



Tannery of the Year:

Pittards-Ethiopia Tannery Share Company, Ethiopia

The state-owned Ethiopia Tannery Share Company, close to the village of Ejersa, is on a site covering 65 hectares. It is 2.5 kilometres from a man-made lake, Lake Koka, from which it has traditionally drawn its water resource, although it now uses water from geothermal springs that flow close to the site. The facility has been producing leather from local sheep and goat skins, and bovine hides since 1975, for a range of applications including gloves, shoes, leathersgoods and some upholstery. For the last four years been run on the state's behalf by UK-based tanning group Pittards, a company that believes strongly in the present and future potential of Ethiopia and of the tannery.

Once, there were seven state-owned tanneries in Ethiopia. Bearing in mind the country's substantial livestock population (30 million sheep, 20 million goats and 40 million cattle), this is, perhaps, unsurprising. They ran as one big co-operative, as part of the government-owned and -run Leather and Shoe Corporation.

Things function in a different way there now. Of around 20 tanneries across the country today, only one is still owned by the state, the Ethiopia Tannery Share Company (ETSC), near the village of Ejersa, about two hours south by road, from the capital, Addis Ababa.

What makes the tannery even more unusual is that, four years

ago, the state asked UK-based tanning group Pittards to run ETSC on its behalf, which is why John Moriarty, who has been in the leather industry for more than 30 years and has spent his entire career with Pittards, now spends around 80% of his time in Africa, managing the ETSC operation. At the time of writing, Pittards is in advanced dialogue with the government of Ethiopia about the future ownership of the tannery. Pittards has traded with Ethiopia for over 90 years and has a long-term commitment to the people and country.

The link is clearer than may at first meet the eye: the tannery's output is predominantly sheep (60,000 skins a week), and goat (12,000 skins a week) leather for gloves, compared to 1,500 bovine



From a technical point of view

Raw materials

Ethiopia Tannery Share Company is located 90 kilometres south of Addis Ababa. The site covers 65 hectares, and the tannery is positioned approximately 2.5 kilometres from Lake Koka, a source of water and electrical power. Production commenced in 1975, and Pittards assumed management control of the tannery in August 2005.

The output was initially 80% pickle/wet blue and 20% finished leather, but by 2009 this has been converted entirely into crust and finished leathers. The plant capacity now stands at 12,000 skins per day for the manufacture of gloves, garments and shoes, and 1,500 hides per day to make shoe, upholstery, bag and belt leathers.

Most of the hides and skins processed within the tannery are obtained within Ethiopia. The national flocks and herd is large but the off-take is approximately 33% skins and 10% hides as the life of the animal is relatively long. This is because they are an asset and source of wealth, and not just a food source.

About 90% of the skins are from local slaughter, and kill is determined by tradition, with many periods of fasting and other times of feast and celebration. Because of these fluctuations consistent input for tanners is not possible, so preservation of the raw skins and hides is critical.

Until a few years ago the driving force was to export part processed skins, and although this encouraged volume and

more small pickling plants, this did not support quality. More recent changes in tariff, that essentially stopped the export of pickled and wet blue stock, has favoured adding value and manufacture to the finished state. This has restored the balance in the supply chain, as traders had previously held considerable power in terms of raw material supply.

Two years ago ETSC changed its approach to process by expanding manufacture to the finished state. This necessitated a change of raw material input, with a shift from raw skins to part-purchases in the pickled state. Although raw skins are still processed on site, more pickled skins are being processed from proven suppliers. The tannery has established a standard pickle to ensure that the optimum skin quality is maintained, and this has been introduced to these known providers. The quality of the pickled stock from these tanners is constantly monitored, and this programme is being expanded. The objective is a uniform and high-quality pickle across the board.

The company has side-stepped many of the issues that cloud raw material purchases by this shift. Long storage times are possible if the pickling process is performed correctly, and a good quality assessment is possible. By virtue of size, the tannery can rationally process leathers to the finished state in a number of textures and colours. Smaller tanners cannot achieve this, but they can benefit by having a reliable outlet for their pickled skins. 🌐

hides per week. Glove leather is where Pittards first made its name on the international leather scene, making material for products ranging from high-end ladies' fashion gloves to gloves for professional golfers and catchers' mitts and other baseball gloves for top sports brands, and Ethiopian skins have long been a prized raw material for making them. As long ago as 1986, the UK company set up an overseas technical development team to help the industry in Ethiopia make the transition from raw to pickle.

This was a far-sighted thing to do, but almost 25 years later, many of Ethiopia's tanneries still only go to pickle. ETSC is the most prominent exception. Two years ago, the Ethiopian government voiced the desire to increase the value that the country receives from its hide-and-skin resources and put export tariffs of 10% on pickle and 5% on wet blue in an attempt to encourage tanning companies to go further towards producing finished leather.

"This didn't prove to be quite the deterrent the government hoped for," John Moriarty says now. "Most operators just agreed with their customers to share the extra cost. Many only wanted to produce pickle; their customers, who were mostly in

Italy and the far east, said they preferred to add value there. Then, in February this year, the government raised the tariff on both wet blue and pickle to 150%. By applying such a high tariff, the government is telling everyone, 'You're not listening to us; you have to go to added value.'"

Livestock interpretation

Mr Moriarty makes the point that the size of Ethiopia's combined herd could give a false impression of the scope of the leather industry there. In Europe, a large population of sheep would promise a substantial availability of skins as lambs often go to slaughter at about nine months. In Ethiopia, slaughter often takes place three years after birth. Plus, the cattle are bred, not for meat, but for ploughing fields; meat is very much an afterthought. "The livestock population is large, but there are not as many hides available as one might imagine, and Pittards has already started to import raw material from other countries.

He points also to the particular religious situation in Ethiopia. The most recent census, which took place earlier this year, shows that 43.5% of the population are Ethiopian Orthodox Christians, while 33.9% are Muslim. Both of these religious

affiliations have extensive periods of fasting. Even lay people in the Ethiopian Orthodox Christians are asked to fast for 165 days a year, including every Wednesday and every Friday. Ethiopian Muslims, of course, fast during daylight hours during the month of Ramadan, but additional days of voluntary fasting are widely followed by the Muslim population of the country. Then, at times of festival, the rate of slaughter can soar upwards. Mr Moriarty explains: "For a tannery, all of this needs interpreting. Sometimes, there are not enough skins to meet capacity, and at other times we have too many, and preservation of them becomes very important. In some Muslim countries, 80% of total annual slaughter takes place at the end of Ramadan, so a huge amount of material can come onto the market at once. At those times, we have to work night and day to get it all salted so that it can then feed into the system in the course of the year."

He has travelled quite extensively in the region, to countries such as Chad, Mali and Niger, where this slaughter surge around the time of Eid ul-Fitr occurs, but where there is no tanning industry to speak of to absorb the hides and skins produced as a result.

Even before slaughter, ensuring the



quality of animal skins, anywhere in the world, is an important matter. Ethiopia presents particular challenges, ekek, for example. Mr Moriarty believes this disease is causing \$40 million worth of damage a year in terms of lower milk and meat yields, and lower quality of hides and skins. In an attempt to prove to livestock farmers and traders that investing in animal care and welfare can pay off in the end, ETSC is in the process of buying 1,200 live sheep of its own, which it will keep in pens in Debre Berhan, 120 kilometres north-east of Addis Ababa. It will provide feed and veterinary care, and when, in time, the skins come to the tannery it will attempt to demonstrate the difference a little care can make.

Integrated industry

Whatever the extent or the quality of the country's hide and skin resource, Mr Moriarty feels it would make little sense for every tannery in Ethiopia to attempt to take the raw material through to finished-leather stage. "It would be pointless," he says. "It

The Ethiopian hairsheep is one of the finest sources of gloving leather.

New Italprogetti drums in the retanning department.

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would be much better for there to be a few specialising in finished leather and for the rest to be feeders. They might all have wanted to export and earn dollar revenue, but if no one will buy your pickle [because it has a 150% tariff on it]; this may be your best option."

The tannery Pittards company runs on behalf of the government is planning to increase its finished leather capacity, but it has much less interest in expanding at the beamhouse end. John Moriarty says that there is enough capacity in the Ethiopian tanning sector to cope, if it integrates in this way. He explains: "Most of the people in the pickling plants were originally skin traders. They know how to get the skins, which is not easy in this country as there are few abattoirs. And we need them, because, if you look at the number of skins we get

through each week, you can see that this is a hungry beast. Each tannery can't be everything. You have to have some degree of specialisation, but we're big, and we want to be the finishing tannery in Ethiopia, letting others specialise in other areas. This idea is in line with government strategy and would benefit the whole country."

The integration can, and already has, spread beyond the tanning industry. ETSC has been working closely for some time with Anbessa, a state-owned footwear manufacturer. Most of the hide leather it produces goes into the domestic market at the moment, because with European and US hides available in large quantities and at good prices, demand for African bovine leather on the open market is limited. But Anbessa is doing a good job and has done well enough in selling its shoes on the export market to win ETSC an award last year as non-direct exporter in its sector for 2008, recognition that it is a good supply partner to the footwear company. The government has been behind what Mr Moriarty calls "a huge drive to make shoe



From a technical point of view

Leather manufacture

There are two quite different types of leathers produced within the factory. Most research and development work is performed at the UK headquarters of Pittards, but when the technique has been established the technology is transferred to ETSC. This is then carefully introduced into production, until a satisfactory standard is achieved before moving into bulk production.

The outline process is described below.

Sheepskin production

Ethiopian sheepskins are renowned for their fine grain characteristics, especially those from the hairsheep breed. Salted sheepskins are soaked in paddles, before painting and stacking for hair loosening. After pushing off the hair, the skins are drum limed, delimed/bated then processed to the pickled state using a line of 10 three-by-three metre drums. All of the pickled stock—in-house and purchased—is then pickle fleshed and chrome tanned.

Although much of the production is dyed and retanned in a line of wooden drums, newer equipment has been installed. This includes two large Italprogetti drums, which enable greater throughput and rationalisation of manufacture.

Some of the wet blue skins are sammed and shaved, and this production is designated for shoe upper leathers. According to substance, other skins are selected for clothing leathers where they are dyed, mainly black, and often dye shaved when dry. Other production is processed as undyed



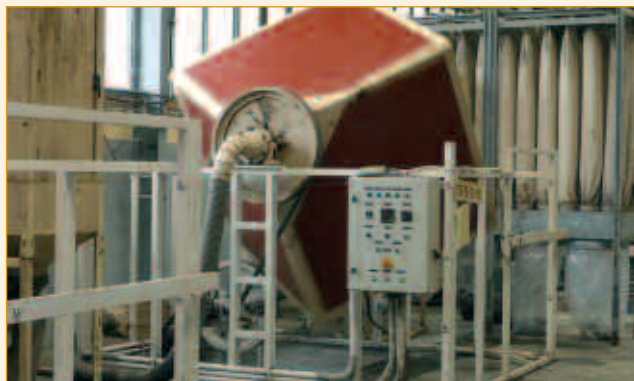
Crust selection: key to success.



Hand staking for ultimate softening.



Final hand polishing operation.



Unusual tumbling drums fitted with dust extraction.



Feed through substance measurement



crust, and some of this is then shaved and re-dyed. This saves on chemicals, but requires extra handling, so a careful balance is needed.

All of the skins are dried on Cartigliano vacuum dryers operating at low temperature. The lighter skins can be dried to the required moisture content, but thicker skins need overnight stacking then additional drying using a pole conveyor system before vibration staking.

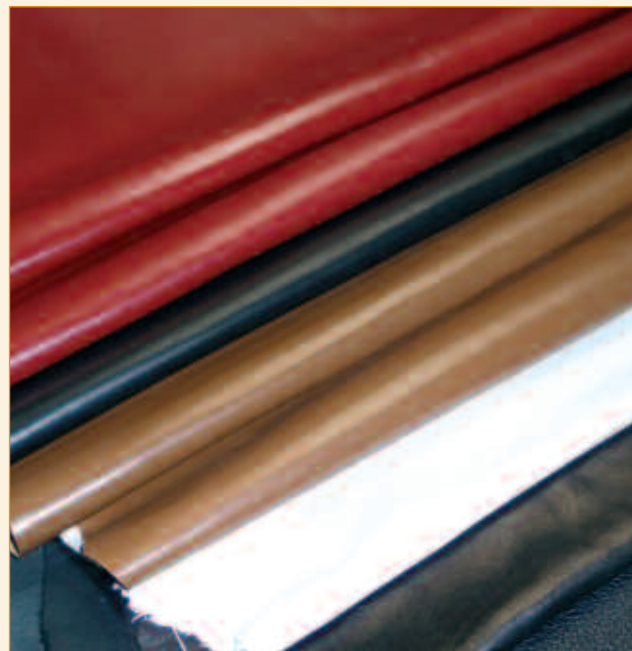
Grade, substance and size are key, and each skin is measured for substance on a throughfeed measuring machine. The skins are then lightly finished and polished.

Bovine hide production

Ethiopian bovine hides are relatively small and average around 25 square-feet. Cattle are used as draft animals and are normally slaughtered after a life of around 10 years. The quality is therefore limited, although the leather can provide excellent service.

Hides are received as both air-dried and wet salted hides. After soaking and liming in a batch of 12 drums, the hides are fleshed on an elevated fleshing machine, then lime split. After chrome tanning and samming the wet blue, the hides are sided. After blue sorting and shaving to substance, the sides are retanned either as batches of 400 sides in the conventional wooden dye drums, or as 1,000 sides in new Italprogetti drums.

After samm/setting and vacuum drying, the hides are hang-dried, then trimmed and staked using a Cartigliano through-feed staking machine. After crust assessment for quality and substance the sides are offered to a Gemata roller-coating machine, spray finished and plated. 🌐



Variety of finished bovine leathers.



Lime splitting team. Trimmings and thin limed splits are sold for rendering.



Part of the bovine pole drying conveyor system for side leathers.



Patch-padding after roller coating.

leather", saying it wanted Ethiopia to produce 50 million pairs of shoes a year. "But there are not enough skins in the country for that," he explains.

Much more recently, Europe's biggest leather glove manufacturer, the German-based Otto Kessler Group, announced that it too intends to set up in Ethiopia, in addition

to its glove-making unit in China, using ETSC leather to manufacture high-quality finished goods for the most important export markets in the world.



From a technical point of view

Chemical stocks and maintenance

The Ethiopia Tannery Share Company has a large input requirement, and the delivery of chemicals, mainly from Europe, can take many months. This means that the chemical stocks are considerable and have to be managed meticulously.

Maintenance can be a problem, as although some servicing and repair is possible within the country many specialised components have to be held in stock. The company has, however, built up a competent team of engineers who have been trained in a full range of maintenance tasks as they work with specialist engineers at the time of servicing. In-house staff whose expertise continues to develop now carries out much of the maintenance.

Many of the machines in use are basic but substantial, such as the Svit presses, where the old circuits are now being replaced by new electrics. New machinery is planned, but it must be reliable and fit for purpose. There are both old and new drums used for soaking, liming, tanning and retanning: all are in good order, but there is a programme for replacement. 🌀



Heat exchangers from within a vacuum drying unit undergoing in-house maintenance.



Part of the Ethiopia Tannery chemical stocks.

Power supply

Manufacturing leather or finished goods, or industrialised product, in Ethiopia has been a challenge in recent years. As the country has undergone rapid economic development, the demand for power has sometimes outstripped supply and this has sometimes resulted in power cuts. Pittards says the flexibility of staff has enabled the tannery to adjust and cope.

More power output is imminent as a second Gilgel Gibe hydroelectric power plant (Gilgel Gibe I is already in place) on the Omo River in the south of the country will come on stream in the months ahead, with a third to follow before 2012, which would give Ethiopia enough to meet its own energy needs, with enough capacity left over for it to become an energy exporter, or to enter into an exchange agreement with Sudan, trading Sudanese oil for Ethiopian hydro-electricity.

On the logistics side, there have also been recent developments. Bureaucracy

requires careful handling in Ethiopia, and merely to put in place all the documentation you need to export a container of finished leather, or to import a container of chemicals can be a long, slow and expensive process. But the burden on the export side should become lighter now that the authorities have set up a dry port facility only 15 kilometres from the tannery, near the town of Mojo, within easy reach of not just ETSC, but also of new production sites for flowers, concrete and textiles that are growing up in the area. Containers of goods go there first and clear customs for Ethiopia and for Djibouti at the dry port, in the tannery's own backyard, before travelling to the neighbouring country's main container port, where their passage is proving much smoother.

John Moriarty is optimistic about the difference such developments will make, to his operation and to those of partner companies.

Workers' benefits

The approach to the Ethiopia Tannery Share Company is a colourful scene of traditional African huts, people ferrying water to their homes in containers borne by donkeys, teams of oxen on their way to or from ploughing a field, young adults walking to work in the nearby flower farms and cement factory, and groups of children who jump up and down and wave with delight at the sight of strangers.

The local community seems happy to have the tannery there, and for good reason. There is a clinic attached to it that serves the wider community, offering blood tests, treatment for conditions such as malaria and advice on a range of health topics. Also, the village of Ejersa now has a supply of clean drinking water because ETSC paid the contribution the community had to make to match a government water grant. A possible next step will be to use the hot water from the new bore holes from which



From a technical point of view

Effluent treatment

The company philosophy is to manufacture in a way to make the optimum use of chemicals, and minimise chemical waste. The waste waters generated are split into two streams for treatment, with the first-wash liquors from liming/unhairing and from chrome tannage delivered to a series of settling lagoons. These have been in use since the factory was first established and, thanks to their large capacity and long retention times, ensures thorough mixing and settling of solids.

The remaining waste waters and outflow from the lagoons are delivered into a more recent balancing and mixing tank, where they undergo catalysed aeration using air diffusion domes. This serves both to blend the effluent, and to oxidise sulfides.

The effluent is then subjected to activated sludge treatment using surface aerators, followed by secondary clarification. Part of the sludge is returned to the biological stage for further breakdown, and the surplus sludge discharged to drying beds for evaporation to dryness.

The treated effluent is then tertiary settled/clarified, before discharge from the site. The Ethiopia government sets standards for discharge, and the effluent complies with these limits.

The whole area surrounding the effluent treatment plant has been upgraded, and now supports 1500 mango trees, 650 avocado trees, and 300 coffee plants. There are also lemon and banana trees, and 35 beehives have been set up to ensure good pollination and a future supply of honey.

As part of continuing environmental improvement, the company is investigating the use of engineered reedbeds to improve waste water and minimise energy consumption. Using pilot installations of different configurations, the objective is to determine the design most suited to the African environment, before moving to large-scale installations. A further greening of the site will be provided, and the treated effluent used for irrigation and expansion of the plantations. This will then be made available as a model within Ethiopia and more widely across regions of Africa. 🌱



Coffee trees in the plantation adjacent the effluent treatment plant.



Part of the lagoon effluent treatment system.



Aeration of raw effluent to equalise and remove sulfides, with sludge drying beds in the background.



ETSC is ISO 14001 registered and has been accredited since 2005.



Some of the 35 beehives set in the plantation.



From a technical point of view

The water supply

Historically, the tannery abstracts all of its processing water from Lake Koka. The lake was created in the late 1950s and is the largest artificial lake in the country. In addition to the generation of electrical power, the lake supports a 60-member fishing community and lands approximately 600,000 kilos of fish per year.

The water for tannery use is abstracted via a 2.5-kilometre pipeline, and at times of seasonal low water levels within the lake the water carries a considerable amount of suspended solids and silt. For this reason the tannery has a large-scale settling and water treatment plant, followed by sand filtration and underground storage.

The area is geothermal, and to avoid the problems of silt-

laden water, and to reduce energy costs the tannery has recently sunk three bore holes. The water is soft, clean and free from silt; moreover the water from these supplies comes, naturally, at high temperatures: 55, 38, and 33 degrees Celsius.

The water supply and treatment plant is thus undergoing change. The hot water is to be delivered directly to a cooling tower presently under construction, and when cooled to 25 degrees Celsius, will be stored in the existing settling and sand filtration plant.

The hot water will be used directly in wet processing, and as heating for the vacuum driers. The two oil-fired boilers required for energy supply at present are scheduled to be taken out of use at this time. 🌐



Lake Koka: 2.5 kilometres from the tannery and largest artificial lake in Ethiopia.



This water treatment plant will soon be converted for use as cooled water holding tanks.

hot water for tannery operations to supply a shower block in the village.

ETSC built and still supports the local school by allowing the teachers who work there to eat in its workers' canteen. There is a dearth of education professionals in the area, so much so that the children have to go to school in two shifts, which means that the teachers have a keen need of a hot meal between morning and afternoon classes. Pupils eat at home, but they are no strangers to the tannery, coming regularly for educational visits to the production site and the surrounding land on which the company has planted 1,500 mango trees, 600 for avocados, 300 coffee plants and 35 beehives. The produce from the estate benefit the 631 people (474 men and 157 women) who work in the ETSC tannery, either through the crops going directly into the canteen, or through their sale, with the

money going to local labour unions. Planting these crops, and setting up the beehives was the idea of Jamal Aliye, a member of staff at the tannery and a person who is passionate about creating a pleasant and productive environment there. He suggested the plants to commemorate the millennium, which Ethiopia celebrated exactly two years ago because it follows the Ge'ez, and not the Gregorian, calendar.

Future ambitions

After four years, John Moriarty harbours more serious ambitions than ever for the tannery he runs. "We're looking to become world-class tanners of leather here in Ethiopia," he explains, "providing management experience and marketing expertise to anyone who might require it. I'd also like us to set up our own shipping company; you can find outsource service

providers for that here, but the levels of service could be higher. At the same time, I'd like us to become agents for as many tanning machinery manufacturers as possible, and the same with chemicals suppliers, for whom I'd build my own bonded warehouse. But we wouldn't lose sight of our main ambition, to expand and improve our operation for producing finished leather, to satisfy our customers' needs and expectations. There is a lot still to do, but I think we are on the right track and that our strong commitment to people in this area is helping. People are genuinely interested in us and worry if they think there is not enough power or enough water for us to keep producing. We get concerned enquiries about that. And then there are the children. As long as the local children still wave to us, I will take it as a sign that we're not doing too much wrong." 🌐