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FEATURES: Improving measurement data import | Passport to adhesion innovation | Replace, reduce and recycle | Expect innovation and much more | Total flexo pre-press solution | Static neutralising App



Passport to adhesion innovation

Kugler-Womako has developed a passport machine which utilises a polyurethane hot-melt adhesive instead of traditional glue and another which inserts RFID chips

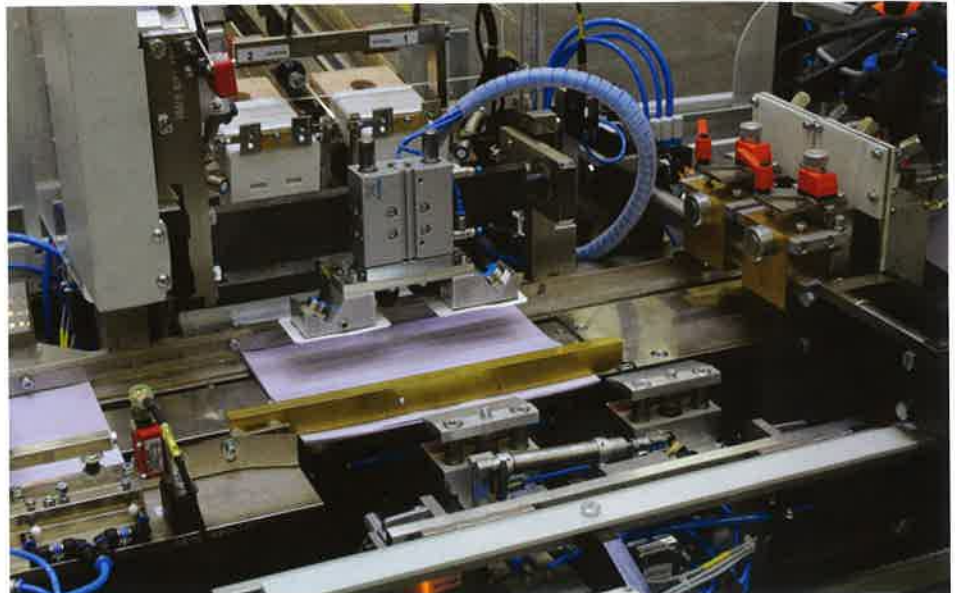


Passports make high demands in terms of forgery protection so the machinery deployed in the manufacture of these products must always be state-of-the-art.

Kugler-Womako has developed

a new variant of its passport machine for Note Printing Australia (NPA). PassPort2 PUR uses a polyurethane hot-melt adhesive instead of traditional glues and a completely new PassPort chip insertion machine.

A wholly-owned subsidiary of the Reserve Bank of Australia, NPA has been manufacturing Australian banknotes for a century and prides itself on providing secure products of the highest quality. Today, the systems NPA deploys in passport manufacture are supplied exclusively by Kugler-Womako of Nürtingen, Germany.



The PassPort Chip Insertion works with PUR adhesive and is situated downstream of the PassPort 2 in the production process

Improved adhesion

At NPA an Australian passport goes through five machines during production. The PassPort 1 binds the books, collating the individual components of the passport two-up and sewing them together. In the second machine the layers from PassPort 1 are laminated with covers and/or chip inlays. In the third, the two-up layers from PassPort 2 have the biometric inlays inserted into the pages after the middle on the PassPort Chip Insertion machine. On PassPort 3 the layers are gold embossed, separated one-up, folded and cut to size with a die-cutting tool. In PassPort 4 the passport is given a Gothic number and laser perforation. At the same time the chips for e-passports can be initialised and personalised.

Previously, cold glue was used in the PassPort 2 for the inner book and cover. On the machine designed for NPA, the gluing process has been adapted for polyurethane hot-melt adhesive (PUR).

To this end, Kugler-Womako has modified its PassPort2 machine and replaced the traditional cold glue applicator roll with sheeting dies via which PUR adhesive is applied to the material to be processed at temperatures of 130-140°C. A glue quantity control system uses a heat-detecting camera to check the even application of the adhesive layer on the surface to be glued. While it is cooling the PUR adhesive undergoes a chemical process and hardens completely. The cross-linking of PUR is

better than that of cold glue so it is suitable for heavy and coated papers. One improved security aspect is that the bound products can withstand extreme temperatures and humidity without losing any of their adhesive strength. Furthermore, the bond cannot be detached without destroying the glued materials. PUR adhesive attains its final hardness in a very short time so that the products can be further processed immediately. This is not possible with cold glue because of its prolonged drying time of approximately 24 hours.

Users of the traditional Kugler-Womako PassPort2 who want to change to PUR adhesive without investing in a new system should know that almost any existing PassPort2 machine can be converted into a PUR machine.

PassPort chip insertion

In addition to a special passport number many passports today are already fitted with an RFID chip which normally goes between cover and endleaf. NPA expressed a wish to have the chip inserted between two pages after the middle of the passport to ensure that it was better protected. On account of the high cost of the chips it was important to have production spoilage reduced to an absolute minimum.

Kugler-Womako developed a newly designed machine for the customer. The

PassPort Chip Insertion works with PUR adhesive and is situated downstream of the PassPort 2 in the production process. With the center seam needing to remain visible as a security feature, the chip is inserted between the two pages that follow it.

PUR is applied to the pages via an adhesive die and the RFID chip inserted. Then the glued pages are closed and pressed together. Thus the chip is no longer detachable and is enclosed in the passport in such a way as to be well protected. To minimise spoilage the target page in the passport is scanned by a print mark reader prior to insertion of the chip.

Trusting cooperation

The designers and technicians at Kugler Womako worked closely together with NPA in implementing their customer's wishes.

"We very much appreciate the machines and the skills of the staff at Kugler Womako, especially the mechanics and technicians", says Andrew Atwell, passport production manager at NPA.

The equipment having been successfully commissioned, the manufacture of the new generation of passports in Australia has been going ahead since September 2013.

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