focus on
POTS & PANS
Sassda investigates the quality of stainless steel cookware

case study
DESLINATION
Stainless steel plants offer a solution for water restricted areas

profile
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A

Apparent stainless steel consumption statistics for the January 2013 to June 2013 period indicate that this year will turn out to be similar to 2012, however, as we enter the last leg of 2013, there are indications that the South African stainless steel manufacturing industry is facing uncertain times. Although it doesn't make it any more palatable for the stainless steel industry, there may be some comfort in the fact that this uncertainty and reduced business activity is being experienced by most industry sectors in South Africa.

Opinions relating to the current state of affairs vary. Imports, while still an issue, show a slight reduction on 2012 on a pro-rata basis in the case of finished product categories monitored by Sassda. However, issues facing South Africa as a whole still loom. These include policy uncertainty in many areas, particularly the mining industry, as well as labour concerns, skills shortages and so on. However, for most it is not all doom and gloom, with the long-term outlook still being positive for many.

On page 12, we focus on desalination as a case study. One of the challenges facing South Africa, which will intensify going into the future, is the scarcity of water, both for industrial and domestic use.

For domestic use, a number of desalination plants have been constructed in coastal towns to supply potable water to the town's inhabitants.

For industrial use, many companies currently use desalination plants and many more are looking into the possibility of doing so to ensure their own continued supply of clean water. At a presentation at the most recent Joint Sector Meeting by PetroSA on Project Mthombo, the possible new refinery planned for Coega, a desalination plant was included to meet the refinery's water needs. Even in inland areas, desalination plant technology is being talked about to address certain Acid Mine Drainage (AMD) water concerns.

This issue of Stainless Steel covers the desalination question in general, as well as exploring the use of stainless steel in desalination plants.

In this issue, we also look at the topic of imports from a new angle. Sassda recently embarked on a pot testing investigation to identify the price, quality and authenticity of consumerware on the market. Sassda engaged the services of Mintek to conduct chemical analysis on pots readily available to purchase from major South African retailers. The results were telling, see page 6 for more.

The most alarming part of the investigation was the labelling of one pot as "high quality 18/10 stainless steel"; this pot was not in fact the premium quality 18/10 grade used for the manufacture of high quality hollowware. It was actually manufactured from a chromium-manganese stainless steel – whilst these grades were not necessarily those of the management of Sassda. The contents of this publication enjoy positive protection under the Copyright Act and therefore copyright thereof is expressly reserved. Any copying, publication and distribution of part or whole of the publication is prohibited unless consent is granted by Sassda.
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The Southern Africa Stainless Steel Development Association (Sassda) has noticed the recent proliferation of a variety of stainless steel pots and pans on the market, with wide variations in price.

Sassda requested the services of Mintek’s Metals Technology Centre (MTC), to analyse a small sample selection of pots and pans readily available to consumers, to identify what they were really made of and if they conformed to the prevailing South African national standard for stainless steelware for domestic and general use, SANS 998:2010.

Sassda tested eight pots, each of a different brand, purchased from six well known retail outlets. Of the eight pots, two were manufactured locally, four were imported and two did not state their country of origin, but were thought to have been imported.

These were supplied to Mintek for various tests to be performed, the most important of which was to determine the chemical composition of the main body of the pot.

For the purpose of this article we will call them pots A to H (see Table 1). The pots were of a similar size. Some of the pots packaging labels made reference to a material grade, while others simply stated that they were produced from stainless steel.

The cost of the pots was provided by Sassda and in cases where the pots were only available in sets, the average cost per pot was used. It was noted that the cost of the two locally manufactured pots (i.e. pots A and G) was significantly higher than some of the imported pots.

SANS 998:2010 specifies that a material of manufacture for cookware should be stainless steel type 18/10 or 18/8, these grade descriptions being basically interchangeable for this application. The 18 in this instance refers to a nominal 18% chromium content and the 10 or the 8 refers to the nominal percentage nickel content.

Tests conducted by Mintek show that the label on your purchase might not be representative of the product you are buying. But the **PRICE DOESN’T LIE** - the more expensive a pot is, the more likely it is to be a higher quality stainless steel, such as 18/10.

### Table 1: Description and properties of the pots selected for analysis

<table>
<thead>
<tr>
<th>Pot Label</th>
<th>Retailer</th>
<th>Size</th>
<th>Reported Material</th>
<th>Source</th>
<th>Cost**</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>165mm</td>
<td>18/8 (304)</td>
<td>Locally manufactured</td>
<td>R 300</td>
</tr>
<tr>
<td>B*</td>
<td>2</td>
<td>180mm</td>
<td>Stainless steel</td>
<td>Imported from India</td>
<td>R 100</td>
</tr>
<tr>
<td>C*</td>
<td>3</td>
<td>180mm</td>
<td>Stainless steel</td>
<td>Not specified</td>
<td>R 145</td>
</tr>
<tr>
<td>D*</td>
<td>4</td>
<td>180mm</td>
<td>18-10</td>
<td>Not specified</td>
<td>R 125</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>200mm</td>
<td>Stainless steel</td>
<td>Imported from China</td>
<td>R 260</td>
</tr>
<tr>
<td>F*</td>
<td>5</td>
<td>180mm</td>
<td>18-10</td>
<td>Imported from China</td>
<td>R 200</td>
</tr>
<tr>
<td>G</td>
<td>6</td>
<td>160mm</td>
<td>18-10</td>
<td>Locally manufactured</td>
<td>R 400</td>
</tr>
<tr>
<td>H</td>
<td>6</td>
<td>200mm</td>
<td>18-8</td>
<td>Imported from China</td>
<td>R 350</td>
</tr>
</tbody>
</table>

* Bought in a set and not as an individual pot, price is an estimate of total set
** Costs have been rounded to closest rand value
The benefits of using stainless steel for cookware are its durability, great appearance, low maintenance, the fact that it is hygienic and does not react with food, as well as that it is rust resistant and, if chosen and used correctly, will last a lifetime. These attributes are generally linked to the chromium content of the steel, with higher levels of chromium implying a higher level of corrosion resistance.

There are two basic types of stainless steel that most hollowware for domestic use is now manufactured from. Traditionally used, and still considered to be the premium stainless steel grade for the application, are the so-called chromium-nickel grades. For pots and pans made from the chromium-nickel grades, the commonly used description is 18/10 or 18/8, or sometimes 304, this being the American designation of this particular stainless steel type. As noted previously, the 18 stands for a nominal chromium content of 18%, whilst 10 or 8 stands for the nominal percentage nickel content.

Of increasing importance, however, for the manufacture of stainless steel pots and pans are the so-called chromium-manganese grades. In these grades, nickel is substituted (sometimes only partially) with manganese. The primary reason for this is economical, as nickel is a significant cost component of the chromium-nickel grades. The chromium-manganese grades of stainless steel are widely used for consumerware type products in India, China and South East Asia. (For completeness, it should be noted that SANS 998:2010 also refers to 18/0 stainless steel – a plain chromium stainless steel grade containing no nickel.

### Methods of Cleaning Stainless Steel

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cleaning Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine Cleaning - all finishes</td>
<td>Soap or mild detergent and water (preferably warm). Sponge, rinse with clean water, wipe dry if necessary. Follow polish lines.</td>
</tr>
<tr>
<td>Fingerprints - all finishes</td>
<td>Soap and warm water or organic solvent (eg acetone, alcohol, methylated spirits). Rinse with clean water and wipe dry. Follow polish lines.</td>
</tr>
<tr>
<td>Stubborn Stains and Discolouration - all finishes</td>
<td>Mild cleaning solutions, eg. Jif, specialty stainless steel cleaners. Use rag, sponge or fibre brush (soft nylon or natural bristle. An old toothbrush can be useful). Rinse well with clean water and wipe dry. Follow polish lines.</td>
</tr>
<tr>
<td>Lime Deposits from Hard Water</td>
<td>Solution of one part vinegar to three parts water. Soak in solution then brush to loosen. Rinse well with clean water.</td>
</tr>
<tr>
<td>Oil or Grease Marks - all finishes</td>
<td>Organic solvents (eg. acetone, alcohol, methylated spirits, proprietary “safety solvents”). Baked-on grease can be softened beforehand with ammonia. Clean after with soap and water, rinse with clean water and dry. Follow polish lines.</td>
</tr>
<tr>
<td>Rust and other Corrosion Products Embedded or Adhering “Free Iron”</td>
<td>Rust stains can be removed by adding one part of nitric acid to nine parts of warm water. Leave for 30 to 60 minutes, then wash off with plenty of water, and flush any drains thoroughly. Rinse well with clean water. Wear rubber gloves, mix the solution in a glass container, and be very careful with the acid.</td>
</tr>
<tr>
<td>Routine Cleaning of Boat Fittings</td>
<td>Frequent washing down with fresh water. Washing is recommended after each time the boat is used in salt water.</td>
</tr>
<tr>
<td>Cooking Pot Boiled Dry</td>
<td>Remove burnt food by soaking in hot water with detergent, baking soda or ammonia. Afterwards clean and polish, with a mild abrasive if necessary.</td>
</tr>
<tr>
<td>Scratches on Polished (Satin) Finish</td>
<td>Slight scratches - use impregnated nylon pads. Polish with iron-free abrasives for deeper scratches. Follow polish lines. Then clean with soap or detergent as for routine cleaning. Do not use ordinary steel wool - iron particles can become embedded in stainless steel and cause further surface problems. Stainless steel and “Scotch-brite” scouring pads are satisfactory.</td>
</tr>
</tbody>
</table>
This type of stainless steel is commonly found in catering equipment such as Bain Maries. The chromium-manganese grades are considered to be a lower quality variant compared to the chromium-nickel types of stainless steel. They generally contain no or very little nickel, can be magnetic but are still rust resistant. They are not considered to be as dishwasher friendly as the chromium-nickel grades. They may deteriorate depending on what food stuffs are cooked in them and how frequently they are washed. Generally they do not conduct heat as well as 18/8 or 18/10. Nevertheless, they will serve the consumer well, but not necessarily for a lifetime.

18/8 or 18/10 stainless steel is non-magnetic, rust resistant and a better, long-term option to chromium-manganese grades. 18/8 and 18/10 stainless steel is highly corrosion resistant, very hygienic, dishwasher friendly and easy to clean, and will last a life time with correct usage – "a real stainless steel inheritance".

Mintek used spark emission spectrometry and scanning electron microscopy to analyse the chemical composition of the pots and all their metal components. Thickness measurements were also performed to measure the layers of the base and wall of each pot.

Table 2 shows the composition of the pot bodies in relation to the ASTM A240/A240M specification of 18/10 and 18/8.

The results showed that the bodies of the locally manufactured pots conformed to the SANS998:2010 standard requirements, as did two of the imported pots. The other imported pots were mostly made from low nickel and high manganese grades of stainless steel.

The bulk chemical composition of pot F did not conform to the 18/10 specification as reported on the label of the packaging, due to insufficient nickel content, although it would still be regarded as a chromium-nickel grade. However, pot D has been completely misrepresented as having been made of 18/10 stainless steel material. Pot D contains predominantly manganese rather than the required nickel. The bulk chemical compositions of pots C and B also contain manganese, similar to pot D, but they are only described on the packaging as stainless steel, with no grade being referenced. Sassda believes that SANS 998:2010 should be reviewed, not only to include the chromium-manganese grades, but also to address other shortcomings that this investigation has identified. In addition, Sassda would recommend minimum labelling requirements for stainless steel hollowware, which would include the country of manufacture, as well as the grade of stainless steel used.

The overall analysis confirmed that the imported pots that are comparable with the quality of the locally manufactured pots also compare fairly well on cost.

A main problem identified was that one of the pots (which was thought to be imported), was very clearly marked "high quality 18/10 stainless steel", but was actually made from the chromium-manganese variant. To substantiate the results of the tests on this pot, Sassda arranged for another seven pots of the same brand to be tested at Mintek. When the results were received, they confirmed the results from the first pot tested.

In Sassda’s view this constitutes deliberate misleading of consumers and is a problem for the industry.

<table>
<thead>
<tr>
<th>Table 2: Spark Emission Spectrometry results of pot body chemical analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification</td>
</tr>
<tr>
<td>Pot / Label</td>
</tr>
<tr>
<td>18/10 or 18/8</td>
</tr>
<tr>
<td>Pot body</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>G</td>
</tr>
<tr>
<td>H</td>
</tr>
</tbody>
</table>

* Nickel within analytical tolerance limits

Courtesy of Hendler & Hart (Aloe Kitchenware)
Most consumers know stainless steel is the best option for cookware, some even recognise 18/10 as the premium grade of stainless steel for pots and pans, and it erodes the brand when you buy an 18/10 pot that does not live up to standards,” says Bill Scurr, Sassda’s executive director. “The best pot you can buy is one with a Cross and Balls logo on it. This means it is produced locally, adds to jobs and skills development in South Africa and its quality can be relied on,” says Scurr.

Based on the tests, Sassda feels that the stainless steel brand is under threat from erroneous advertising and has taken it upon themselves to rectify the situation with a couple of specific plans of action.

Sassda intends approaching the SABS regarding the updating of SANS 998:2010. “The specification needs to include the 18/10 or 18/8 grade of stainless steel as the top of the range pots that will last a lifetime, as well as including chromium-manganese stainless steel as an option, which would be available at a cheaper price and would be a lower grade specification for hollowware. In addition to this, Sassda would recommend that an updated SANS 998 should specify what must be put on the packaging of pots and pans that are sold in the retail environment in South Africa, this would include country of origin, specific grade of stainless steel, and so on, to allow consumers to make an informed decision on what they are buying.

Sassda is also contacting and visiting the various retailers with a view to assisting them with their knowledge of stainless steel, stainless steel specifications and helping them to source the appropriate products for their stores. Sassda will give the retailers feedback on the types of products they are currently stocking, based on the tests conducted by Mintek, and the pitfalls or advantages of the different types of stainless steel used in the manufacture of their products.

In the case of the pot that was marked “high quality 18/10 stainless steel” that was actually made from the chromium-manganese variant, Sassda has taken advice from its lawyers, who have sent a communication to the company concerned advising them that they are deliberately misrepresenting their product to the South African consumer and requesting them to remove the “high quality 18/10 stainless steel” from all their packaging, failing which Sassda will approach the Advertising Complaints Commission.

Sassda is also looking at commissioning further testing to expand the scope of the research.

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A desalination plant in Korea
Stainless steel is the material of choice for the two main methods of desalinating water. These are thermal and membrane TECHNOLOGIES. The processes also offer innovative ways of dealing with other water decontamination issues, such as acid mine drainage.

Case Study:
Desalination plants

The lack of available fresh water globally has seen an increase in the use of desalination plants, these help protect the world’s supply of fresh water while guaranteeing a dependable water supply. Successful desalination requires a material that can resist the aggressive corrosion caused by seawater and brine.

Utilising stainless steel to create fresh water further increases the sustainability profile of the desalination industry. The durability and minimal maintenance requirements of stainless make it a good choice economically. The high-level of recycled content and 100% recyclability at the end of its life are the cornerstones of stainless steel’s environmental profile.

High performance stainless steels, including duplex grades, are the perfect choice for desalination.

Why Stainless Steel?
Thermal and membrane technologies are the two main methods used to desalinate water. Thermal methods of desalination include Multi-Stage Flash Distillation (MSF) and Multi-Effect Distillation (MED) while membrane technologies include Reverse Osmosis (RO) and Electro-dialysis / Electro-dialysis Reversal (ED/EDR).

Stainless steel is used in all of these technologies, primarily because of its corrosion-resistant properties. All desalination processes work in the same way. The incoming salt water is separated into two parts: treated and concentrate. The treated water has a very low level of salt while the concentrate has a higher level of salt than the raw seawater. An absolute necessity for the process to work is the use of corrosion-resistant materials in the construction of the plant.

Material selection and design criteria are affected by the specific operating conditions the material will be exposed to during its lifetime. Many of these criteria are perfectly met by stainless steel. Stainless steel should be utilised wherever corrosion resistance and durability are key requirements.

Which Stainless Steel?
Although there are over two hundred stainless steel grades on the market, only a handful are utilised in desalination applications. The primary property required from any material used in desalination is corrosion-resistance in a wide variety of aqueous environments.

Austenitic stainless steels in the ASTM 300-series (316L/EN1.4404 and 317L/EN1.4438) were the predominant material used to make the components of a desalination plant.

Type 316L is useful in environments with a marine atmosphere. However, if it is immersed in seawater it can suffer pitting and crevice corrosion. The tendency to pit in chloride-containing environments may seem to rule out the use of stainless steel in distillation plants which handle hot, concentrated seawater. Although hot seawater lacks oxygen, which reduces the tendency of stainless to pit, most modern MSF plants do not use grade 316L/1.4404.

Historically, 316L/1.4404 has been the material of choice for the evaporators. However, most desalination technology providers have now switched to using duplex alternatives for this application.

A particular sub-group of stainless steels, known as duplex grades, are becoming available to the desalination industry.

Case Study: Saudi Arabia - Shuaibah Phase 3
Doosan Heavy Industries based in Changwon, Korea is one of the few companies in the world that has proprietary technologies for three desalination methods (that is, Multi-Stage Flash Distillation (MSF) and Multi-Effect Distillation (MED) and Reverse Osmosis (RO)).

“Doosan recently built the world’s largest desalination plant in Saudi Arabia. Known as Shuaibah Phase 3, the plant has a daily desalination capacity of 880 000 tons. We have also built the world’s first hybrid desalination plant in Fujairah, UAE. The plant combines both MSF and RO systems,” says Kyungkoo Kim who manages the Water Process Piping department.

“We use duplex stainless steels for the pipes and fittings of various water systems. Duplex stainless steels account for about 30% of the stainless used in these applications,” explains Kyungkoo.

“The duplex stainless steel matches the specifications of the plant’s owners and is less costly than nickel-based alloys and cladding materials. In addition, duplex stainless steels resist pitting and crevice corrosion and are suited for high-chloride environments. We also use duplex grades for high-pressure piping lines, where the required mechanical strength is higher than austenitic stainless grades can provide. If delivery times for duplex stainless steels compare favourably with those of 300 grade, and maintain their cost-advantage over nickel-based materials, we will be very satisfied and will extend their use.”

Sungjin Geotec based in Ulsan, Korea is a major manufacturer of plant, marine and power facilities. Yongho Lee, Director of Technology, Marketing and Sales, stresses his company’s potential need for lean duplex: “We are interested in using lean duplex stainless steels to build desalination plants. We expect cost competitiveness compared with conventional 300 series and a reduction in the construction period for the plant due to shorter material lead times than for other materials. The most important benefits of using lean duplex compared to conventional cladding materials are its low cost and high quality. As these are key factors in our business, I have no doubt that lean duplex will continue to be used in our new projects.” - ISSF
Duplex stainless steels exhibit good resistance to corrosion, especially to stress corrosion cracking (SCC). SCC is the unexpected sudden failure of normally ductile metals which have been subjected to a tensile stress in a corrosive environment, especially at elevated temperature.

Duplex stainless grades have twice the strength of austenitic grades and are particularly cost-effective because of their mechanical properties. They are also excellent engineering materials. Duplex grade 2205/1.4462 has already been utilised in MSF evaporator shells.

Both the Melittah plant in Libya and the Skikda plant in Algeria (constructed in 2004 and 2005) utilise grade 2205 /1.4462. Duplex grades were also specified for large plants engineered by FISIA, an Italian company that specialises in building desalination plants.

Built examples include the Taweelah B extension in Abu Dhabi, the Jebel Ali L plant in Dubai and the Ras Abu Fontas desalination plant in Qatar. These projects utilise the “dual duplex” concept where grade 2205 /1.4462 is used in the more hostile environments in the plant while lean duplex is used in less corrosive applications.

Lean duplex is a cost-effective duplex stainless steel which has lower nickel and molybdenum content than 2205 /1.4462. Corrosion resistance is very close to that of grade 316L/1.4404. The high strength of lean duplex makes it possible to reduce the gauge by up to 50% compared with austenitic 300 series grades. However, restrictions in design codes limit the real savings to around 35 to 40%. The dual duplex concept has already been implemented in large MED plants.

The first such example was erected by Sidem in Sharjah, United Arab Emirates (UAE). The grades used in the plant are 2205 /1.4462 in combination with 2304/1.4362.

Experience from 27 seawater reverse osmosis (SWRO) plants already in service confirm that there is a risk of corrosion if the wrong stainless grade is used in the high-pressure piping.

Neither grade 316L/1.4404 or 317L/1.4438 possess sufficient corrosion-resistance properties. Not even highly alloyed grades (such as 2205/1.4462 and 904L/1.4539) show reliable service performance in this application.

However, no corrosion has been reported for new super-austenitic stainless grades (such as S31254/1.4547) which have been used in more than 30 full-strength SWRO plants and several plants using brackish water with high salinity.

Source: ISSF

Case Study: SingSpring desalination plant in Singapore

The SingSpring desalination plant in Singapore constructed by Hyflux is a reverse osmosis plant with the capacity to produce 136,000 cubic metres of freshwater each day.

At the time of its opening in 2005, the facility was the largest seawater desalination plant and one of the most energy efficient desalination plants in the world.

Stainless steel is still helping the plant to meet around 10% of Singapore’s daily freshwater needs. The incoming seawater first passes through a seawater reverse osmosis (SWRO) pass where super-duplex stainless is utilised in high-pressure piping.

This grade of stainless steel can resist the high-levels of corrosivity of seawater and the pressures required.

After the level of salt in the seawater has been lowered in the SWRO, the water moves through the brackish water reverse osmosis (BWRO) pass.

Pipes in the BWRO utilises a standard 300-series grade of stainless.

For the energy recovery systems, ensuring energy efficiency of the plant, super duplex grade 2507/1.4410 was utilised for its high-strength and corrosion-resistance properties.

According to the plant’s operators stainless steel performed well after five years of continuous service.

Source: ISSF
Desalination plants - the South African context

Current seawater desalination plants in South Africa are small in comparison to those abroad, says Veolia, one of the largest desalination specialists in South Africa. However, this does not mean that the potential is not there.

The reverse osmosis process requires a specific pressure to enable the separation of salts from water to take place. This pressure can vary from under 20 Bar when treating brackish water to 70 Bar when treating highly saline seawater at cold temperatures. These pressures, coupled with the highly corrosive nature of the treated water, require a suitable material that is both mechanically and chemically compatible. The only natural choice is the family of stainless steels due to their resistance against chloride attack. Depending on the feed water content, very specific grades of stainless steels can be used.

These vary from 316L for brackish water to 904L, SAF2507, SAF2507 and 254SMO for seawater applications. The main criteria for material selection are resistance against pitting and crevice corrosion.

Some notable desalination plant case studies are the following:

**Case Study: Saldanha**
Stainless Steel: SAF2507

In 2008, Transnet Limited awarded a contract to design, build and commission a new reverse osmosis (RO) desalination plant at its iron ore terminal situated at the Port of Saldanha.

Initially, the plant would have consisted of only one desalination unit capable of handling a capacity of 1 200 m³ of water per day, but Transnet elected to double the plant’s capacity. This is in reaction to the parastatal’s intention to further reduce its dependency on municipal water, and is in accordance with future expansion projects.

The RO plant now consists of two units - taking its capacity to 2 400 m³ per day. The plant has the capacity to be upgraded to 3 600 m³ per day by adding a third RO unit.

**Case Study: Knysna**
Stainless Steel: SS904L

A turnkey seawater desalination plant was built to produce 2 megalitres of potable water per day.

Growing water and energy shortages in the Garden Route region dictated that a highly efficient and effective potable water treatment plant had to be designed.

Raw water is abstracted from near the lagoon and, since it is constructed next to the Knysna Wastewater Treatment Works, the plant discharges its brine into the sewage works, which has low salinity. The generated potable water is pumped into Knysna’s reticulation system with energy-efficient pumps.

**Case Study: Springs**
Stainless Steel: SS316L

Effluent water from the Impala Platinum Base Metals Refinery’s effluent pond is treated for heavy metals and sulphate contamination by way of clarifying, de-watering, reverse osmosis and filtration. The treated water is re-used after brine effluent has been crystallised and solid waste removed.

**Case Study: Lamberts Bay**
Stainless Steel: SS904L

The Cederberg Municipality awarded a R17 million contract to design, build and commission a 1.7 mega litre per day seawater desalination plant in Lamberts Bay. This infrastructure upgrade will help alleviate growing pressure on the region’s water system and improve availability of high-quality water for the region’s nearly 40 000 residents.

Specifications also require the plant to accommodate a future upgrade to five mega litres per day.

**Case Study: Milnerton, Cape Town**
Stainless Steel: 316L

This petrochemical water treatment project in Milnerton for ImproChem’s Chevron Refinery, involved the design, construction and commissioning of an ultrafiltration plant, as well as a reverse osmosis desalination plant.

Domestic and industrial effluent from a nearby wastewater treatment plant is directed to the water recycling plant. The water then goes through a series of clarification steps, including dissolved air flotation, ultrafiltration and reverse osmosis, and is upgraded to process water that is used and re-used in the refinery.

Source: Veolia Water Solutions
The Mossel Bay Municipality oversees the service delivery of over 120,000 residents in an area that occupies roughly 2,000 km² of the Cape. Mossel Bay features a commercial harbour, a tourism industry, commercial farms, and a gas-to-liquids refinery – owned and operated by PetroSA.

PetroSA is one of Mossel Bay’s largest water users, as well as a key figure in the city’s economy as its largest employer.

In 2010, the worst drought in over 130 years caused the southern Cape to be declared a disaster area. The solution was to find a way of utilising the region’s only constant water source - the ocean.

A contract was awarded to design, manufacture, supply, maintain and operate a turnkey seawater desalination plant ten times bigger than anything previously built in South Africa.

The plant has helped to secure Mossel Bay’s future: PetroSA is able to maximise fuel production and continue contributing to the region’s economy, while residents are ensured of high-quality water in their taps, suitable for irrigation, bathing and drinking.

The plant provides additional water security to the region, along with the Wolwedans Dam, the Mossel Bay Municipality’s main water supply.

The plant is supplied directly by an open sea water intake about 600m from shore. Water is pumped to a pump station, and then into a holding tank via drum screens, which screen incoming water to 500 microns or 0.5mm to get rid of kelp, sea shells and other impurities.

Water then passes through six filters before going to the reverse osmosis units for purification. The treated water is then fed from the plant into split tanks. A dedicated tank of 5 megalitres is designed to supply PetroSA as industrial process water.

The 10 megalitres of water is treated chemically to kill any bacteria and stabilise the pH balance, before joining up with the municipal water line.

This potable water treatment plant is the largest seawater desalination plant in South Africa to date.

**Key Figures:**

- **Stainless Steel used:** SS904L
- **Cost of project:** R 210 million
- **Total capacity:** 15 megalitres per day
- **Process water:** 5 megalitres per day – destined for PetroSA
- **Potable water production:** 10 megalitres per day – for domestic & other uses.
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Own source of ferrochrome
The Tornio integrated stainless steel mill has its very own Ferrochrome mine close by.
When Outokumpu acquired Inoxum, the stainless steel business of ThyssenKrupp, a new global leader in stainless steel and high-performance alloys was born at the turn of the year. What does it mean? Outokumpu boasts the widest product offering in the market, which covers all stainless steel grades, complemented by high-performance alloys for the most demanding applications. Its sales and service centre network cover all continents, and its stainless steel grades and high performance alloys are produced in China, Finland, Germany, Mexico, the UK and US.

**Outokumpu - the global stainless steel leader**

The acquisition of ThyssenKrupp’s stainless steel unit, Inoxum, heralded the birth of a new global leader in the stainless steel industry. **OUTOKUMPU** now boasts the widest product offering in the market for stainless steel and high performance alloys.

**Outokumpu sees great potential in sub Saharan Africa.** The team, from left, are Jolene Basson (Administrator), Pamela Pike (Financial Controller) and standing from left Margaret Lerm (Sales Executive) and Johan Karlsson (General Manager).

In the Asia-Pacific region, Outokumpu now has a cold-rolling mill in Shanghai, China and modern plate coil and plate service centre in Kunshan as well as service centre in Guangzhou, and an extensive sales network covering the entire region, so that Outokumpu can offer faster delivery times for customers.

High Performance Stainless and Alloys serves customers who operate in demanding industries that require a high level of customisation. Its business lines are special coil, thin strip, special plate, long products and high performance alloys (Outokumpu VDM). These are produced in Germany, Sweden, the UK and US.

**Widest product offering**

Outokumpu’s product offering covers all the stainless steel grades and high performance alloys, such as titanium, nickel and zirconium alloys. It is of benefit to the end user that there are many grades available, because, together with the experts, they can choose the best option for their particular applications – from the very wide range of austenitic stainless steel grades to duplexes. While some grades are used very commonly, there are other grades that remain niche products for very demanding or special applications.

While duplex might seem a relatively new phenomenon, Outokumpu has produced duplex grades since its discovery in Avesta, Sweden in the 1930s. Nowadays, significant users of duplex grades include oil and gas as well as chemical processing industries, architecture and construction, pulp and paper, desalination plants and chemical tankers.
Lean duplex grades are also increasingly used: their nickel and molybdenum content is lower, making their prices more stable. The high-strength lean duplex grades save material and fabrication costs, and like all stainless steel, also maintenance costs. Life-cycle consideration is essential in evaluating duplex as a solution: not only the initial investment cost needs to be assessed, but so do any maintenance costs.

**New innovations to market: formable duplex**

Outokumpu continues its long tradition of bringing new innovations to market since the invention of stainless steel and duplex grades. In May, only a few months after the creation of the new company, Outokumpu launched new duplex products at a customer event in London.

This new product launch included a formable duplexes (or FDX) product family. FDX is a new product family to fix the weakness of duplexes, which is their somewhat lower formability. But now duplexes FDX 25™ and FDX 27™ are available with similar corrosion-resistance formability properties as austenitic grades 304 and 316, but twice their mechanical strength.

FDX is particularly aimed at customers who would have benefited from the excellent combination of strength and corrosion resistance of duplex grades, but have not been able to utilize it so far because the formability of duplex grades has not been sufficient. It is a unique combination of price stable alloying, with high strength and substantially improved formability. And, like all duplex grades, FDX grades deliver significant material savings and life cycle advantages.

Formable duplexes are well suited for applications with high demands on formability such as plate heat exchangers, and flexible pipes and pumps; where strength, formability, durability and long-term service are required. In the beginning the FDX grades will be available to selected pilot customers in selected application areas only. Once standardisation work proceeds, the market introduction will be expanded geographically and by applications.

**Enhanced duplex**

Outokumpu also presented a third duplex grade, enhanced duplex. EDX 2304® is an enhanced version of the mature duplex grade 2304. For EDX 2304®, Outokumpu guarantees higher corrosion resistance (a minimum of PRE 28) and higher mechanical properties (minimum of 500 MPA yield strength for hot-rolled and cold-rolled coil products). EDX 2304® has a better performance than 316L grade.

At first, Outokumpu will target EDX 2304® to topside offshore applications and structural components of those, such as blast walls, pipe supports and cable trays on oil rigs. It can replace carbon steel coated solutions to avoid costly maintenance, taking into account all life cycle costs: like all stainless steel grades, EDX 2304® is maintenance-free.

The new grades complement Outokumpu’s already strong duplex offering. Outokumpu’s duplex offering covers a variety of duplex grades from lean duplex 2101® up to super duplexes 2507® and 450®. And these grades come in a variety of product forms, from precision strip of 0.1 millimetres...
up to quarto plates that are 100 millimetres thick in flat products, 2m wide coil products to long products, which include stainless rebar and heavy wall pipes.

**Advanced materials for a sustainable world**

Outokumpu believes the materials it produces are vital in enabling a sustainable world with economic prosperity. Advanced materials offer superior life cycle properties, which enable sustainable solutions to benefit the whole of society: stainless steel is durable, corrosion-resistant, maintenance-free and hygienic material. But it is not only what you do, it is how you do it. Outokumpu aims at responsible production because it makes the company more competitive as well as being good for the planet. As a key indicator, Outokumpu steels today have a recycled content of approximately 85-90%, with the industry average being 60%. This has ensured that although the production of stainless steel is energy intensive, Outokumpu can produce stainless steel with a small carbon footprint.

The carbon footprint of Outokumpu austenitic steels is today almost 40% less than it was in the 1990s and a further 20% reduction is targeted by 2020.

The exceptional environmental performance that Outokumpu has achieved over the years has been recognised by major global rating agencies. These include DJSI World & Eurostoxx, SAM, CDP, OEKOM, ETHibel SRI, Kempen SRI, Aspi Eurozone, and OMX Sustainability Index.

**From humble kitchen sinks to the Chrysler building**

A product engineer once estimated that we interact with stainless steel products over 30 times every day, from cutlery and kitchen sinks to automobiles and building structures. Outokumpu has a showcase of references in and around the world, from iconic landmarks such as the Chrysler building in New York, to the world’s tallest building - Burj Khalifa tower in Dubai, and Stonecutters Bridge in Hong Kong, to more everyday applications such as kitchen sinks and washing machines.

Outokumpu recently announced a 12 250 ton contract for five chemical tankers by Stolt Tankers, which operates one of the largest and most sophisticated fleet of chemical tankers in the world. This contract was the largest duplex order ever won for quarto plate, and it includes an option for three additional vessels. In Germany, lean duplex stainless steel is proving to be an ideal construction material for new generation biogas tanks. In addition to saving substantially in weight, Börger was able to make its tanks larger than before. These biogas tanks are now up and running.

With the acquisition, Outokumpu has a comprehensive sales and service network around the world to serve its customers in metal processing and tubes; chemical, petrochemical and energy; consumer goods and medical; architecture, building and construction as well as automotive industries and to help customers choose the right grade with just the right properties for their application. Outokumpu employs 15 000 stainless steel professionals around the world in more than 40 countries and has offices from Mexico to China and from Norway to South Africa.
Afrox ploughs skills and technology into SA industry

A top performing Afrox welder, Houston Isaacs, recently returned from participating in the WorldSkills competition in Leipzig, Germany. This follows Isaacs being named the winner of the South African Institute of Welding’s (SAIW) Young Welder of the Year competition earlier in 2013.

“We’re very proud of Houston’s achievements and delighted that he is counted among our employee body,” says Afrox Business Manager, Manufacturing Industries, Johann Pieterse. “Afrox has been fortunate enough to attract and cultivate talent of this calibre and we’re committed to supporting the development of many other talented young welding artisans in South Africa by giving back to the industry.”

Thembinkosi Matyeka, winner of the 2005 Young Welder of the Year competition, who also participated in the WorldSkills competition that year, was offered employment by Afrox in 2012 and helped to prepare Houston for his endeavours in the WorldSkills competition.

“The shortage of skilled welders in South Africa able to work to local and international standards is well documented and, in many cases, local industry has had to rely on importing skilled welders to meet local demand. At the same time, the numbers of new young welders produced by other informal institutions are too low to meet the demand brought about by projects such as the Strategic Infrastructure Projects.

“This is being aggravated by the fact that technical schools often lack the necessary equipment, skills and support to ensure that students who enter FET (Further Education and Training) colleges are at the appropriate standard to obtain the welding qualifications that will be offered.”

Afrox has identified three primary solutions to address this situation and has already implemented initiatives to realise these objectives:

- Creating awareness of welding as a career opportunity and an own business.
- Strengthening the capacity of Technical Schools to support the implementation of the new curriculum in 2015
- Making bursaries and internships available to welding students.

As a leading welding process expert Afrox, in partnership with key stakeholders, is focusing the full force of its Corporate Social Investment efforts for 2013 — and beyond — to develop local welding capability.

Afrox has held meetings with the Department of Basic Education (DBE): Directorate Partnerships, to discuss issues pertaining to the state of Technical High Schools in South Africa and also to explore possibilities for a partnership aimed at improving the performance of these schools, with a specific focus on welding.

In addition, Afrox has signed a Memorandum of Understanding (MoU) with the Gauteng Department of Education (GDE) to make a significant contribution towards the improvement of Technical Education in welding in Grades 10 – 12 in the schools identified jointly by Afrox and GDE. Through this MoU, Afrox will provide specifications for the establishment of safe welding centres in selected Technical High Schools in Gauteng and furnish these centres. Afrox will also work with the SAIW to train welding teachers and Education Specialists within the GDE to help support the technical rollout.

Afrox is aligning its process safety training with the National Qualifications Framework in order to have this training registered as a short course and allow customers’ employees to obtain credits by attending this training.

The National Business Initiative (NBI) has been commissioned by Afrox to conduct a survey to determine the extent of the shortage of welders and the specific nature of these shortages. The survey is also intended to establish whether there is training in place to ensure that these shortages can be addressed, and to specifically understand the role that FET Colleges currently, and potentially, could play.

The NBI’s Makano Morojele says: “In commissioning the survey and entering into an MoU with the GDE, Afrox is not only generating new knowledge that will benefit the welding sector broadly, but is also demonstrating a practical response to enhancing the skills levels of welding teachers. This will help to improve the quality of provision and responsiveness to industry needs. A partnership between Afrox, GDE and the NBI sets an example of a Public Private Partnership that can be replicated in other sectors of the economy.”

All this has resulted in a project team-type relationship developing between the GDE, Afrox, the NBI and the SAIW. Pieterse says Afrox is partnering with the SAIW as the vehicle to deliver support, since the two organisations share the same objectives for the industry.

Afrox sponsors the Young Welder of the Year competition financially and by conducting machinery repairs, making support technicians available on the day of the competition and by allocating welding mentors.

Winning Houston Isaacs performed well at the Young Welder Awards
Afrox has launched the most technologically advanced and engineered gas pressure regulator to hit the global industrial market. Called SMOOTHFLO™, the regulator embodies unique and innovative features which ensure its market leading status worldwide.

“SMOOTHFLO™ represents years of research and development investment, clearly demonstrating Afrox’s total commitment to being a leader in the gas equipment market,” says Nazmi Adams Afrox’s Head of Hardgoods and Exports.

“Afrox and BOC changed the world a decade ago when it launched the world class Series 8000 and Series 9500 range of regulators that changed the global competitive landscape. The unique combination of Afrox’s Gas Equipment Research and Development competencies and the German technology heritage of its parent, The Linde Group, has again developed a Leading product that will impact the global arena and significantly improve operator safety.” says Nazmi Adams.

The Development project team included marketing and technical experts from the many Linde global businesses and was project lead by Linde’s global product management team, making this a truly global product for the Linde Group.

“The SMOOTHFLO™ regulator is a South African developed, designed and engineered product, manufactured locally, to global standards which set new heights in the global gas pressure regulator market,” says Adams. “SMOOTHFLO™ is the new industry benchmark, incorporating all the elements of modern technologies and safety features demanded by the mining, fabrication, manufacturing, shipbuilding, railways and automotive industries.”

The easy-to-operate SMOOTHFLO™ is one of the safest gas regulators in its class. The break-off inlet stem is designed to ensure that should a cylinder and regulator be accidently impacted by a fall, the high performing excess-flow valve will automatically safely seal off gas discharge from the cylinder into the atmosphere. Other safety features include a piston-embedded safety valve that eliminates the need for a diaphragm. Piston-driven technology produces excellent pressure stability at higher flow rates, which allows an operator to achieve greater gas cutting speeds.

The mirror configuration of the SMOOTHFLO™ regulators prevents hose overlap and reduces the potential risk of oxygen/acetylene fires. The panel mounted gauges are an integral part of the regulator, improving safety and reducing potential pressure gauge damage.

The outer casing is manufactured from a robust polymer based material and affords ultimate pressure gauge protection.

A unique lever-activated encapsulated valve with Dynamic Quadflow Stability Control technology (DQSC) offers a high level of pressure stability and reduces internal forces, for improved life and performance of the regulator.

“One of the most exciting features of this new hybrid product is the fact that multi-stage-like performance is achieved from a single-stage regulator,” comments Adams.

The SMOOTHFLO™ gas pressure regulator is backed by more than 50 years of Afrox competency in designing gas equipment, and is ISO 2503 and AS 4267 certified. The patented design has been oxygen ignition tested as well as promoted oxygen ignition tested by international inspection body Apragaz. Product certification to these standards was witnessed by TÜV Rheinland SA.

For more information, contact the Afrox Customer Service Centre on 0860 020202.
This year the Southern Africa Stainless Steel Development Association (Sassda) was one of the sponsors of the SAB Intervarsity Beer Brewing Challenge.

Stainless steel is the preferred material for brewing equipment as it has many favourable characteristics for the process. It imparts no flavour in beer, it has excellent hygiene cleanability, it reacts with very few chemicals, which means that almost any cleaning solution can be used and it has sufficient strength to withstand the positive and negative pressures experienced during the brewing cycle.

The University of Pretoria was announced the overall winner of the 6th annual awards at the end of August. The university's Black Forest Lager claimed the Ben Lamaletie IBD Intervarsity Beer Brewing Challenge floating trophy, as well as the top honour of Castle Lager Best Bru Award, which carries a cash prize of R25 000, as well as the Carling Black Label Champion Lager with an additional cash prize of R15 000.

They beat 2012 defending champions, the University of Cape Town, who, this year, was presented with the award for Best Speciality Beer.

“The overall winning lager was very closely contested and the judges debated it for a while. The University of Pretoria’s Black Forest lager was the best balanced beer, which was not over the top, had no major faults and was perfect to style,” said Chris Roth of Worthog Brewers, independent and accredited beer tasters.

The University of Pretoria tested their brewing skills against 10 other of South Africa’s top universities, including University of the North West (Potchefstroom), University of the Free State, Rhodes University, UKZN Westville and Pietermaritzburg campus, Nelson Mandela Metropolitan University, Cape Peninsular University of Technology, University of Stellenbosch, University of Limpopo and Wits University.

This year’s competition offered cash prizes for the universities, more entertainment, and smaller prizes throughout the finals weekend, which culminated into a fun filled and exciting awards evening. This was made possible through generous sponsorships from SAB Technical and SAB Brand teams, the IBD and Sassda.

Sassda’s John Tarboton shared the history of stainless steel, the different grades and their characteristics, and how the various grades can corrode in a brewery environment if certain precautions are not adhered to.

The University of Pretoria has proven to be a winning team over much of the existence of the SAB Intervarsity Challenge, having brewed the best beer overall in 2008, 2010 and 2011.

“We looked very specifically at the criteria used for judging; and brewed against these criteria, focussing on getting the process right, including quality control and checklists. We also have continuity in our brewing team which has helped us to grow from year to year,” said Carl Sandrock, University of Pretoria brewing team member and mentor.

Participating universities each have their own micro-breweries where students brew, ferment, condition and package their beers prior to the final stages of the competition when they are tasted by independent and accredited craft beer tasters. “An independent and experienced tasting panel is paramount in judging the high quality of the closely contested beers,” said Vimlan Moonsamy, SAB Technical Services Manager.

SAB presented sponsorship cheques for two micro-breweries; one at Rhodes University and the other at the University of the Free State. Sassda presented a sponsorship cheque to Professor Bob Stafford for a micro-brewery at the University of Johannesburg. This will be a 2 hectolitre brewery and will fall under the faculties of Science and Engineering.

The building of the micro-breweries requires a multidisciplined learning experience for students and will allow specific research projects on stainless steel in the food and beverages industry.
RPL Engineering - new kid on the block

RPL Engineering is the newly formed Randfontein-based fabricator that specialises in a variety of stainless steel, special alloys and mild steel products. RPL Engineering, which was formed last year, brings together a group of the industry's most experienced and talented members to create a firm dedicated to quality fabrication, competitive costs and great service.

With a wealth of experience in fabrication at shop floor and management level, RPL Engineering is well placed to tackle the intricacies of high quality fabrication in a variety of industry sectors where excellence and on time delivery at a competitive cost are non-negotiable. RPL specialises in the fabrication of primarily stainless steel but also mild steel products such as tanks, heat exchangers, ducting, pressure vessels, silos, retorts, impellers, process plant equipment and any other client-specific equipment. These products are primarily focused on the petrochemicals, minerals processing, agricultural, mining, liquids handling, food and beverage, and paper and pulp industries. RPL employs a specialised team who are able to provide unique client solutions, fabricate and install equipment on site.

The men behind RPL Engineering are founders Ruland Munz, Louis Steenkamp and Paul Steenkamp Jnr. Munz is the managing director; his experience includes positions in the industry as managing director of Stainless Fabricators and Carbon Steel Fabricators as well as group financial director at VBV Holdings among other positions. Louis Steenkamp is the works director; he has 27 years of boiler making experience and has held the position of works director and shareholder at Stainless Fabricators. He is widely regarded as one of the best works directors in the industry. Paul Steenkamp Jnr is the project manager; he brings vast experience in the field of sales and is also responsible for the stringent internal quality assurance process RPL products undergo.

"To underpin our simple mission statement of: 'On-Time Quality', RPL has embarked on a program to implement the ISO 9001 quality assurance system," says Louis Steenkamp. "In the interim a robust internal quality assurance system is in place. This system covers every aspect of the fabrication process from full material traceability and auditable welding practices to internal and external testing of the final product to customer specifications." Munz and Steenkamp work closely together to ensure a harmonious relationship between the workshop and the quality assurance system.

To further enhance the credentials of this young business, its founders have also secured the services of three of the stainless steel industry's most experienced and distinguished players: Sakkie Nel, Paul Steenkamp Senior and Johan Grobbelaar. This group has more than 140 years of experience in the steel industry and an invaluable amount of knowledge that can be called upon at any time. In the words of Munz: “Our management team and advisors are like one big family. With the wealth of experience, knowledge and technical skills that the advisors bring to our business, we are able to provide a wider variety of superior engineering solutions to our client base.”

Munz says that 2013 has been a breakthrough year for the company; with it securing its biggest client to date; engineering powerhouse Drytech International. Drytech are world leaders in the thermal process engineering sector. This contract was to produce various .304 piping and manifold systems and install them on site in Phalaborwa. The main ring was a 12m in diameter 304L 300NB pipe manifold with an after fabrication tolerance of less than 3mm. This was an excellent outcome that both Drytech and the end client, Foskor, were ecstatic with.

Other clients include: Xstrata, Mintails/Mogale Gold, Rebelo Agriculture, VRN, ASA Metals and Samancor.

Munz noted that a special mention should be made about their many suppliers, without whose good faith - some gave RPL credit based on the reputation of the owners alone - the business would never have gotten out of the start-up phase.

With an ever-growing team that includes two middle management and eight employees, RPL has already achieved a level 4 BEE status. Munz also mentioned a host of experienced boilermakers and welders, who, based on their positive associations and previous experiences working with Louis Steenkamp, are ready at the drop of a hat to join RPL Engineering when their services are needed.

As a committed member of the local stainless steel industry and a proudly South African company, the team at RPL also takes on challenges of a more humanitarian nature. This is evident in the work they do rejuvenating wheelchairs and beds for Hospice. In a time of economic uncertainty, bold new businesses such as RPL Engineering can serve as both a refreshing and necessary reminder that there is always a place for those with sufficient knowledge and a can-do attitude.
"The only good importer is a dead importer" was the nano-second reaction from a stainless steel industry stalwart to my question: "What is a good importer?"

Throwing out an invitation for comment is like fishing. You cast in the hope of reward for your preparation of reading the waters, tying the near-perfect fly or choosing the most tempting bait. No, I didn't hook that massive tiger. What I did get in the spontaneity of flippancy was an inkling of how people in the industry consider importers.

I shouldn't have been surprised. In my training to become a Psychologist*, I quickly came to realise that very often the first words out of a person's mouth are the truest. They come without the editing of reflection.

Now, I'm sure that my industry associate didn't mean the statement in the way that Shakespeare's character, Dick the Butcher, did when he blurted to Jack Cade: "The first thing we do, let's kill all the lawyers" (Henry VI, Part 2, Act IV, Scene II). In Dick's not too brilliant mind, destabilisation of England through the extermination of lawyers and judges would ensure that Cade would become King.

What was clear, however, was the conclusion I had come to many months ago ... the role of the importer is not understood, nor is their value to the stainless steel industry.

Said another long-serving non-importing member: "Importing members must pay their way." Amusing, I thought, coming from someone who pays a 'token' fee in return for Sassda's substantial (and increasing) offerings. Years ago, I'd have been annoyed by such ill-informed comment. Increasingly, I'm getting to be like the proverbial duck and its handling of water. Thanks to my mother's genes, I guess. She was the creative and philosophical parent. To her, "Forgive them, for they know not what they do" was a better reaction than throwing toys.

Fact is, Import Sector members do pay their way. And, the Import Levy is just one way in which they contribute.

Sassda's import members contribute part of the income stream enabling the Association to care for the needs of its members and to help fund the objective to develop and grow the domestic stainless steel conversion market. The Import Sector, through effective 'harvesting' of levies, must and is doing its part.

Reluctant as I am to resort to charts and tables, the above figures paint a clear picture of the Import Sector's income contribution since the commencement of the import levy system.

<table>
<thead>
<tr>
<th>Financial Year</th>
<th>Total Import Levies</th>
<th>Total Domestic Levies</th>
<th>Total Levy Income</th>
<th>Import Levy % of Total</th>
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<td>2007 - 2008</td>
<td>R 1 481 316</td>
<td>R 7 560 707</td>
<td>R 9 042 023</td>
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<td>2008 – 2009</td>
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<td>2010 - 2011</td>
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<td>R 8 394 134</td>
<td>R 9 797 683</td>
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</table>

Although I've worked with two previous South African Ministers of Finance, and could probably write my own take on the role of importers, I chose to ask a fellow member whose sagacity I admire.

Mike Campbell commented: "If we take, at the extreme, an economy that has been isolated from global economics, we would probably find no manufactured modern products available. As the economy starts to open up and develop, the first stage would be the importation of products as money becomes available to purchase them. It follows that as activity increases it becomes economical and, at some stage, sensible to produce locally.

"Importation is not the enemy of development but its friend. There comes a time when local markets justify local manufacture and even in a fairly developed economy, imports may still have a meaningful role. Some examples of roles in a developed economy would be to provide..."
alternative sources of inputs in the process of manufacture and an outside source of pricing discipline to temper exploitation in the local economy.

“I believe that South Africa’s historical dependance on a security economy taught us some good and valuable disciplines, but also gave us some distorted pictures of how development economics actually work.

“Badly managed international trade is a major threat to all of us and very destructive of employment. Uneconomic local production without sensible sunset clauses would be just as bad.

“We need to develop sensible unemotional policies that take our economy through the ‘natural’ process of development. South Africa needs to protect itself but not in a way that chases efficiency and effectiveness away. There are many goods and services that this country can provide economically. The big trick will be to identify what we cannot do (either due to stage of development or lack of natural resources) and put our talents to work on the things that we are suited to doing. A tough challenge, but how else will we progress.

“A blind bias against importation is NOT the answer.”

Thanks, Mike. To me it’s really quite simple. When an importer imports goods, it is either because they are not available in the importing country, or the price is better than similar domestically produced items, or there is demand in quality or delivery, or there is demand for a wider range than locally produced.

Of course, any rational importer imports for reward, through profit of resale or to gain a marketing advantage.

But, potential reward comes at risk.

That’s why, in my opinion, Sassda’s importers should be lauded. For, in taking not insignificant risk, they bring us choice and help create a more competitive southern African marketplace. I’ve got to know most players, and my observation is that those who steer Import Sector member companies are more entrepreneurial than most. Not that they’re a bunch of loose cannons. The André, Anna, Carlos, Charles, Colín, Craig and Craig, Frik, Graham, Hugh, Imre, Johan, Ken, Margaret, Martin, Mike and Mike, Mohamed, Ross, Roy, Selwyn, Simon and Tony I know are hard-headed business persons ... who understand that being an entrepreneur means embracing ambiguity and challenge.

They’re the kind of people Oprah Winfrey had in mind when she said: “Don’t put a ceiling on yourself.”

Jeff Bezos, founder of Amazon, com, puts it another way: “One of the huge mistakes people make is that they try to force an interest on themselves. You don’t choose your passions; your passions choose you.”

Their companies contribute more than just levy income. They bring diversity and add greatly to Sassda’s character and influence.

Which, to my mind, lawyers do not. Back in Shakespeare’s England I could well have sided with Dick the Butcher.

Perhaps, even today. But, I’d have to spare two legal friends ... a Senior Counsel, and an ex-Miami injury attorney ... who have redeemed themselves. Neither deserve the professional courtesy of sharks, because both would have been given the green light by Eleanor Roosevelt: “Great minds discuss ideas; average minds discuss events; small minds discuss people.”

*Although Psychology was the author’s first love, he made time to study Economics, Social Anthropology, Languages, Literature, Engineering and Architecture while paying his way through university. Not until ten years later did he bring these disparate subjects together under the umbrella of Strategy and gain a Masters Degree.

The views and opinions expressed in this article are those of the author and do not necessarily reflect the official policy or position of Sassda or the author’s employer.
Air Products in food scheme

For Air Products South Africa, corporate social investment (CSI) is about taking responsibility for the future, which means caring for today's children and youth. This is why the company has chosen to invest its time and resources in education-related programmes, in a bid to encourage hope and self-reliance among South Africa's economically-disadvantaged youth.

Inmed, in recognising Air Products' commitment to positively impacting the lives of children, approached the company to become involved in its Aquaponics programme in this country.

“Air Products is the first company in South Africa that we have worked with which really recognises the potential of aquaponics to change people's lives and break the cycle of poverty,” says Dr Linda Pfeiffer, CEO and president of Inmed.

“The simple ebb and flow system eliminates the need for expensive filters and oxygenator systems. The Inmed Aquaponics systems are built on a modular design which can be adapted to fit available space, from individual family units to commercial systems of various sizes,” explains Pfeiffer.

“Projects which focus on children's health and development are very close to our heart,” says Josua le Roux, General Manager – Central Support at Air Products South Africa.

Welding Academy gets accredited

The Austrian Welding Academy Trust Welding Skills Training Centre in Isando, Johannesburg, part of the Bohler Uddeholm Africa Group (BUAF), was recently awarded Merseta Accredited training centre status.

The BUAF Group opened the Welding Academy opened in 2009 in Isando on the east rand to provide a welding training centre that offered a range of entry and advanced levels of welding skills and the up-skilling of qualified welders. It also offers a range of short and medium term courses that allow students to put their new and updated welding skills to use on the job.

The academy offers courses to students with and without welding experience. Course content can be customised to include different materials including stainless steel and standard or specialised welding techniques as well as related subjects including arc consumables / filler material selection, safe shopfloor working practices and welding shielding gases selection.

Courses range from a five day (40hrs) entry / orientation practical course, to a ten day (90hrs) basic practical welding course, as well as a practical welding competency test.

Advanced courses include a five day EN287-1 Certificated Practical Welding test based on one welding process, one material such as stainless steel in one welding position.

Welder trade test coaching and preparation courses are also offered.

“One of the advantages of the academy is that we only train four students at a time,” says Eddie Scheepers, the academy's welding instructor.

“However, we provide a high level of individual student-instructor interaction and practical welding skills demonstrations as part of our coaching methods.”

Interested students and companies may obtain further welding course information by contacting Eddie Scheepers on 011 571 2333 or Mobile 073 8980770 or Tom Rice on 011 571 2390, Mobile 082 780 5906.
Internship program launched

Energy Engineered Products (EEP) and Multi Alloys’ sustainable internship program provides engineering students with the necessary experiential training to complement their theoretical studies, so that they can successfully complete their education and find employment in their careers of choice.

EEP is a leading stockist and distributor of industrial stainless steel, corrosion resisting alloys and valves for over two decades, and Multi Alloys is one of South Africa’s specialist suppliers of nickel alloys, duplex and high alloy stainless steel, titanium and other niche products.

“As two related companies, the interns have the unique opportunity to gain experience within both businesses,” says Ken Perel, Multi Alloys owner/member.

“Although tertiary education is expensive, it is an investment if students graduate and succeed in finding a suitable career,” continues Ken. “Both theory and practical training must be completed successfully before students can pass and this is where we believe the value of internships lies. By providing the necessary experiential training required by students, these programs make a positive contribution to the country’s economy.”

Ken also notes that as part of their program, interns attend specific training courses such as Sassda’s basic training program on stainless steel.

Director of Business Development at EEP, Graham Whitty, explains why the internship program, which was first implemented approximately four years ago, is an investment for both the company and the students. “We look for people with CAD drawing capabilities so that we can build up records of our cut plate to further improve our customer service. The benefit of internship programs for medium-sized businesses like EEP and Multi Alloys is massive as the students make valuable contributions and become important assets to the company.”

Graham says that there are also numerous advantages for students who complete their internships with medium sized businesses as opposed to larger organisations, explaining that interns learn diverse functions within different departments of a smaller company while in larger companies they will remain within the department relevant to their line of study. “Employees in smaller companies take on a range of responsibilities which is another reason why interns are exposed to all aspects and are not limited to simply one aspect of the business. This gives them a better understanding how the different departments in their career field operate.”

Graham continues, “The interns benefit from the knowledge we share with them. We arm them with the necessary tools so that they are better equipped to go into the workplace with some working experience. When our interns leave us they have mastered some intrinsic skills necessary for work readiness and have a better idea of how business and industry operate. We also provide them with a credible reference.”

“After completion of their internship, all the students remained with us while searching for permanent engineering positions and I am proud to add that they all moved on to better things.” Graham attributes this to the fact that their internship program provides appropriate practical experience. “They leave us as entrepreneurs, armed not only with knowledge about their careers but also with technical, product and sales knowledge, communication, time management, multi-tasking even some bookkeeping skills; in other words, a full rounded business education. It is without any doubt a ‘win-win’ situation that adds value to both the company and the students.”

“We currently have two interns - Themba Mahlangu and Romeo Nkosi. The internship program develops a momentum of its own because Themba, who has been with us for twelve months, has taken on a mentorship role, training and teaching Romeo what he has learnt during his internship,” concludes Graham.

Energy Engineered Products and Multi Alloys’ internship programs are providing not only the required practical experience but also other important work place skills, empowering these young people with the necessary business acumen so that they can strive for a better future.
Sassda meets with Durban business

Twenty five like-minded business men and women together with the president and CEO of the Durban Chamber of Commerce and Industry’s (DCCI) various action groups, met last month to determine Best Practice between, and learnings across, the various action groups.

Among others seen in the picture are (front centre) DCCI President Akash Singh, (top 4th from left) DCCI CEO Andrew Layman and (front right) Sassda KZN’s Clive Phillpotts.

As has become standard practice, Sassda KZN’s office will continue to inform its members of the many key DCCI activities and events.

Phillpotts encourages all Sassda KZN members to become members of the DCCI, which will ensure Sassda members are kept informed on the many aspects and happenings relating to Durban business and the province. “For the sake of being part of the informed, relating to business matters taking place and having the opportunity to be heard, becoming a member of the DCCI is actually a non-brainer - membership subs are really minimal,” he adds.

Phillpotts invites all interested members to contact him for assistance to join the DCCI.
Sassda KZN travels to Africa


Clive Phillpotts joined the delegation, which included members of KZN Provincial Government, DCCI, as well as KZN business members. Two objectives were set. The first was to investigate the "lie of the land" for Sassda’s KZN membership and the second was to investigate an opportunity available for Sassda to extend its objectives into sub-Saharan Africa, using Zambia as a test case country.

On returning, Phillpotts was bubbling with enthusiasm. "A land-linked country, Zambia with 5 neighbours surrounding its borders, is a country that has great opportunity, where it’s a lot easier to move around and connect with local government and business leaders than initially anticipated, with huge potential for investment, hungry for up-skilling of its people, where we as South African citizens will be most welcomed," said Phillpotts.

"Zambia is a country that Sassda and its members can easily access and become a natural extension of Sassda’s own association-based objectives," he said.

Artisan programme launched

The Tool, Die and Mould (TDM) making sector of South Africa has launched an initiative to counter the skills gap and job losses hampering the local TDM sector. By 2016 the pilot TDM Powered Programme will have created the capacity to produce 400 Toolmaker Artisans a year, 150 Toolmaking Master Artisans a year and 50 Toolmaking Engineers a year.

The strength of the programme lies in the selection model, high pass rate and quality of artisan being produced. Sassda, PEMA, SAISC and SAIW also hope to adopt this model for welders and boilermakers.

Building a better future together

The Southern Africa Stainless Steel Development Association (Sassda) recognises that education is vital for the future of South Africa.

At the same time, the stainless steel industry is a vital component of the country’s economy, with sectors such as infrastructure, automotive, architecture, food and beverage, chemical processing and consumerware all reliant on the commodity.

The industry is growing and presents an opportunity for prospective job seekers to get a foothold in the market. Mathematics, however, is essential for a successful career in the stainless steel sector.

Unfortunately, it is too late to rely on tertiary education to provide the mathematical training required. The fundamentals of maths need to be instilled at the early stages of a person’s schooling.

Sassda wants to play an active role in the evolution of this and is therefore proud to be part of a CSI initiative involving computer-based maths and literacy training to supplement the current school education curriculum.

Sassda is teaming up with Rockseries, who specialise in the development of the computer programmes, and the all-important teachers who have to oversee the implementation of the programmes.

With this partnership in place, the pupils should have all the necessary support to realise their dreams.

The initiative is still a pilot project and will initially be rolled out at two schools in Tembisa. The Entshonalanga Primary School run by principal Mrs M.T. Ramagole and the Endulweni Primary School run by Mr M.M. Khoele are the proud torchbearers of this exciting project.

Once the programme has been implemented at these schools, the students’ results will be monitored to evaluate the success of the project.

If the initiative proves to be a success, plans will be made to introduce it to schools in other areas.

Sassda believes in the project and looks forward to witnessing the progression in the students’ education and as a consequence the advancement of South Africa.
Seminar planned for February

The Southern Africa Stainless Steel Development Association (Sassda) will be hosting a Duplex Stainless Steel Seminar in Cape Town, Durban and Johannesburg on the 17th, 19th and 20th February 2014, respectively. The main sponsors are Columbus Stainless and Outokumpu.

Other potential sponsors are still being finalised.

Duplex stainless steels are currently the fastest growing group of stainless steels. This is because of their attractive combination of mechanical properties with corrosion resistance ranging from 304 equivalence to super austenitic equivalence, depending on the grade. Due to the strength advantage of the duplex stainless steels, down gauging and hence weight and cost saving is often possible. In addition, historically, the duplex stainless steels have had a more stable price than austenitic stainless steels.

Over recent years, there have been significant advances in the range of duplex stainless steels available, as well as their areas of application.

The seminar will be directed at fabricators, end users and project consulting engineering companies in the petrochemical, pulp and paper, agricultural chemical, energy and food and beverage industries.

This will help to support the increased adoption and growth of duplex stainless steels within both the South African, as well as sub-Saharan African markets.

In addition to providing pertinent information regarding duplex stainless steels, the objective of the seminar will also be to showcase the expertise and capability of the South African manufacturing industry to potential specifiers and users of duplex stainless steels.

To date topics for the seminar include:
The History, Development and Properties of Duplex Stainless Steels - Sassda
Duplex Grades – a Technical and Theoretical Perspective - Outokumpu
Manufacturing of Cast Components in Duplex Stainless Steels - Steloy Castings
Corrosion Testing of Duplex Stainless Steel for use in Solar Hot Water Geysers - Columbus Stainless
Welding & Weld Properties of Duplex and Super Duplex Stainless Steels - Metrode Products, UK
Cored Wires for Duplex Stainless Steels - Welding Alloys Group
Duplex Grades in Tank Manufacturing - Outokumpu
Designing with Duplex Stainless Steels - Styria
Fabrication of Duplex Stainless Steels - Metso ND
Duplex Stainless Steels – a Suppliers Perspective - Multi Alloys
Duplex Grades in the Mining Industry - Outokumpu
Duplex Stainless Steels - The World’s First Engineering Grade Stainless Steels - NDE
Use of Duplex Grades for Oil and Gas Exploration in Brazil - Aperam
The Southern Africa Stainless Steel Development Association (Sassda) is committed to the development of the stainless steel industry. By recognising the importance of education, training and skills upgrading as a driver of industry growth, Sassda has developed a fully comprehensive, technologically-based, online stainless steel training programme for non-technical personnel.

**MAKE SURE IT’S STAINLESS**

The ‘cross and balls’ quality promise is backed by the Southern Africa Stainless Steel Development Association (Sassda), who are developing the industry through the technical advice, training and regulation that they provide to both its members and the public.

Visit [www.sassda.co.za](http://www.sassda.co.za) for more information. Tel 011 883 0119
Johan is the managing director of Outokumpu SA. He may have only worked for one company, Outokumpu, but he, and his wife, have lived in six different countries during this time. He has worked for four different mills in the company and was previously general manager for the mining segment before landing his current position. Johan has lived in sunny South Africa for the past two years, but has been a regular visitor for the past six.

Tell us about your role at Outokumpu?
I am the General Manager for sub-Saharan Africa, and Managing Director of Outokumpu (Pty) Ltd.

What is the most important thing in your life?
Health and happiness for me and the ones closest to me … and that ÖSK, my local soccer team back home, manage to get back to the first division.

What is the most important lesson you have learned in business?
That honesty doesn’t always get you quick deals but integrity creates a sustainable business model. Also, not all countries start their meetings with a 15 minute soccer discussion before the serious stuff, some start with rugby instead.

What is your favourite stainless steel object?
Stainless steel is such an interesting material and all objects where the corrosion and mechanical properties of the different grades outclass any other alternative are my favourite ones. I do find the mining and transport industry particularly interesting but also general tank applications where the duplex properties can be fully utilized.

How do you define happiness?
A summer in Cape Town with family and friends, or downhill skiing in the Alps.

What do you do in your personal time?
At the moment I am studying an MBA, part time, but I try to spend as much time as possible with my wife and friends; playing soccer or going to the gym.

What is your biggest accomplishment?
Privately that I managed to take my wife off the market! In business, that I played a part in the positioning of Outokumpu as the preferred supplier and speaking partner to the mining industry globally.

What else would you like to accomplish in this life time?
I am far from being a decent golfer but I hope to learn how to hit the ball straight, or at least to be good enough not to have to make up excuses immediately after each stroke.

Tell us something not many people know about Johan.
I was a sergeant in an arctic ranger unit before starting the long road towards a Master’s Degree in Metallurgy.

What are you currently reading?
Financial Management, Corporate Governance, Principles and Practice of Marketing, Strategic Operations Management and a few other books that really help you fall asleep in the evenings. I normally read pretty much everything but do not unfortunately have that much time for pleasure reading at the moment.

Who do you really admire?
Too many to be mentioned here. In general I admire honest and humble people that take time to make the world a better place for all, like Nelson Mandela.

Why stainless steel?
In Sweden you either work with steel or in the forest but I have never looked back or regretted the path taken as I quickly discovered what a diverse and multi-purpose material stainless steel can be.
It has to be stainless when you’re as passionate about quality, integrity, service and affordability as NDE.

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