# UV hot-melt coating, integrated: An exciting technology redefined

**What if a single line could coat, cure and finish adhesive tapes in one continuous process? Tim Self of Elite Cameron revealed how UV hot-melt integration is redefining efficiency and sustainability for the European tape industry.**

Tim Self, director and owner of TS Converting Equipment Ltd. | Elite Cameron (U.K.), took the stage on Wednesday, 24 September, during Afera's European Tape Week, to present "UV hot melt coating: An exciting technology, integrated." His message to the packed production-focused session was clear: UV-curable hot-melt coating, when designed as a single, integrated system, can make adhesive-tape manufacturing leaner, greener and far more flexible.

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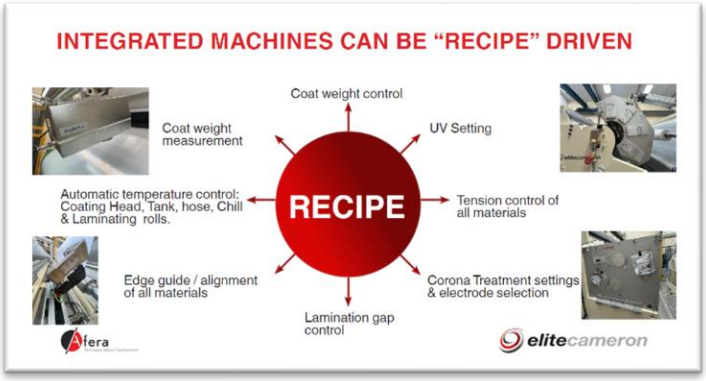
## The integrated line concept

Mr. Self explained that "integration" means more than simply connecting separate machines. In a fully integrated UV hot-melt coating line, every stage of the process is designed to operate as one co-ordinated system.

The adhesive is applied through a precision slot-die head that handles 100% solids, solvent-free hot-melt material. Immediately after coating, the adhesive layer is cured with UV light, removing the need for long drying ovens or solvent handling. Depending on the product, a second layer can be laminated in-line, followed by controlled cooling and, increasingly, on-line slitting and rewinding so that finished rolls come off the same machine ready for packing.

All these steps are managed through recipe-based software and closed-loop controls that automatically adjust operating parameters for consistency and minimal waste. The result is a compact, efficient production cell that uses less space, less energy and fewer manual interventions than traditional coating lines.

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## Why UV hot melt now?

Mr. Self positioned UV-curable hot-melt coating as a technology whose time has arrived. Rising energy costs, tighter environmental regulation and shorter product cycles are pushing manufacturers to find cleaner, more adaptable production methods. A UV hot-melt line responds to all three needs: It is energy-efficient, solvent-free and capable of fast product changeovers.

He summarised the main advantages:


1. **Sustainability**. The process uses no solvents, so there are no emissions from drying or incineration. Its compact design also saves factory space and energy.
2. **Agility**. The line can start and stop quickly, making small or customised runs economical and reducing waste during changeovers.
3. **Quality and consistency**. Slot-die coating and UV curing provide extremely accurate coat-weight control and repeatable performance.
4. **Integrated control**. Lamination, chilling and slitting can all take place in the same line, reducing handling and ensuring full digital traceability.

Mr. Self noted that several equipment and adhesive suppliers are now investing heavily in this field, demonstrating that UV hot-melt coating has moved well beyond pilot projects into established production use.

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## Process details and practicalities

A significant part of the presentation explored how the process works in practice.

**Adhesive formulation**. The adhesive must combine two key features: stable viscosity for smooth coating at temperature and the correct UV reactivity for complete curing at line speed. Modern acrylic UV hot-melt systems meet these criteria for a wide range of pressure-sensitive applications.

**Curing process**. Achieving full polymerisation depends on balancing UV intensity, exposure time and web speed.

**Web handling**. Precise tension control and progressive cooling are vital for avoiding distortion—particularly on thin or heat-sensitive films. Proper lamination nip geometry helps maintain flatness and surface quality.

**Inline finishing**. Increasingly, lamination, slitting and rewinding are built into the same line, reducing work-in-progress and improving traceability from coating to finished roll.

By combining all these functions under one control system, operators can achieve repeatable results with far greater efficiency than in multi-step coating lines.

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## Where it fits in the tape portfolio

Mr. Self stressed that UV hot-melt coating does not replace every existing technology but occupies an important niche wherever speed, flexibility and sustainability are priorities. It is especially well suited for:

- **Short and medium production runs**, where fast changeovers minimise waste
- **Rapid product development** or pilot projects needing quick formulation testing
- **Sustainability-driven upgrades** from solvent-based processes
- **Precision markets** such as electronics, protective films and labels that demand tight coat-weight control.


In these cases, an integrated UV hot-melt line can offer a genuine competitive advantage by combining consistent quality with lower energy use and a smaller environmental footprint.

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## Risks, limits and what to watch

While enthusiastic about the technology's potential, Mr. Self acknowledged several areas that still require careful attention:

- **Formulation range**. Not all adhesive chemistries are yet available in UV-curable form, so close collaboration with raw-material suppliers remains important.
- **Thermal and UV management**. Some substrates are sensitive to heat or light, making temperature control and shielding critical.
- **Investment and training**. Integrated lines concentrate capability in one system, requiring a higher initial investment and trained operators to make full use of automation and digital controls.

Mr. Self framed these not as drawbacks but as development opportunities. Suppliers are already addressing them through improved UV lamp designs, more stable adhesive chemistries and smarter process control software.

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## Take-home message

Mr. Self concluded with a simple point: An integrated UV hot-melt line allows manufacturers to cut energy use, eliminate solvents and gain production flexibility without sacrificing performance. The technology has matured from a promising concept into a practical, proven option for real-world tape production.

As more converters adopt this approach, it is helping to make adhesive-tape manufacturing cleaner, faster and more sustainable—precisely the direction in which Afera's Members, and Europe's wider circular-economy goals, are headed.

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# About the speaker

**Tim Self** is the director and owner of **TS Converting Equipment Ltd. | Elite Cameron**, a U.K.-based manufacturer of slitters, rewinders, coaters, laminators and core cutters. Beginning his career as an apprentice engineer at 16, Mr. Self gained worldwide experience in installation and commissioning before founding his own company in 1984. TS Converting later incorporated the historic Cameron brand—established in 1905—into what is now Elite Cameron. Today the firm supplies integrated coating and converting systems to tape, film and adhesive manufacturers across Europe and North America.