wanted to find out what you thought of our new look Steel Construction and secondly get a clearer picture of how you want to receive your communication. The response to the survey has been disappointing so far – we can blame it on the Post Office strike if we want to or your to-do list. The survey is still available on the website (go to www.saisc.co.za – Publications – Journal), but the competition has closed. We will announce the winner and results on our website followed by the next issue.



2015 challenges and opportunities

By Paolo Trinchero, Chief Executive Officer, SAISC

Compliments of the season, I hope that 2015 will be a good year for all of us.

Starting the New Year with good intentions and hope for the future is noble but we need a healthy dose of reality. Our economy has not been performing well and although our growth rate is expected to improve it will remain below 3% (never mind the 5% we all hope for). As if this is not enough our labour and electricity rates will increase, new regulations and red tape are the order of the day – the only small windfall being the drop in oil price.

yielded limited success but we will try harder this year. I believe that if we work together as an industry and all sing from the same hymn sheet we can generate sufficient energy to encourage the positive change and mind shifts we require.

It seems impossible to me that most of our large state owned enterprises and listed SA companies seem to be working against local companies by deliberately supporting other manufacturing countries. This cannot be correct if we are to build the South Africa we all strive for.

I believe that if we work together as an industry

and ALL sing from the same hymn sheet we can generate sufficient energy to

encourage the positive CHANGE and mind shifts we require.

So we have to hit the ground running, and look for every opportunity to be the competitive and excellent industry we strive to be. We need to pick ourselves up when we have disappointments and continue to work hard to keep our industry going and build it into a thriving business we know it can be.

Many of us expected the National Development Plan to be up and running by now. I still believe that Southern Africa needs a substantial investment in infrastructure which bodes well for the steel industry, but economic and sometimes political realities will continue to delay implementation.

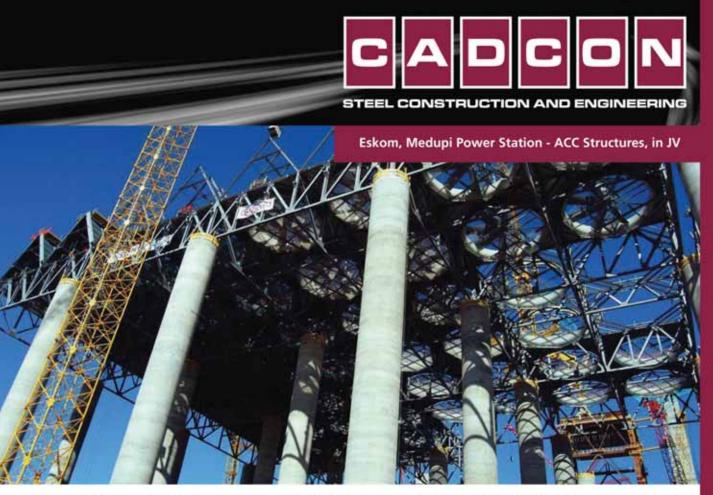
Our efforts on the promotion of local fabricated structural steel continue in earnest, designation and enforcement of duties on fabricated structural steel have to date

I would encourage them work with us to ensure we find competitive solutions in the local market.

What makes me confident that we can deliver and compete with the rest of the world?

- We are a can-do industry.
- We have a proven track record of delivering world class quality projects.
- Our members have world-class facilities and have adopted the most modern technologies available today.

For our members, help us to continue helping you. Send your young staff members on training courses; get involved and give us your feedback. It is only through a concerted effort on **skills development and innovation** that we can become the world leaders that we know we can be.



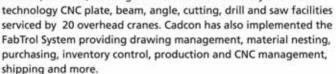
Established in 1987, Cadcon, as a vibrant and reputable entity, has grown into a leading steel construction, designing and engineering organization involved in major projects in and around Southern Africa and internationally. Cadcon operates from their 15 400 m² workshop and office facilities in Centurion, Pretoria, housing state of the art machinery and latest











Planning and completion of various significant and complex national and international projects on time, for commercial, industrial, mining and plant sectors, serves as testimony putting Cadcon as a leader at the cutting edge, in a rapidly growing and competitive environment. Cadcon has valuable experience in exports of steel products internationally and strong innovative contributions to the whole of Southern Africa.

Furthermore, Cadcon's unique packages include the design and supply of buildings through Mictec, Cadcon's in-house engineering design department. Additional services include crane, truck and trailer hire.

Cadcon operates their full production process from the delivery of raw material, fabrication, abrasive blasting, corrosion protection, erection and finishing to the proud delivery of the final product through their team of graduates and dedicated artisans. Cadcon's methodologies and processes results in their ability to provide their clients with turnkey solutions at optimum efficiency; STRIVING FOR EXCELLENCE AND PEACE OF MIND IN STEEL CONSTRUCTION, this being the cornerstone of Cadcon's success and competency.





Industry NEWS IN BRIEF

ArcelorMittal South Africa wins award for contribution to wind energy sector

SAISC company member

The South African Wind and Energy Association (SAWEA) and the Global Wind Energy Council (GWEC) recently hosted the fourth annual Windaba. At this year's event, themed "Power2the People: Improving lives through Wind Energy", ArcelorMittal South Africa was acknowledged as the best contributor to local content in the wind energy sector.

Jan Kotze, Product Manager, Plate and Renewable Energy Projects at ArcelorMittal South Africa says: "The ArcelorMittal SA team is proud of this accolade as it clearly demonstrates our commitment to the growing wind energy industry, as does our effort to upgrade the plate mill to increase supply of the heavy plates required by the industry. We do however experience a serious threat regarding value added steel plate being imported from China for wind tower manufacturing and still be deemed as local content."

ArcelorMittal SA provides high-strength structural steel for wind towers and reinforcing bars for foundations. One wind tower uses approximately 150 - 200 tons of steel which is 80% of the total material on average.

The 80 - 100 metre high steel turbine is part of the solution to both environmental and economic climate change.

"Utility scale wind energy is already boosting economic development in South Africa. Industry and government are committed to ensuring that these benefits are realised by small businesses and local communities across the country," says Dipolelo Elford, Chairperson of the South African Wind Energy Association (SAWEA).

The wind energy industry in South Africa is set to contribute R7 billion to communities and socio-economic development over the coming two decades. Wind power is currently the fastest growing source of electricity production in the world. Approximately 6 200 jobs have been created during construction and another 13 000 operational jobs have been added by the wind energy sector. The electricity produced by wind turbines generates significantly lower lifetime CO₂ emissions than the global average for electricity production.

"Our goal in 2015 is to explore potential for public-private partnerships with government to take advantage of the 24 000 tons of annual potential orders from wind energy, let alone the potential tonnages the solar industry promises," adds Kotze.

Scaw reinforces a culture of safety

SAISC Company member

The Scaw Metals Group (Scaw) is continuing on its journey toward a zero injury culture, with all employees being made aware that they each play a role in making a difference resulting from a shared understanding and dedication to working safely.

BELOW LEFT: Jan Kotze, Product Manager, Plate and Renewable Energy Projects, ArcelorMittal SA receives the award on behalf of ArcelorMittal SA for the best contributor to local content in the wind energy sector.

BELOW CENTRE: Robor assited in the upgrade of the community hall for the Goqo Residence part of the Ulundi Municipality. Mangosuthu Buthelezi unveiled the plaque on behalf of the community.

BELOW RIGHT: Scaw's operations and the safety management teams place the safety and wellbeing of its workers as a top priority in the company.







As a manufacturer of value-added steel products from steel scrap and directly reduced iron, Scaw is active in one of the world's most sustainable industries. It procures and processes its own steel scrap requirements and recycles significant volumes of steel in its steelmaking operations.

"At Scaw we continuously drive our safety, health and environment management programmes. As an organisation it is imperative for sustainable business performance and improvement", asserts Jurgen Theiss, Head of Safety, Health and Environment for Scaw Group.

The group is mindful of the impact of global warming and the pressing need to conserve finite resources. It strives to improve the efficiencies and hence maximises the use of the resources it uses to manufacture its range of steel products.

With a strong and culturally diverse team of talented, enthusiastic individuals, nothing is more important to Scaw, its operations, and the safety management teams than the sustainability of Scaw's businesses and the safety and wellbeing of its workers.

Staff and contractor training workshops and presentations have also contributed to greater awareness and survey participation – allowing for an exchange of views and discussions on the solutions to potential safety challenges, problems or concerns.

Robor Gives Back
SAISC Company member

Ulundi Project

In 2012 Robor agreed to erect a community hall for the community of Goqo Residence at the request of the Ulundi Local Municipality.

Robor erected a steel structure during 2013, but once the steel structure had been erected it became clear that the structure alone would not be usable by the community nor service the community's full needs. Robor then decided to build a complete building around the structure and also ensured that essential services were also provided to the community.

Robor contracted with Gonal Construction to build the hall during 2014, with contributions also being made by: Kansai Plascon, PPC, Jo-Jo Tanks and the Ulundi Municipality. The official handover of the building to the community by Mangosuthu Buthelezi took place on 10th December 2014.

Other SED Contributions

Robor has invested in a number of other socio-economic projects over the past years, most of these investments have been in education through bursaries and sponsoring schools within the area where Robor operates.

Robor assisted Cotlands financially and with additional learning programmes from 2012 to 2014.

Furthermore, Robor makes substantial contributions to underprivileged children, the aged and various charity organisations that do excellent work within our community.

Robor employees raised an amount of R5 000 for the Kempton Park SPCA in December 2014.

DST Minister appeals to pupils to study maths and science

"South Africa needs to quadruple the number of engineering graduates per year," said the Minister of Science and Technology, Naledi Pandor, at the official opening of the UNESCO Africa Engineering Week at the University of Johannesburg (UJ), on Monday 1 September 2014. The opening ceremony was attended by over 200 children from schools in Soweto, who also visited the engineering professions exhibition.

Minister Pandor encouraged learners to make a decision to study mathematics and science, and to work hard at them.

One of the learners who attended the event was Bayanda Madi, in grade 9 at Ncube High School in Mofolo North, Soweto. "By studying maths and science, young people will be able to help South Africa develop," he stated.

"I have learned that engineering makes life easy; engineers build bridges and roads to improve movement and create a healthy environment in communities to reduce overcrowding which often brings diseases like TB for example," said the aspiring mechanical engineer.

In a passionate plea to the learners, Minister Pandor said: "Our desperate need is for you, as the future of this country, to take the decision from grade 10 right through to grade 12, to study maths and science at school, and to persevere with these subjects, right up to university. If you stick with this decision, in 20 years' time our country will be transformed."

BELOW LEFT AND RIGHT: Students at the official opening of the UNESCO Africa Engineering Week at the University of Johannesburg (UJ).







Reducing the COST

of power line construction by 20% -

A PIPE DREAM OR REALITY?

By Kobus de Beer, POLASA Secretariat and Industry Development Executive, SAISC

It became dear that many opportunities for improvements exist.

All participants were committed to address these opportunities constructively.

between client and suppliers took place at the Country Club Johannesburg during September 2014. The subject for the day was: Reducing the cost of power line building by 20% and it was attended by more than 60 representatives of Eskom and the power line industry, mostly members of POLASA.

An unusual and challenging workshop

The subject was first outlined by three presentations followed by a few hours of robust small group discussions where causes were examined, facts queried and issues clarified. Issues raised were listed and discussed covering the environment we work in; the problems caused and experienced by suppliers and contractors; as well as problems caused and experienced by Eskom. A number of solutions or approaches were suggested.

Gary Whalley, Chairman of POLASA presented an industry paper "A burning platform for engagement" (previously discussed in Steel Construction Vol. 38 No. 1 and 2 2014) where the recent history of postponement and delays of projects was translated into major job losses in the industry including the closure of six

companies in spite of substantial requirements for new power lines over the next decade.

Bob Naraghi of Eskom presented a paper on "Power delivery projects, and line construction cost analysis" which showed an unsatisfactory picture on many recent contracts for power lines with late deliveries, overspending and access problems.

Leon Heymans of POLASA then gave a thought provoking talk: "Why do South African contractors tender 20% to 30% cheaper in neighbouring countries?" using a recent bid for work in Namibia as an example.

The issues discussed were varied and covered a surprisingly wide field of subjects. In order to facilitate addressing these, four main categories of problem areas were identified:

- Contractual Avoiding over-scoping and over-design, standardisation, building trust etc.
- Timing / Delays Servitudes, long adjudications, local labour, document approvals, etc.
- Safety / SHEQ Seek uniformity and simplicity, over regulation, design for risk management, etc.
- Manufacturing Planning significant, cost effective technology changes, AMSA subsidy, etc.

It became clear that many opportunities for improvements exist. All participants were committed to address these opportunities constructively.

The challenge now for POLASA and Eskom is to find a practical and effective way forward to build on this foundation – watch this space!





THE PRODUCTION WHEN COMPARED TO GANTRY STYLE MACHINES



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SAISC student prizes

By Spencer Erling, Education Director, SAISC

We would love to see more of these projects where steel is applied excellently for its many advantages. Great stuff guys!

For years now, the SAISC has been sponsoring prize money to students for outstanding work in steel related projects at various universities and universities of technology.

Now that some of the prize-giving events are over, with thanks to the support of the university staff we are able to show you some of our prize winners and why they were deserving of the prizes given.

University of Johannesburg (UJ) -Architecture Department

SAISC sponsors two prizes:

The prize winner from 3rd year is Kgao Mashego for the best steel related project.

The best student for steel projects in 4th year is Darren Sampson. *See his project presentation below right.*

We would love to see more of these projects where steel is applied excellently for its many advantages. Great stuff guys!

Stellenbosch University

SAISC funds a prize for the best steel construction work for a 4th year student.

This year the prize went to Willem van Jaarsveld.

University of Cape Town (UCT)

Gary Hopkins was awarded the SAISC prize for the best structural steel design submitted by an undergraduate student. Mick Latimer did the honours and presented the prize on our behalf.



BELOW: One of the design presentations of Darren's project.



GEMINI HD36 advanced CNC gantry style plate fabrication centre

















The modular design enables execution of cutting, drilling, milling, marking and thermal cutting including bevel to finish the piece in a single set-up, using the most suitable and up-to-date technologies.





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LIGHT STEEL FRAME BUILDING

SOARING

By John Barnard, SASFA director

There is a growing trend amongst the leading architects in South Africa to use LSF for curtain walls of multi-storey office buildings and shopping centres.



OPPOSITE TOP: Riverwalk Office Park, with LSF external walls and EIFS finish (Architect Boogertman + Partners).

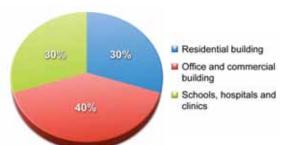
OPPOSITE BELOW: LSF curtain wall at Cell C Headoffice.

BOTTOM LEFT: One of the office buildings at Summit Place (Architect Boogertman + Partners).

BOTTOM RIGHT: Another of the Summit Place office blocks, with LSF curtain walls (Architect Boogertman + Partners). The light steel frame industry and SASFA can start the new year on a positive note.

During the eight years that SASFA introduced LSFB to the country, architects and developers were quick to identify the advantages of using LSFB for other building types, and the application of LSF in South Africa has diversified to a number of non-residential applications.

During a survey recently carried out by SASFA, the industry indicated the following distribution of LSFB during 2014:



The significant growth in the use of LSFB in schools, hospitals and clinics stems from the resolution of the PICC (Presidential Infrastructure Coordinating Commission) that innovative building technologies (such as light steel frame building) will be used for the building of a growing percentage of all new schools and clinics, as well as student accommodation.

LSF curtain walling for multi-storey buildings

There is a growing trend amongst the leading architects in South Africa to use LSF for curtain walls of multi-storey office buildings and shopping centres. This entails replacing heavy masonry walling with light steel framing, which is fixed to the reinforced concrete floors.

The steel frames are clad with galvanized steel sheet, to which 60mm to 90mm thick expanded polystyrene (EPS) panels are







fixed. The external finish of the EPS consists of two layers of a special colour impregnated polymeric plaster. A reinforcing fibreglass mesh is embedded in the coating. This cladding system is referred to as EIFS (external insulating and finishing system). The inside of the light steel frames is clad with fire-resistant gypsum board. Additional insulation can be installed in the wall cavity, if required.

There are a number of significant advantages offered by LSF curtain walling for multi-storey buildings:

Low mass: LSF walling offers a 90% mass saving compared with heavy masonry cladding. The mass of the LSF walling comes to some 40kg per square metre including the components of the wall, compared with 450kg per square metre for plastered heavy masonry walls. This mass saving reduces the logistics and the labour needed for installation, speeds up the installation process, and results in savings in the supporting structure - floor slabs can be thinner as they need to carry less load. This means that the columns can be smaller, again saving concrete and

reducing the load on the foundations smaller diameter piles will also be required.

Accuracy: Due to the narrow tolerances offered by LSFB (as little as ±2mm) windows and door frames can be ordered in advance

Speed of construction: Apart from the rapid installation of the frames and the EIFS - the client would save up to 50% on the time it would have taken to build heavy masonry walls. The use of LSF walls allows other trades concurrent access to the site. speeding up the overall building process.

Energy efficiency: The excellent thermal insulation offered by LSF walls with EIFS reduces the capacity of air-conditioning plant required. The CSIR has done tests to confirm the energy efficiency of LSE

Design freedom: LSF curtain walls offer the designer 'gravity defying' solutions, through the low mass of the wall and the strength of the steel framework. As illustrated in the Riverwalk Office Park, window openings need not be vertical, and the facade need not be in a flat plane -

raised sections can be used for an interesting relief (in terms of giving the impression that the material has been raised above the background plane).

There are some notable buildings in South Africa with LSF curtain walls including the Cell C Head Office, Riverwalk Office Park (as mentioned above), the Summit Place buildings, the Villa Mall Shopping Centre, and the Zambezi Mall. Some of these buildings can be seen in this article.



SAISC Steel Awards 2015

The 34th Event and the 5th Steel Awards Photo Competition



You can't win the lottery if you don't buy a ticket.

You can't win Steel Awards if you don't submit an entry!

The steel construction award for excellence in the use of structural steel

Entry Deadline: Friday, 17 April 2015

Categories

Although the judges decide on the categories and winners based on the actual entries received, the following categories will definitely happen:

- · Tubular Category
- · Light Steel Framing Category
- Factory and Warehouse Category
- A new category for carbon steel based cladding

In 2014 the following categories were covered:

- Overall Winner
- Tubular
- Light Steel Framing
- · Factory and Warehouse
- Mining and Industrial
- Architectural
- Corporate Office Building Bridge

We do our best to give every project entered publicity – so please enter the projects you are most proud of.

Criteria

Does the project illustrate what can be achieved with steel?

Other factors to be considered:

- The importance of steel as a structural component of the project
- Benefits achieved by using steel construction
- Aesthetic appeal
- Environmental/sustainability consideration
- Innovation in design, fabrication or construction
- Technical prowess required for realising the project
- Engineering expertise
- Exceptional quality of workmanship

- Tubular content
- Cladding workmanship, innovation, special solutions
- Export project
- Satisfaction of client's brief, particularly cost and/or time efficiency (speed of construction)
- · Special details: bolted or welded connections, or the like
- Value to society/community development
- Any other unique features

Conditions of entry

Go to www.saisc.co.za and download the information and entry form document to see if your project qualifies or send an email to Reneé Pretorius at renee@saisc.co.za.

Entry fees

- 1. For projects with a mass of less than 10 tons a fixed rate of R800.00 (incl. VAT) will be charged.
- For larger projects a fee of R3 200.00 (incl. VAT) will be charged which will entitle the nominator company to
 - One complimentary seat at the Steel Awards dinner at the venue of their choice Johannesburg, Cape Town or Durban on the condition of booking more than one seat.
 - b. 5% discount on any size advertisement placed in Steel Construction Vol. 39 No. 5 2015 (Special Steel Awards Issue)

Material to be submitted by 17 April 2015

- 1. The fully completed entry form*
- 2. Good quality images of the project (one will be considered for the Photo Competition)

3. A description of the project and a motivation for entering the project

*Incomplete or illegible entry forms, missing images or motivations (as well as incomplete motivations) will be grounds for not considering the entry.

For the details and entry form go to:

Contact: Reneé Pretorius **E-mail:** renee@saisc.co.za

Cell: +27 (0)83 565 7173

Tel: +27 (0)11 726 6111

Interested in sponsoring this prestigious event?

Contact Marlé Lötter at marle@saisc.co.za

THE EDWARD O. WILSON BIODIVERSITY LABORATORY

GORONGOSA, MOZAMBIQUE

When the client wanted to build the first phase of the centre they faced quite a few challenges and the Light Steel Frame (LSF) building method posed to be the solution to all of them.



When the client wanted to build the first phase of the centre they faced quite a few challenges and the Light Steel Frame (LSF) building method posed to be the solution to all of them:

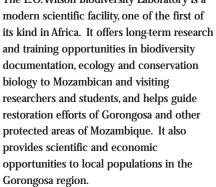
Challenge: The site is particularly remote with minimal local building materials or skills. All materials had to be designed, purchased and manufactured in South

Africa and transported into the park.

Solution: The material is light enough to be transported with smaller vehicles or fewer trips than would be required for an ordinary masonry building. The structure could also be pre-assembled in the workshop and transported as modular sections to the site and required only on-site assembly of the sections with light equipment.

Challenge: The implementation of sophisticated design features in a remote environment requires building systems that allow for a large degree of pre-planning.

Solution: The accuracy that LSF construction brings, allows for precise



The laboratory is named in honour of one of the world's greatest champions of biodiversity conservation, Dr. Edward O.



PROJECT TEAM

Developer/Owner:

Gorongosa Restoration Project Inc

Architect:

Crafford and Crafford Architects

Structural Design:

E4 Construction (Pty) Ltd

Project Manager:

E4 Construction (Pty) Ltd

Main Contractor:

E4 Construction (Pty) Ltd

LSF Contractor/s:

E4 Construction (Pty) Ltd

planning to be done in the design phase cutting out on-site alterations and redesign. This also allows the integration with other building methods i.e carpentry and other services to be designed in the office and implemented on site.

Challenge: They could not deploy a huge workforce in the park and local workers needed to be employed.

Solution: Due to pre-planning, the modular design and lightness of the material, fewer

BELOW: A concept drawing depicting how natural ventilation could be used to cool down the building

workers were required on site. LSF also allowed for rapid skill transfer – local carpenters where quickly shown how to work with pre-cut, predrilled LSF sections.

Challenge: Time was of the essence.

Solution: The manufacture, transport and assembly of an LSF structure have been proven to be much quicker than traditional building systems.

Challenge: As a biodiversity centre in a remote setting, the building had to be as environmentally friendly and sustainable as possible.

Solution: Light steel frame construction and this building in particular complied:

- Steel is recyclable by nature.
- The external cladding allows for incorporation of thermal insulation for reduced energy usage.
- The open light features bring natural light into the building without energy consumption.
- Natural ventilation could be used to cool down the building.

Challenge: It also needed to 'disappear' in the lush foliage, and not be an eyesore in the park.

Solution: Timber cladding on the outside were easily attached to the light steel frame

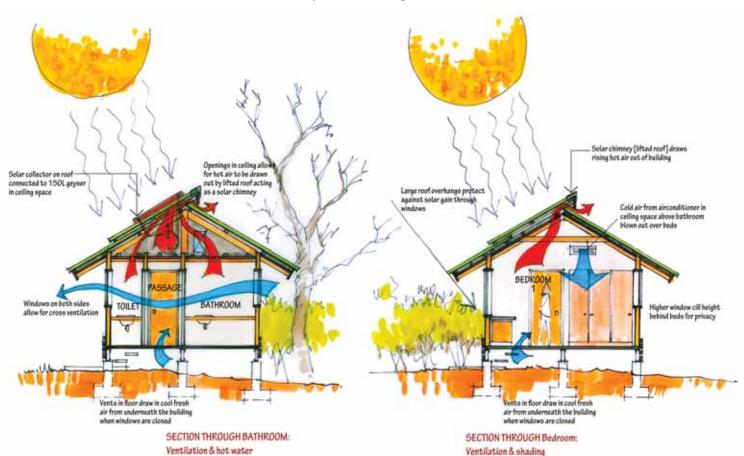
and insulation, thereby visually integrating the centre with its environment.

Challenge: The hot, humid and wet climate of the forest required good ventilation of the air flow in the buildings.

Solution:

- The buildings were all designed to maximize natural airflow using cross ventilation.
- Solar stack ventilation was applied using roof sheets that were designed in such a way that they act as chimneys, assisting the rising hot air in escaping from the building and drawing cool air from underneath the building though a thermal 'pump' and vented floor design. This was achieved by using light steel stilted floors with concrete screeds.
- The raised floors of all the buildings also lessened the possibility of flood waters reaching the site in the rainy season.
- Plastered MgO clad LSF walls with insulation allowed the laboratory to function at 16°C in an upwards of 40°C environment.

This centre showcases its materials of construction, especially the advantages of using light steel framing. Ultimately the client is very satisfied with the high quality of the construction and finishes achieved in a remote environment.





ARCHITECTURAL Steelwork EXPOSED!

STEEL AWARDS 2015 PROVIDED STEEL

CONSTRUCTION WITH A NUMBER OF

EXCELLENT ENTRIES IN THE

ARCHITECTURAL CATEGORY. THE WINNER,

NO 1 SILO, STOOD OUT TO THE JUDGES,

BUT THE OTHER ENTRIES IN THIS

CATEGORY WERE BY NO MEANS LESS

INNOVATIVE, INTERESTING AND WERE OF

A HIGH QUALITY. THEY DESERVED A

PLACE IN OUR EXPOSED STRUCTURAL

STEEL PROJECTS FEATURE.



Additions to Eduplex High School

Steel is used extensively in the design of both buildings in the main structure, the roof assembly, stairs, balustrades and various shading devices. It serves to link the various facilities visually, spatially and tectonically.

Photographer: Bruce McLean



PROJECT TEAM

Developer/Owner:

H.A.S.S. Properties (Pty) Ltd

Architect:

Sonja Neitz Architects cc

Structural Engineer:

SF van Zyl Consulting Engineers

Quantity Surveyor:

Matla Quantity Surveyors (Pty) Ltd

Main Contractor:

NGA Construction (Pty) Ltd

Steelwork Contractor/s:

Ferro Eleganza (Pty) Ltd

Detailers/Detailing Company:

Ferro Draughting

Landscape Architect:

Insite Landscape Architects cc

Fire Consultant:

Safeway Fire Consultants (Pty) Ltd

The Eduplex School is an independent pre-primary, primary and high school situated in Queenswood, Pretoria. The school is unique in that it accommodates deaf children alongside hearing children in a mainstream school environment. In line with the school's vision of continued growth, they required expansion of the high school with the new buildings to be situated on the existing school grounds.

The project consists of two distinct buildings accommodating diverse functions yet bound together visually through their similar architectural language and materiality. The northern building houses both classroom and administration spaces while the southern building houses the more informal programmes of the student centre (which also serves as a multipurpose hall) and school tuck-shop.

The student centre has five meter high, sliding, glass doors, which can be opened to create a bright, naturally lit and ventilated area during the warm summer days.

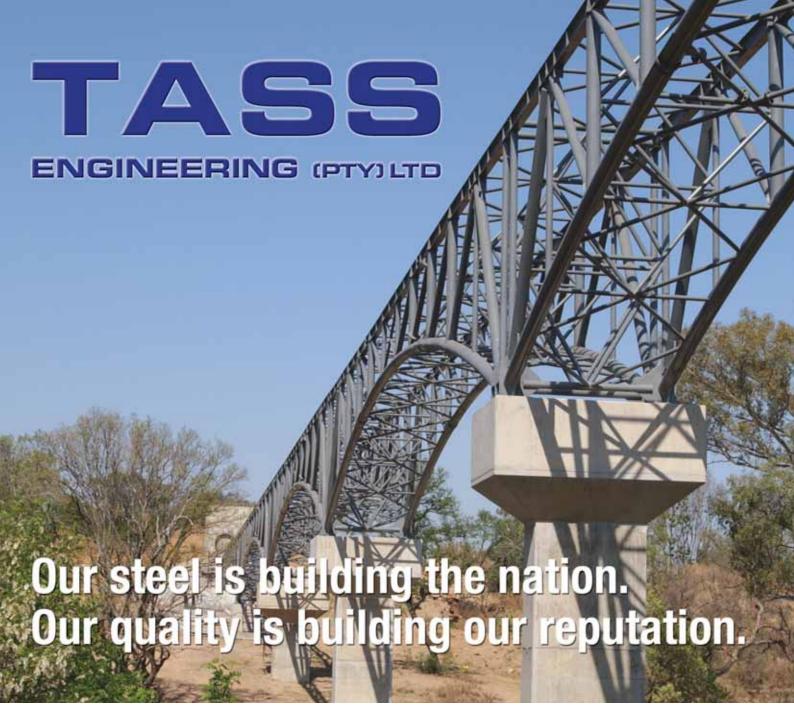
Steel is used extensively in the design of both buildings in the main structure, the roof assembly, stairs, balustrades and various shading devices. It serves to link the various facilities visually, spatially and tectonically.

The design takes full advantage of the strength and lightness of the steel structure. Steel framed sunscreens where used where direct solar gain was undesirable.

Generous space is incorporated through the extension of the steel structure beyond the building footprint. This allows for shading in the form of shade sails and large overhangs which protect the tall glazed openings from direct solar heat gain while simultaneously integrating the space between the building interior and external gathering spaces. It also encourages learners to gather in the spaces between.

The use of natural light is imperative to the learning environment as much as it is good practice within sustainable guidelines. Thus large openings were incorporated throughout the classroom block. These screens also assisted with privacy from the street. The steel frames with shading screens are durable and are integrated visually and structurally into the building facade.

The economical use of steel in the roof assembly improved the functionality and comfort of the classrooms and administrative offices on the upper floor. High ceilings with maximum fenestration allow for a more spacious and inviting room, than those of a standard classroom. The steel acoustic panels and LED lighting have been suspended horizontally from the trusses; this contributes to the creation of an effective education environment by reducing aural and visual fatigue.



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- 1st Ave Warehouse, Longlakes (675t) Capital Property Fund
- New Sentech Masts (650t) Sentech
- Sandton Repositioning Phase 3 Office Tower Cladding -Liberty Properties
- Sandton Atrium on 5th Cladding Liberty Properties
- · Razomart Warehouse (350t) Razomart
- · Warehouse Columbia Pharmaceuticals (250t)
- DSTV Head Office, Randburg (100t) Multichoice

- Sedibeng Brewery Extension (650t) Heineken
- Incubation Hub (240t) Century Property Developments (Pty) Ltd
- Menlyn Maine Central Square (250t) Menlyn Maine Investment Holdings
- Fourways Bungee Tower and Sky Bar Play at Height
- Nelson Mandela Square refurbishment Liberty Properties









The classrooms are also well insulated as the aim was to eradicate any need for artificial cooling thus reducing the building's overall environmental impact.

These design decisions were facilitated by the use of steel. Had traditional masonry and timber construction been chosen instead, the elevated openings, lofty ceilings and large overhangs would not have been possible at such a scale.

The steel structural grid allows for simple buildings which can be changed and

modified with relative ease as may be required in the future adding an extended life span to the building. Another valuable aspect of the use of steel in construction is that once a building reaches obsolescence, it can be removed and reused or recycled completely. The speed with which steel can be erected, as well as the low maintenance costs, were also key factors in the choice of material for the project.

The innovative use of materials is most clearly demonstrated at the tuck shop, where the steel members which support the shade sails are used to form the tensile structure, as well as to disperse of rainwater. However, rotation of the beams, to function as gutters compromised the section's inherent strength. Steel cables were used to prevent possible deflection caused by the tensioning of the shade sails.

This elegant solution combines aesthetic clarity with simple functionality.

The S.E.E.D.

Steel was chosen as the material of choice as the design was centred on repurposing shipping containers. A light frame work of varying sections is used throughout to reinforce trafficable areas and sections that were removed. Steel frames provide space for isolation and fixing for internal and external cladding.

Photographer: Andrew Royal Photography



The SEED is immediately visible upon entering the Weiler Primary School in Alexandra, Johannesburg, through the main entrance. The colourful building nestled between the classroom blocks and the administration building is a direct contrast to the traditional face brick school buildings. Once on the main school corridor the technicolour clad facade of the ground floor container of the SEED comes into full view. Long thin windows, located between the book shelves on the interior, jut through the colourful facade. The upper container, painted in green and grey, hovers over the library entrance.

The architects were first briefed to design a world-class library which they presented to the client. The intention was that this design



PROJECT TEAM

Developer/Owner:

MAL Foundation

Architect:

Architects Of Justice

Project Manager:

Mi-Amor

Main Contractor:

Dymond Engineering

Steelwork Contractor/s:

Dymond Engineering

could be used as a blueprint for future libraries in South African schools.

This building could not be realised as it was not possible to raise sufficient funding. The architects went back to the drawing board and proposed a smaller building, with a smaller budget, built from two shipping containers. Thus, the SEED was born.

The SEED is made up of the basics of a school library; a place to access information, do homework and read. It is a working example of an exciting, stimulating place that not only houses

knowledge, but also, through the use of colour, shape, light and outdoor space, gives the young learners an inspiring experience when accessing it.

The containers are stacked at ninety degrees creating a cross when viewed from above. The ground floor container houses the book library and the first floor container houses spaces for group work and individual study. On the roof of the ground floor container there is an outdoor reading deck which is accessed from the first floor container. There is also a deck on the ground floor which doubles up as a stage for school assemblies.

Steel was chosen as the material of choice as the design was centred on repurposing shipping containers. A light frame work of varying sections is used throughout to reinforce trafficable areas and sections that were removed. Steel frames provide space for isolation and fixing for internal and external cladding. Steel window boxes made from steel plate were retrofitted to both containers. H columns cradle both containers and facilitate the overhang of the upstairs container.

The structure was a finalist in many awards programmes and won the architectural category with a silver Lourie in 2013 as well as tied in the first place out of 196 entries from 24 countries in the Young African Architects competition.

The Last Glass House

The result is an application of steel where the focus is, not only on the structural aspects of the material, but also on the visual and aesthetic possibilities inherent to the characteristics of steel as a building material.

Photographer: Roelof Petrus van Wyk

"The Last Glass House" is situated on the rocky outcrop of the Westcliff Ridge, with a view to the west, through electricity pylons, over a valley, with Auckland Park and Melville in the background.

The brief was simple: Design a dwelling/part art studio for an artist which houses a bedroom suite with an en-suite bathroom, kitchen, dining area, lounge area, study area, and a guest room

facility. Ancillary facilities include a swimming pool, staff quarters, and storage space.

The design is inspired by the rich history of Johannesburg - the goldmines and its industry and industrial buildings in central Johannesburg. Another element of inspiration was the galvanized steel electricity pylons located a few metres away from the site.

The project was conceptualised as a series of interrelated spaces, defined by elements such as retaining walls; the horizontal planes of the terraces; glass walls and landscape elements. These create various degrees of privacy.

The residential structure is 5m wide and 42m long, consisting of a single open plan space that contains most of the required functional areas. Hierarchies of privacy



PROJECT TEAM

Developer/Owner:

Roelof Petrus van Wyk

Architect:

Thomashoff + partner Architects

Structural Engineer:

P Design cc Consulting Civil & Structural Engineers

Quantity Surveyor:

Bredell Quantity Surveyors

Main Contractor:

Paragon Property Developments (Pty) Ltd

Steelwork Contractor/s:

Cadcon (Pty) Ltd

Detailers/Detailing Company:

Mondo Cané

Cladding:

Cadcon (Pty) Ltd (JJ Roofing)

Galvanizer:

Robor (Pty) Ltd

within the main glass structure are created through the use of a split-level configuration. To the north and south of the main structure, the guest room and staff quarters are accommodated in repurposed industrial shipping containers.

The functional beauty of the steel portal structure is expressed in various ways. The columns, rafters and beams are made up of rectangular hollow sections. The complete structure was fabricated and hot dip galvanized in complete portal frame elements and finally assembled on site. The steelwork was galvanized due to its low maintenance properties and durability.

Mock-ups were constructed on site to test detailing before the structure was fabricated. Site connections and welding were kept to a minimum. All parts were

cut, drilled and prepared at the factory off-site, transported from Centurion to Johannesburg, and assembled in a two week period.

The main steel structure consists of repetitive but individually unique inverted portal frames on a structural grid spacing. Each column is detailed as a two-part element, consisting of 160x80 RHS steel structural columns and a 100x50 RHS steel secondary column onto which the curtain walling support beams and infill steel and glass facade are fixed.

The distinct shape of the roof is emphasised by the roof cladding detail and the stretched canvas ceiling. Each roof sheet was cut at the ribs and folded over into the eaves or wall cladding to maximise rainwater harvesting. The canvas ceiling was installed as a separate floating element, to create a contrast against the exposed steel structure.

The construction of the intersection of the intricate folded shape of the roof and east elevation posed a unique challenge. The roof profile was shaped by nonrepeating but regular portal frames, each slightly different and detailed separately by the engineer.

The east elevation's folded roof design comprises a steel sub-frame, clad with roof cladding. Minimum flashings were used. Templates of the completed flashings were made to shop manufacture the final product flashings.

Environmental and sustainability considerations are evident in a number of ways: The optimal orientation of the main structure; polystyrene insulation to mitigate radiant heat transfer; photovoltaic panels to provide electrical power; rainwater harvesting, and landscape design where minimal additional watering is required.

The result is an application of steel where the focus is, not only on the structural aspects of the material, but also on the visual and aesthetic possibilities inherent to the characteristics of steel as a building material.





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For more information:

New Military Health Base Depot

Steel, especially galvanized steel, is the material of choice to provide structures that are low maintenance with a durable finish that remain attractive over time.

Photographer: Petrol Photography



PROJECT TEAM

Developer/Owner:

Department of Public Works, South African Military Health Services

Architect:

Jeremie Malan Architects / Impendulo Design Architects Joint Venture

Structural Engineer:

Emzansi Consulting Engineers (steel), Civil Concepts (concrete)

Quantity Surveyor:

Mokate Monk & Du Plessis

Main Contractor:

Liviero Building (Pty) Ltd

Steelwork Contractor/s:

QM Steel, Custom Creations

Cladding:

Tate & Nicholson

The Military Health Base Depot (MHBD) is a formation within the South African Military Health Service (SAMHS) responsible for the acquisition, stockpiling and distribution of medical supplies and pharmaceuticals. SAMHS required a larger, more secure and modern base to ensure optimal functioning.

An existing military property in Thaba Tshwane was selected as the most suitable site. A number of the existing buildings on site were identified to have significant heritage value and had to be retained in the new design.

Requirements were met through a campus type development with 12 buildings of different sizes and functions, including five heritage buildings - restored and creatively adapted for re-use. The main functions housed on the 'campus' are pharmaceutical storage, general storage, vehicle storage, specialist storage (weapons, ammunition and medical containers), offices, recreation facilities, covered walkways and parking.

In keeping with the historic warehouse character of the site and the storage

function of the new buildings, the new design displays an industrial aesthetic. The existing hangar buildings use steel structures and sheeting extensively. The design exploits these aesthetics in the new buildings. Pre-painted steel sheeting on steel support structures is used as side and roof cladding for the large warehouse buildings.

Steel, especially galvanized steel, is the material of choice to provide structures that are low maintenance with a durable finish that remain attractive over time.

For the three largest new buildings a galvanized steel grid is visible over northern facades. A high level truss that cantilevers three metres supports the steel grid suspended below. The structure carries aluminium sun control filigree and a steel roof over the truck loading bays. Columns could not be used at ground level because of vehicle movement at the loading bays. Horizontal and vertical steel channels have finely detailed connections to accommodate the filigree and canopy roofs.

Galvanized steel canopies provide protection to the pedestrian walkways linking different buildings across the site. The canopy roof in the heritage area is a lightweight structure cantilevered from a single line of columns to minimise the visual impact on the historic buildings and ensure free movement of pedestrians.

In other areas' sturdy concrete stub columns support the steel columns. These light structures also provide an unobtrusive and elegant link to the historic buildings.

Of the existing buildings on site, two old Bellman type steel aircraft hangars and one railway type platform building had to be retained and restored as per heritage legislation. All were re-fitted internally to accommodate new functions. The doors of one of the hangars were stripped of sheeting to expose its steel skeleton as a feature.

The steel structure skeleton of another hangar was retained and re-cladded with steel and translucent roof sheeting to create a covered ceremonial area. Complete steel structures of another four hangars were carefully dismantled, documented and re-erected elsewhere.

The ammunition store was identified to have heritage value and had to be retained. However, its brick walls were cracking badly and the concrete flat roof was in poor condition. A way was found to restrict further damage to the building while still ensuring an aesthetically pleasing end-product that preserves its historic integrity.

Galvanized steel I-columns were erected around the building (without touching it) to carry a new steel roof for protection of the old one. Steel angle straps were aligned continuously to the inside and outside of walls with a connecting bolt



in-between, thus holding the existing walls tightly in position and preventing further cracking. The external facebrick finish therefore remains untouched. The steel straps are connected back to the I-columns for extra stability.

Local developing artists were used to produce artworks and sculptures as part

of the project. This included a series of steel plate cut-outs by artist Paul Cooper representing soldiers that were wounded in the line of duty. Gordon Froud created a full scale sculpture of a military ambulance by using a light steel frame and wire.



Mondo Cané structural steel detailing & design services

Lucky Bread Company

To achieve the specific aesthetic of a 20th Century train, the use of steel had to be employed. Hot rolled I-beams and tubular pieces where used. The combination of poplar timber and steel sections gave rise to the special aesthetic of the project.

Photographer: Dook Photography

The Lucky Bread Company, a small restaurant and patisserie, is located in a previously unused space under the escalators to the cinema in the middle of Brooklyn Mall, Pretoria.

The concept for the structure started with the 20th Century Limited, a railway company that was formed in 1902, especially the NYC Hudson streamlined steam power modern train designed by

PROJECT TEAM

Developer/Owner:

TriBeCa Coffee Company (International) (Pty) Ltd

Architect:

Earthworld Architects and Interiors cc

Project Manager:

Ecostruct Developments (Pty) Ltd

Main Contractor:

Ecostruct Developments (Pty) Ltd

Steelwork Contractor/s:

Art Industrial Steel

Richard Dreyfuss in 1938. These new machines were faster, slicker and more streamlined. The first conceptual drawings for the new Lucky Bread Co. took its cues from these beautiful machines.

In essence the structure is crafted out of mild steel, brass, timber and leather. Added to the steel are raw timber planks and glass. Careful consideration was given to the locally made, the hand crafted and the process of creating objects that could possibly last a century.

The owners/chefs that had a particularly good eye for materials, texture and proportion played an important part in the making of a meaningful structure. The logo, hand painted onto the tiles, and glass as well as the billboard like sign (hand crafted from solid mild steel and brass) are bold and visible. The space has a sense of modesty and the allure of a bygone era when reading and travelling was romantic, and time for eating and enjoyment was the essence of life and not a mere action for survival.

To achieve the specific aesthetic of a 20th Century train, the use of steel had to be employed. Hot rolled I-beams and tubular pieces were used. The combination of poplar timber and steel sections gave rise to the special aesthetic of the project. The bending and curving of steel sections presented quite a challenge.

Access difficulties to the site dictated that most of the components were made in the workshop in transportable pieces off site and assembled on site. Special considerations had to be given to the steel to steel connections as well as steel to timber connections. All furniture pieces were laser cut from mild steel and combined, in some instances, with leather.

There was a challenge to make the small scale project using small amounts of material, but needing huge amounts of attention to detail.

The use of steel and timber as primary materials in collaboration with skilled craftsmanship resonated with the Lucky Bread Company brand that is focussed on hand crafted artisan bread and coffee.





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UP/CSA: Indoor Centre of Excellence

The design concept was to create a translucent structure that acts as an extension of the existing cricket oval. It was successfully achieved by having a fully glazed southern wall locked in between structural steel columns. A free standing steel fenced structure was then developed to be robust enough to act as a ball screen outside the building.

Photographer: Fanie Richter



The new University of Pretoria (UP)/Cricket SA (CSA) Indoor Centre of Excellence is the first cricket indoor training facility in South Africa that complies with international standards in terms of its finishes and equipment, in both

DDO IECT TEAM

Developer/Owner:

University of Pretoria and Cricket SA

Architect

Neo Dimensions Architects

Structural Engineer:

DG Consulting Engineers

Quantity Surveyor:

CAQS Quantity Surveyors

Project Manager:

University of Pretoria

Main Contractor:

DLR Construction

Steelwork Contractor/s:

Emerald Africa

Cladding:

Saint Gobain Etics

the training area and the supporting administrative component.

The UP and CSA reached agreement to build the facility on the northern edge of the UP Sport Campus Cricket Oval, opposite the existing High Performance Centre (HPC). The contemporary steel and concrete design of the HPC acted as the departure point from where the design concept was developed.

The brief was very technical and a specialised facility was required. The design was adapted and reworked continuously to successfully incorporate the technical details and services into the aesthetic of the building. The steel structure is versatile enough to accommodate the services, while structurally supporting the services and roof, yet still resulting in the large indoor training area.

The design concept was to create a translucent structure that acts as an extension of the existing cricket oval. It was successfully achieved by having a fully

glazed southern wall locked in between structural steel columns. A free standing fenced steel structure was then developed to be robust enough to act as a ball screen outside the building.

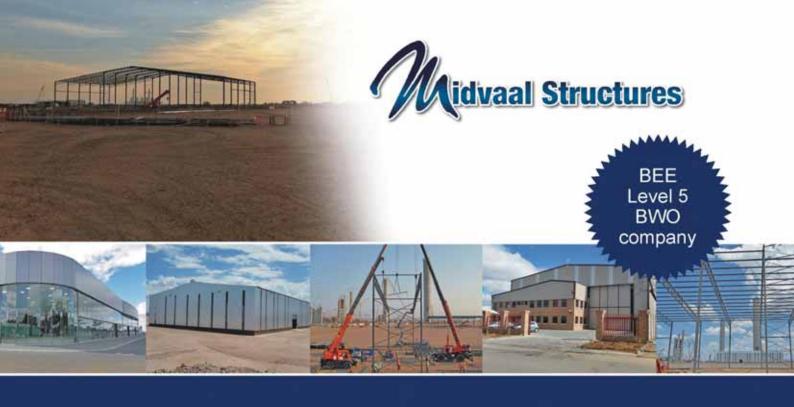
The steel roof cladding has the ability to span 7.5 metres, without the need for purlins. All netting, air-con ducting, lighting, cameras and other electronic equipment are suspended from the steel trusses as well as the WRT roofing. The shape of the roof was determined by the internal functionality of the training area, reflecting the movement of the cricket ball during the training and testing. The water run-off from the steel roof is harvested in water tanks.

The northern facade is a lightweight composite wall system. H-shape columns were used throughout. A design decision was made to make the columns appear less solid than tubular profiles. The spacing of the H-profile steel columns was determined by the impact resistant board sizes used as the internal cladding of the composite wall system. There is a solar collector box on the northern facade which is kept in position using H-profile steel columns.

Structural steel columns and beams were incorporated into the concrete work of the administrative area. These 'marry' the administrative building with the steel construction of the training facility aesthetically.

A custom made, laser cut, stainless steel perforated sun-screen was installed on the eastern facade.

All national teams, including the Proteas, female-, junior- and disabled teams will be using the centre. The facility is also specifically intended for development programmes for underprivileged sportsmen.



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Lessons from Spencer's Voortman visit - Part 1

SA FABRICATORS -

ARE WE NO LONGER PRODUCTIVE

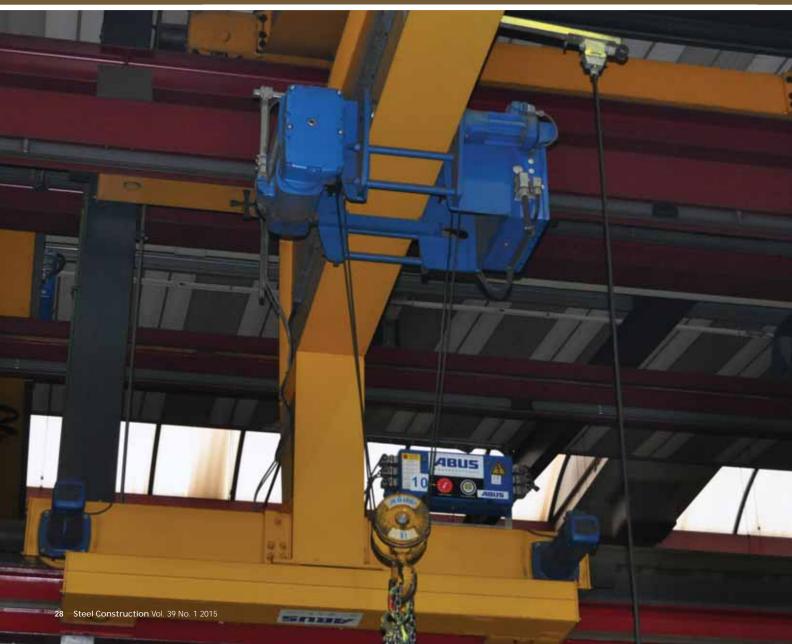
By Spencer Erling, Education Director, SAISC

COMPETITIVE?



members. My grateful thanks go out to the Voortman team and their SA representative First Cut for making this eye opening trip possible.





At the SAISC board and council meetings a subject that is often raised is "are South African fabricators still world-class technically and at the same time cost effective (through productivity)?"

The answer to the former is a most definite yes, if not better than world-class because of an over emphasis on quality, cleaning and polishing. This will be explained in more detail below.

The answer to the latter is - I am not sure. On the one hand we are still exporting well over 100 000 tons per year. On the other hand we are still losing business to Asian and European companies. But based on what I saw in Europe there is every chance we will not be cost effective for very long, despite the short windows of breathing space that the weakening rand does present to us. (Our exports should not be sold based on a weakening rand, we must have much more to offer than that!) Once again we will discuss this in more detail below.

What makes European companies more productive than SA companies?

It is common knowledge that there are certain issues that increase the cost of doing business in South Africa. Examples include:

1. Security of our facilities

- a. We each have a mini Fort Knox (the USA facility that houses the countries gold stocks) where high electric fences or walls, electronic gates and security guards are all the order of the day.
- b. The famous expression "there are no free lunches" applies. Someone has to pay for all these items that you do not see in Europe, nor for that matter in the USA.

2. BBEEE

- a. There is no doubt that this is another cost that our competitors do not have. This cost varies dramatically from fabricator to fabricator. Please don't get me wrong, we do need to empower the previously disadvantaged.
- b. Somehow we seem to have lost sight of that one critical item that should be the cornerstone of genuine empowerment - that is education and training, more education and more training.



3. Job creation

- a. In SA one of our biggest issues, which clearly is fuelling crime, is the lack of employment opportunities. We should not be thinking of paying off workers but should rather be making every effort to up-skill our existing staff.
- b. During the recent recession in Germany, unlike in SA where as soon as there is a downturn we stop training completely (to save money?), the German government actually paid companies to retrain and up-skill workers who otherwise would have been discharged and been on the dole (at a cost to Government anyway). There has to be a lesson for us in that policy.
- c. Perhaps the most significant observable difference between a SA workshop and the European shops I visited is how few workers are to be seen and of course this translates into (low) man hours per ton.
- d. Nevertheless, despite the relatively low pay our semiskilled workers earn, because we have so many of them in our workshops, our rate per ton for labour ends up being relatively high.

4. Overkill when it comes to quality and safety (sorry about the bad pun)

- a. Companies in the construction world all report to us that the over emphasis on safety is not having the desired effect. The accident rate is not improving substantially but the productivity has dropped (by as much as 30% reports one company member).
- b. There are serious double standards being applied on major contracts. Steelwork being imported from other countries has not been 'spit and polished' anywhere near to the same standard that is being demanded of SA fabricators. Inspectors have not been adequately trained in what is 'fit for purpose'. Can you imagine what motivates an inspector to use a torch and dentists mirror to look for spatter and sharp edges in an otherwise not visible part of a product that is not going to get painted? This is just one example.

5. Labour legislation and the power of the unions

a. No one in our industry needs to be reminded of these issues. The July 2014 Numsa and other unions led strike in the industry, the platinum strike, truck drivers and, and, and... have had a serious impact on the ability of our fabricator members to survive. Money that was being set aside to be spent on productivity improvements has been used up just to stay alive.

6. Planning, layout and cleanliness

a. It just jumps out at you how clean with concreted floors and yellow walking lines and generally organised their

OPPOSITE PAGE: This is a photo taken under the cantilevered crane with the free end not in the photo. Notice the two horizontal beam systems to carry the horizontal thrusts from the crane.

LEFT: The cleanliness and organised feeling is to be found all over their assembly lines.

shops are. Compare that with our typical steel stacked anywhere disorganised SA shop.

So what can we learn from our European colleagues?

Accepting that the items mentioned above represent part of an overhead cost structure that is beyond our control, we never the less have to get cleverer and more productive.

Apart from the few workers on shop floors, the next most noticeable difference between the SA workshop and their European colleagues is the emphasis on reducing handling activities. This leads directly to the smaller workforce. No longer is the emphasis just on numerically controlled equipment with faster drilling speed, movement speed within the machine but perhaps even more attention is now being paid on eliminating handling involving human hands.

So we find machines with mechanical feed tables and discharge tables handling the steel component to the next step in the process, which could be a choice of, for example, after hole drilling the steel may need to go to notching (coping) and or marking to show where attachments will be assembled.

This would be achieved by a left or right movement once the component is out of the machine.

Another example would be after the sawing process. There is a choice of returning the off-cut (if long enough) back to the stockyard and if short enough directly to the

BELOW LEFT: Their shops are clean and organised.

BELOW RIGHT: Notice the angles being moved and stacked on dunnage. They do not get rebundled and are ready for use

open fronted scrap bin which is strategically placed close to the discharge end of the saw. But no this does not involve a crane action, a hand driven fork lift with a magnet picks up (as in our case) three pieces of off-cut and deposits this in the bin.

So what I hear you say, what makes this mind bogglingly amazing is that there will be only one operator for two or three machine stations. Some strategically placed closed circuit video cameras with a display at each of the machines enables the operator to know when one of the machines need human intervention. And with all that going on he still has time to blow off the milled shavings from the saw with a compressed air gun before the steel moves to the next station.

In SA we have at least one operator for each machine and he may well have at least one assistant – none of whom would bother to remove the swarf.

Other ways to reduce handling time and associated delays

Apart from the mechanical handling systems programmed by 15 programmers to suit the equipment and possible routes to and from them there are lots of other tricks I learnt:

 For years now I have been beating the drum for more jib cranes strategically mounted on columns to eliminate crane bottlenecks. So this for example could be at a drilling machine where the jib crane would take items off a bundle to load onto the machine.

The Dutch have taken this one giant step further. A fixed jib (really a cantilevered crawl beam) is mounted on a special crane beam as well as the main crane beam both of which are designed to carry the horizontal thrusts of the

- cantilevered system. Apart from the way it is mounted, the crane operates just like any electric overhead travelling crane (EOT) (see photo on page 28).
- 2. It is quite common for fabricators to blast the steel before doing anything else to it. In the SA environment a bundle of angles (say 100 x 100 x 10L) would be split open and the angles passed through the shot blast machines in batches to suit the width of the machine. After blasting the angles would be stacked neatly in a similar bundle and transferred by crane to the next step where the bundle would then be opened up one at a time again.

Not so at Voortman where they come out of the shot blasting machine in batch widths; packed onto dunnage (same width); then transferred by side loader to the next station and stacked one layer on top of the next ready for immediate use one at a time (for in this instance the punch machine). This looked to me to be an amazing saving of time unbundling and rebundling (below right). And no chain saw damage is a bonus.

3. Some years ago we were lucky enough to visit UK shops including Severfield Rowen's Dalton works where the steelwork was trundled through the works on mechanical trolleys and the artisans moved with the trolleys doing their work. The main trick for the success of their operation was sorting the steel items with their drawing in advance of the artisans doing their work. Their Mig Mag welding machines had support arms with very long hoses to reach the middle of the trolleys.







HIGH SPEED BEAM DRILLING

DRILLING | LAYOUT MARKING | CENTER POINT MARKING THREAD TAPPING | MILLING | COUNTER SINKING

VANI

This CNC controlled beam drilling system has a horizontal drilling unit and is extremely suitable for structural steel fabricators with a limited floor space. The drilling cabin moves horizontally along the table while synchronous driven servomotors in combination with ball screw spindles provide fast and accurate drilling at all times.

V630

Fabricators that require extremely high productivity can rely on the V63D drilling system with three independent drilling heads. The machine can drill both flanges and the web at the same time, which strongly reduces working hours and operating costs. Each drilling head has its own automatic tool changer with five tools suitable for HSS drills.

BEAMS | PLATES | ANGLES | SQUARE TUBING | MULTIPLE PART PRODUCTION





Scan the QR code or visit the URL www.voortman.net/v600



VIEW THE VIDEO Scan the QR code or visit the URL www.voortman.net/v630





HYDRAULIC CLAMP



LASER MEASURING



THREE DRILLING HEADS



PRECISE MEASURING























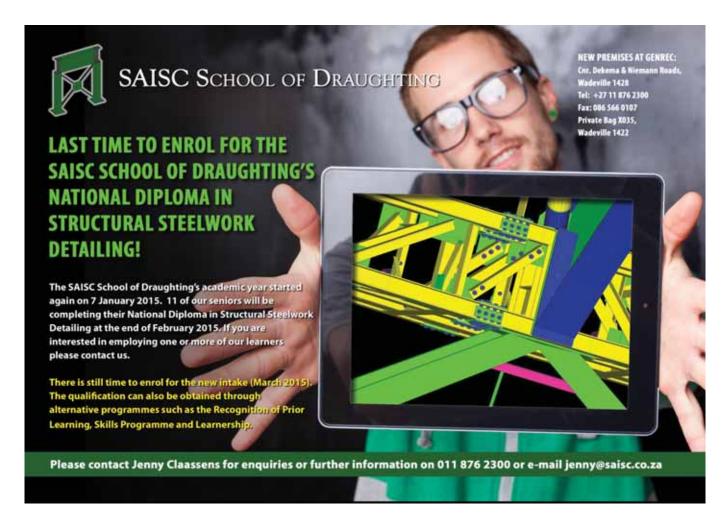
The Voortman take on this was the same emphasis on sorting the steel for the artisan. The steel was moved to a station (one of 64) each with its own welding machine *(photo 1)* (Mig Mag with short hoses – no stick welders to be seen). The assembly, checking, welding and fettling was all done at this station. The only movement was then to despatch, where trailers were waiting

ABOVE:

- 1: Two of the 64 stations see how close they are so that for long items two welding machines can reach any point on the element.
- 2: Jumbo Mig welding wire rolls.
- 3: Different welding sizes for the web and flanges.
- 4: The safe load table for the double magnet.
- 5: Part of the suction lifting device.
- 6: One of the many magnets this case two together for lifting big plates.

- to be loaded. Mig wire was from the Jumbo rolls we first saw in the UK *(photo 2)*. Welding fume extraction is now obligatory.
- 4. Great attention to welding details are given even as far as different size welds for the web and flanges of this beam. In the SA situation we probably don't even call up the weld sizes on our drawings let alone differentiating between web and flange sizes (photo 3).
- 5. Magnet and suction lifting devices are extensively used *(photos 4 6).*

This article has concentrated on minimising handling. Watch out for the other articles which will cover the Voortman range of machines.





SAISC

Advanced search Language tools

Google Search

I'm Feeling Lucky



3

SOCIAL SNIPPETS

By Marlé Lötter, Events Manager, SAISC

POLASA/Eskom Workshop

22 September 2014

RIGHT: Key participants in discussions to find ways to reduce the cost of line building, from left: Albert van der Walt (Eskom), Mpho Dire (Eskom), Bob Naraghi (Eskom), Kobus de Beer (POLASA Secretariat), Pieter le Roux (Eskom), Simon Welch (Eskom), Nuala Jackson (Roshcon).



16 October 2014 interact.

SteelDay 2014

16 October 2014

Based on the initial Steel Day concept of the AISC, 16 October marked the humble start of this industry awareness campaign in South Africa. SAISC hosted a breakfast talk at the Country Club Johannesburg with guest speaker David Milner, Marketing Manager, Mitsubishi Hitachi Power Systems Africa, on 'Lessons learnt on Medupi'. The initiative was also supported by Scaw Metals, who hosted an open day for students of the Ekurhuleni West College at their premises, and by ArcelorMittal SA with an awareness campaign and activities at their Vanderbijlpark plant. The date for Steel Day 2015 South Africa is set for 15 October 2015.

ABOVE RIGHT: Guest speaker, David Milner.

FAR LEFT: SteelDay awareness at ArcelorMittal SA.

LEFT: SteelDay 2014 at SCAW Metals.

BELOW LEFT AND RIGHT: Guests at SteelDay 2014.

Steel Academy Courses

One of the key strategic objectives of the SAISC for 2014 (and beyond) was to establish the Steel Academy to integrate educational efforts. Under this umbrella and under the very experienced mentorship of Steve Mackie and Roy Mackenzie, hands-on courses for small groups were conducted partly in the SAISC Boardroom and at Sunnyside Park Hotel during the last semester of 2014. Focus areas included basic framing and connections (11 & 12 September), light industrial building design (20 & 21 November) and design of connections with real life consequences (24 & 25 November). More courses will follow in 2015 - See page 36 for more information.

RIGHT: Steel Academy mentors: Roy MacKenzie (left) and Steve Mackie.

FAR RIGHT: Paolo, SAISC CEO and students at the Steel Academy

BELOW: More students in action.





2014 AGM SESSIONS

POLASA AGM

3 November 2014, Country Club Johannesburg

POLASA Board 2015 – selected at the AGM of 3 November 2014 at Country Club Johannesburg.

RIGHT (from left): Kobus de Beer (SAISC/POLASA Secretariat), Marcello Lamperini (Mkhulu), Vincent Kanyongolo (Dyambwini), Peter Ramaite (Rmagale Holdings), Mduduzi Mabaso (Consolidated Power Projects), Gary Whalley (Babcock/POLASA Chairman), Fred Visser (Quanta Services Africa).

Not in the picture: Sagren Moodley (Metpress), Spencer Erling (SAISC/POLASA Treasurer), Paolo Trinchero (SAISC CEO).



SAISC/SASFA/SAMCRA/ISF AGM 11 November 2014, Country Club Johannesburg



SASFA Exco 2015

ABOVE LEFT: (Back, from left) John Barnard (Director, SASFA), Steve Cullender (Scottsdale), Stewart Murray (MiTek), Mike Bywater (Global Innovative Building Systems), Reitze Hylkema (Kare), Chris Smith (Razorbill), Garry Powell (Saint-Gobain). (Front, from left) Ashley Fransman (Framecad), Annemarie Robertson (Lafarge Gypsum), Mulder Kruger (Trumod, SASFA Chairman), David van Zyl (Kwikspace).

Not in the picture: Andrew de Klerk (Everite), Melvin Hickers (ArcelorMittal SA), Paolo Trinchero (SAISC), Charl van Zyl (Silverline Group).

BELOW LEFT: Guest presenter at the 2014 SAISC AGM Cocktail Function, Paul O'Flaherty, CEO of ArcelorMittal SA.

BELOW RIGHT: 2014 was a tough year in many aspects for the structural steel industry... and yet our members found some reasons to smile!



SAISC Council 2015

ABOVE RIGHT: (Back, from left) Paolo Trinchero (SAISC CEO), Prof Alex Alvin (academic), Bridget Ledwaba (contractor), John Swallow (consulting engineer), Andrew Kirkland (contractor), Jim Guild (SAIW).

(Front, from left) Spencer Erling (SAISC secretary), Johan van der Westhuizen (SAMCRA chairman), Tebogo Raaleka (merchant), Tim Tasioulas (contractor), Riccardo Leita (contractor).



SAMCRA Board 2015

der Westhuizen (Global Roofing Solutions), Danie Joubert (Clotan Steel), Reitze Hylkema (Kare), Dave Reid (Macsteel), Dennis White (Director).

CALENDAR OF





The SAISC has recently launched the Steel Academy. This came about to integrate all our training activities (SAISC as well as subsidiaries) under one umbrella including the SAISC School of Draughting.

The Academy will cover a range of courses and training opportunities from typical engineering design courses, to competitiveness and contractual issues through to business development.

A list of courses from February to May 2015 is detailed on this page as well as other events.

following important events submitting in time.

STEEL AWARDS 2015

- Project entry deadline: **17 April** (see page 33 for details) For further information contact: renee@saisc.co.za
- Sponsorship overview lunch in Johannesburg: 6 March
- Awards dinner in Johannesburg / Durban / Cape Town: 3 September

For information on sponsor lunch and event contact: marle@saisc.co.za

GOLF DAYS

- SAISC Golf Day 2015 KwaZulu Natal: 13 March, Kloof Country Club
 - Enquiries: paul@avellini.co.za
- SAISC Golf Day 2015 Johannesburg: 6 May, Royal Johannesburg & Kensington Golf

Enquiries: marle@saisc.co.za

JANUARY	
From January:	Steel Awards 2015 – Call for project entries
FEBRUARY	
12 - 13 February:	Johannesburg – Steel Academy: Basic strengths of materials and theory of structures
17 February:	Johannesburg – Steel Academy: Steel management and estimating (every Tuesday, 15 weeks)
19 February:	Johannesburg – Steel Academy: Structural steel workshop supervisors (every Thursday, 15 weeks)
19 - 20 February:	Johannesburg – Steel Academy: Industrial building layouts, basic loading, load paths and joint configuration
25 February:	Cape Town – Steel Academy: OHS of 1993 and the 2014 Construction Regulations
26 - 27 February:	Johannesburg – Steel Academy: Basic strengths of materials and theory of structures

MARCH	
2 - 7 March:	Johannesburg – SASFA Builders Course
4 March:	Johannesburg – Steel Academy: OHS of 1993 and the 2014 Construction Regulations
5 - 6 March:	Johannesburg – Steel Academy: Industrial building layouts, basic loading, load paths and joint configuration
6 March:	Johannesburg – Steel Awards 2015: Sponsorship overview lunch
11 March:	Durban – Steel Academy: OHS of 1993 and the 2014 Construction Regulations
13 March:	Durban – SAISC Golf Day 2015 (KZN)
APRIL	
17 April·	Steel Awards 2015 – Project entry deadline

17 April:	Steel Awards 2015 - Project entry deadlin
23 April:	Johannesburg – SASFA Industry Meeting

MAY

Johannesburg - SAISC Golf Day 2015 6 May:

JULY

Durban - SASFA Builders Course 6 - 11 July:

SEPTEMBER

Johannesburg/Cape Town/Druban - Steel Awards 2015 Dinner 3 September:

14 - 19 September: Cape Town - SASFA Builders Course

OCTOBER

15 October: Steel Day South Africa 2015 22 October: Johannesburg - SASFA SANS 517 Course 26 October: Durban - SASFA SANS 517 Course 29 October: Cape Town - SASFA SANS 517 Course

NOVEMBER

9 November: Johannesburg - POLASA AGM

12 November: Johannesburg - SAISC AGM (Provisionally also SASFA/ISF/SAMCRA)

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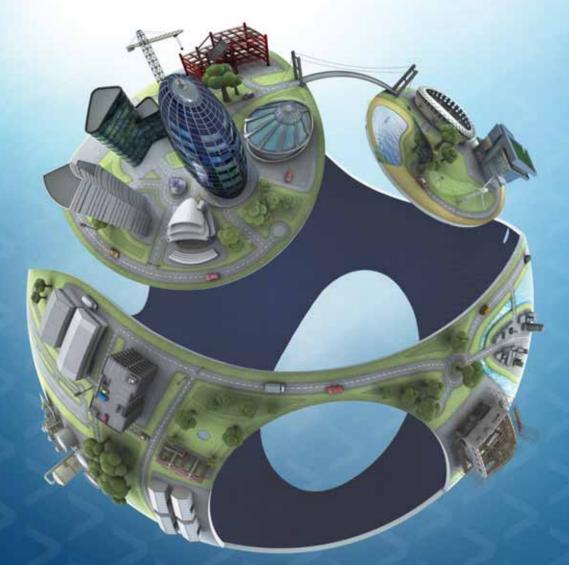












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