



Tongtianxing Group general manager, Chen Fei (centre) with customers selecting TTX leather. ALL CREDITS: TTX



Tongtianxing Group, Quzhou, Zhejiang province, China

Until 2002, Quzhou-based Tongtianxing Group (TTX) was a state-owned tannery, but as China's economy began to open up, the company began to "transform its system of ownership"; the management and some of the employees bought up all the equity and TTX became a private enterprise. Chen Fei, one of those original investors, is the general manager today. "The company was quite small at first," he recalls now, "but it's grown much bigger. However, we have stayed here and expanded here, going from around 300 workers in 2002 to 1,700 now."

In the early days, TTX's specialism was making nubuck-style pigskin, mainly for apparel for the Russian market. Today, the focus is firmly on furniture. And with an output of 15 million square-feet of finished leather for the furniture market per month, with around 4,000 colours in its range, it lays claim to being the biggest supplier of furniture leather in the world. "We want to have strong relationships with the furniture manufacturers who are our customers," Mr Chen says. "We want long-term relationships with them and we want them to become stronger as companies so that we can become stronger. And that means we sometimes have to

One of the largest producers of furniture leather in the world, Tongtianxing (TTX) is proud of its ability to keep coming up with new ideas to help its customers. But it also knows that working closely with chemical and machinery suppliers is of huge importance in allowing it to continue to innovate and keep its leather collections fresh.

say 'no' if we do our due diligence and prospective customers appear to have a more short-term mentality."

Most of the company's leather, 70% in total, is exported in the end, although this is often as a component of a finished sofa, manufactured in China by international brands. Customers that meet the long-term criteria also include big players producing sofas for the local market, some with around 500 stores in more than 30



cities across China and sales of close to \$1 billion per year. "We have many customers like this," the general manager says. "We work together. We are honest and open with each other and that makes it easier for us to keep developing new leather articles for them, helping them keep their product offering fresh. We even carry out market research together to decide between us what products will attract the consumer, our customer's customer. We work with our customers' sales departments, too, for the same reason. And if the market is difficult, we talk about ways in which we can reduce costs together: maybe we see ways in which they can improve efficiency in their factories, or they see ways in which we can improve our processes. If we have a good relationship, we will find it easier to help each other."

Overseas customers who have a well established relationship with TTX have also built up strong relationships with manufacturing partners elsewhere in China, the companies who make finished products. Some of those international companies have completed the loop by opening as many as 100 of their own furniture stores in Chinese cities in the last five years, with plans in place to keep expanding. In other cases, China-based companies on the customer list have opened representative offices in Europe or North America and are on the way to becoming international brands themselves. Leather is of great importance to these furniture companies, as demonstrated by the fact that TTX customers are represented among the so-far small number of brands from the furniture segment to have engaged with multi-stakeholder body the Leather Working Group.

Market position

Generally speaking, Chen Fei believes 20% of the sofas being produced today, globally, use leather. However, if the price of leather goes down, as it is at the time of our conversation (autumn 2017), leather's share could increase to 30%, in his opinion; in fact he's confident this will happen in the course of 2018. He talks of "different layers" in TTX's customer base based on his conviction that higher-end consumers "don't care about the price and will always buy leather because it's high quality", whereas those in the mid-market "may or may not choose leather". If leather is expensive, an alternative in fabric may appeal more to these consumers. His view is that the market is changing along these lines at the moment. In sofas, as in car interiors and shoes, there are plenty of consumers who devote very little thought to the material the manufacturers have used; the brand and the look matter much more in these cases. He explains that it's the mid-market that reacts when the price of leather comes down and insists that this reaction can come quickly, often from the designer community first, who take notice of a drop in the price of hides and of finished leather and use more of the material in the sofas they create. And if they are able to offer those sofas at a competitive price, end consumers react to that. He recalls that a similar thing happened in reverse at the start of the global economic downturn in 2007 and 2008, when the property market in the US was one of the first to be affected. "Our business went down very quickly at that time," Mr Chen recalls, "but it didn't take too long for us to recover. In 2009, our business stabilised again, and since then we have grown each year."

Customers want products that will make them feel good, he continues, and he points out: "This happens with cell phones and



Tongtianxing Group general manager, Chen Fei.

other electronic products. It's true that many end-consumers may be unable to make a judgement about the true value of the raw material and it's also true that some finished products that we call 'luxury' aren't truly worth it and people think more about the brand and are willing to pay more because the products make them feel good. But we should still supply good raw material to help brands give good value for money." He makes the point that furniture brands that use high-quality wood and high-quality leather in their sofas, emphasising the naturalness and renewability of both materials, stand a good chance of success among higher-end consumers at the moment, but says that strong branding still adds considerable value. Perhaps a combination of good design, strong brand appreciation and excellent-quality raw materials is the winning formula. He wonders out loud about a small accessory brand using leather similar in quality to Louis Vuitton's, for example, and equally attractive designs for its handbags; would the smaller, lesser known brand be able to charge the same price for its bags as Louis Vuitton does? His response to his own question is just to laugh. One down side is that all big, powerful brands (not just Louis Vuitton, of course) know how to exercise control over their suppliers, including their suppliers of leather. Tanners supplying a brand of this magnitude can often become afraid of losing a big-name customer and missing out on the prestige that comes with it.

Different types of raw material

In terms of its own raw material, TTX currently processes 8,700 hides per day, with 700 of those passing through its own beamhouse and most the rest going in as wet blue. The 700 raw



Around 80% of all the hides TTX processes at the moment arrive as wet blue, but an increase in the amount of crust the tannery buys is also part of the panorama.



The company has begun to process around 1 million square-feet of crust per month and plans to increase this to 3 million square-feet per month, 20% of the current total. It says its motivation is sustainability.



An extensive retanning department comprises 28 drums.

hides come to TTX “heavily salted”, purchasing and development director, Ben Liu, explains because it’s often hot in Quzhou, with temperatures frequently reaching 40 degrees Celsius in summer. These hides tend to be stored for only a few days before going into drums, though. The company’s supply of wet blue is much more extensive, with large volumes in storage under protective polyester in the grounds of the plant. TTX likes having different types of raw material in its processing mix; Mr Liu says that a high pH from the beamhouse operation helps neutralise a low pH from the retanning operation, making it easier for TTX to run a wastewater treatment plant of which it is extremely proud. Even the beamhouse’s solid waste, in the form of fat and protein, helps waste management, he says, because having that material in the wastewater helps breed bacteria, which, in turn, reduces the chemical and biological oxygen demand (COD and BOD) at the treatment plant. The company is attracted to the idea of using crust too and has begun to process around 1 million square-feet of crust per month. So far, this has worked well and plans are in place to increase crust’s share of the raw material cake to 3 million square-feet per month, 20% of the current total. “The point is that our total capacity will increase,” Mr Liu says, “and using more wet blue than we do now would have a bigger impact on our wastewater treatment plant. Using more crust instead is attractive. Yes, you can lose a little yield, because you can’t open up crust the way you can open up wet blue, but it’s only 5%-10% more expensive than wet blue. This is all about environmental protection.” Brazil is the source of a large proportion of the hides TTX buys.

Production set-up

There are 12 soaking and liming drums for wetting the wet blue back. These feed splitting machines, from Italian technology provider Mosconi, but also from a local rival, Huzhou Mercier. As well as all the top grain, TTX finishes around 1 million square-feet of split every month, with the rest selling as wet blue split, mostly to other tanners in China. On average, the hides the Quzhou-based tannery works with (salted hides from France and Australia, wet blue from Brazil and, via wet-end tanners in other parts of China, the UK) yield around 55 square-feet of top grain leather and 30 square-feet of split.



In its retanning department, TTX has 28 drums, mostly in stainless steel, although some have wood on the outside with stainless steel interiors. This total includes two smaller drums that the company uses to conduct new product trials. From here the material goes through Chinese-made staking machines and onto toggle frames for stretching and drying. For buffing, the technology comes from Italy once again, with machines from Bergi preparing the hides for finishing (there is no shortage of buyers in China for the compressed blocks of dust this operation generates) and Italian machines, this time from Gemata, are involved in the bottom coating operation that follows. Top-spraying, on the other hand, is by a locally produced machine. And, continuing this meandering between Italian technology and local machines, while TTX uses a Bergi Superpress for embossing, its 37 milling drums all come from Xinji Julong Leather Machinery. Another Chinese technology provider, GoTech, is the supplier of much of the equipment in the TTX laboratory, which has been named by the China Leather Industry Association as an accredited testing centre for third parties. Ben Liu says the GoTech equipment works well and came with the recommendation of global research and testing body SGS. More than 100 technicians make up TTX's own research team and work on new developments is continuous. There are joint developments with leather chemical suppliers, including Lanxess, TFL, Stahl, Fenice and Samia (see separate section), which go on alongside projects with major Chinese universities with a keen interest in leather, including Sichuan and Jiangxi. The tannery also conducts its own development initiatives, often inspired by visits to major furniture exhibitions in Italy, such as the Salone del Mobile Milano, and in the US, including High Point Furniture Market and Las Vegas Market.

Water quality

The expansion Mr Chen talks about has led to the tannery occupying a variety of buildings across an extensive area, but it is still able to devote an expansive space, 47,000 square-metres, to its wastewater treatment plant, a facility in which flowers, fish, dragonflies and fresh air feature prominently. Reeds and other types of wild grass flourish there, all contributing to a reduction in BOD, the levels of which, along



Splitting, using Italian tanning machinery.



Locally made tanning machinery is also in use at TTX, in the wet stretching operation, for example.



Most of TTX's finished leather, 70%, goes for export as a crucial component of furniture manufactured in China for markets such as the US.



Part park, part effluent treatment plant, the TTX wastewater facility is an attractive place.



Water flows from the tannery straight into the important Qiantang river system. Zhejiang's provincial government carries out 24-hour remote monitoring of BOD, COD and ammonia.



Environmental challenges have contributed to a substantial reduction in the number of large tanneries operating in China.

with those of COD and ammonia, are subject to 24-hour remote monitoring by Zhejiang's provincial government. The authorities' remoteness may be their loss; the people who work at TTX regard the wastewater treatment plant as one of the most attractive parts of the tannery. There are tables, chairs and parasols to give people somewhere to enjoy some time outdoors during breaks. The company has built waterfalls and other aquatic features into the layout, providing beauty but also serving to add oxygen to the water with less reliance on components such as electric pumps: gravity can do the job too. The fish, bright orange in colour, are thriving. Lan Li, director of the company's general office, says she enjoys coming to feed the fish and they react excitedly when she nears the water's edge. Water quality is a key subject here. Quzhou sits on a plain between ranges of reasonably high mountains and has various smaller rivers that flow into the Qiantang river system, one of China's most important because it flows through Hangzhou. In recent times, for example as the host city for the 2016 G-20 Summit, Hangzhou has been the focus of intense international attention and the authorities took radical action to make sure the city showed up well on the television screens of the world. Factories across the region were closed down for weeks in advance to guarantee smog-free skies. Not just for that event, but for years, any city upriver of Hangzhou has had to take particular care over water quality because Hangzhou is the capital of the province and a metropolitan area that is home to more than 20 million people. One glance at its wastewater treatment plant suggests this is a responsibility that TTX takes extremely seriously; water flows from the treatment plant directly into the Qiantang river system without additional filtering anywhere else.

Fewer tanneries

The management team at the Quzhou tannery says it supports moves from the Chinese government to impose high levels of environmental responsibility on the country's leather manufacturers. In November 2011, the China Leather Industry Association (CLIA) said there were 1,800 tanneries operating across the country. In September 2015, it said this figure had fallen to around 1,000. The figure it gives now is 560 medium- and large-sized



Lan Li, director of the company's general office, with head of finishing Dai Zhibin.

tanneries. Chen Fei's opinion is that this figure could fall further in the next three years, perhaps by as much as 50% (a view the CLIA does not share, at least in public), although he insists the volume of leather China produces as a whole will not diminish (which CLIA does agree with). Some companies still active in the industry "still need great improvement", in the assessment of the TTX general manager, and the financial cost of making the necessary improvements may prove too steep for some. "The volume of leather being produced by the industry in China will not change too much, though," Mr Chen says, "but it will be concentrated on fewer, bigger tanners that have already invested in advanced machinery and systems and are committed to working properly. TTX will be one of them."

He regards the consolidation as a natural consequence of the growth of China's economy in the last three decades. Manufacturing only came to China because of low costs, Mr Chen acknowledges, and now it's moving to other parts of south-east Asia, such as Thailand and Vietnam, because costs are lower there than China can offer today. That this should have had an effect on the leather industry was inevitable, he feels. He goes on to say: "Low-grade leather manufacturing will go to lower-cost countries, but higher-quality leather will become even more valuable than it is today, and that's what China will manufacture: mid-to-high-grade leather. There is an example for us in Italy. Italy has many tanneries and the leather industry there is still doing well."

Consumer choice

There can be no let-up in innovation. Chen Fei makes it clear that the influence of fashion and the desire always to have new offerings, new options to put in front of consumers affects the furniture market as well. He explains: "The market is different now

compared to the past. Young people want new styles, new products, so we need to develop more and more articles. We are now preparing 200 new samples every month, compared to perhaps 40 or 50 per month five years ago. Young people have always wanted something new. To win their business, furniture companies have to keep offering new ideas, which means they have to come to us, the suppliers, and say 'who can respond?'. All we are doing is responding to that." He acknowledges that, from this, there are implications for his company's expanding production facilities. Faster response-times, extra flexibility, smaller batches are all part of this. But he insists the work TTX does on its own to observe and interpret consumer demand trends is a great help. "It means we can be ready to offer new articles, new colours, new products quickly and adapt them for different customers," he says.

Leather chemicals manufacturers have a definite role to play in this, he insists; they have to keep up their own research and development efforts and bring to market products that will allow TTX to keep making new articles. As for machinery manufacturers, he observes that the leather industry may be "less developed" in terms of automation than other sectors, but he says the appetite for new technology of this kind is strong. "Labour costs are increasing," he says. "Here in China they have gone up by 50% in the last three years. This gives the machinery manufacturers a big opportunity."

Other labour challenges include the familiar issue of having to replace workers from distant provinces who choose to remain in their home villages rather than travel back east after major holidays such as Chinese New Year. Accepting the reality of the situation,



Chen Fei's calculation is that 20% of sofas today are made using leather, but that this could go up to 30% if the price of leather comes down.

Fresh approach

Five years ago, between 40 and 50 new samples of finished leather per month from Tongtianxing (TTX) were enough to satisfy the needs of its furniture customers. Today, the Quzhou-based tanning group needs to have 200 new samples ready to show to furniture manufacturers every month.

New colours are a good way to keep the TTX offering fresh, but only colours that work well on finished leather can be part of the company's range of more than 4,000. To keep its options wide open without compromising on quality, the leather manufacturer works closely with leather chemicals providers around the world, tapping into their expertise and opening its doors to let the tanner's and the suppliers' technicians work on joint projects together.

For this reason, the Dr Raoul Sartori, research and development director of Italian leather chemicals company Samia, a specialist in pigments and dyestuffs for leather, is a well known character at the Quzhou facility; he even has his own nickname among the workers there, with everyone referring to him as 'The Doctor'. Every six months, Dr Sartori explains, Samia produces its own trends book for the forthcoming fashion season with each volume containing "many, many new proposals". He plays down his own role in helping tanners such as TTX turn these ideas into real finishes on real hides for customers to put onto sofas for consumers' living-rooms and pays tribute to his technician colleagues, saying they are more likely to get their hands dirty.

What people want

Like TTX, Samia, too, believes innovation has to be constant and that the work to produce ever-better finishes and colour ranges for leather has to continue. "Technically speaking, we know that what everyone wants is stain-resistant leather for upholstery, but this is something that is hard to do and very expensive. The only options that really work are resins, such as Teflon, but it's a fluorinated compound and the whole world is trying to move away from those chemicals because they persist in the environment; the international community is worried

about the possible permanent effect of those substances. Many companies still use them, in cooking appliances and in high-performance outdoor jackets, for example, but I can tell you that it is a subject that comes up in the conversations we have now. Many brands are starting to ask tanners, and to ask us, if our products contain polyfluoroalkyl substances."

He points out that chemical manufacturers have tried to adapt, making products with fewer carbon atoms in the chain to address concerns about bioaccumulation and the chemicals' apparent reluctance to break down in the environment. "But almost nobody wants those products," Dr Sartori complains. "So we continue to work to find a stain-resistance technology that will work to the sofa manufacturers' satisfaction, but without causing these environmental concerns. We have new ideas that we are trying out together, the tanner and us, but I am not satisfied yet."

Good for China

He is of the opinion that pushing for innovation in this way could be of particular benefit to Samia's Chinese customers, including TTX. The Doctor says he believes large volumes of leather will continue to be produced in China but that a strategy of making products cheaply and presenting them as good economic options (simply because they are made in China) is no longer viable. "That's not enough now," he continues, "and I think Chinese leather manufacturers have to make a bit of a switch. Costs have increased and so has Chinese tanners' ability to make good-quality, if not top-quality, leather and they should have a price structure that reflects that. This applies to finished products too, including furniture. For me, it's really hard to see how there could be a return to having large volumes of furniture made in the US. Costs are high and I'm not sure there are enough craftspeople there with the natural instinct you need to make a beautiful product. Designers in China will be able to do this before their counterparts in the US. In China, people learn things very fast. One more leap and their designs, based on their own ideas, will be beautiful. They will soon be selling good-quality, good-looking sofas at a good price. The world is changing."



TTX asks workers almost to recruit their own successors. "We publish job vacancies on our website like lots of other companies," Ben Liu explains, "but we also say to people when they are preparing to go back to their villages for the holiday to ask young people there if they want to come to Zhejiang and work for us. Word of mouth is a very good way for us to reach potential new employees there because some of the places are thousands of kilometres away. We have people from Yunnan and Sichuan provinces, and when our workers go home we tell them to ask around and try to convince young people to come." He estimates that between 30% and 40% of the total workforce are people originally from outside Zhejiang. "Some stay," he insists, "buying houses and raising their families here."

When new recruits do come to Quzhou, there are mentors to look after them and ongoing skills training, with regular competitions to see whose skills have developed the fastest. "Different processes in the tannery need different skill levels," Mr Liu explains, "and of course some jobs attract a higher level of pay. Competitions of this kind are a good way of making sure we reward the people who have learned well and learned quickly. Prizes have included holiday trips to other parts of China."

Support from the authorities

If TTX continues to protect the environment, its general manager says, the authorities in Quzhou and in Zhejiang province will continue to offer support "with any difficulty that crops up". Having decent levels of sales, which means being an important contributor of tax, also helps the company's standing. Its reputation is good, among neighbouring companies, the authorities Quzhou, those at provincial level in Zhejiang and among the wider China leather industry. For Mr Chen, this idea of building and maintaining a good

Lots of the ideas that have helped TTX expand have come up from the tannery floor.

reputation in the wider market is an important factor in allowing the company to hold its head high in the global leather industry. Establishing a good corporate social responsibility strategy is a second important factor he mentions. He regards the expansion of product development as another important reason, insisting: "Our product development is the best. We develop so much." He explains that having "a stable volume" of hides to process, finish and ship to customers is also an important part of it because it allows you to be big enough for internal changes to make an impression on the wider industry and big enough to ask for change among chemical, machinery and raw material suppliers. But he insists that when it comes to distributing the benefits of TTX's success, its own people, its managers and workers, must come first.

He explains: "Most of the new ideas that we can then work on as partners with our suppliers to satisfy our customers' needs come from our own people, and they must benefit from that because they are the motor that keeps us going. Our workers, particularly those from remote provinces, think of the company as a home and for this reason we ask managers to treat the workers like family. Their benefit has to come before any benefit to the owners. We are always praising the best workers, we pay them bonuses and make sure their colleagues know we appreciate the work they've done; this encourages others to look up to them, learn from them and follow their example. We think of the structure as a circle rather than as a hierarchy, and each part of a circle can make a big impact on the whole." He says there are many instances around the TTX set-up of improvements that have come up from the tannery floor. Details of new ones go on display on a merit board, a kind of hall of fame. ☺