



Tannery of the Year: Seton AutoLeather, Nigel, Gauteng, South Africa

Now part of the GST AutoLeather group, the Seton AutoLeather tannery in South Africa is making a positive impression on head office and on its customers for quality and efficiency.

Few things are simple in South Africa, but the country, which became the first African country to host the FIFA World Cup (very successfully) in 2010, appears to be growing in confidence and in prosperity. Seton AutoLeather is one of a group of globally important automotive tanners in Gauteng Province, which encompasses the major cities of Johannesburg and (national capital) Pretoria. It supplies major automotive original equipment manufacturers (OEMs) around the world, delivering its upholstery leather to those who have manufacturing facilities in South Africa as well as to car factories and to tier-one seat suppliers in a wide range of European countries.

Managing director, Shalen Sewnandan, is proud of these achievements, but says he knows that as far as automotive companies are concerned, leather production has to take place in lower-cost

countries. This brings up questions of the commoditisation of leather, competition from lower-cost manufacturing locations, the use of more substitute or synthetic products, and the challenge to make leather match those substitute products. We shall address these issues later.

Global group

GST, the group that acquired Seton AutoLeather in January 2011, is a global group, with 12 facilities employing 5,200 people around the world. Just under 800 of these are based at the group's South Africa facility. The focus is entirely on automotive leather, with Daimler, BMW, Toyota, Nissan, Ford, Mini and Land Rover all among the OEMs on the customer list. Seton AutoLeather SA produces all its finished leather from South African hides, with the leather types including



light-embossed, medium-embossed and deep-embossed leathers, available in full or corrected grain, chrome or chrome-free. There are also “cool leathers”, to protect drivers from seats becoming too hot, and a wide range of specialty finishing systems.

There are currently seven OEM production facilities in South Africa making vehicles for local and export markets. Seton AutoLeather supplies leather to five of them, although this makes up only 15% of its total production. The remaining 85% of the leather production is exported to Europe, either directly in whole hide or cut-kit form, or via South African sewing plants in the form of sewn seat covers. Seton AutoLeather has the capacity to handle 4,000 hides a day, but current production levels are between 1,800 and 2,000 hides per day. From a total finished leather capacity of 15,200 square-metres, current output is over 7,000 square-metres per day.

Employee empowerment

Nigel, about 65 kilometres from Johannesburg, is a former centre for gold-mining; sadly, the majority of the mines are no longer operational.

Now, the town's biggest employer is Seton AutoLeather. In South Africa, all businesses have to comply with Broad Based Black Economic Empowerment (BBBEE) legislation, promulgated with the aim of redistributing wealth across a broad spectrum of South Africans, primarily focusing on previously disadvantaged ethnic groups.

Seton AutoLeather leads the way amongst its competitors with a BBBEE compliance rating of Level six but is working hard to achieve a lower (better) score. “GST and the management team in South Africa remain fully committed to this transformation process,” says Mr Sewnandan. “The company has a defined employment equity plan to develop black and female employees through the ranks of senior, middle and junior management. Our efforts in this regard are clearly visible in our management structure and shop-floor control. Training plans are centred on elementary skills development and the development of core business skills in the areas of general management, safety, health, environment and quality, leather technology and operations management. There is also a specialised team leader programme in place that is built on the 20 Keys continuous improvement system. In terms of enterprise



The site area is clean and well maintained. This shows part of the area between the finishing department and the chemical store.

development, the company has various initiatives that support and sustain newly developed black-owned businesses; we score full points in this category. On the socioeconomic development front, we have broader, community-based projects in place and score full points in this category as well.”

Employee welfare

Just as South Africa began to emerge from the Apartheid era (the system of racial segregation enforced by the government between 1948 and 1994), it had to face a different problem, one that still casts a shadow. By the late 1990s, 35%-40% of the entire population was HIV-positive. In early 2000, Seton AutoLeather recognised the impact of HIV and AIDS on its operations and decided not to wait for government intervention but to fast track the roll-out among its workforce of antiretroviral medication.

“We had terminally ill employees who needed our support,” the managing director explains. “Also, we could not approach our employees about their state of health due to legislation that prohibits disclosure and discrimination. We had a death a week and we were really helpless.”

Seton AutoLeather launched a specialised HIV-AIDS programme at no cost to the employees and covered on-site employee

monitoring on a weekly basis, pathology, medication and personalised and family counselling. “To maintain confidentiality, we also provided the necessary medication off site,” Shalen Sewnandan says. “Currently, our programme remains in place and our efforts are directed at being more preventative in nature. Today we can say that we have managed to improve the quality of life for all our employees and their families.”

In addition to the HIV-AIDS programme, the company also provides on-site primary healthcare, patient management, occupational safety and health, and chronic disease management.

Further social challenges

In 2010, South Africa experienced a wave of industrial strike action and the automotive industry suffered as a result. In the ensuing months many OEMs took business away from South Africa to reduce their exposure to industrial action. “OEMs did move business away immediately following the 2010 strikes,” Shalen Sewnandan says, “but the leather industry has since been stable. The implementation of a multi-year wage agreement has played a key role in stabilising the leather industry. Since 2010, we have also made a concerted effort to do things better, to be transparent, share information, offer ongoing feedback and just



From a technical point of view

(1) Overview of operations

Seton AutoLeather is located at the town of Nigel, approximately 65km from Johannesburg, South Africa. The company supplies automotive leather cut-kits for the global automotive sector, and both whole hides and cut-kits for sewing plants within South Africa for export as seat covers. The finishing capacity of the tannery and cutting plant is 4,000 hides per day (15,200 m²/day) based on South African bovine hides, employing 811 hourly and 97 salary staff.

(2) Manufacture and processing

The wet blue department comprises 10 drums of 4.0 x 4.0m and six drums of 3.5 x 3.5m dimensions for soaking/liming and tanning, serviced by a rear mezzanine. There are two elevated whole-hide fleshing machines and a lime splitting machine. The current low slaughter rate and the economics that go with underutilisation of the plant has led management to temporarily moth-ball the facility. As the slaughter rate improves, management will review its decision accordingly.

This plant is maintained in good condition, but is currently only being used for wetting back a sample of 20% of each delivery of the wet blue received. Once these hides have been sammed, they are graded and measured for area, and this information is used to assess the standards of each delivery.

When these standards have been met, the wet blue is issued to production, shaved to specification, trimmed, sealed in polythene and transferred to the retan and crusting department. This takes place in two clusters of stainless steel Dose tri-compartmental vessels, 12 in total. These are elevated and serviced from the mezzanine for solid additions, and computer-managed dosing of liquids and solutions. There are two different sizes of vessel so that batches of 200 and 300 hides can be processed using the same degree of mechanical action. All of the hides are samm/set on reciprocating machines, and then the whole production is dried using four toggle drying units of the same size and configuration. This is followed by conditioning, and staking using three feed-through vibration staking machines. Dust is a potential problem and drag-chains are fitted at the out-feed end from the third machine to earth the leather, and the machine belts sprayed with water to help reduce static electricity. Dust and loose fibres are removed by linkage to a de-dusting unit before the hides are stacked. As a final measure, the hides are lightly roller-coated on the flesh side with a resin binder to seal any residual fibres, followed by infrared conveyor drying.

Product development is viewed as a key component within the operation, and two areas are dedicated to research and development. The wet-end facility contains small-size tumble drums for dyeing trials, and six trial drums of various sizes for producing lots ranging in size from a single hide to 200 hides. The finishing department is extensive, comprising two full production scale spray/drying lines, a reverse roller coater, full size milling drums, and two Datacolor computers.



The whole department for liming and chrome tanning is being held in mothball due to shortages of South African hides. The department is being maintained in good order so that it is possible for the plant to become fully operational at any time.



20% of all of the wet blue purchased by Seton is wet backed in the tanning department. All of the drums are used in rotation to help ensure they remain in good order. After stacking, the hides are samm to assess both quality and area of each delivery.



All of the dyeing and retanning operations are performed in 12 stainless steel tri-compartmental Dose vessels. These are of two sizes to accommodate two different input weights and apply the same level of mechanical action.



Two products in particular have been developed in recent years:

- As part of weight reduction within vehicles, the first development is lightweight leather, where although the leather remains at the same substance, the average weight has been reduced by 20%. Although there is some reduction in physical strength, the original leather was considered over-engineered, and the new leathers are well within customer specifications..
- Cool leather, a speciality leather developed for cabriolets that keeps the leather cooler in direct sun conditions, was also developed a few years ago. Special leather auxiliaries are used that reflect the sun's rays that otherwise would be absorbed by the leather; this maintains a cooler surface temperature. Specialised laboratory equipment is used to test surface temperature and reflective properties.

The company R&D policy is clear; R&D is fully responsible and accountable for all new product and process development until final handover to operations. As part of the handover package, they are responsible to be hands on and train and pass on knowledge to their colleagues in operations. Only when operations are satisfied with the handover and after a series of production runs, will the handover package be signed off.

[a] FINISHING

The finishing operations are essentially based on spray finishing – using between three and five applications as required – and four embossing roller presses.

The spraying equipment comprises five individual spraying cabinets fitted with steam drying cells, four being installed so that they can be bridged to operate as two pairs in tandem. The floor area by each spray booth is identified as a dedicated area by using floor demarcation. This also assists in keeping the area in a clean condition. A Gemata roller coating machine has just been installed in front of one of the spray lines: this is set on rails so that it can be brought into operation as and when required. All of the binder blends and



Static electricity causes fibres and dust to remain on the leather after staking using three feed-through vibration staking machines set in tandem. Steel chains are set at the out-feed from the final staking machine to remove charge from the leather and ease fibre removal.



Both pigments and binders are dispensed and blended under computer control in the main dispensing area adjacent to the finishing department.



When a pack of leather is sprayed, the first three hides are removed and checked for colour, followed by one hide per 50 hides, then the last three hides. These samples are fully approved after each spray application to ensure conformity.



25 embossing rollers provide a wide texture range for Seton. Four embossing machines are set in line in a custom-designed servicing system that enables all embossing rollers to be changed with minimum downtime.



Inspection is central to product assurance, and this is performed by holding leather under tension on rotating frames. The inspection and identification and marking of defects is time-consuming, each hide inspection requiring on average five minutes.



The hides are marked according to the quality differences across each hide, and the colour-coded cutting dies are placed to maximise yield. The cutting board holding these hides can be readily moved from the work tables for feed to the cutting presses using a combination of ball and roller bearings.



One of the additional requirements demanded by customers is for components to be skived. Other requirements include flesh lamination using up to four different laminates.

pigments used are dispensed via a PPP computerized dispensing system.

Four MMM roller embossing machines are used to create a wide range of surface textures. These machines are set in line within a servicing system that can deliver any of 25 embossing cylinders to the selected roller press. These cylinders are mounted on a framework constructed between the presses, and can be hoisted using slings, and then delivered via an overhead rail track into any machine. All cylinders can be pre-headed before delivery to avoid downtime, and two presses can be serviced at any one time.

Erretre milling drums are also used within finishing. These drums are serviced by two loading conveyors fitted on a rail that can be moved in front of any drum. Delivery belts are fitted under each drum: the leathers are dropped onto these belts, and then moved forward as required to assist the operative as the leathers are stacked. This area is located adjacent the main finishing area to avoid any dust contamination.

[b] CUTTING OPERATIONS

The first step is to identify any leather defects before cutting operations. Each hide is carefully hand-stretched using a cylindrical toggling frame to reveal any defects that might otherwise remain hidden. This frame is rotated so that sections of approximately 30 cm width can be inspected at a time and the defects marked on the hide. The hides are inspected at an angle to an overhead light source, then turned around and viewed in the opposite direction to ensure that no defects remain undetected.

Following cutting, each component is measured against master samples to ensure precise compliance, and the cut-kit for each seat is made up and packaged. Over and above the supply of these kits, there is a sub-department where components may receive further attention such as skiving the edge of the components, with flesh-lamination then perforated if required.

All of these operations are highly controlled: insight into the complexity and demands of these operations can be summarised by pointing out that an individual customer may demand a mixture of full grain and corrected grain leathers that match perfectly within the vehicle, but all from different suppliers.

(3) Solids management

- All of the solids generated from manufacture – shavings, blue trimmings, buffing dust, and sludge from effluent treatment – are deposited to licensed landfill. There are legal restrictions on these materials that prevent their conversion into secondary products.
- All of the leather trimmings from cutting operations are baled and stored until there is sufficient volume to offer for tender. Most of this is exported to China for the manufacture of small leathersgoods.
- Chemical containers and barrels are washed and stored, together with segregated plastic bags, metals and other waste. These are collected and sold by an external provider.



(4) Water and environmental management

[a] RAW WATER

The raw water is provided from municipal supply.

[b] RECYCLING AND CHEMICAL RECOVERY

Although the wet blue manufacturing plant is in mothball, it is fully equipped with a chrome recovery plant. This is designed to receive all of the chromium-containing washwaters and drainings for precipitation using magnesium hydroxide. After settling, the supernatant is decanted from the dense solids settled at the vessel base, followed by acidification of the solids to form chrome liquor for storage before use within subsequent tanning operations.

Plant is also installed for the recycling of used unhairing and lime liquors. This is designed for the collection of all used floats and the first wash. These are screened, and then allowed to settle for the removal of fine solids and the removal of grease from the surface. The supernatant is then stored in tanks and heated to the temperature required as the float for liming/unhairing. The sulfide addition to the liming process is calculated based on the residual content in the supernatant.

[c] EFFLUENT TREATMENT

Since mothballing the wet blue plant, volume of effluent has decreased so that retention in the balancing and equalisation tank has been approximately doubled from the original period of two days. The effluent is mixed and prevented from turning anaerobic by blowing compressed air into the base using a series of air diffusers.

The effluent is then pumped to a second holding tank where it is dosed with lime to adjust the pH, then pumped from this sump at a constant rate for dosing with aluminium salts, followed by offer to three Silflo flotation units. In this operation, air is introduced via a venture arrangement into the base of the tank, causing the suspended solids to rise to the surface of the tank. These solids are then wiped from the surface as a wet sludge.

In turn, the sludge is run into a series of drying beds. Water removal occurs through a combination of air evaporation, and gravity draining through the filter bed, with the filtrate returned to the effluent treatment plant for reprocessing.



This plant is designed to receive used lime liquors and washings. After grease and solids removal, the recovered liquors can be preheated then, together with chemical adjustments, used as the liming/unhairing floats.



Precipitates and fine solids are held at a foam mat on the surface of the effluent by fine bubbles introduced into the base of a series of three air diffusion units as part of effluent treatment. This surface scum is automatically scraped from the surface, and then delivered to drying beds for dewatering.

be attentive."

Today, as a result, the tannery has a stronger relationship with the workforce, stewards and union leadership, he says. He adds: "The key is for us all to be on the same page with regard to our customer needs and our competitiveness, and to have realisable operational performance targets in place." His feeling is that the more all sides work together and share a common interest, the greater the wellbeing of the company and the safer everyone's jobs will be. "Some of our customers have heard first hand from our union leadership their pledge not to strike, but to try and resolve matters while work continues," he says.

"Decontenting" and challenges in the leather industry

Good relationships with leather buyers notwithstanding, sales and marketing director, Detlef Wedekind, who is transferring to GST's tannery in Mulheim in Germany at the start of 2013, uses the word "decontenting" to describe the approach some customers have taken in recent years towards leather upholstery. The addition of more vinyl and other synthetics is becoming more evident. "We are being requested much more frequently by OEMs to match the leather to vinyl products," says Mr Wedekind. "We strongly believe that this should be the other way around and that vinyl and other synthetic

products should be minimised or used exclusively in non-visual areas. We have seen many complaints in the field where customers complain about leather not being durable, or discolouring, and when we investigate such claims we find in majority of the cases it is the vinyl that does not perform. End customers truly think they are purchasing a full leather interior and leather gets a tarnished reputation through the non-disclosure of the content."

He goes on to say that five years ago, "certain OEMs" had 20% more leather in their cars than they do today. His opinion is that the automotive interiors industry has become more competitive and many OEMs have developed new supply sources;



manufacturing or model supply exclusivity has become a thing of the past, he says. "Overall automotive leather volume has grown but with so many new entrants in the marketplace, it is easy for buyers to chop and change," he adds. "As leaders in our field we continuously look to create more value-add for our customers to discourage the use of synthetic products."

Until October 2012, Seton AutoLeather operated as South Africa's only fully integrated automotive tannery. However, at least for the time being, it has stopped operating its own beamhouse and is bringing in all its raw material at present as wet blue. Shalen Sewnandan explains that this was far from an easy decision.

The beamhouse at Nigel is a quality operation, well established before GST and indeed before Seton acquired the plant in 1997. This tannery was originally set up in the 1960s by an emigrant German tanning family called Hanni. Current research and development director, Richard Delfel, has been at the plant since the early 1980s and has lived through many of the changes. He made sure the company considered all angles before taking its decision on halting wet-end operations in Nigel, for example gently voicing the view that it's at the wet end that tanners can best make their mark on a hide.

Mr Delfel helped the Hanni family design the wet blue plant in 1981, helped decide where the drainage would go, drove a forklift to carry materials required for the installation of the 16 drums, still there but silent now, except for two that are in use for wetting back some of the wet blue that comes in from external suppliers.

"Our interim decision to mothball our wet blue facility was driven by the ongoing low slaughter rate in the country. This impacts heavily on economies of scale and we will revisit our decision once the market improves," says Mr Sewnandan.

Raw material choices

Seton AutoLeather has five approved wet blue suppliers, each with a working relationship that has lasted well over 10 years. Over these years, the company has seen its suppliers improve their facilities in terms of layout and technology. It says its suppliers are generally easy to work with and are open to recommendations and change. Wet blue in South Africa usually means chrome split production hides and

average around 3.9 square-metres per hide. Hides are sold either on a table run basis, automotive selection, or printer selection, which is primarily used for stucco buffed-type applications. Unlike in most parts of the world, the majority of hides in South Africa are non-feedlot hides, and are a mix of breed, weight and gender.

The managing director says: "Although we prefer to produce from raw, we have worked with our supply base over the last few years in developing quality control standards. As part of our quality assurance system, we audit our suppliers regularly. Our incoming quality control is effective and the results per delivery are passed onto our suppliers enabling them to take corrective action, if required. We also benchmark their products against each other. With all of this, we can expect to receive the same quality level as we would if we run our own plant."

He explains that the availability of high-end automotive grade hides has declined over the last five years. Hides have more defects and these defects cannot be completely eliminated during downstream processes. In addition, some OEMs specify the width and length of open scars that can be stuccoed and buffed. If the hides are destined for full-grain manufacturing, these open areas will be marked out as non-cuttable areas. Automotive seating design has also changed considerably; the days of gathered seats are gone, with very tightly pulled seat covers that have a lot more body and shape replacing them. This results in natural marks being more visible in a pulled state and an increase in customer rejects.

Secondary to the rise in open defect types is the prominence of veins that are clearly visible on the grain after finishing. In the past, if the veins did not look worse than a healed scar, the tannery could cut this in. Today, this is no longer possible as the majority of cut-to-pattern parts are laminated with either a foam or a scrim base and the lamination process itself accentuates the veins, making the cut part a reject. Likewise, process defects such as splitting damage, suck outs and shaving damage are accentuated when cut parts are laminated.

International offering in chemicals

With the exception of locally sourced commodity products such as acids and

salts, 90% of the chemicals that Seton AutoLeather uses are imported. The tannery's managing director speaks very highly of the levels of customer service many of these international suppliers offer, as well as their technical competence in product development. Their representatives travel frequently to South Africa and take time to demonstrate and explain the benefits of new products. He likes the fact that there is strong competition among the various chemical houses and believes this keeps them focused on the business. This, in turn, helps the leather industry to remain competitive and to keep substitute products out.

On the machinery side, he senses less urgency among suppliers to develop new technology that will make an immediate impact on the work of his and other tanneries. The current trend in the automotive leather segment presents a good example. Leather that is lighter in weight is in demand; car companies care deeply about weight because lighter cars are, generally, more fuel-efficient and place a lesser burden on the environment. And leather counts, because a 25% saving on the weight of a finished hide could mean a saving of up to three kilos on the whole seat-set in a vehicle. Mr Sewnandan says this is another example of leather showing it is up to the challenge of other automotive component suppliers for whom, he says, reducing weight is far less complex than it is for tanners.

Chemical providers are coming up with newer retanning systems that promise lighter-bodied leather. The technologies employed are broadly based on making the leather thicker but not heavier.

Leather makes a difference

Despite the ever-changing challenges in the automotive industry, end-users still associate leather with prestige and luxury, Mr Sewnandan continues. "Leather is still unsurpassed in elegance; no synthetic substrate can match it," he says. "Leather looks, feels and smells unique and these three qualities differentiate it from any competitor product out there. It becomes even more beautiful with age and it's the ultimate recycled product."

Competition against the best

As a group, GST takes internal benchmarking seriously. It has tanneries in



China, Germany and Mexico, as well as South Africa, and cutting plants to turn the leather into seat-cover kits. "What is not measured is not managed," says Mr Sewnandan. "We are privileged to be part of a multinational company. All GST facilities share their individual scorecards with each other, and this extends well beyond just manufacturing statistics, it covers best manufacturing practices and operational excellence and most importantly of all, lessons learned.

"This gives the tannery a good feel as to where we are positioned in the world. Benchmarking within the GST group has definitely improved our operations in South Africa; we are not the same company we were two years ago."

Career development

Restructuring the business in line with changing volumes and after the mothballing of the wet blue facility in September has led to a reduction in the number of people working at the tannery now. This is never a pleasant task, but the company seems to have gone about it in an interesting way. "Although we part ways with our employees, we ensure they have a soft landing and have a new skill-set to sustain themselves after they leave us," says Mr Sewnandan. "To this end we either subsidise further training, in part or in full."

Seton AutoLeather realised that the team it had making wet blue was made up of some of its most skilled and most senior people. Members of this team have now joined the retanning and finishing departments, while some of the less senior employees from those departments opted for voluntary "retrenchments" to further their studies, subsidised by the company. "And we'll be following up on their results," the managing director insists, "because we care. We think this gives them a good chance to grow, and to grow well beyond Seton."

Even without the beamhouse, it's a big operation, offering plenty of career development to those who work there. Mr Delfel explains that if a member of his technical team develops a new product, the practice is to see the product all the way through production and testing, staying with hides that form part of the trial until everyone, including his production management colleagues, are happy that the concept will work. "This synergy between R&D and production has

Control and Accreditations

LABORATORY SERVICES

On site there is a state-of-the-art testing laboratory equipped with a full range of equipment to suit customer specifications. Key test capabilities include:

- Anti-squeak test equipment
- Various high wear test equipment
- Climatic chamber testing (dimensional stability)
- Weatherometer testing (light fastness)
- Anti-soling test equipment.

Inter-company comparative testing is practised within GST/Seton companies to ensure the integrity of test procedures.



ACCREDITATION AND AWARDS

- ISO 9001 (Retan/Dye & Finishing Plant)
- ISO 14001
- ISO/TS 16949 (Cutting Plant)
- ISO/LEC17025 (Laboratory) by A2LA

Medical and health issues

The company has established its own extensive medical care centre with full time staff. This comprises five separate areas, and serves two main functions:

- Provision of ongoing medical care
- Attention regarding injury and other health issues.



impressed some of the automotive supply chain experts," Mr Delfel explains.

All Seton AutoLeather employees have an equal opportunity to grow, Shalen Sewnandan insists, as well as having responsibility for their own growth plans. Additional support from the company includes having an industrial psychologist on site once a week with the primary functions of developing leadership talent across all levels of management, career-modelling and tracking progress on agreed career development plans.

This approach is working, Mr Sewnandan believes. Current business practice is to consider all possible internal candidates for any vacancy before employing anyone from the outside. And one inspirational example he shares concerns a member of the R&D team, named Paul, who studied after work for eight years, often by candlelight owing to energy restrictions. "He had the enthusiasm, the company recognised this and funded his studies," the managing director says. "His R&D colleagues did a

great job mentoring him and he has now qualified with a leather technologist degree. We have many other success stories like Paul. We know that if we give our employees half a chance, they will grasp it and make a success of it."

He feels that something that sets Seton AutoLeather apart is its resilience. It has successfully navigated changes of ownership and profound changes in South African society. "Our employees have a natural hunger to learn and to grow," Mr Shalen concludes. "This is not a company we all just work for, it is our company. And we have a passion for the product we make. This is a competitive environment and we have very reputable competitors. But my feeling is that we have changed our own mindset with all the investment we have made in our human capital. And as well as bringing us stability, security and viability in our business operations, this development has changed the way our customers perceive us. For the better." 🌟