



Iris colour quality control

With over 40 years' experience in the production of tannery machines ranging from measuring machines and spray economisers to automated rolling and bundling machines, GER Elettronica launched its IRIS colour control technology at the 2018 SIMAC TanningTech exhibition in Milan. Recognition of this innovation came a little more than a year later, during the 2019 APLF fair in Hong Kong, where IRIS won the 'Best of APLF' award in the New Tanning Technology category. This encouragement to GER Elettronica and its See Beyond strategy, a challenge that it has been pursuing for more than 40 years now.

Today's market imposes processing methods that reduce waste to a minimum and optimise processing. It is with this in mind that GER Elettronica has patented Iris, a device that reduces the risk of error, reduces control times, provides a careful and continuous analysis of the colour on the whole production line, and thus reduces the costs of rework and assures the quality standard required by customers.

Utilising a CIE 1931 spectrum value colorimeter sensor, contained in a protective IP54-rated aluminum housing, the technology works on a 500-millisecond sampling interval. Iris compares the colour of a leather sample against the colour of a hide in production and, from the comparison, evaluates the differences between the two colours in terms of the distance between two points (a and b) in the CIELAB colour space. This is known as 'delta E', [ΔE^*ab]. The minimum ΔE^*ab detectable by the IRIS system is 0.03. Putting this into context, in most instances the human eye has an equivalent ΔE^*ab of around 1.0.

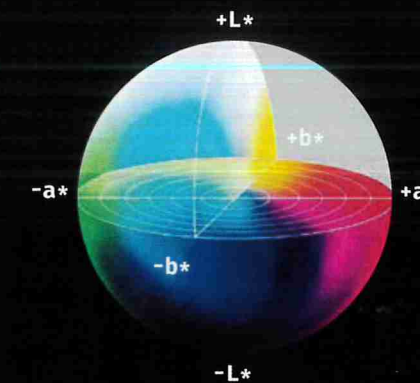
To expand on this:

| ΔE^*ab : | |
|------------------|---|
| 0.0 - 0.5 | No colour difference |
| 0.5 - 1.0 | Difference only distinguishable for experienced observers |
| 1.0 - 2.0 | Minimal colour variance |
| 2.0 - 4.0 | Perceivable colour variance |
| 4.0 - 5.0 | Significant colour variance |
| 5.0+ | Different colours |

Thirty-three times more effective than the human eye and with a capacity to identify 50 billion colours, Iris can do away with the subjective nature of colour control, GER Elettronica claims.

The flexibility of the machine allows its placement at various stages of production, coming out from the drying tunnel of a spray finishing line, for example, after area measurement or at the final inspection stage.

COLOUR IDENTIFICATION



The IRIS system identifies the colour in the three-dimensional CIELAB space. Each shade is represented by a point whose position is measurable on three axes (L^* , a^* , b^*).

Each colour is uniquely identifiable through the coordinates L^* , a^* , b^* (with values from -100 to +100) and the difference between two colours (ΔE^*) can be measured as the distance between two points. Minimum ΔE^* detectable by IRIS = 0.03

| Hide 1 | Colour difference | Hide 2 |
|---|---|---|
| | $\Delta L^* = +4.03$ $\Delta a^* = -3.05$ $\Delta b^* = +1.04$ $\Delta E^* = 5.16$ | |
| $L^* = 43.31$ $a^* = 47.63$ $b^* = 14.12$ | | $L^* = 47.34$ $a^* = 44.58$ $b^* = 15.16$ |

Fields of application include:

- Colour measurement to control finishing processes
- Detection of non-standard hides
- Classification and sorting of hides according to colour
- Online inspection
- Final quality control (pass/fail)

In operation, the equipment displays instantaneous data in graphical form, allowing operators to see an individual hide's colour characteristics. The data can be archived by batch and exported via USB or ethernet connection. Visual and acoustic alerts can be set to detect drifting and out-of-specification occurrences.

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