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the journal of the southern africa stainless steel development association

steel



ISSUE 3 2024

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Celebrating 60 years of brilliance with the triumphant return of the Stainless Steel Awards

A significant milestone for the South African stainless steel industry is this year's celebration of the 60th anniversary of Sassda's official establishment in July 1964 – highlighting its rich legacy and pivotal role in supporting and advancing the industry. The year 2024 is also notable for the return of the long-standing Sassda & Columbus Stainless Awards recognising and applauding exceptional achievements within the stainless steel industry.

Following a five-year hiatus due to calamitous global events, the comeback of the awards is especially welcome amid relentless challenges that have only strengthened Sassda's resolve to remain relevant and sustainable.

The theme of this year's event aligns with the global shift towards responsible use of Earth's resources: sustainability. In line with this theme, award categories include sustainability, business excellence and export achievement. Additionally, they recognise the best products or projects using austenitic, ferritic and duplex stainless steel grades.

Our well-balanced and knowledgeable judging panel faced the challenging but exciting task of selecting winners from a wide range of entries. The remarkable winners and runners up feature in this special edition of the Sassda Stainless Steel Magazine. Thanks to the sponsors, this event successfully acknowledges staunch Sassda supporters and significant contributors to the local industry and its global reputation.

Exemplary quality and professionalism across the industry is also evident in this year's award entries – entrants worked hard to present their eligibility and our judging panel invested long hours in determining award winners.

As awards may not always reflect the immense effort and dedication of the teams and individuals involved in planning, specifying, fabricating and executing recognised projects, honour the people who keep the industry's wheels turning by contributing to economic growth, job creation and a better environment for future generations. The awards celebrate the tenacity, resilience and teamwork characteristic of the South African stainless steel industry. Essentially, the event celebrates the sustainability of the industry, Sassda and its members.

The 2024 Sassda & Columbus Stainless Awards highlight the positive aspects of the past six years and celebrate the crucial role of stainless steel in building an industry that sustains people, the planet and the economy. The brilliance of South African stainless steel is set to benefit the country for at least another 60 years to come.



Michel Basson
Sassda Executive Director



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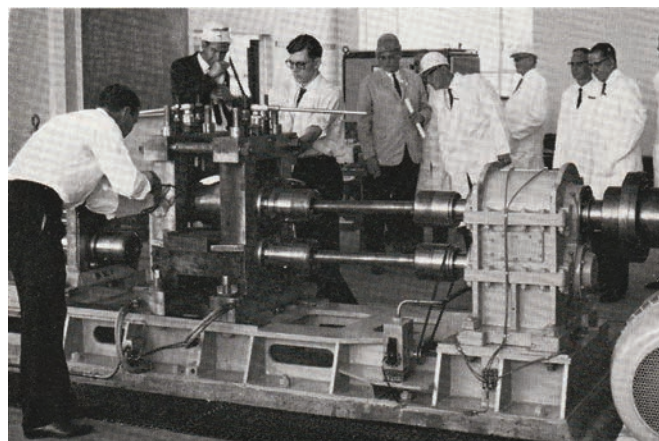
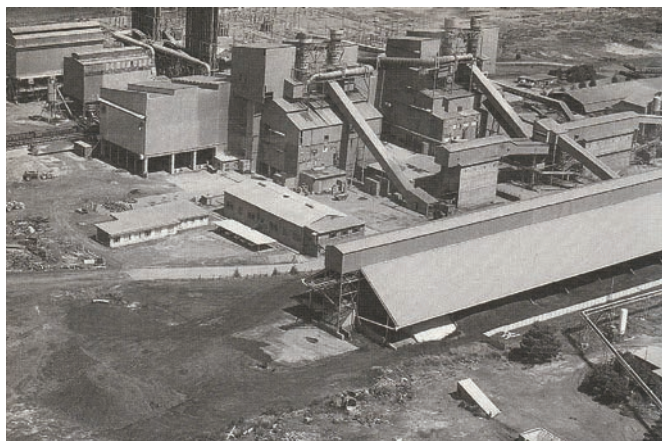
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60 years of Stainless Steel leadership: Sassda's enduring legacy in South Africa

The Southern Africa Stainless Steel Development Association (Sassda) has travelled a remarkable journey, alongside the evolution of South Africa's stainless steel industry from its modest beginnings to a global force, over the past 60 years. The 2024 Sassda & Columbus Stainless Awards celebrate the milestones that have defined the industry on this journey and the key contributors to its legacy of excellence and sustainability

The genesis of South Africa's stainless steel industry

The story of South Africa's stainless steel industry begins in 1961 with the registration of RMB Alloys. In that year, RMB Alloys took over the Driehoek plant from Scaw Metals and began producing low-carbon ferrochrome, a critical component in stainless steel production. Under the guidance of Rand Mines, the controlling shareholder, RMB, embarked on experiments with stainless steel production, setting the stage for the birth of a new industry.

By 1962, RMB's directors had a bold vision: to build a state-of-the-art ferrochrome plant outside Middelburg, harnessing South Africa's rich reserves of raw materials. This vision materialised in 1964 when the plant neared completion, and personnel moved to Middelburg in batches, marking the dawn of a new era in stainless steel manufacturing in South Africa.



The birth of Southern Cross Steel

The momentum continued in 1965 with the establishment of Southern Cross Steel, a unique and integrated specialty steel manufacturing unit. By December 1966, Southern Cross rolled its first plate from stainless steel ingots, officially entering the market as a local producer of plate and sheet by May 1967. The following year, a merger between Southern Cross and RMB Alloys led to the formation of Middelburg Steel & Alloys (MS&A), solidifying South Africa's position in the global stainless steel market.

The 1970s: a decade of growth and innovation

The 1970s was a period of tremendous growth and expansion for South Africa's stainless steel industry. By 1977,



South Africa was on its way to becoming the chromium alloy workshop of the western world. One of the most significant innovations of this era was the development of 3CR12 – a weldable, corrosion-resistant ferritic stainless steel – by MS&A in 1981. This revolutionary material found widespread application in the manufacture of coal wagons, locally and internationally, showcasing South Africa's leadership in stainless steel innovation.

The formation of Columbus Stainless

The 1990s marked another significant chapter in the industry's history with the formation of the Columbus Stainless joint venture expansion project in 1992, followed by the establishment of Columbus Stainless in 1995. By 2002, Columbus Stainless had attracted international attention with Acerinox of Spain acquiring a significant stake in the company. This strategic partnership further cemented Columbus Stainless's place in the global market and signalled a new chapter in South Africa's stainless steel story.

Sassda: A champion for the industry

Parallel to these industrial milestones, Sassda was formed in July 1964 with a clear mission: to unite stockists and fabricators and promote the image of stainless steel. Sassda's first public display at the Johannesburg Building Centre in October 1964 and the inaugural issue of Stainless Steel magazine in 1965 marked the beginning of a legacy of advocacy and industry development.



Over the decades, Sassda's contributions have been monumental. The first stainless steel symposium in 1969 brought industry leaders and experts together, laying the groundwork for future collaborations and innovations. The creation of new sectors, such as the Catering Equipment Association in 1975, and the launch of the stainless steel mark in 1973 (still in use today) are testaments to Sassda's role in driving the industry forward.

Modern achievements and commitment to sustainability

From 2010 onwards, Sassda has continued to tackle the challenges and opportunities of a rapidly evolving world. Initiatives like the campaign to limit water losses using stainless steel in the Drakenstein municipality and the development of mobile life cycle cost software in 2017 exemplify Sassda's unwavering commitment to sustainability and innovation. The push to localise stainless steel beer kegs in 2022 further highlights Sassda's dedication to promoting local manufacturing and reducing environmental impact.

Sassda's real value to the industry was also demonstrated during the Covid-19 pandemic when the association successfully negotiated a 50% activity level with government. This achievement helped cement growth in the industry between 2019 and 2022, showcasing Sassda's ability to adapt and thrive in challenging circumstances.

Looking ahead: The future of South Africa's stainless steel industry

In 2023, Sassda launched new tools for grade selection in atmospheric corrosion conditions and initiated ambitious plans to increase local consumption of 3CR12 in infrastructure projects. Looking to the future, Sassda is playing a crucial role in the development and implementation of the Steel Master Plan, which will provide a roadmap for the next five to 10 years for the South African steel industry.

Celebrating Sassda's 60th anniversary, the industry not only reflects on a legacy of brilliance and sustainability but also looks forward to a future filled with promise and potential. The journey of the South African stainless steel industry is far from over – with Sassda at the helm, the industry is poised for continued innovation, growth and excellence.





John Tarboton



Janet Cotton



Rob Lawrence

Judges highlight innovation and resilience

The 2024 Sassda & Columbus Stainless Awards continue to provide a platform recognising and celebrating innovation, excellence and resilience within South Africa's stainless steel industry. This year's awards are particularly significant, reflecting the industry's ability to adapt and thrive amid economic and environmental challenges. Insights from the judging panel, a group of esteemed professionals with diverse expertise, offer deeper understanding of this year's choice of nominees and winners.

Compelling qualities of nominees

The nominees are exceptional for several reasons with some consistent qualities highlighted by the judges. Innovation and forward-thinking are frequently mentioned with Gas Safety GM **Rob Lawrence** noting how this year's entries demonstrate remarkable ingenuity and the potential to position South Africa as a leader in the global market.

Manufacturing Circle Executive Director **Philippa Rodseth** emphasises the global competitiveness of South African companies, which is evident in the expertise and ingenuity of entrants. She is particularly impressed with focus on sustainability and innovation, increasingly important in the industry. This sentiment is echoed by South African Iron and Steel Institute Principal Analyst **Lufuno Maliaga** who highlights nominees' commitment to "innovation,

sustainability and social impact" – companies not only excelling in their projects but also contributing significantly to national economic development.

Southern African Institute of Welding Executive Director **John Tarboton** notes the "great innovation and 'can do' attitude in the face of adversity" displayed by this year's nominees, underscoring their resilience and determination.

Reflecting industry trends and standards

Award winners are seen as "trailblazers and disruptors" strategically positioned at the forefront of the industry. Sassda Market Intelligence Specialist **Tebogo Nkwe** says the winners in 2024 are not only stable and resilient but also understand the dynamics of the industry, making them leaders in an ever-changing environment.

John Tarboton refers to the winners as "great companies doing world-class work, deserving recognition and celebration of their excellence amid evolving trends and standards".

Retired Stainless Steel Specialist **Charles Cammell** is impressed by the adaptability of the South African stainless steel industry in a changing economic environment. Despite lack of domestic project work, the industry's ability to excel in the export market is a testament to its resilience and excellence.



Lufuno Maliaga



Significance of the Sassda awards

Clearly, the 2024 Sassda & Columbus Stainless Awards are more than just a celebration of industry excellence but a vital platform for recognising the contributions of the stainless steel sector to the broader economy. Rodseth says these awards showcase the capabilities of South African manufacturers and emphasise the importance of acknowledging these achievements despite the challenges faced by the industry.

For Maliaga, the awards celebrate not just technical excellence but also social responsibility and environmental stewardship, which are increasingly critical today. These values set a new benchmark for the industry and contribute significantly to national economic development.

Tarboton compares the awards to the Oscars, providing winners with distinct marketing leverage to demonstrate excellence to customers. The awards may be the most valuable benefit Sassda provides to the industry, even surpassing the value of training courses, he adds.

Overall, the 2024 Sassda & Columbus Stainless Awards highlight the resilience, innovation and global competitiveness of the South African stainless steel industry. The judges' insights reflect an industry keeping pace with global standards and leading in sustainability and social responsibility. As the industry continues to evolve, the awards will certainly inspire further innovation and excellence, ensuring South Africa remains a key player on the global stainless steel stage.

Methodology

In previous years, the awards judging involved in-person meetings enabling direct debates and deliberations. However, due to prevailing circumstances, the process has been adapted to a digital format. Judges across the country conduct evaluations through online meetings. Each category has specific judging criteria, communicated to entrants before meeting judges, outlining minimum requirements for a valid entry.

Judges receive scoring sheets for each category to assess entries in terms of a standardised scale. Based on the average of total individual scores, the entry with the highest points is generally the winner but scores are also deliberated to ensure the final decision is balanced and well-considered.





ND Engineering, a proudly South African-owned company, has been crowned the overall winner of the prestigious 2024 Sassda & Columbus Stainless Awards. This remarkable achievement is a testament to the company's relentless pursuit of excellence, innovation and sustainability across projects and operations. A distinguished and versatile industry leader, ND Engineering also won awards in the business excellence and duplex stainless steel categories.

A legacy of excellence and innovation

Founded more than 55 years ago, ND Engineering is deeply embedded in South Africa's industrial fabric. The company has consistently demonstrated expertise and leadership with a customer-centric approach and resolute commitment to quality and innovation. Earning its reputation as the industry's benchmark, at the heart of ND Engineering's success is dedication to continuously assessing and refining operations to create maximum value for customers. This buoys the company through challenges including product differentiation in the face of fierce competition.

Managing Director **Elvis Green** says resilience and adaptability are key factors in sustaining success. By focusing on innovation and sustainability, ND Engineering has not only maintained its competitive edge but also set new standards for the industry. Green believes sustainability is integral to operational excellence hence initiatives such as reducing waste, supplementing energy consumption with solar power and harvesting rainwater are central aspects of the company's business model.

Leading with innovation and excellence

ND Engineering has solidified its reputation in stainless

steel fabrication with two notable achievements: construction of the multi-purpose pulp tank for Sappi Ngodwana and involvement in Sappi Saiccor's Project Vulindlela. The business excellence category award also showcases the company's focus on customer value, innovation and sustainability.

ND Engineering's ability to remain relevant in a rapidly evolving industry, driven by deep understanding of customer needs and commitment to operational excellence, set it apart from competitors

Triumph for South Africa

ND Engineering's victory is not just a win for the company but also a triumph for South Africa as the company is among the most resilient and promising companies in the country.

Operating from its base in Hammarsdale, KwaZulu-Natal, ND Engineering has become a world-class company inspiring others to pursue excellence despite relentless challenges.

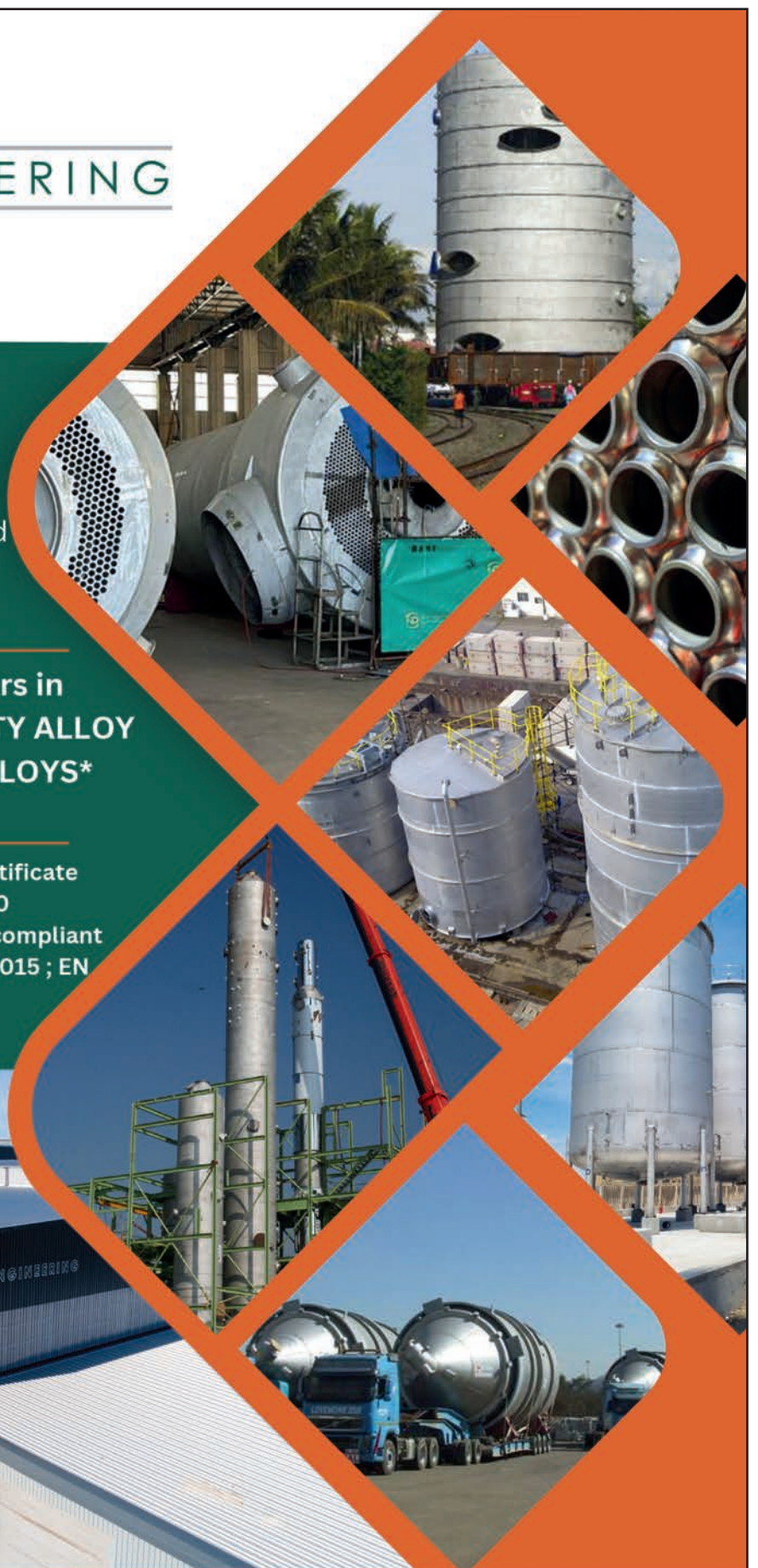
Celebrating ND Engineering's success acknowledges the potential within South African industry, which can be unlocked with dedication, innovation and devotion to excellence.



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Sustainability Award for revolutionary fog recovery technology

In a significant achievement for sustainable innovation, Eco Clarity has been recognised by the prestigious Sassda & Columbus Stainless Awards for technology that revolutionises the recovery of fats, oils and grease (FOG) from food service establishments (FSEs). This innovative solution not only addresses a critical environmental challenge but also contributes to the circular economy by converting waste into a valuable resource: biodiesel.

Addressing a critical environmental challenge

FSEs generate substantial volumes of FOG waste, which can lead to severe blockages in sewer systems and wastewater treatment facilities if not properly managed. The blockages often result in costly clean-up operations and environmental hazards. Eco Clarity's innovative solution, known as FOG Consolidation Hubs, provides an efficient and sustainable method for the disposal of FOG-laden wastewater before it reaches the sewer network.

Eco Clarity Founder **Christopher Clemes** shares his inspiration for the project. "The idea for this technology

came around a decade ago when I was fly-fishing and noticed the impact of surface oil and other contaminants on water quality. This inspired me to find a solution."

Material optimisation for longevity and efficiency

Eco Clarity's technology is designed with material optimisation at its core, ensuring maximum lifespan at minimum cost. Careful selection of materials plays a crucial role in achieving this balance. The plant's high-frequency product contact surfaces (including key components such as skimming tanks, hardware skid, pressure vessels and

flexible tubing) are constructed from 304L stainless steel, which is known for its durability, hygienic properties and low maintenance.

For non-direct contact surfaces (such as cladding, reinforcement and tank mounting), to ensure structural integrity and longevity, the plant uses 3CR12 stainless steel, which is often painted for additional protection. Shipping containers housing the technology are repurposed carbon steel units, which further emphasises Eco Clarity's commitment to sustainability and material reuse. Over 60% of the plant's weight comprises stainless steel, which is fully recyclable, contributing to the circular economy.

Energy efficiency and environmental impact

The energy efficiency of Eco Clarity's system is a standout feature. The technology enables users to screen and separate water from organic solids and FOG before it enters the water system. The cleaned water can be reused or safely returned to the waste stream while dewatered organic solids and FOG are diverted from landfills and converted into renewable energy.

The Eco-Ceptor, a key component of the system, was shortlisted by Isle Utilities at the Global Water Innovation Summit in 2019 as one of the top technologies for halving the cost of wastewater treatment globally. With a throughput capacity of 15 000 litres per hour, the system operates at an impressive energy efficiency of 6,5 kW/ton through advanced power management software.

The environmental benefits of this technology are substantial. By reducing reliance on landfills, minimising road use by FOG haulers and lowering downstream water-treatment costs, Eco Clarity's system significantly mitigates environmental impact. The compact design of the hubs, which occupy just 10 square metres, makes them suitable for installation close to FSEs and residential areas, further reducing environmental disruption.

Recycling within the circular economy

At the heart of Eco Clarity's innovation is the concept of recycling as a contribution to the circular economy. FOG recovered by the system is consolidated into a feedstock suitable for biodiesel production. This biodiesel is blended with traditional diesel enabling FSEs, haulers and water utilities to run vehicles on their waste. This closed-loop system exemplifies the potential for waste to be transformed into a valuable resource, reducing reliance on fossil fuels and promoting sustainability.

The use of repurposed materials in the construction of the hubs further underscores Eco Clarity's commitment to recycling. The shipping containers, once their initial purpose is fulfilled, can be repurposed again or recycled as part of the stainless steel production process, reinforcing the company's dedication to a sustainable life cycle for all materials.

Overcoming challenges through collaboration

The lengthy environmental permitting process was among the challenges on the journey to success for Eco Clarity. Clemes emphasises the need for modernisation in this area. "We want to provide FOG recovery across multiple locations before grease builds up in sewers but delays in obtaining permits are a major hurdle."

To overcome this challenge, Eco Clarity is actively engaging with key stakeholders to streamline the permit application process. Collaboration within the water sector is also crucial for scaling up the FOG-to-fuel solution. By fostering partnerships and addressing permitting challenges, Eco Clarity aims to promote a more sustainable and efficient wastewater management system for the future.

A strategic approach to sustainability

Eco Clarity's recognition by the Sassda & Columbus Stainless Awards highlights the strategic importance of sustainability

in modern business. "Sustainability has transformed from a discretionary add-on to a core business strategy," says Clemes. "It's no longer merely ethical; it's a sound investment in long-term business success and societal well-being."

Through innovative technology and commitment to sustainability, Eco Clarity is not only addressing a critical environmental issue but also contributing to the sustainable circular economy. The company's success is an inspiring example of engineering innovation driving positive change for the environment and society.





Mpumatech Mines gold with green innovation

Mpumatech has secured the runner-up position in the sustainability category of the 2024 Sassta & Columbus Stainless Awards, thanks to an innovative approach to addressing environmental challenges in the mining industry.

Andrew Ioannou of Mpumatech shares insights that saw the company earn recognition for a project born from an urgent need to implement more sustainable practices within the mining sector. “Our project was inspired by the environmental challenges posed by traditional mining methods, particularly the use of mild steel split sets, which are prone to corrosion and require frequent replacements, leading to significant environmental waste.”

Recognising the drawbacks of hot-dip galvanising, a process used to extend the life of mild steel but fraught with environmental concerns, Mpumatech sought a sustainable alternative. “We aimed to create a split set that not only matched the performance of mild steel but also eliminated the need for environmentally harmful coatings,” says Ioannou.

The solution is manufacturing split sets from 3CR12 stainless steel, which is inherently resistant to corrosion without additional treatments. This innovation significantly extends the service life of split sets in underground mining while reducing the environmental impact associated with material waste and the galvanising process. “By choosing 3CR12 stainless steel, we are supporting the industry’s operational needs and moving towards a more sustainable future in mining,” Ioannou adds.



Transitioning to 3CR12 stainless steel was not without challenges, particularly in changing the mindsets of end users who were accustomed to using galvanised mild steel. "Scepticism about moving away from traditional methods was a significant hurdle," recalls Ioannou.

Mpumatech addressed this challenge by collaborating closely with engineers, environmental specialists and procurement teams in field tests and comparisons to demonstrate the benefits of 3CR12 stainless steel, including its superior corrosion resistance and reduced environmental impact. "Through persistent education and open communication, we shifted perceptions and established 3CR12 as a sustainable, cost-effective solution," Ioannou notes.

For Mpumatech, sustainability is more than just a trend; it's a strategic business advantage. "By selecting materials like 3CR12, we reduce maintenance and replacement costs, leading to long-term savings," Ioannou explains. This focus on sustainability not only enhances business operations but also positions Mpumatech as a leader in promoting environmentally responsible practices in the mining industry.



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Revolutionising clean cooking: Stainless steel stove leads Africa's sustainability charge

Afnon, a trailblazing Zambian company, has earned recognition in the sustainability category of the 2024 Sassda & Columbus Stainless Awards for its innovative Juvin 3-in-1 stove.

This ground-breaking stainless steel stove, the first of its kind in Africa, has been acknowledged as one of the 1 000 most efficient global solutions, marking a significant leap forward in clean cooking technology within a market valued at over US\$130 million across the continent.

The use of stainless steel in the Juvin 3-in-1 stove is central to its durability, efficiency and environmental impact. Stainless steel, known for its resilience and recyclability, ensures the stove not only lasts long but also maintains a small environmental footprint.

Focus on material optimisation aligns with Afnon's broader mission to localise clean cooking solutions in Africa – a goal driven by **Arnold Nyendwa** who has led Afnon to distribute over 8 000 clean cooking stoves in Zambia since

2021 with exports to the Democratic Republic of the Congo and Malawi.

The Juvin Eco stove, another flagship product, further underscores Afnon's commitment to sustainability. Manufactured from locally sourced recycled waste metal, this stove is not only cost-effective but also highly efficient, offering continuous cooking for eight to 10 hours with minimal solid fuel. This innovation represents an 80% improvement in energy use compared to conventional stoves, which typically harness only 14% of their fuel's energy. Afnon's market positioning is differentiated by its strategic approach. While many competitors focus on single-fuel stoves, the Juvin 3-in-1 stove is versatile using gas, electricity and pellets. This multifunctionality not only reduces costs for consumers but also addresses the limitations of single-fuel models.

Beyond environmental benefits, the company's distribution of clean cooking stoves has significantly positive social impacts such as reducing deforestation and improving public health by lowering smoke emissions.

ND Engineering triumphs in the Duplex Category



ND Engineering, a stalwart in the South African stainless steel sector with more than 55 years of experience, has earned the prestigious 2024 Sassta & Columbus Stainless Award in the duplex category.

This accolade was awarded in recognition of its outstanding work on the multi-purpose pulp tank (MPPT) for Sappi Ngodwana in Mpumalanga - a project that exemplifies the benefits of duplex stainless steel SAF 2205 in production efficiency and environmental impact.

ND Engineering GM **Mark Ackerman** comments: "In the late 1980s, we were one of the first in the country to really push the use of duplex stainless steel. We saw the potential immediately, especially in cyclic pressure vessels where the material's strength and reduced thickness could make a significant difference. It was a game changer allowing us to improve performance and safety without relying on older, more cumbersome methods".

Project overview

ND Engineering's award-winning MPPT at Sappi Ngodwana is a colossal structure standing 32 metres tall with a diameter of 9 500mm, tapering into a 60° cone at the

bottom. The tank, housed in a base skirt with double anchoring rings, boasts an impressive capacity of 1.7 million litres. Constructed using duplex stainless steel SAF 2205, this project is not only a testament to ND Engineering's expertise but also reflects the material's superior qualities in industrial applications.

"When we were tasked with the MPPT project, we knew it was going to be challenging, especially in such a congested and active plant, but that is where our experience with duplex stainless steel shone," Ackerman says. "We have been working with this material for many years, which demonstrated its incredible benefits in this project, allowing us to deliver on time, within budget and without compromising on safety or quality."

Production benefits

The MPPT has significantly enhanced Sappi Ngodwana's operational efficiency. Prior to this upgrade, the mill faced a substantial post-shutdown chemical make-up cost of R8.5 million and experienced a slow startup curve, reducing fibre line production rates until full capacity was achieved. The new tank allows the mill to avoid these costly and time-consuming issues, enabling smooth annual shutdowns. In addition, the MPPT has eliminated the need for the mill to lower its soda stock before maintenance shutdowns - a process that previously hampered production. Additional

duplex stainless steel winner

recovery of sodium from the effluent stream is another notable benefit, generating annual savings of R600 000 by reducing the need for salt cake makeup.

Environmental impact

The environmental advantages of the MPPT are equally impressive. Installation of the tank has significantly reduced effluent volume, sodium and sulphate during upset conditions, thereby improving the mill's sodium effluent compliance by 0.1 tons per day. The tank has decreased sodium effluent by 0.5 tons per day, aligning with Sappi Ngodwana's environmental sustainability goals. One of the most crucial environmental benefits is that the tank enables statutory maintenance during annual outages without disposal of soda into the effluent stream. This feature not only supports environmental compliance but also enhances the overall sustainability of the mill's operations.

Fabrication challenges

Constructing such a large and complex structure within a live, highly congested operating plant presented numerous challenges. ND Engineering's field erection teams had to navigate a host of difficulties including limited space, environmental hazards like airborne contaminants and weather conditions and the logistical constraints of working in an active industrial environment.

The tank was surrounded by vessels, equipment, pumps and large structures, leaving no access to any side of the plinth. The nearest assembly area was more than 25 metres away across a road frequently used by chemical tankers,

which could not be blocked for extended periods. The project also required lifting prefabricated tank sections over structures standing at least 15 metres high – all while minimising disruptions to the plant's operations.

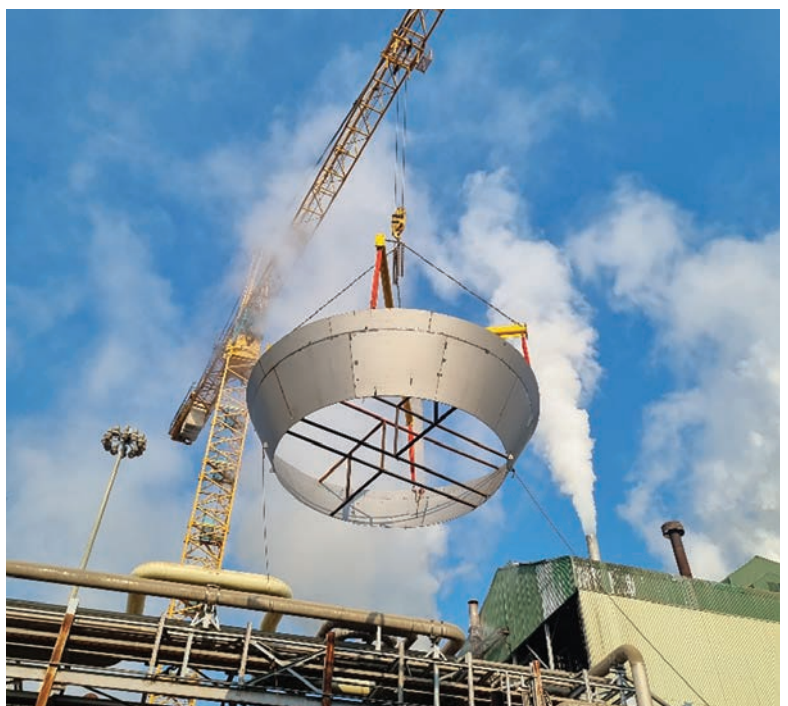
Innovative solutions

To overcome the challenges, ND Engineering adopted a piece-large approach: fabricating large sections of the tank off-site and assembling on-site using a tower crane with 14-ton lifting capacity. This crane was strategically positioned to avoid blocking roads and to minimise disruptions to the plant's daily operations.

This innovative construction approach not only allowed ND Engineering to complete the project within an extremely short timeframe of 2,5 months but also enabled significant cost savings by eliminating the need for a massive main lift crane. Despite the complexity and risks associated with working in such a constrained environment, ND Engineering completed the project without a single lost-time injury, underscoring commitment to safety and excellence.

Conclusion

The MPPT project is a shining example of ND Engineering's expertise in stainless steel fabrication and ability to deliver innovative solutions under challenging conditions. By harnessing the strength and versatility of duplex stainless steel, ND Engineering has not only improved Sappi Ngodwana's operational efficiency and environmental footprint but also set a new standard of excellence in the industry.



Pandemic partnerships: How COVID collaboration fuelled project success

ND Engineering showcased resilience and innovation through its involvement in Sappi Saiccor's Project Vulindlela - despite the challenges of the COVID-19 pandemic.

The project, located in Umkomaas, KwaZulu-Natal, was primarily driven by the need for environmental improvements coupled with an increase in production. ND Engineering's innovative use of duplex stainless steel and the on-site workshop were pivotal to the project's success, which earned the team a runner-up spot in this category at the 2024 Sassa & Columbus Stainless Awards.

Strategic on-site workshop: a game changer

One of the most innovative aspects of ND Engineering's involvement was the establishment of a 2 000 m² manufacturing workshop on Sappi's premises. This decision allowed ND Engineering to expand production capacity to 12 000 m², combining this facility with an existing workshop in Hammarsdale, KwaZulu-Natal.

The on-site workshop not only increased capacity but also led to significant cost savings by reducing the need for abnormal road transport loads. The fully functional workshop, complete with two 20 tonne overhead cranes, was handed over to Sappi, reflecting ND Engineering's commitment to long-term client relationships.

The workshop also facilitated local community involvement, allowing ND Engineering to offer comprehensive training programmes to local residents. Many trainees were later employed full-time, aligning with Sappi's local training goals and enhancing the project's overall impact.

The role of duplex stainless steel: engineering precision

Duplex stainless steel was central to Project Vulindlela. It was chosen for superior strength, corrosion resistance and cost-effectiveness. ND Engineering used 1,525 tonnes of duplex stainless steel throughout the project, demonstrating expertise in handling this specialised material. Using this grade enabled reduced vessel thickness without compromising structural integrity, which was critical for the high-pressure environments of the project.



One of the outstanding applications of duplex stainless steel was in the construction of large digesters, which are essential for pulp production. The material's high strength-to-weight ratio enabled more efficient construction, reducing material costs and assembly time. This extensive use of duplex stainless steel also contributed to a significant increase in local stainless steel consumption, boosting the regional economy.

Overcoming challenges with innovation

Project Vulindlela began in 2019 and faced numerous challenges, especially the global COVID-19 pandemic. Despite these obstacles, ND Engineering's innovative approach ensured it was the first large contractor to sign off and close out contracts without penalties.

GM **Mark Ackerman** comments: "Navigating through the COVID-19 pandemic was one of our biggest challenges but our team's dedication and the strong partnership with Sappi's management made all the difference. Strategic decisions, like setting up the on-site workshop, were crucial to maintaining our timelines and delivering high-quality results".

The on-site workshop allowed ND Engineering to construct most equipment in large sections transported to site using self-propelled modular trailers. This approach minimised the need for multiple transportation loads, enhancing safety and efficiency. ND Engineering also offered design expertise to address vacuum and pressure relief system challenges on larger vessels.

ND Engineering's involvement in Project Vulindlela exemplifies its commitment to engineering excellence. Innovative use of duplex stainless steel, the strategic on-site workshop and ability to overcome pandemic-related challenges have set a new industry benchmark.

Revolutionising fluid dynamics: Closed vane impeller redefines industry standards

Among the exceptional projects in this year's awards, one stands out as the special merit winner, showcasing ground-breaking advancements in the manufacturing of closed vane impellers – a crucial component used to boost fluid pressure and flow. This project, spearheaded by Venter Consulting's team of visionary engineers, skilled machinists and expert metallurgists, not only met its ambitious goals but also redefined industry standards, setting a new benchmark for innovation and excellence in the field.



Inspiration and objectives

The project was inspired by successful manufacturing of open vane impellers from a single stainless steel billet as a monolithic part. This earlier success spurred the team to push the boundaries further – this time focusing on closed vane impellers. The primary objective was to replicate the benefits of open vane impellers, such as enhanced structural integrity and longer lifespan, in closed vane impellers, which present a more complex design and manufacturing challenge.

Venter Consulting Project Manager **Doks van Tonder** emphasises the driving force behind this endeavour: "We knew we were onto something significant with the open vane impellers and the logical next step was to tackle the closed vane design. Our main goal was to optimise the design and machining process to create a stronger, more durable impeller that could withstand the rigours of demanding environments".

Enhanced performance

One of the key features of this project is the impeller's monolithic construction. Traditionally, closed vane impellers were fabricated by welding together separate sections – a process that introduced several inherent weaknesses. The welding process, especially where the vanes meet the base, created heat-affected zones prone to stress corrosion cracking due to chrome depletion at the corners.

By manufacturing the impeller from a single billet of stainless steel, these weaknesses were effectively eliminated. The result is a component with superior structural integrity,

capable of withstanding higher stress levels without the risk of corrosion-related failures. This innovation not only enhances the impeller's lifespan but also improves its overall performance, making it a more reliable choice for applications in corrosive and high-stress environments.

Overcoming challenges through collaboration

The most significant hurdle on the journey to achieving these results was the sheer size of the impeller with a diameter exceeding 850 mm. This necessitated re-design and modification of the tooling needed to machine the deep pockets and sharp angles integral to the impeller's design.

Van Tonder highlights the importance of teamwork in overcoming this challenge: "This project was a true collaboration. Engineers, machinists, technicians and our tooling supplier all worked closely together to develop the tools we needed. It was a continuous process of trial and error but, ultimately, we succeeded in creating the precise tools needed".

Another challenge was selecting the appropriate stainless steel grade for the impeller's demanding operating environment. The team's metallurgists conducted an extensive investigation to identify a grade that offered the right balance of high strength as well as resistance to stress corrosion cracking and hydrogen embrittlement. The choice, 1.4418 stainless steel, proved to be the perfect solution, providing the necessary properties to ensure the impeller's durability and performance.

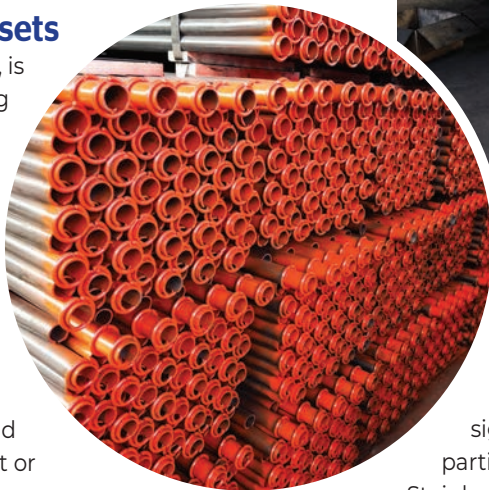
Enhanced mining safety with stainless steel split sets

Mpumatech has introduced stainless steel split sets to underground mining environments, marking a significant advancement in roof support technology.

Mpumatech Sales and Business Development Director **Andrew Ioannou** says: “Our stainless steel split sets, made from corrosion-resistant stainless steel, are designed to enhance safety and efficiency in underground mining operations, offering a long-lasting solution that significantly reduces maintenance and operational downtime”.

Understanding split sets

A split set, or friction anchor, is used in underground mining to provide temporary or permanent support in excavation roofs or walls. It is a cylindrical steel tube with a longitudinal slot allowing expansion when inserted into a pre-drilled hole. This expansion creates frictional anchoring, which stabilises underground excavations, especially in soft or unstable rock formations.



Innovative material

Stainless steel split sets have the same load-bearing capacity and elongation as traditional mild steel versions but with additional benefits. The corrosion resistance of stainless steel makes it ideal for harsh underground environments, ensuring long service life and reducing the need for frequent replacements. Mpumatech also customises split sets to meet specific mining requirements, optimising performance while maintaining compatibility with existing infrastructure.

Life cycle cost

The life cycle cost of durable stainless steel split sets is also competitive when compared to galvanised steel options. While the initial cost of stainless steel is higher, its extended service life and reduced maintenance needs lead to long-term savings. Galvanised steel requires regular maintenance and replacements, which can add to operational costs over time.



Localisation potential

Mpumatech's stainless steel split sets have significant localisation potential in South Africa, particularly through collaboration with Columbus Stainless. This partnership could enhance domestic production, create jobs and reduce import dependency. Local sourcing also supports environmental sustainability by lowering carbon emissions associated with transportation.

Market growth

Durability and corrosion resistance position Mpumatech's product for market growth, particularly in Australia. Ongoing trials comparing stainless steel with galvanised steel in mining environments are expected to highlight the advantages of stainless steel split sets. “This product is a game changer for the South African mining sector, which has long struggled with issues of durability and cost in challenging underground conditions,” says Ioannou. “By introducing stainless steel split sets, we're offering a solution that not only enhances safety and efficiency but also supports local manufacturing and reduces long-term operational costs. This innovation comes at a critical time, providing the industry with the resilience it needs to overcome current challenges and sustain its future.”



Revolutionising stainless steel processing: Slashing steps, cutting costs and boosting efficiency

In the ever-evolving world of engineering, an innovative project, inspired by the need to optimise the processing of steel used in various applications, recently attracted significant attention. The primary motivation was to reduce the complexity, cost and environmental impact associated with processing mild steel.

Inspiration and objectives

Mild steel is widely used in construction and manufacturing processes. Guardiar's **Paul van Der Berg** explains: "Traditionally, steel used in these projects had to undergo five distinct processes: profiling, drilling, hot-dip galvanising, degassing and coating. The rising cost of galvanising – driven by increasing prices of raw materials and energy – necessitated a more efficient approach."

By opting for stainless steel instead of mild steel, the Guardiar team aimed to reduce the number of required processes from five to three: profiling, drilling and coating. Eliminating galvanising and degassing primarily saves costs and improves efficiency of steel processing without compromising the quality or durability of the final product.

Unique features and benefits

Unlike mild steel, which requires additional galvanising to prevent corrosion, stainless steel inherently resists corrosion. This property allowed the team to remove two of the most resource-intensive and costly processes. An

additional benefit of eliminating galvanising is reduced environmental impact.

Furthermore, reducing processing steps enhances efficiency on the production line, which contributes to faster turnaround.

Overcoming challenges through collaboration

One of the significant challenges in this project was rolling the stainless steel, which has high-tensile strength relative to its thickness. The solution required meticulous fine-tuning of the mills to accommodate the unique properties of stainless steel. This was achieved through close collaboration among team members who shared their combined expertise.

"This innovative project not only demonstrated the potential to reduce processing steps and costs but also highlighted the importance of material selection and teamwork in overcoming engineering challenges," Van der Berg adds. "The success of this project is inspiring efforts to innovate and optimise traditional manufacturing processes."

Fabrinox cuts through the fog at 2024 Stainless Steel Awards



Fabrinox, a leading South African stainless steel fabrication company, has again showcased its engineering prowess by clinching a prestigious award at the 2024 Sassta & Columbus Stainless Awards.

The recognition comes as a result of its collaborative project with UK-based Eco Clarity – a ground-breaking endeavour to develop modular, scalable and containerised “FOG Consolidation Hubs” for the sustainable management of fats, oils and grease (FOG) waste generated by food service establishments (FSEs).

Inspiration and objectives behind the project

Inspiration for the FOG Consolidation Hubs stemmed from growing environmental challenges associated with the disposal of FOG waste, which can cause significant blockages and costly clean-up operations in sewer networks.

Fabrinox MD Andre Visser explains: “Eco Clarity approached us with the vision of creating a sustainable solution for FOG waste. Our main objective was to co-

develop and manufacture a system that not only addresses the environmental concerns but also creates a circular economy by converting waste into valuable biofuel”.

The FOG Consolidation Hubs offer a solution by providing accessible disposal sites where haulers can dispose of FOG-containing wastewater. The system effectively consolidates FOG into a feedstock suitable for biodiesel production, enabling FSEs, haulers and water utilities to reduce waste and environmental impact while saving on operational costs.

Innovative features and market potential

The FOG Consolidation Hubs are distinguished by innovative design, which includes a highly efficient energy management system and a unique waste separation process that does not require settling or chemicals.



“This technology not only addresses critical environmental issues but also has the potential to create meaningful jobs and foster economic growth in South Africa”

Andre Visser

The system is designed for circular economy principles, using repurposed shipping containers and recyclable materials, with over 60% of the plant's weight consisting of stainless steel.

Visser highlights the significance of these features, stating: “Our design allows for a low life-cycle cost with minimal maintenance, making the hubs not only cost-effective but also environmentally friendly. The potential for localisation is immense, particularly in South Africa where water scarcity and environmental regulations are becoming increasingly important”.

The technology's market potential is further bolstered by its proven performance complying with stringent European conditions. Local fabrication of these plants in South Africa, combined with strong demand in the UK and Europe, positions Fabrinox as a leader in this emerging market.

Overcoming challenges

However, the project team experienced challenges. The complexity of developing a containerised waste management system required close collaboration between Fabrinox and Eco Clarity from the initial stages of the concept.

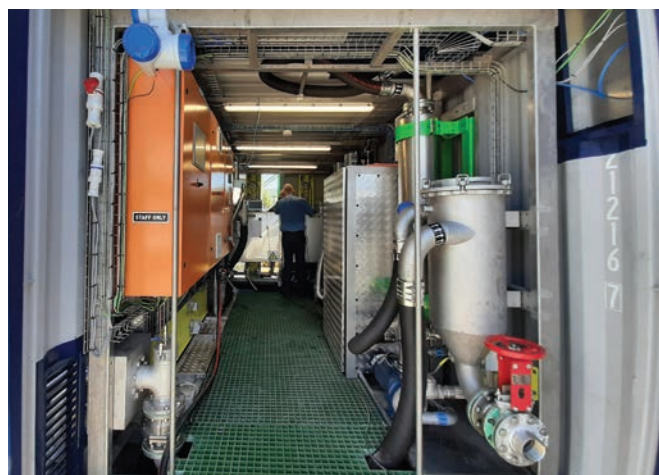
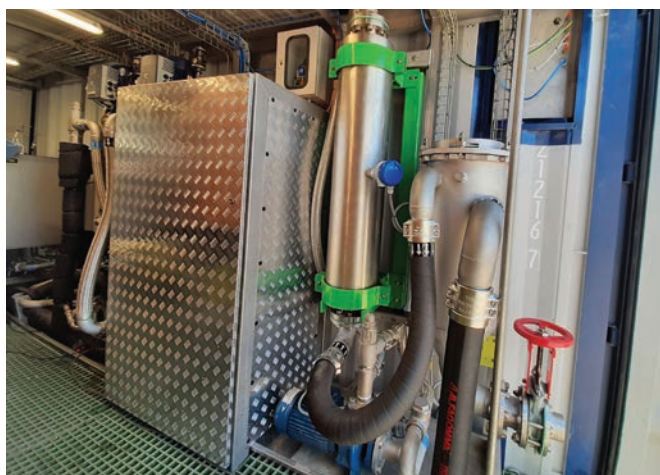
Visser emphasises the importance of teamwork in overcoming these hurdles. “Our involvement from the developmental concept phase allowed us to refine the design and manufacturing processes in real time. The steering committee, composed of senior representatives from both companies, played a crucial role in ensuring strict timelines and milestones were met.”

This collaborative approach enabled Fabrinox to leverage its 30 years of experience in manufacturing, project management and installation, ensuring the successful delivery of a sophisticated and functional product.

Impact on the environment and society

The impact of the FOG Consolidation Hubs extends beyond engineering innovation. By preventing FOG waste from entering water systems, the technology contributes to environmental protection and resource conservation. The hubs also support the production of second-generation biodiesel – a cleaner alternative to fossil fuels.

“This technology not only addresses critical environmental issues but also has the potential to create meaningful jobs and foster economic growth in South Africa,” Visser points out. “By turning waste into a resource, we are contributing to a more sustainable future.”



Vinco Steel crushes inefficiencies with game-changing bin tipper

Vinco Steel, a leading innovator in the steel fabrication industry, has introduced a ground-breaking solution aimed at revolutionising handling whole bunches of grapes – a critical step in producing high-quality wines. The Vinco Bin Tipper, addresses long-standing inefficiencies in traditional grape-handling methods, providing a streamlined, cost-effective and space-saving alternative.

Traditional methods of grape handling, which involve manual harvesting, sorting and transportation, are fraught with challenges. These include complicated and expensive systems, excessive space requirements and inflexibility of the production environment. Additionally, issues such as product spillage, difficult cleaning processes and high water consumption have plagued winemakers for years.

“Our goal was to simplify the entire process, from the vineyard to the fermentation tank, without compromising on quality,” explains **Klaas Loubser**, lead engineer at Vinco Steel. “We wanted to create a solution that not only addresses the inefficiencies of existing systems but also enhances the overall performance and flexibility of the production environment.”

Innovation

The Vinco Bin Tipper stands out in the market due to its innovative design and functionality. At the heart of the system is a simple hydraulic mechanism that operates in conjunction with a cellar’s existing water supply. This system is complemented by a small centrifugal pump, which boosts water pressure to the optimal level of 6.5 bar, ensuring smooth and efficient operation.

Highlighting the significance of these design choices, Loubser says: “The simplicity of the hydraulic system, combined with the efficiency of the centrifugal pump, allows for a solution that is not only cost-effective but also easy to install and maintain. It’s a major leap forward compared to the cumbersome and expensive systems that have been in use for the past 30 years”.

The Vinco Bin Tipper addresses critical pain points associated with traditional methods. It occupies significantly less space within the cellar, making it ideal for wineries looking to maximise their operational efficiency. The system’s design also minimises spillage and requires less water for cleaning, contributing to a more sustainable production process



Overcoming challenges through collaboration

Development of the Vinco Bin Tipper was not without challenges. One of the primary obstacles was conceptualising a solution that could surpass the existing systems, which had become the industry standard over the past three decades. Vinco Steel worked closely with top winemakers to define the specific requirements and performance criteria that the new system needed to meet.

Loubser notes. “We had to work very closely with the end user – the winemakers – to ensure that every detail was accounted for. This collaborative approach was crucial in developing a product that truly met their needs.”

Another difficult aspect of the project was determining the precise tipping angle for the bin. This required a deep understanding of how different grape varieties behave when handled. Through meticulous testing and collaboration, the team at Vinco Steel was able to identify the ideal angle, resulting in a system that is highly effective across a range of grape types.

“The final tipping angle we arrived at was a perfect fit, which was a huge validation of our approach,” Loubser adds. “It’s not just about designing something that works; it’s about creating a solution that is elegant, flexible and efficient.”

Overall, the successful implementation of the Vinco Bin Tipper marks a significant advancement in grape-handling technology, offering wineries a more streamlined, sustainable and cost-effective solution.

A fusion of art and innovation

Creating striking displays of artistry and innovation, Weird Wizard artist **Jacques van der Westhuizen** continues to impress the Sassda & Columbus Stainless Awards judges. An award winner in the art category last year, he received another award for captivating pieces using austenitic stainless steel this year.

Van der Westhuizen's journey from stainless steel artisan to celebrated artist is a testament to the creative possibilities in the intersection of industry and art. His latest entries – a collection of sculptures blending stainless steel with other metals – exemplify the seamless integration of innovation and artistic expression.

Each piece is a carefully crafted narrative with material selection, manufacturing methods and installation techniques converging to maintain the integrity of the artist's message. His innovative use of austenitic grades of stainless steel, renowned for durability and corrosion resistance, demonstrates the potential of this medium to artistically represent the juxtaposition of permanence and transience.

One of the outstanding features of these artworks is attention to life cycle cost competitiveness. While art is often difficult to quantify in terms of cost-effectiveness, the use of stainless steel in these pieces uniquely contrasts ephemeral and eternal. "Stainless steel provides that sense of perpetuality – a constant reminder of the spiritual unchanging amid the chaos of life," says Van der Westhuizen.

Localisation is another strength of Weird Wizard pieces. Commitment to sourcing materials and labour



locally supports communities and enhances the authenticity of the artworks.

The market for Weird Wizard creations, although niche, is growing steadily with consistent focus on spreading Van der Westhuizen's message through visually compelling pieces. Functionality transcends physical utility – his artworks aim instead to provoke thought and reflection on life's deeper meanings. Additionally, his designs embrace sustainability as he often incorporates recycled materials although he resists the notion that his pieces are recycled – this reinforces the timelessness of art.

In a world where productivity and lifestyle improvements are often measured by tangible results, Weird Wizard offers a refreshing perspective. Van der Westhuizen's artworks enhance mental and spiritual well-being by urging audiences to find clarity and connection in a complex world.



Innovative wine cellar design sets new benchmark in lifestyle estate development

A recent project marked a significant milestone for Saturn Stainless that successfully completed its first turn-key cellar equipment supply contract as part of a prestigious lifestyle estate development. This project, which went beyond traditional wine cellar expansions, allowed the company to push the boundaries of design and technology.

The inspiration for the project came from Saturn Stainless's extensive experience in wine cellar expansions. However, the opportunity to take on a complete turn-key project, where every aspect from design to installation was managed by Saturn Stainless, presented a unique challenge. The main objectives were clear: to meet the client's high standards, to use the project as a showcase for its capabilities, and to achieve a profitable outcome.

Saturn Stainless MD **Jacques Schreuder** explains, "We wanted to demonstrate our ability to deliver a comprehensive solution, not just provide piecemeal components. The project was seen as an opportunity for us to set a new standard and illustrate that our expertise



extends beyond equipment supply, encompassing the design and implementation of a complete cellar."

One of the standout features of the project was the integration of the latest technology in wine processing systems. The unique design allowed the client to handle significantly higher tonnages compared to traditional cellar layouts. It was noted that a project of this scale would typically require the involvement of at least eight different contractors. By streamlining the process and consolidating all aspects under one roof, Saturn Stainless delivered a more efficient and cohesive solution.

However, the project was not without challenges. The most significant hurdle was the state of the ports, which led to shipping delays and logistical complications. Shipping times reportedly tripled, requiring meticulous coordination to align the arrival of the installation crew with the delayed shipments.

However, through teamwork and collaboration, Saturn Stainless overcame these obstacles, ensuring the project was completed on time and to the client's satisfaction. "This project has set a new benchmark for future developments, demonstrating that innovation and perseverance can lead to extraordinary results," says Schreuder.



Revolutionising clean cooking with stainless steel innovation

The 2024 Sassda & Columbus Stainless Awards recognised an exceptional achievement in the export category, bestowing the Export Achievement Award on Ener-G-Africa (EGA). This accolade honours EGA's commitment to innovation, sustainability and quality in delivering an advanced biomass stove and the eCO2-pot to millions of households across Sub-Saharan Africa. EGA's work exemplifies how engineering, driven by user-centric design and high-quality materials like stainless steel, can create life-changing products for global markets.

Cooking for rural communities

EGA's journey to winning the Export Achievement Award began with a profound understanding of the needs of rural communities where traditional cooking methods typically involve the use of charcoal or wood, which are both not ideal fuels. Using charcoal, although effective, is costly and contributes to environmental degradation. The use of increasingly scarce wood, although often free, leads to deforestation. Both also present health risks due to excessive smoke and carbon emissions.

EGA's response to these challenges is the Rocket Advanced Biomass Stove designed with efficiency, cost-effectiveness and user safety in mind. The stove is engineered to use over 60% less fuel than traditional "three stone" cooking fires, which is ideal for households where fuel availability is limited. Moreover, the stove's design concentrates heat more effectively, reducing cooking time and harmful emissions that contribute to respiratory illnesses.

The stove is not just a product; it is a solution to some of the most pressing issues faced by communities in Sub-Saharan Africa. By 2024, EGA had successfully exported over seven million Rocket stoves to households in 12 countries including Mozambique, Angola, Zimbabwe, Malawi and South Africa. Widespread adoption is a testament to the stove's ability to meet the needs of rural families while contributing to environmental conservation.



“EGA's commitment to quality and affordability has been a key factor in its export success. Stainless steel, although more expensive upfront than materials like aluminium, offers superior durability and safety, particularly when used for cookware”.

Innovation in stainless steel cookware

EGA didn't stop at stoves. The company's innovative spirit led to the development of the eCO2-pot – a cookware range designed to maximise the efficiency of the Rocket stoves. The eCO2-pot is made from ferritic stainless steel chosen for its exceptional durability, thermal conductivity and low thermal expansion rate. These properties are crucial for cookware that needs to withstand daily use while maintaining safety and efficiency.

The eCO2-pot features double-insulated sides, which significantly increase the surface area that conducts heat from the stove to the contents of the pot. This design innovation not only speeds up cooking but also ensures even heat distribution and thus better cooking results. By choosing stainless steel, EGA has provided households with cookware that is not only safe and long-lasting but also enhances the overall cooking experience.

Cost and quality competitiveness

Aluminium products, often found in rural markets, can cause health conditions such as neurological and bone disorders. EGA's stainless steel products are free from these risks, providing consumers with a safe alternative.

Sourcing stainless steel within South Africa has also enabled the company to keep costs competitive while ensuring high quality. The durability and recyclability of stainless steel contribute to its cost-effectiveness over the product's lifespan, offering consumers better value for money. Focus on quality control and management ensures every product EGA exports meets stringent safety and performance standards, making them acceptable and affordable in various market segments.

Overcoming export challenges

EGA's success in exporting products across Africa was hard-earned. One of the most significant hurdles was overcoming reliance on road transport for distribution. Poor road conditions in many regions, the unpredictable state of vehicles and delays at border posts complicate logistics.

To address these challenges, EGA forged strong partnerships with reliable transport companies specialising in cross-border logistics within Africa. These partnerships have been instrumental in navigating the complexities of road transport, ensuring products reach their destinations promptly and efficiently. By anticipating potential issues and working closely with logistics partners, EGA has maintained a robust export operation despite inherent difficulties.

Job creation and economic impact

EGA's growth and expansion have significantly improved employment opportunities in South Africa and the continent. Over the past two years, the company has expanded its operations to include new factories in Paarl, South Africa, and a pellet mill and stove assembly plant in



Mozambique. These expansions have created numerous jobs, contributing to economic development in the regions where EGA operates.

Additionally, EGA has established 11 retail stores in Malawi and four in Mozambique and plans to open 20 outlets in each of the countries where it operates. These retail outlets not only increase access to EGA's products but also provide jobs and stimulate local economies.

EGA's recognition in the 2024 Sassda & Columbus Stainless Awards underscores the company's dedication to innovation, quality and sustainability. By focusing on the needs of rural communities and leveraging the unique properties of stainless steel, EGA has created products that are not only life-changing but also export-ready. Its achievements in clean cooking technology and stainless steel innovation exemplify the crucial role of engineering in addressing some of the world's toughest challenges.

Stainless steel precision fuels global energy breakthrough



ND Engineering has secured the runner-up position in the export achievement category of the 2024 Sassda & Columbus Stainless Awards, thanks to its significant role in advancing global energy-saving technologies. The company's expertise in fabricating complex stainless steel components has earned it a distinguished reputation, particularly in supplying OEM parts to Europe.

The company's global recognition grew when a sheikh and his management team visited South Africa to discuss energy reduction strategies with the Industrial Development Corporation and a local sugar company. The sheikh's ambitious plan, part of Al Khaleej Sugar's energy-saving technology development programme, is aiming to achieve carbon neutrality within the next decade. This led to a pivotal opportunity for ND Engineering to contribute to a ground-breaking project involving the development of seven calandrias – critical components in the world-first energy-saving device.

Central to the project's success was the use of 316L stainless steel in the fabrication of the calandrias. This material was chosen for its superior resistance to corrosion, especially in high-temperature and high-pressure environments, typical in steam heat exchangers. The durability and longevity of 316L stainless steel were crucial in meeting the demanding specifications of the project, ensuring the components would perform reliably in the challenging conditions of the energy-saving system.

Each calandria, measuring 6 630mm in diameter and 3 050mm in height, featured 2 646 tubes – all constructed from the high-grade stainless steel. These components are the largest of their kind ever built. Given the massive dimensions, on-site assembly was necessary as shipping fully assembled units would have been economically unfeasible.

ND Engineering faced significant challenges in fabricating the donut-shaped tube sheets – the largest the company ever produced. With tube ligaments of just 4.5mm, there was no margin for error in drilling 2 646 holes in each tube sheet. The company invested heavily in CNC drilling technology to meet tight production deadlines.

The calandrias were meticulously crafted to ensure optimal performance and wrapped in plastic to prevent contamination during their journey to Dubai. ND Engineering's success in overcoming the logistical challenges underscores its status as a leader in precision engineering and global exports.

Relentless focus on customer value drives innovation, sustainability & resilience

ND Engineering's triumph in the 2024 Sassda & Columbus Stainless Awards business excellence category can be attributed to its relentless focus on the fundamental question: "What value are we creating for our customers?" This approach drives every aspect of the company's operations from system design and process improvement to resource allocation.



ND Engineering MD **Elvis Green** says this philosophy ensures the company not only remains competitive but also relevant in a rapidly evolving industry. "Our aspirational vision to be the benchmark in our industry drives us to continually assess and refine our operations. By focusing on customer value, we invest in employee development, quality, innovation and initiatives that enhance operational efficiency."

This strategic focus is not static; it requires continuous evaluation and adaptation to keep a competitive edge. Green acknowledges that the stainless steel industry is highly competitive with access to similar technologies and best practices for all players. However, ND Engineering is differentiated by deeply understanding customer needs and using its entire value chain to meet demands.

"Our resilience is a result of our institutional adaptability. This adaptability, promoted through long-term investments, culminates in a competitive edge that needs

continued assessment and, where necessary, adjustments," Green notes.

Innovation and sustainability as core differentiators

In an industry where differentiation is challenging due to widespread availability of similar technologies and systems, ND Engineering has carved out a niche by focusing on innovation and sustainability.

The company adopts a systems view to satisfy customer needs, emphasising the importance of leveraging skills and technologies within its value chain. By promoting win-win relationships with stakeholders, it creates an ecosystem that understands and strives for excellence.

Sustainability also plays a crucial role in ND Engineering's operations. Green explains: "Sustainability is not just about avoiding tangible pollutants; it's about reducing waste

throughout the manufacturing process and adopting environmentally responsible practices”.

The company has taken significant steps to reduce residual loss, supplement energy consumption with solar power and harvest and purify rainwater for use in its operations. These efforts not only reduce environmental impact but also ensure the long-term viability of the business. “Taking, making and wasting is an outdated way of doing business,” adds Green. “We’ve worked diligently to evolve beyond this model, ensuring that sustainability is at the heart of everything we do.”

Navigating economic challenges with resilience

The past few years have posed numerous challenges for businesses worldwide and the stainless steel industry is no exception. However, ND Engineering has successfully navigated these turbulent times by staying true to its core principles of resilience and adaptability.

Green attributes this success to the company’s diverse and inclusive team, which plays a crucial role in effective decision-making. “We are blessed to have a diverse team that feels free to openly contribute ideas and views. This broad perspective enables effective decision-making based on valuable information.”

The company’s diverse portfolio of customers across multiple industrial sectors has also been a key factor in its resilience. This diversity allows ND Engineering to pivot its focus to sectors that are performing well, ensuring sustained business growth even during economic downturns. Looking to the future, Green is optimistic about the company’s prospects.

He highlights the importance of prudent resource management, which has enabled ND Engineering to invest

in its people and facilities, positioning the company to capitalise on new opportunities. “Through the prudent management of resources, we have been able to develop our people and facilities so that new opportunities can be pursued.”

One of the significant milestones achieved by ND Engineering is its certification as an ASME U-Stamp accredited organisation, which opens new avenues for growth and expansion in the global market.

The power of people and collaboration

At the heart of ND Engineering’s success is its people. The company’s motto, “Our people are what make us special”, reflects its culture of inclusivity and collaboration. Green believes every employee and department is integral to the company’s success and this philosophy extends across the entire value chain. “Collaboration is critical and a key expectation of all employees,” he asserts.

ND Engineering has also been a pioneer in promoting gender diversity within the traditionally male-dominated engineering industry. The company’s long-term programme to attract and train more women in the field has yielded outstanding results with women shining in trades such as welding, boiler-making and mechanical fitting. Green proudly states: “We have nurtured a new culture of trust and support for our ladies, and they are excelling in their fields”.

For aspiring professionals in the stainless steel industry, Green offers simple yet profound advice: focus on the basics of your craft, stay abreast of technological developments and build a network of reliable people and organisations. He cautions against complacency: “Many companies that were too big or good to fail did fail. There is no time to rest on past achievements”.



Innovation and quality leadership create a culture of excellence

Anderson Engineering has been named runner up in the business excellence category of the 2024 Sassda & Columbus Stainless Awards, reflecting the company's focus on quality, innovation and customer engagement as a leader in the stainless steel industry.



Founded in 1958, Anderson Engineering has built its reputation on continuous improvement and high standards. Anderson Engineering MD **Hennie de Jager** highlights the importance of the company's legacy: "Our strategy has been to build on our experience while adapting to industry demands, which has helped us maintain our reputation for quality".

A key factor in Anderson Engineering's success is its customer-centric approach. By understanding client needs and tailoring solutions, the company has established long-term partnerships. This strategy is complemented by strong emphasis on innovation. Anderson Engineering has invested in research and development, especially in sectors like food, pharmaceuticals and personal care, to stay ahead of industry trends.

Quality assurance remains a core focus for the company. Anderson Engineering holds ISO 9001:2015 and ISO 3834 Part 2 certifications, which support its commitment to produce safe and reliable products. "Our focus on quality ensures our products consistently meet high safety and efficiency standards," de Jager states.

The company also attributes its success to its workforce. Ongoing training and development equip employees to meet industry challenges, fostering a culture of innovation. Additionally, Anderson Engineering has implemented

sustainability initiatives, such as recycling programmes and engineering energy-efficient solutions, which appeal to environmentally conscious clients

Anderson Engineering has navigated economic challenges by diversifying its product offerings and serving various industries, which helps to mitigate risks. The company plans to continue investing in research and development, aiming to expand its presence in established and emerging markets, with focus on sustainability.

"Our goal is to strengthen our position as a leader in the stainless steel industry," de Jager says, noting the company's commitment to agility and market responsiveness.



A pioneer dedicated to stainless steel innovation

Sakkie Nel, a name synonymous with dedication, innovation and leadership in the stainless steel industry, is the deserving recipient of the 2024 Sassda and Columbus Stainless Lifetime Achievement Award.

Early career and foundation

Sakkie started out at South African Railways and Harbours in East London. This foundational experience enabled him to hone his technical skills and develop a deep understanding of machinery and engineering principles. However, his career took a pivotal turn when he transitioned into sales and marketing with an international oil company. This move not only broadened his expertise but also provided valuable management experience, which eventually led him back to his passion: engineering.

A company specialising in stainless steel pressure and storage vessels ignited Sakkie's interest in stainless steel. This inspired his future endeavours and significant contributions to the stainless steel industry.

Entrepreneurial ventures and innovations

In 1981, driven by a desire to create and innovate, Sakkie and two friends established Stainless Fabricators. The company started from modest beginnings in a small, rented workshop in Chamdor, Krugersdorp. The first project, completed in January 1981, impressed clients with exceptional quality that defined the company's reputation for years to come.

Under Sakkie's leadership, Stainless Fabricators became known for its high-quality work, which often required deadline extensions due to contract volumes. One of their significant innovations was an advanced estimating system. This system, which dramatically reduced the time required for these tasks, was recognised as one of the most advanced in the world at the time.

Contributions to the industry and community

Beyond his entrepreneurial success, Sakkie plays a crucial role in the broader stainless steel industry. His involvement with Sassda has fostered a collaborative and innovative environment within the industry. As Chairperson of the Heavy Fabricators Association and a non-executive director of Sassda, Sakkie's influence helped shape the industry, promoting quality standards and encouraging the exchange of ideas among members.



One of Sakkie's notable achievements is his response to a major crisis in 1991-1992 when a significant explosion at Sasol 2 destroyed many stainless steel pipelines. Through his company at the time, APS Stainless Services, co-managed with the late Judy Moncur, Sakkie ensured rapid delivery of necessary materials, secured a significant portion of orders and demonstrated the agility and efficiency that defined his approach to business.

An enduring legacy

Sakkie's career is a masterclass in resilience, innovation and strategic thinking. One of the key lessons he shares from his extensive experience is the importance of maintaining positive cash flow, which ensured the long-term success and stability of his companies. His advice to the next generation of professionals in the stainless steel industry is simple yet profound: focus on your goals, value your suppliers and manage your finances wisely.

Sakkie's legacy is not just in the companies he built or the innovations he pioneered but also in the values he upheld throughout his career. His story is one of perseverance, integrity and relentless pursuit of excellence, making him a true icon in the stainless steel industry.

His contribution to the stainless steel industry is monumental. Sakkie's journey from a millwright to a leader in the industry, his entrepreneurial spirit and his commitment to quality and innovation have earned him the respect and admiration of his peers. The Lifetime Achievement Award celebrates an industry champion who is inspiring future generations to pursue excellence in the stainless steel industry.

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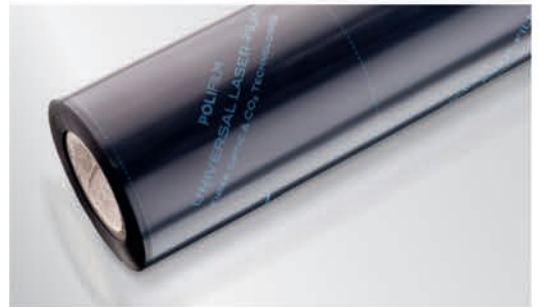
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THE SASSDA COLUMBUS Stainless Awards 2024

Congratulations to our winners and runners-up, who exemplify the innovation and sustainable practices that are setting new standards in our industry!

Overall winner

ND ENGINEERING

**Business
Excellence**

WINNER
RUNNER UP

ND ENGINEERING
ANDERSON ENGINEERING

**Austenitic
Stainless Steel**

WINNER
RUNNER UP

FABRINOX
VINCO STEEL

**Export
Achievement**

WINNER
RUNNER UP

ENER-G- AFRICA
ND ENGINEERING

**Duplex
Stainless Steel**

WINNER
RUNNER UP
SPECIAL MERIT

ND ENGINEERING
ND ENGINEERING
VENTER CONSULTING ENGINEERS

Sustainability

WINNER
RUNNER UP

ECO CLARITY
MPUMATECH

**Ferritic
Stainless Steel**

WINNER
RUNNER UP

MPUMATECH
GUARDIAR SOUTH AFRICA

**Lifetime
Achievement**

WINNER

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