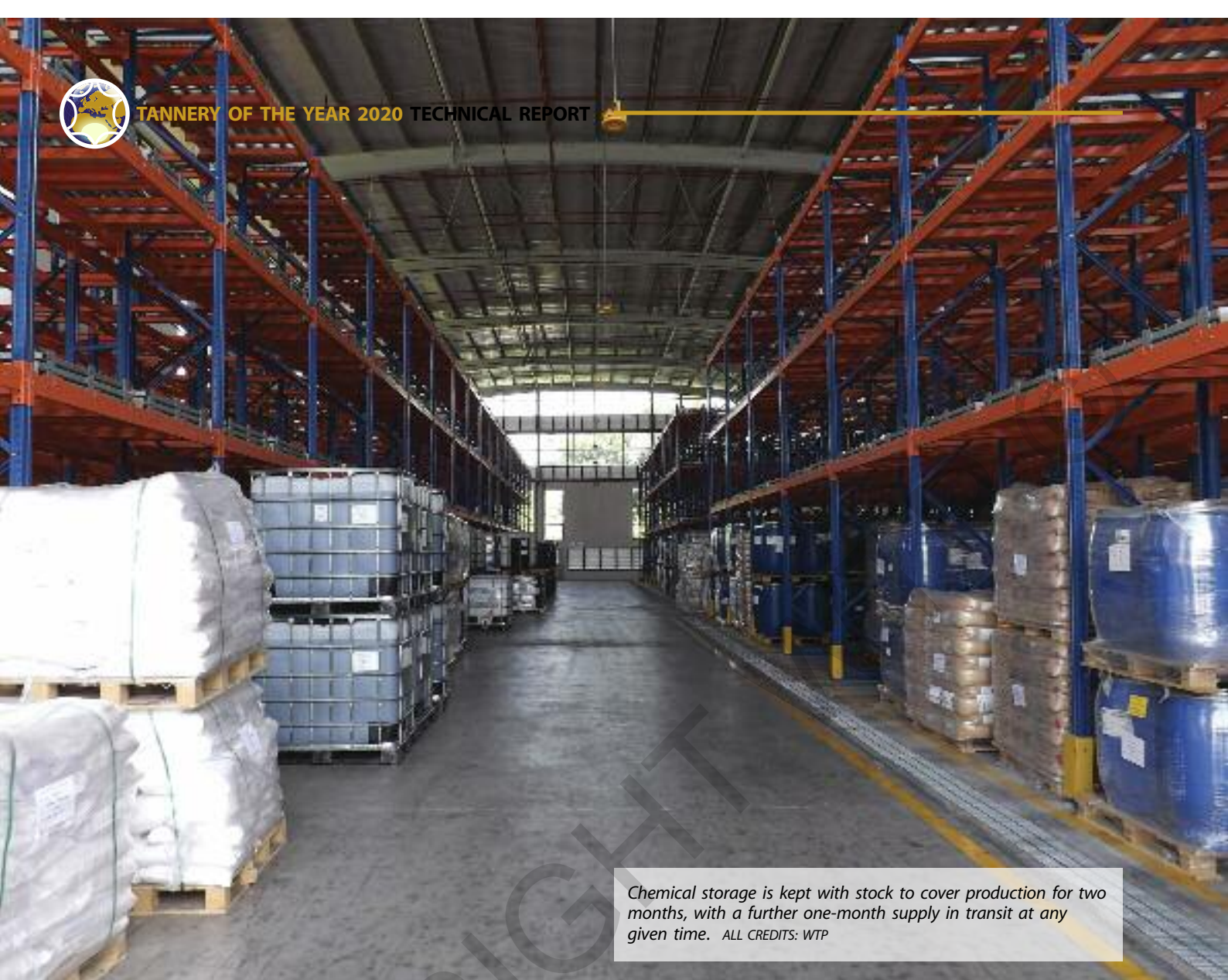




Chemical storage is kept with stock to cover production for two months, with a further one-month supply in transit at any given time. ALL CREDITS: WTP



PrimeAsia Vietnam Technical report

PrimAsia Vietnam (PAV) is located in the Xuan A2 industrial zone of the Vietnam Formosa Industrial park in Ba Ria-Vung Tau, Vietnam, approximately 50 kilometres south-east of Ho Chi Minh City. The site has undergone various expansion programmes since construction began in 2001, starting as a finishing facility for crust imported from China and moving to the current manufacturing set-up of working from wet blue in 2008. The most recent expansion project began in 2015 and concluded in March 2019. With a production capacity of approximately 10,000 sides per day, the tannery purchases the majority of its wet blue from the US with other supplies coming from Europe, Australia and South America. On arrival, the first impressions are of greenery surrounding the administration offices,

softening the lines of the glass-fronted building. What also draws the eye is an all-weather football pitch, regularly used for inter-tannery departmental games, that sits near the front entrance to the 210,000 square-metre tannery site.

Manufacturing and processing

Working with eight major wet blue partners, approximately 75% of the hides purchased are from US steers and heifers with the remaining supply coming from Australia (5%) and Europe (3%) with South America, notably Brazil, making up the rest. The wet blue comes to the tannery either as full substance hides, originating from 62-64 pound trimmed steers, or as split hides with the grains being graded as A, B or C. Preferring to call



suppliers 'partners', PAV has done extensive work to limit the variations in the tannages it receives and the company has in many cases standardised the process prior to purchase in order to uphold the consistency that it seeks. This is the first step in a wider effort to ensure what it calls 'security of supply' with an investment in the material pipeline three months in advance.

On arrival, the hides are kept in the wet blue store – a warehouse with the capacity to hold more than 14 million square-feet of leather. With this volume of damp leather, combined with the local climate, mould contamination is tightly monitored and the whole warehouse undergoes weekly agar plate air inoculation tests, with monthly fumigation to eradicate mould spores. Working on a first-in-first-out (FIFO) stock rotation, the incoming material is first logged on the Tannery Information Management System (TIMS) from where it can be monitored and traced through production. From the store, the wet blue goes to the first wet stage in the production process. The hides are loaded into soaking drums that are a cross between a slatted de-salting drum and a paddle. In the 45-minute process, the hides are rehydrated with additions of fungicide and a sort-assist pigment and also undergo some pH adjustment. From the soaking, they are allowed to drain slightly and are hoisted to the viewer where they are spread out onto a 45° pitched conveyor for inspection and grading under strong lighting. The individual grade is written onto each side flank of the hide. The hides are then immediately sammed, cut into sides and stacked into graded piles. From the eight differently graded piles, the sides are split to substance and in accordance with the production forecast are sent for further processing.

Moving to the retanning and dyeing operations, the substantial expansion over the past four years has included almost doubling the number of retan drums PAV operates: 42 drums, with a load capacity of 2,000, 1,000 and 500 kilos, are in an elevated position with mezzanine floors for operator access. This range of drum sizes allows maximum flexibility when planning production. Feed to the drums is almost totally automated utilising a bespoke water feed system and liquid chemical feed, accomplished using Hūni automated dosing technology while allowing manual addition of powders and small volumes of liquids, plus the relevant checks and balances such as pH and dye-penetration by the operators.

Following the retanning and dyeing stages, the sides are dropped into stainless steel hoppers placed under the drums, which are then taken to the samming department by fork-lift truck. Here the sides are horsed up to drain for a short while. Throughfeed samming and wet staking, if required, are then carried out prior to the drying stages. Depending on the product requirements, the start of the drying operation is either vacuum drying or wet toggling. The vacuum drying is carried out predominantly using one of two Cartigliano A-CNS low-temperature vacuum dryers, these being fitted with auto-feed conveyors from throughfeed Bause samming machines. Following this initial drying stage, the sides are sent through a Cartigliano TAIC drying and conditioning unit, followed by hang drying and final conditioning before going to staking and inspection. Wet toggling is carried out by teams of six, toggling sides to frames on the Emmezeta One toggle drying unit, followed by conditioning and staking.

Prior to the finishing operation, the sides are buffed for corrected-grain and nubuck leathers, but also buffed on the flesh



Warehouse for wet blue storage holds two months' production. Hides are purchased in relation to the marketing forecast that is updated every three months.



Soaked back, the wet blue hides are inspected on a pitched conveyor. The wet blue is tested for chrome VI every three months with restricted substance and REACH compliance tests twice per year.



60 trial drums are used to produce the 500,000 square-feet of samples that PAV makes each month. Small orders and order shortfall can also be made up using these drums.



The immaculate mezzanine floor between two rows of the automatically dosed colouring drums. This phase of the expansion was completed in 2019.



20 Hüni automated dosing polypropylene drums allow for safe and efficient chemical dosing to the retanning and dyeing drums. These drums hold the most commonly used liquid chemicals.



Pictorial display of crust defects that require removing in the trimming operation is on display in the crust sorting zone.

side to remove longer fibres that might cause aesthetic issues when covered with a lining leather, a small but crucial detail in the quality requirements. Following buffing and de-dusting, the sides are dry-sponged to further remove dust particles; this uncommon practice is carried out to reduce the issue of crocking, the dye migration from the leather to other fabrics and textiles coming into contact with the leather.

Finishing activities are carried out in two separate buildings, with one dedicated to nubucks, anilines and waterproof leathers and the second used for pigmented finishes. For pigmented finishes, the entire operation is carried out on one continuous line comprising roller-coating and spraying sections for the various coats, with drying units in between. Owing to the work required to meet colour requirements, there are three finishing lines in total, one each for white, black and coloured leathers. For the anilines, individual spray-lines are used for dye sprays and topcoats, with roller-coaters used for oiling the grains when required. Following finishing, various embossing prints can be employed, either by means of Mostardini hydraulic press or through a rotary Rotopia or Nanopress. Softening of the leather is by use of dedicated Cartigliano vibratory stakers, again segregated for dark and light leathers.

Once finished, the leathers are trimmed and inspected by SATRA-accredited personnel, after which the leathers are measured and sent for dispatch. The holding warehouse for the leathers is purely for orders and leathers are not made for stock. Where stocks are kept, it is at the crust stage, where strategic stocks of 16 base colours are made and held to enable a quick turnaround and maintain security of supply. With very little by way of a minimum order quantity, PAV invests in delivery reliability and peace of mind solutions for its customers, with a 98% on-time delivery record.

Major brand partners also have input into the training and accreditation of workers and equipment. Samples from each production batch are retained and signed off against master samples that have previously been agreed with customers, even to the point of providing milling variation samples.



Throughout the facility, emphasis on health and safety is evident with easy access to the safety data sheets for all products used in that area.



Waste management

Heavy investment has gone into the drying and disposal of sludge generated by the wastewater treatment plant. Utilising heat from onsite solar panels, an enclosed system dries the sludge through the use of a Cartigliano sludge extruder. The extruder, using water heated to 86°C, turns the sludge into long thin 'noodles' and through a system of drying conveyors, dries the sludge down to 12% moisture. This dried sludge, when compared to the 80% moisture variant that was previously attained, results in far less waste going to landfill. Investigations into financially beneficial outlets for the sludge are also under way.

Further waste management practices include:

- Splits sold for suede or pigmented finished leathers;
- Blue barrels collected for reuse or recycling;
- Scrap metals recycled;
- Scrap pallets reused;
- Crust and finished scraps sold for small leathergoods.

Reuse and recycling

Water from the initial soaking and sorting operation is reused five times before sending to the wastewater treatment plant. Of the water that is used in production at the moment, 30% is recycled and reused for washdowns, toilets and spray booths, but there are plans to increase this to 70% by 2020, when recycled water will be of a good enough quality to be reused in the retanning operation. Currently, the wastewater treatment plant consists of prefiltration and collection followed by further screening and conventional biological and chemical treatment with resulting COD less than 100mg per litre.

Energy and water

Water for the plant comes from the municipal supply to the city and is heated by use of solar cells. The steam used in production is generated by a biomass boiler that burns rice husks. As Vietnam is a mass exporter of rice, the husks are a sustainable waste product. Two back-up diesel boilers are also available for when the biomass boiler is being serviced and cleaned. In the case of power outage, back-up generators are in place to continue supply. ☉



365 solar cells, covering an area of 5,400 square metres provide 1,800 tonnes of hot water (at 85°C) per day. The water is used for processing and wastewater sludge drying.



In the newly expanded finishing area, Spraytech Waterflow rotary spraying machines are used to finish the aniline and semi-aniline leathers. The water veil 'waterflow' booth drastically cuts the quantity of pollutants released into the atmosphere.



Final inspection is carried out by three operatives. Two of the operatives handle and trim the sides being sorted whilst the third is a certified grader. The lighting can be altered to account for different specifications.



Pilot scale reed bed with a capacity to treat 3,600 cubic-metres is being investigated for end of pipe effluent polishing.