

**AV Flexologic**  
*We innovate!*



Fully Automatic Flexo Plate  
Mounting Machine FAMM 2.0

# FAMM 2.0

- ✓ A reduction of waste in the production process
- ✓ Reduction of man-hours
- ✓ Reduction of waste material in press startup
- ✓ Reduction of press downtime
- ✓ High quality color-to-color registration
- ✓ Elimination of human-dependent variables
- ✓ Removal of inconsistencies in the production process
- ✓ No operator dependency
- ✓ Improved traceability



## Widths

Width [mm]	≤ 1500, 1700, 2500
Width [inch]	59", 67", 98"
Max repeat [mm/inch]	1350 / 53"

## Description

The **FAMM 2.0** is the second generation Fully Automatic Mounting Machine. The FAMM 2.0 automatically mounts multiple plates after one another, and will mount a plate extremely accurately every 45 seconds **without operator interaction**. The only action left to the operator is to load a sleeve and lay the plates on the conveyor belt.

## Workflow

The operator presses start, after which the machine takes over. During the time the machine is mounting, the operator has time available to perform other offline tasks, such as applying tape, preparing plates, finishing sleeves, etc. The overall efficiency of the mounting and complete prepress department is boosted tremendously by introduction of a FAMM 2.0.

Being able to measure the positions of mounting marks using ground-breaking image recognition technology down to  $1\mu\text{m}$  (0.001mm or  $0.4 \times 10^{-4}$  Inch) during the plate mounting process provides a phenomenal print quality to printers end customers. This image recognition technology on the FAMM 2.0 enables Flexo printers to take total control of total process and improves traceability, while removing operator dependency.

The optimized workflow around a FAMM in prepress enables a qualitative approach to increase overall plant output and productivity. Important best practices upon introduction of a FAMM include setting up an internal just-in-time system which reduces Work In Progress. Flexible production system that enables users to respond to changes in market demand rapidly are vital for a flexo printer's growth strategy.

An important thing to note is the mounting mark specifications to optimally benefit from the FAMM's capabilities. In case a mounting mark is not recognized for whatever reason (for example damage of the mounting mark), the FAMM is able to operate in semi-automatic mode, in which the operator indicates to the machine where the mounting mark is and the machine takes over from there.



# FAMM 2.0

## Business Case Study

Amcor Melbourne is a leading flexo printing plant with 6 printing presses recently purchased a FAMM. This company handles 22.000 – 24.000 sleeves annually. See the chart below.

### Manual Mounting

### Fully-Automatic Mounting

### Advantages



## References



## Testimonials



### 2 months after installation of the Famm 1st generation at Amcor Moorabbin (Melbourne, Australia)

*"In 2011 I travelled to Cumbria to see the Famm in action at the SGS plant that serviced Amcor in the region. I was instantly intrigued at the simplicity and incredibly efficient output of the Famm. I then travelled to Holland and viewed 2 Famm's in operation at Elopak, again incredible output. We started our capital expenditure in 2012 with the view of installing a Famm in Moorabbin, Australia early 2013. Within 24 hours of the machine being delivered, we were mounting plates for all 6 printing machines at Moorabbin, and haven't looked back. It replaced the incumbent 3 manual mounting machines and is currently keeping up with the daily demands of around 120 sleeves per day. The machine is nowhere near capacity and we anticipate output levels rising to well over 200 sleeves per day, potentially servicing other Amcor sites. **It is incredibly safe, efficient and accurate, the three things most critical to our business... my only regret is not having it at our plant earlier.**"*

### 1 year after installation of the Famm 1st generation at Amcor Moorabbin (Melbourne, Australia)

*"Just an update on the Famm 1700 that was installed at Amcor Moorabbin, April 2013.*

*Before the Famm was installed we employed 13 people in our mount/strip/sleeve/plate library area. We currently employ 8. Before the Famm installation we were encountering in the vicinity of 15-20 hours down time per week across 6 machines due to miss registration, particularly on Novo 1 (Pepsico 1555mm).*

*Currently the downtime directly attributed to the Famm's mounting, is zero. We still encounter issues where Twinlocks are not prepared correctly as well as sleeves where tape is not prepared correctly.*

*None of these issues are related in any way to the Famm. For some older plates where microdots are either damaged or at times non existent, the Famm is required to operate in semi auto mode, only adding around 60 seconds to the already short mounting time. The Famm has delivered extensive safety performances regarding plate laying and manual handling, as well as an incredible quality record I would never imagined could have been possible. I would recommend to any printer that if volumes are warranted, the purchase of a Famm is something that should be seriously considered. Amcor Moorabbin currently is mounting around 150 sleeves per day, and nowhere near full capacity on the Famm. Our sister plant at Acacia Ridge is preparing a CER for approval with the view of also installing a Famm at the plant in Brisbane over the next 12 months. The machine is basically maintenance free and is extremely simple to use. Please let me know if you require any more information."*



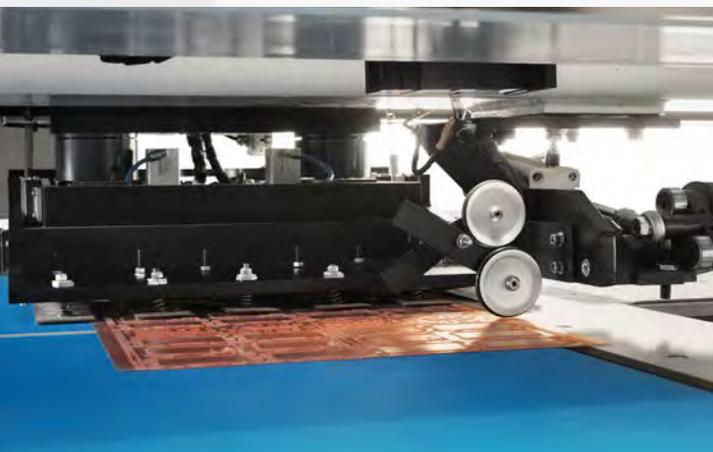
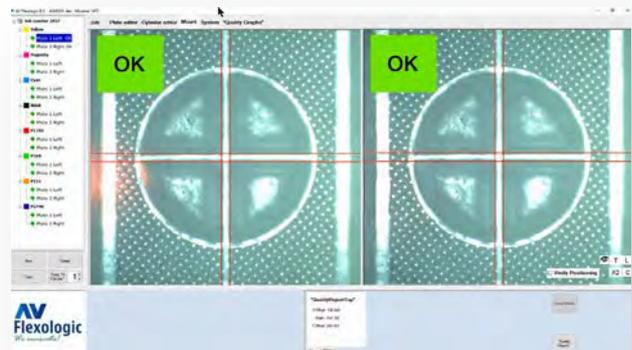
## FAMM 2.0

## Unique features of FAMM 2.0

The **FAMM 2.0** is the top of the line of AV Flexologic mounting machines for mounting flexographic printing plates onto sleeves. The reduction of the mounting related press downtime and the optimized workflow around the machine make the FAMM the world's most accurate, fast and consistent mounting machine.

### Speed and high accuracy

Due to the patented **Image Recognition Technology** and **Automatic positioning**, the machine automatically and extremely accurately mounts multiple plates with a precision of 5 microns. A **Stationary Third Camera** helps recognize the mounting marks faster to begin the mounting process, while a **Light Beam** executes the sleeve change in 10 seconds. All these features allow the machine to mount with an "Average" Maximum Capacity up to 700 sleeves per day.

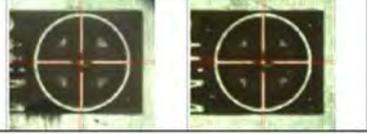
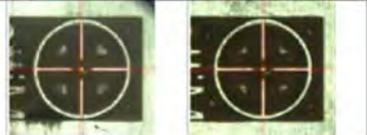
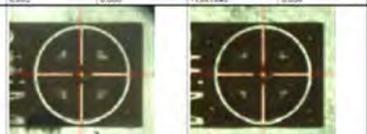


### Fully Automatic and no operator interaction

While the plates are automatically mounted onto the sleeves, the only action needed from the operator is to load a sleeve and place the plates on the conveyor belt, thus, the operator can attend other tasks while the machine is mounting plates.

### Quality reporting after mounting

After the mounting process the FAMM goes back to the idle position to conduct a Quality report to monitor the quality of the jobs.

Plate no: 1	Left X [mm]	Left Y [mm]	Right X [mm]	Right Y [mm]
Plate Name	-471.700	400.000	-790.800	400.000
Size	-471.699	400.000	-790.800	400.000
Actual - 3ms	0.001	-0.001	-1.881.640	0.004
				
Plate no: 2	Left X [mm]	Left Y [mm]	Right X [mm]	Right Y [mm]
Plate Name	-471.700	400.000	-790.800	400.000
Size	-471.699	400.000	-790.800	400.000
Actual - 3ms	0.001	0.000	-1.881.640	0.004
				
Plate no: 2	Left X [mm]	Left Y [mm]	Right X [mm]	Right Y [mm]
Plate Name	-471.700	400.000	-790.800	400.000
Size	-471.699	400.000	-790.800	400.000
Actual - 3ms	0.002	0.000	-1.881.640	0.004
				

## Features

HD Ethernet Cameras
Air cylinder
Windows 10 mounting software
Overlay
Motorized rotation of cylinder
Digital Zooming capability
40" HD Monitor
Laser pointers
Vertical Movement of Cylinder
Fixed distance from lens to plate
Motorized cameras
Synchronized front table movement
Digital Calibration System
Pressure roller
Image Recognition Software
Quality report
Automatic quality check using image recognition
Vacuum table
DOAL Lights
Robotic positioning
Easymount
Automatic repeat detection
Automatic mandrel rotation
Automatic pressure roller
Motorized table movement
Fully Automatic

## Options

Automatic Easyreg detection (W&H)
Magnet zero-setting (BOBST, SOMA, Allstein)
Critical Spare Parts Package
Barcode Scanner
TIR Sleeve measurement
Sleeve Tracking System

# Features & Options Overview



## Tape roll holder

A simple tape roll holder can be added (on all machines apart from the FAMM) for holding the tape in front of the sleeve to assist the operator with tape application. A metal bar with cones to hold the tape roll in place.



## HD Ethernet cameras

Using the latest technology in high-speed Ethernet cameras on all of the mounting equipment, AV Flexologic ensures crisp and sharp ultra-high-resolution images, enabling an efficient and accurate mounting process.



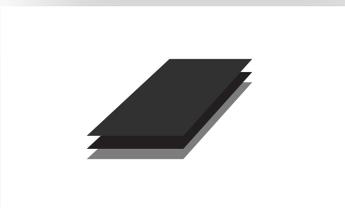
## Custom made Air Cylinder

All sleeve-dedicated AV Flexologic mounting equipment is equipped with a high-precision chromed mounting mandrel. The cylinders are produced in Germany by a specialist company under the strictest tolerances. The cylinder is custom-made to fit press requirements.



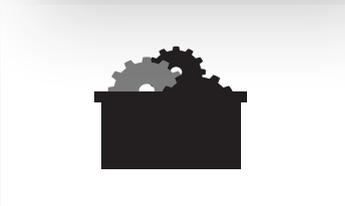
## Windows 10 mounting software

Striving for the latest up to date technology, the SAMM 2.0 is equipped with Windows 10, which is fully compatible with our software.



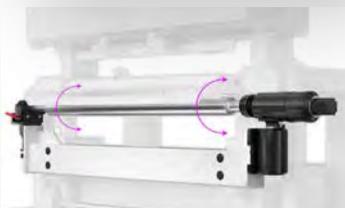
## Overlay

Once the first plate is in the right position, the overlay module enables the operator to take snapshots of the mounting marks, which are then shown semi-transparently when mounting the other plates.



## Critical spare parts package

It is recommended to opt for a critical spare parts package, which is available for all equipment. AV Flexologic has spare parts warehouses in Western Europe: Alphen aan den Rijn, The Netherlands (HQ), North America: New Hudson, Michigan, USA and Eastern Europe: Cluj-Napoca, Romania.



## Motorized rotation cylinder

The chromed cylinder is driven by a high quality electric motor which is joined to a high-precision, zero backlash gear reducer called a 'harmonic drive'. This ensures maximum possible precision in the rotational (Y) direction of the mounting process. Starting or recalling a job and moving to the right mounting position for each plate is done within seconds.

## Tape holder on precision rail

A tape holder can optionally be added to MOM and SAMM machines on precision linear guides. The linear guides make sure the tape roll is completely parallel to the sleeve when applying tape and assist the operator to easily move the tape along the side of the sleeve.



## Barcode scanner

A barcode scanner can be optionally added to the MOM, SAMM or FAMM for automatic loading of the jobs. The jobs are then usually made offline in prepress to optimize the machine Operation Equipment Effectiveness (OEE).



## Digital zoom capability

Combining HD cameras with HD flatscreen monitors enables mounting equipment to zoom digitally up to 170x.



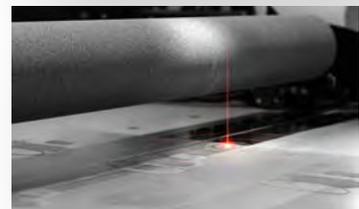
## 40" HD Monitor

To be able to optimally view the mounting marks during the mounting process, the MOM and SAMM machines have a large-format HD Mounting monitor mounted on top of the machine. In combination with the HD Ethernet cameras. The magnified images are viewed with a high level of detail, making the machine more accurate and user-friendly.



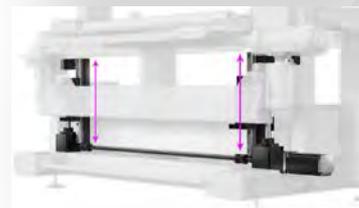
## Laser pointers

Laser pointers are mounted next to the cameras to indicate where the field of view of the cameras is. The mounting marks can be easily positioned in a fraction of time, instead of having to search for the mounting marks in the camera image each time.



## Vertical movement of cylinder

The cylinder moves vertically on high-precision linear guides. Advantages are that by moving the cylinder towards the plate, the plate is not disturbed in the final stage of the mounting process, meaning the 'fixation' accuracy of the plate to the sleeve is very high. Also, fixed distance from lens to plate means that there is no need to focus the lenses, ensuring the highest accuracy and user-friendliness.



## Fixed distances from the lens to plate

The table is in a fixed height, so the cylinder moves up vertically when the plate is in position to fix the plate to the sleeve's adhesive layer (tape or twinlock). One of the advantages is that a fixed working height ensures best operator ergonomics.



## Motorized cameras

The cameras are operated directly from the computer interface.

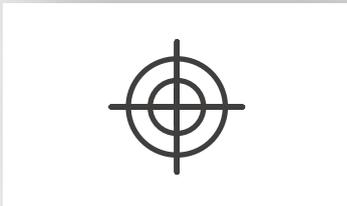


## Features & Options Overview



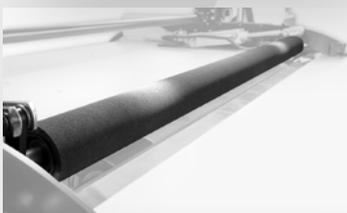
### Synchronized front table movement

Because of this feature the front table moves with the same speed and at the same height throughout the entire process of plate mounting. This results into an increased mounting accuracy.



### Digital calibration system

Digital Y-calibration of the camera beam: the camera images are used in a calibration procedure to create a lookup table and digitally 'straighten' any deviations in the camera beam, down to 10 µm over the entire width of the camera beam / sleeve. For every x-position of the camera the y-deviation is recalled, the image is automatically digitally adjusted, ensuring 100x more accurate mounting. Additionally, the measured Y-deviation is stored in a lookup table.



### Pressure roller

The pressure roller has become a standard feature in AV Flexologic flexo plate mounting machines over recent years. The roller is used to apply the plates evenly over the carrier such as a sleeve, cylinder or Mylar. The use of the pressure roller eliminates the typical 'hand-rolling'. The feature saves time and avoids un-ergonomic working procedures.



### Automatic easyreg detection

Using our patented image recognition system, a visual mark on the edge of a sleeve such as the W&H Easyreg strip can be automatically 'set to zero' on the MOM, SAMM and FAMM mounting machines by simply pushing a button. The camera automatically homes in on the Easyreg mark and also automatically 'sets zero' in X and Y direction with 0.001mm (1µm) accuracy.



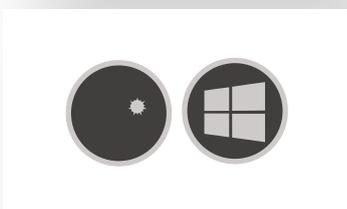
### Shaft coupling for cylinders

Shaft coupling for cylinders is driven by a harmonic drive. The shaft coupling is mounted on precision rails and can slide onto the cylinder shaft using a hand wheel that actuates the horizontal movement. The coupling is manually fastened by a locking mechanism that tightens a collar around the shaft, preventing any play. The shaft diameter should be the same for all cylinders.



### Cutting knife for plates

A special cutting knife designed to cut plates at an angle of 45° or 90°. That helps the operator cut plates easily in the wanted size.

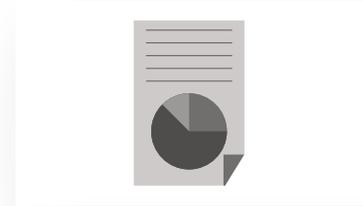


### Image recognition software

Specialized software developed by AV Flexologic can 'recognize' the mounting marks on the printing plates, which are used as the references for the mounting process. The ability to measure the positions not only during mounting but also after plates have been mounted provides endless possibilities to enhance a flexo printing production workflow.

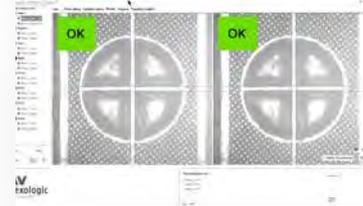
## Quality report

After each plate is mounted, the MOM, SAMM and FAMM mounting machines have the ability to automatically check the tolerance of mounted plates using image recognition. A pdf quality report is generated on-the-fly with ability to check top and bottom.



## Quality check with image recognition

The image recognition system measures the exact positions of the mounting marks and thus how accurately the printing plate is fixed on the sleeve. The tolerance of the report settings determines whether a plate is judged as mounted 'OK' or 'NOT OK'.



## Tape applicator

The tape applicator assists the tape application and adds speed to the workflow by allowing a fast and accurate tape application and minimum waste of materials.



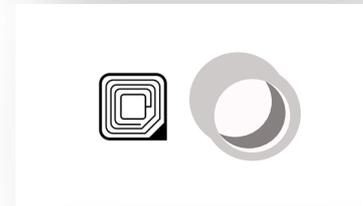
## TIR sleeve measurement

The TIR system is designed to measure the '3D landscape' of sleeves and cylinders by using a laser to scan an adjustable grid pattern across and around the sleeve. With this information, it is possible to know the condition of every sleeve that you have in inventory, which helps save valuable time in your press department. It is also possible to build a database to help track the condition of your sleeve inventory over time.



## Sleeve tracking system

Feature on the TIR. A database that tracks sleeves using the sleeve ID, which can be read using a barcode or RFID chip. The TIR sleeve measurement is then stored in this central database. Things such as run length, run times can also be added.



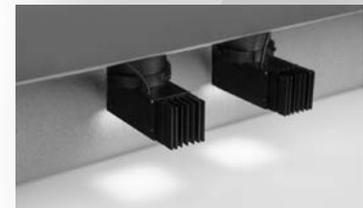
## Vacuum table

To ensure highly accurate positioning, the vacuum system fixates the plate to the robotic table before positioning.



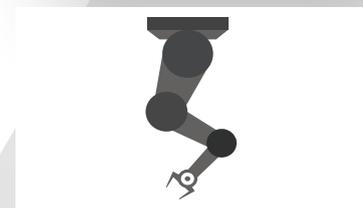
## DOAL lights

The image recognition system includes special DOAL lights with a half-transparent mirror which provide the best recognition conditions for automatic mounting. The light comes from the side and is reflected down in the same direction the camera is looking. When the light hits the plate surface it reflects straight back up into the lens.



## Robotic positioning

Driven by the AV Flexologic software, the robotic table positions the mounting plate with high accuracy, each and every time. After positioning the vertically moving cylinder automatically comes up.



## Features & Options Overview



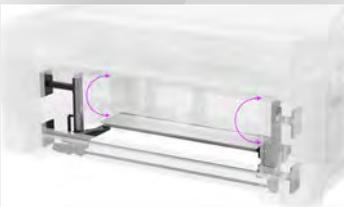
### Automatic repeat detection

With this feature the machine automatically detects the repeat size of the sleeve.



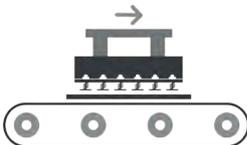
### Automatic mandrel rotation

The automatic mandrel rotation combined with the one piece fully automatic mounting table allows for automatic plate mounting without operator interaction.



### Motorized table movement

With this addition, the machine mounts one plate fully automatically, keeping the performance of the mounting job with an accuracy of 5 microns.



### Robotic manipulator

FAMM's robotic manipulator picks up the plates and places them in the correct mounting position. Because of that, the accuracy of the mounting is ideal.



### Conveyor belt

The operator simply places the to-be-mounted plates on the conveyor belt and the machine does the rest. The conveyor belt transports the plates to the pick-up position where a camera recognizes the mounting mark.



### Fully automatic

The machine mounts the plates automatically, without operator interference.

Features & Options	Sleeve-mounter	MOM DD+ E	MOM DD+ Pro	SAMM 2.0	FAMM 2.0
HD Ethernet Cameras	✓	✓	✓	✓	✓
Air cylinder	✓	✓	✓	✓	✓
Windows 10 mounting software	✓	✓	✓	✓	✓
Overlay	✓	✓	✓	✓	✓
Digital Zoom capability		✓	✓	✓	✓
40" HD Monitor		✓	✓	✓	✓
Laser pointers		✓	✓	✓	✓
Vertical Movement of Cylinder		✓	✓	✓	✓
Fixed distance from lens to plate		✓	✓	✓	✓
Motorized cameras		✓	✓	✓	✓
Synchronized front table movement		✓	✓	✓	✓
Digital Calibration System		✓	✓	✓	✓
Pressure roller		○	✓	✓	✓
Motorized rotation of cylinder	○	✓	✓	✓	✓
Image Recognition Software			○	✓	✓
Quality report			○	✓	✓
Quality check w/ image recognition			○	✓	✓
Vacuum table				✓	✓
DOAL Lights				✓	✓
Robotic positioning				✓	✓
Automatic repeat detection				✓	✓
Automatic mandrel rotation				○	✓
Automatic pressure roller				○	✓
Motorized table movement				○	✓
Robotic manipulator					✓
Conveyor belt					✓
Fully Automatic					✓
Critical Spare Parts Package	○	○	○	○	○
Tape roll holder	○	○	○	○	
Tape holder on precision rail		○	○	○	
Barcode Scanner		○	○	○	○
Automatic Easyreg detection		○	○	○	○
Shaft Coupling for cylinders			○	○	
Cutting knife for plates			○	○	
Tape applicator			○	○	
TIR Sleeve measurement			○	○	○
Cutting knife for tape*			○	○	
Sleeve Tracking System**			○	○	○

✓ = Included ○ = Optional  
 \*only in combination with tape applicator    \*\*only in combination with TIR

Max Repeat Size					
[mm / inch]	1350 / 53"	850 / 34"	1350 / 53"	1350 / 53"	1350 / 53"



# Flexologic

*We innovate!*

## Visitor address

 H. Kamerlingh Onnesweg 2  
2408 AW Alphen aan den Rijn  
Netherlands

 +31(0) 172 434 221

 [av@flexologic.nl](mailto:av@flexologic.nl)

VAT: NL001515561

## Post address

 PO Box 252  
2400 AG Alphen aan den Rijn  
Netherlands