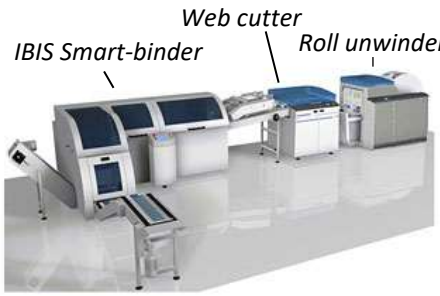
# Examination Booklet Production

The Smart-binder is the premium saddle-binding solution for production of booklets from digital printed sheets:

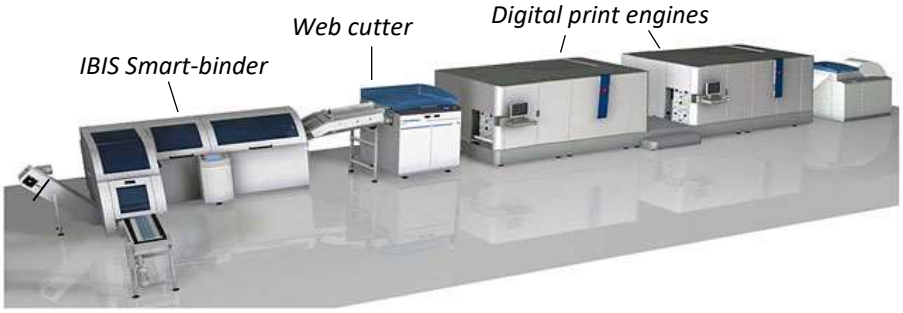
View webpage Wrapping overview

View video Smart-binder producing exam papers

**Typical Exam Booklet Production Lines**




Near-line, fed from a web-cutter




In-line, fed from a digital printer and a web-cutter

WHY USE THE IBIS SMART-BINDER

More printing companies are using IBIS Smart-binders to produce exam booklets compared with any other digital finishing system. The reasons for this are as follows:

**1/ Booklet security and integrity**

The highest priorities for exam booklet production are security and page integrity. Security is needed to ensure that there is no breach of printed examination booklet data. Finishing in-line with the printer is often preferred because then printed sheets or rolls do not need to be stored prior to stitching: they are finished directly into booklets. Finished booklets are often immediately stacked, strapped and/or wrapped so that the printed data cannot be viewed by anyone until the pile bundles are unwrapped in the examination test location.

It is essential that no sheet can mistakenly end up in the wrong paper resulting in one student with a page missing and another with an additional incorrect page - not the best start for a successful exam result for those individuals!

For this reason the Smart-binder has a fully integrated sheet detection and tracking system (using a bar code printed on each sheet) to ensure the integrity of each finished booklet. If there is any risk that a booklet could have incorrect pages, or the correct pages in the wrong sequence, then it is automatically rejected.

*Examples of examination papers made by IBIS Smart-binders at different customer sites around the world*



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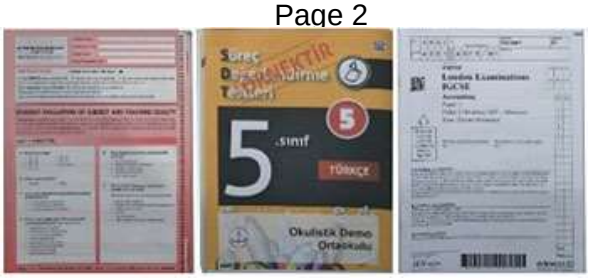




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**2/ High reliability with minimum maintenance**

Machine 'availability' (up-time) is important in a high volume exam booklet production environment, particularly when operating in-line with a digital web printer. The Smart-binder is a very heavy-duty system designed to operate 24/7 with the minimum of maintenance and with the highest possibility reliability. Some IBIS Smart-binders have produced over 70 million examination booklets.

**3/ High speed**

Exam booklets normally contain a small number of pages which means a high cycling rate if running inline with a high speed digital printer. The Smart-binder can therefore run constantly at web speeds around 100- 150 meters/minute and typically producing around 7,000 A4 booklets/hour when making 8 – 16 page booklets

**4/ Stacking, strapping, wrapping and labelling**

The optional booklet stacker BSS-10 is often used when making examination booklets when they contain a small number of pages because of the resulting high production and also because it is desirable to reduce the number of operator contact points and the number of opportunities for the printed data to be visible.


For this latter reason the stacked booklet piles are often then immediately in-line strapped (to avoid the booklets being removed and opened) and also sometimes fully wrapped. Printed labels may need to be added at this stage to identify the school and/or the specific exam for which the booklet stack is intended.

**5/ Variable page extents**

Sometimes the run lengths for exam booklets can be very low, even though the daily volumes can be very high. e.g. 1 million exam booklets a month from each Smart-binder. The Smart-binder can change the number of pages 'on-the-run' under bar-code control, while maintaining the integrity in each individual booklet (correct pages in the correct sequence).



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### 6/ Cover matching

A separately-printed cover sheet, if needed, may be fed from the optional Smart-binder cover feeder. If personalized then the cover may be bar coded so the Smart-binder can ensure it is correct one for the booklet to which it is attached (note: examination booklet do not normally require a separately fed outside cover sheet).

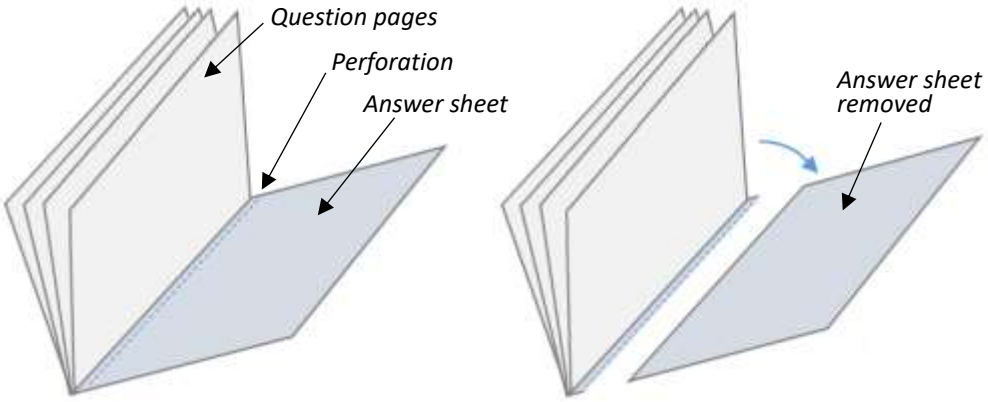
### 7/ Document personalization, question shuffling and booklet tracking/reprint

Exam booklets may be personalized and may include the student's name. Consecutive booklets may include the same questions but in a different sequence to reduce risk of the student copying from their neighbor during the exam process. This is sometimes called 'question shuffling'.

Data tracking is often essential in order to know exactly which exam booklets have been produced and to allow any missing/rejected booklets to be reprinted. The Smart-binder includes a sophisticated tracking system using Bar code (or Datamatrix) code readers and sensors. The Smart-binder control PC retains log files containing production data relating to each booklet that has been produced or rejected. The production log files may be viewed externally with a network connection if required. The optional SDA-100 Smart-Data Analysis system assists with the upstream interface to enable automatic reprinting of any missing booklets

### 8/ Answer sheets and automated marking

Exam question booklets may sometimes need to include an 'answer sheet' on which the student provides an answer to each question during the exam. The Smart-binder can produce a booklet which contains both the questions and the answer sheet. The answer sheet may be printed together with the question sheets in which case it may receive a line of perforation from the option DMP-100 dynamic perforator to allow it to be easily detached from the question booklet.




Perforated Answer Sheet

Alternatively, the answer sheet may be separately printed and loose-inserted into the finished question booklet . Automatic 'matching' is then provided to ensure that each booklet contains the correct answer sheet

Automatic 'marking' of completed 'multiple choice' examinations may require the spine of the booklet to be slit off so that the pages can then be fed individually thought an automatic marking machine. Alternatively it may be the completed multiple-choice answer sheet itself which is removed from the booklet for processing by the marking machine.



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**9/ Wire stitching or ISG cold gluing**

IBIS's unique and patented ISG cold glue system provides a higher quality binding alternative to wire stitching. This results in improved booklet lay-flat which can help subsequent inserting and mailing operations.

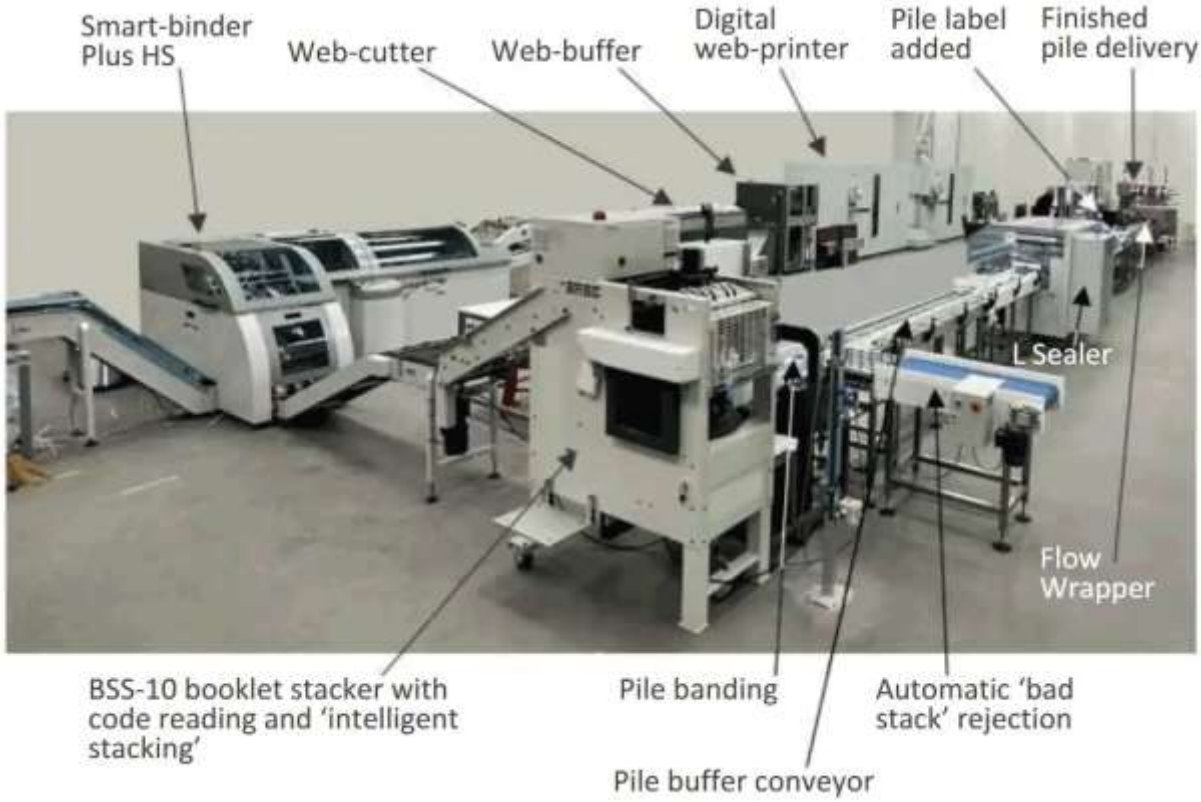

The IBIS Smart-binder 'Plus HS'

View the IBIS Smart-binder system in operation on our website

View a video of the Smart-binder SB-2 producing 16pp A4 exam booklets in-line with Canon Colorstream 6000 series printer at 100 metres/min web.

IBIS-MML IN-LINE WRAPPING SOLUTIONS FOR SECURE EXAM BOOKLET PRODUCTION

The IBIS-MML partnership specializes in providing customized in-line booklet wrapping solutions to ensure the **highest possible security** for examination test booklet production.



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For more information on Exam Booklet Wrapping please follow the links below.

Wrapping Overview | Optional modules available | Typical floorplan layouts

Requirements Questionnaire

## Case Studies

All of our customers below are using the IBIS Smart-binder exclusively to produce exam booklets:

**Case study 1: UK**

In 2008 this customer purchased the first 6 IBIS Smart-binders for exam booklet production. 3 were installed in-line with cut-sheet printers and 3 in-line with web toner printers. Since then the Smart-binders fed from the web printers have each produced over 60 million booklets. In 2014 this customer ordered two more Smartbinders which were installed in-line with ink-jet web printers and in 2015 two further in-line Smart-binders were installed.

**Case study 2: Japan**

In 2006 the large Japanese printer 'TF' ordered from us their first Smart-binder systems to produce examination booklets for Japanese students. These machines operate 'off-line' using high- pile sheet feeders which are fed from color-printed sheets using a loading trolley system. During the period 2006 – 2010 IBIS installed a total of 9 Smart-binders at this site in Tokyo, all of which are used to produce exam booklets of variable thickness and with dynamic sheet perforation. All exam booklets produced by TF are bound using the Smart-binder's unique ISG cold-glue system instead of being wire stitched. Every booklet has separately-fed cover sheet which is personalized and 'matched' to the inside sheets.

**Case Study 3 USA**

This customer near Minneapolis has special requirements for finishing exam booklets in-line with ink-jet web printers and uses three 'customized' Smart-binders for this purpose.

**Case Study 4: Africa**

Over the last 5 years, a number of IBIS Smart-binders have been installed at customer sites in Tanzania, Malawi, S. Africa and Zimbabwe to produce exam booklets in-line with web printers. We are finding increasingly that countries such as these which in the past have chosen to have their exam booklets produced in other countries (such as in the UK) are now preferring to bring production back to their own country. The extra security resulting from Digital Web printing with in-line IBIS finishing (Smart-binders) is contributing to this change. This testimonial statement is from Altron Document Solutions, S.Africa:

James Kelly (Head of Sales):

> "Two of our very large Education Customers in South Africa have been producing excellent volumes on their IBIS Smart-binders, even during Covid-19, when they completed around 10-12 million booklets with high system productivity and minimal downtime. One site has 2 Smart-binders running in parallel which massively improves productivity and provides redundancy. For high volume, mission critical, time-bound applications we never look further than the IBIS Smart-binder.



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Jan 2022: All good with the Smartbinders at WCED, KZN Education and Print on Demand (POD Cape Town). We ran huge volume across the 3 sites in the Q4 2021 period and the equipment performed very well.

**Case study 5: Brazil**

This customer uses a Smart-binder system to produce exam booklets from pre-printed rolls (near line solution).

**Case study 6: New Zealand**

We installed one Smart-binder system, together with Sheet Buffer SBS-100, cover feeder and an additional insert sheet feeder, to produce exam booklets at this customer site in Wellington, NZ. This is operating in-line with an ink-jet web printer at up to 127 m/min web speed. View a video of the Smart-binder SB-3 with cover and insert feeders, SB-097 feeder and SBS-100 sheet buffer on our website

The following feedback was received from Canon regarding this installation (Canon Australia has renewed the service contract for Printlink's print line for a further three years):

Herbert Kieleithner, National Manager for Digital Web Press Technology at Canon:

"The customer is very happy with all equipment in the print line and the line remains very productive. The annual work of the New Zealand examination booklets and various government booklet applications using the IBIS Smart-binder is a high volume key application."

Peter Brown (Customer Service) comments:

"We have had an IBIS Smart-binding system under service contract for over two years. During this time we have received excellent support and communication from IBIS for service and spare parts. The IBIS Service team have been dedicated and responsive to our service requirements in New Zealand and there has been nothing that has been too much trouble for them to assist us. As an example, we had a component failure incident late last year on the SBS-100 sheet buffer which resulted in an outage for our customer. IBIS was able to supply us a replacement part, door to door within 24 hours. This was an outstanding response when freighting parts to New Zealand is taken into consideration and our customer was extremely impressed. We have also received exemplary support and feedback from analysing log files for us to improve the customer experience regarding operating the Smart-binder."



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**Case Study 7: UK**

In 2013 we installed two Smart-binders at this site to produce exam booklets. One is operating in-line with a cut-sheet printer and the other in-line with high speed web printer. For this customer we developed a special corner hole-punch which is installed in the Smart-binder trimmers. In 2017 two additional in-line Smart-binder systems were installed.

**Case Study 8: Turkey**

In 2014 we installed one Smart-binder in-line with an ink-jet printer to produce exam booklets at this leading printer on the University campus in Ankara, Turkey.

**Case Study 9: Abu Dhabi**

In 2018 we installed one Smart-binder in-line with an ink-jet printer to produce exam booklets in Abu Dhabi, UAE.

**Case Study 10: Saudi Arabia**

In 2023 an order was received from a customer in Saudi Arabia for a Smart-binder to run in-line with a digital web printer in order to produce examination booklets. This line was installed in Riyadh together with the optional DMP-10 sheet perforator and booklet stacker BSS-10.

In 2024 this customer ordered a second, identical, IBIS Smart-binder line with perforation and booklet stacking.

**Case Study 11: China**

In 2022 an IBIS Smart-binder was installed at a customer site in Tianjin City to produce examination booklets, fed from a Tecnau roll unwinder and web cutter. This customer is now considering to purchase a second IBIS Smart-binder.

**Case Study 12: Malaysia**

In Oct 2024 two IBIS Smart-binders were installed in-line with Canon Colorstream web printers at a customer site in Kuala Lumpur to produce examination test booklets. Each booklet includes an answer-sheet which is perforated to allow tear-out.

The finished booklets are piled into stacks using IBIS‘s in-line BSS-10 stacker fitted with a bar-code reader to create variable stacks as defined by the numerical data in the printed code on each booklet. Any incomplete stacks are automatically rejected while good stacks are in-line banded, flow-wrapped, bagged and labelled.



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