LUMENERA CASE STUDY

HOW iTRACE HAS BEEN FAULTLESSLY DETECTING MICROSCOPIC TRACK & TRACE MARKINGS FOR MORE THAN TEN YEARS

PROTECTING A BRAND

iTRACE, an industry leader in product tracking and traceability, allows brand owners to secure their products with two-factor authentication to ensure that they are genuine and being sold by their intended retailers and not third-party vendors. This allows brand owners to maintain control over their brand's pricing, margin, and where their products are sold.

iTRACE has developed a system to create a two-dimensional marking, known as a 2DMI, that has data encoded into the pattern. A 2DMI mark can be incorporated into products overtly or covertly depending on the brand owner's preference. They can be laser-etched onto a number of surfaces and measure as small as 200 microns across. This ensures that the markings are incredibly durable, resistant to both fire and water damage, and are small enough that they are invisible to the naked eye.

The algorithms used to create a 2DMI can generate one quadrillion (10^{15}) unique combinations per user, allowing individualized product traceability and authentication.

As products ship to retailers, they are scanned into the iTRACE system that is licensed to the brand owner. The brand owner then uses field investigators to purchase goods from the grey market and checks for the 2DMI marking. If the marking is absent, they can then determine that the product is fraudulent and can proceed with legal action against the retailer for selling counterfeit goods.

If the marking is present and legitimate, they can track leaks in the supply chain where products are diverted from authorized retailers to the grey market. In either case, it allows the brand owner to be proactive in protecting their brand and prevent margin erosion, which could account for a 10-20% loss of gross income for certain markets.

In addition to protecting against market erosion, iTRACE's 2DMI markings are also used more overtly in manufacturing components found in the industrial and automotive markets to ensure that genuine and safety-certified parts are used. For instance, if a counterfeit part that did not meet safety standards was used in a car and eventually determined to be the cause of an accident, the car manufacturer could be held liable for the crash. By ensuring that their assembly plants only use overtly marked parts bearing the licensed 2DMI, they can confirm the authenticity and reliability of the part with no fear that it was switched out with a substandard duplicate.

A RELIABLE PARTNERSHIP

With markings that vary in size from visible to microscopic and application surfaces from metal and plastics to glass, iTRACE needed an optical system capable of verifying the 2DMI marks after application as well as during the brand owner's investigation process in a wide range of settings. They initially attempted to develop a system with IPTV cameras as well as webcams. Although these simple cameras worked for practical purposes, they needed something with a more user friendly software development kit (SDK) that would allow for better integration with their proprietary software.

iTRACE contacted Lumenera for help in designing a new vision system that they could integrate into their software.

As this was over ten years ago, iTRACE selected the Lumenera Lu105M camera – a USB 2.0, 1.3 megapixel camera capable of 15 frames per second. They have been using the same camera model since then and have been pleased with the robustness and longevity of the build. For a wide range of markings, they have paired the cameras with a 75X zoom microscope with coaxial and ring lighting.

In the ten-plus years that iTRACE has been using Lumenera cameras, they have performed without a need for any replacements. Additionally, Lumenera ensures there is no need to update end-user source code or modify API calls with the introduction of new features or changes to the SDK. This additional ROI that iTRACE has received over the years has directly benefited them with several new camera functionalities without any difficulty.

iTRACE micro mark inspection station with Lumenera Lu105 camera and 75X optics

LOOKING AHEAD

Looking to the future, iTRACE will continue to evolve its vision system by making use of the latest machine vision technology to identify 2DMI markings from a live video stream. "Knowing that Lumenera has a full range of cameras to meet almost any system requirement, we're confident that integrating with Lumenera and using their current SDK has given us future-proofing for more complex and sophisticated applications going forward," explains iTRACE's Founder & CEO, Mark Manning. The Lumenera SDK will allow iTRACE to interchange their cameras effortlessly as it works with all Lumenera camera models seamlessly. This means even faster scanning of incoming parts for the 2DMI marking or outgoing finished goods before they are shipped to retailers – saving the brand owner time and money.

For more information about iTRACE, please visit their website at www.itracetech.com.

For information about the Lumenera cameras used as part of the iTRACE system, as well as our full line of USB 3.0 cameras, please contact Lumenera at info@lumenera.com.