



Fast web width change on running extrusion lines

Presented by:
Davide Pomati
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Summary

- **Basic machine configuration**
- **Change of production** (without change of resins and web width)
- **Change of production** (web width but no resins change)
 - Adjustment of the machine
 - Adjustment of the die
 - Adjustment of the thickness control
 - Adjustment sequences
- **Conclusions**
- **Next steps**

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History



Automatic job change on Extrusion Lines *Dream, reality or challenge?*

Presented by:
Pomati Davide
Product Manager Extrusion
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Basic machine configuration

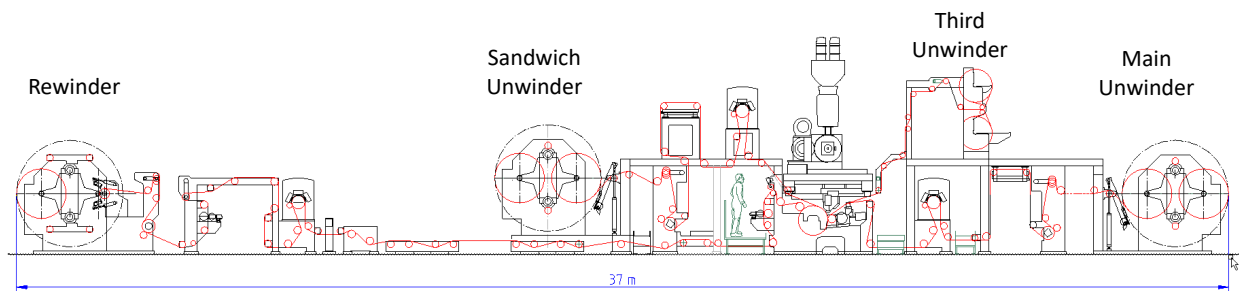


• Line configuration

- Web width 1300 mm
- Speed 400 m/min
- N° 2 Fully automatic unwinders
- N° 1 Primer coating unit
- N° 1 Extrusion bonding unit with co-extrusion
- N° 1 Fully automatic rewinder
- Auxiliary equipment (web guide, thickness control, ...)

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Basic machine configuration



• Line configuration

- Web width 2700 mm
- Speed 600 m/min
- N° 2 Fully automatic unwinders and 1 semi-automatic unwinder
- N° 1 Extrusion bonding unit with mono extrusion
- N° 1 Fully automatic rewinder
- Auxiliary equipment (web guide, thickness control, ...)

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Change of production

- Same extrusion structure
- Same web width
- Different print layout or material thickness



- No adjustment required both on the machine and on the extruders
- Only splices with different materials or different printing
- Operative speed can be maintained the same during jobs change

Action requested

- With same material but different printing:
 - No action required. Automatic splicing at full possible speed
- With different material independent on printing:
 - Set of different tension on the line. Settable on recipe.

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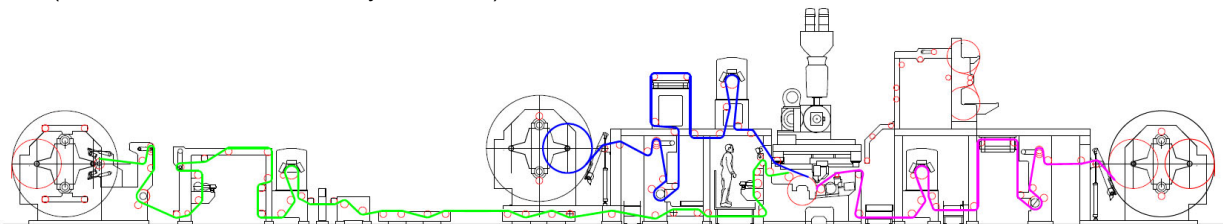
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Change of web width (from narrow to wider)

(same extrusion structure, only web width)

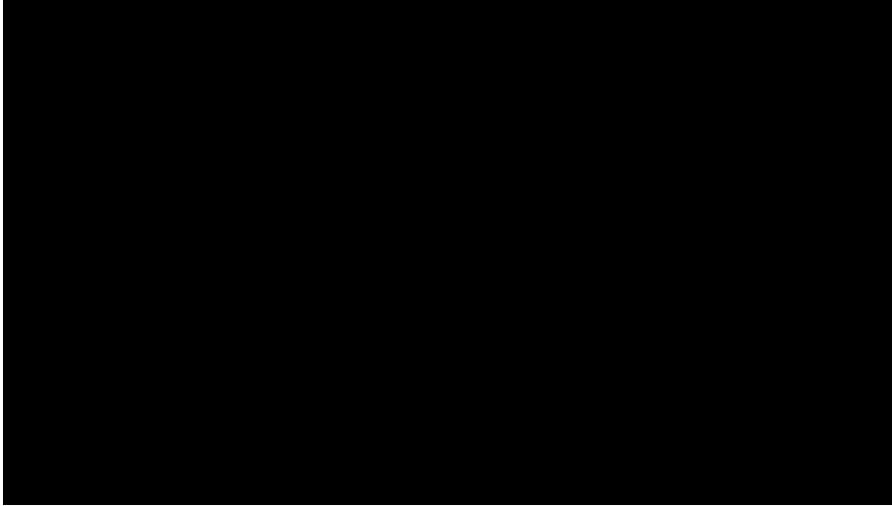


• Line configuration

- | | |
|-------------------------------------|----------------------------------|
| • Primary material (before change): | white paper 175 g/m ² |
| • Primary web width (before): | 1980 mm (78") |
| • Primary material (after change): | brown paper 175 g/m ² |
| • Primary web width (after): | 2120 mm (83.5") |
| • Secondary material: | brown paper 75 g/m ² |
| • Secondary material width: | 2100 mm (82.7") |
| • Extrusion thickness: | 15 g/m ² (9 #/ream) |
| • Production speed: | 300 m/min (985 fpm) |

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Change of web width (from narrow to wider)



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Change of web width (from narrow to wider)

(same extrusion structure, only web width)

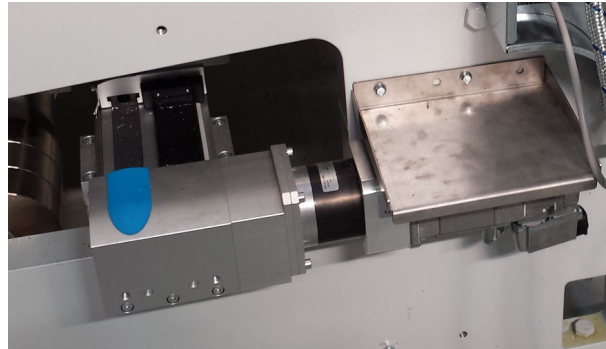
- Machine:
 - Winders and Web guide
 - Auto arrangement of the Teflon tape
 - Adjustment of the trimming unit
 - HMI
- Thickness control:
 - Adjustment of the extrusion width
 - Auto load of the receipt
- Die:
 - Motorized adjustment of the die opening width

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Change of web width (from narrow to wider)

(same extrusion structure)

- Machine:
 - Extrusion bonding unit
 - Motorized Teflon belt adjustment

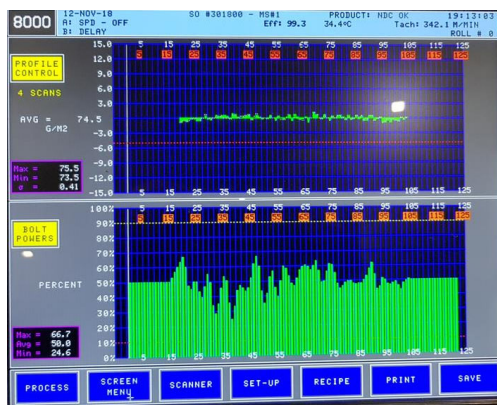


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Change of web width (from narrow to wider)

(same extrusion structure)

- Thickness control:
- Die



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Change of web width (from narrow to wider)

(extruder out of the line)

• ADJUSTMENT SEQUENCES

- Machine in production
- Preparing of winders with new wide web
- Splicing on the rewinder
- Open of the trim system
- "EXTRUDER OUT OF THE MACHINE and RUNNING AT LOW RPM"
- Web-guide opening and put in frozen
- Reduction of speed (0 m/min) and STOP OF THE LINE
- Splicing on main unwinder
- Splicing on Sandwich unwinder
- Adjustment of the trim
- Adjustment of the die
- Adjustment of the teflon belts

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Change of web width (from narrow to wider)

(extruder out of the line)

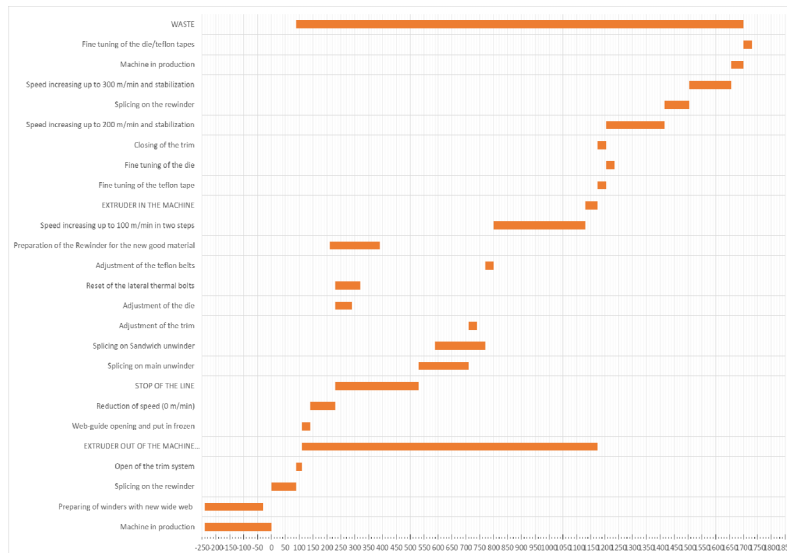
• ADJUSTMENT SEQUENCES (after passage of the tail in the bonding unit)

- Preparation of the Rewinder for the new good material
- Speed increasing up to 100 m/min in two steps
- EXTRUDER IN THE MACHINE
- Fine tuning of the teflon tape
- Fine tuning of the die
- Closing of the trim
- Speed increasing up to 200 m/min and stabilization
- Splicing on the rewinder
- Speed increasing up to 300 m/min and stabilization
- Machine in production
- Eventual fine tuning of the die/teflon tapes

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Change of web width (from narrow to wider)

(extruder out of the line)



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Change of web width (from narrow to wider)

(extruder stays in the line)

● ADJUSTMENT SEQUENCES

- Machine in production at working speed;
- Preparing winders for splicing with new wider materials (similar type and thickness);
- Splicing on the rewinder and STARTING of WASTE MATERIALS;
- Thickness control in frozen mode;
- Reduction of working speed with extrusion group in the machine.;
- Open of the web-guide sensors and consequently by-pass of alignment control (device in frozen mode);
- Open of trim system and consequent positioning at new web width (next tuning should be required);
- Splicing on the main unwinder and eventual synchronized splicing on the sandwich unwinder;

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Change of web width (from narrow to wider)

(extruder stays in the line)

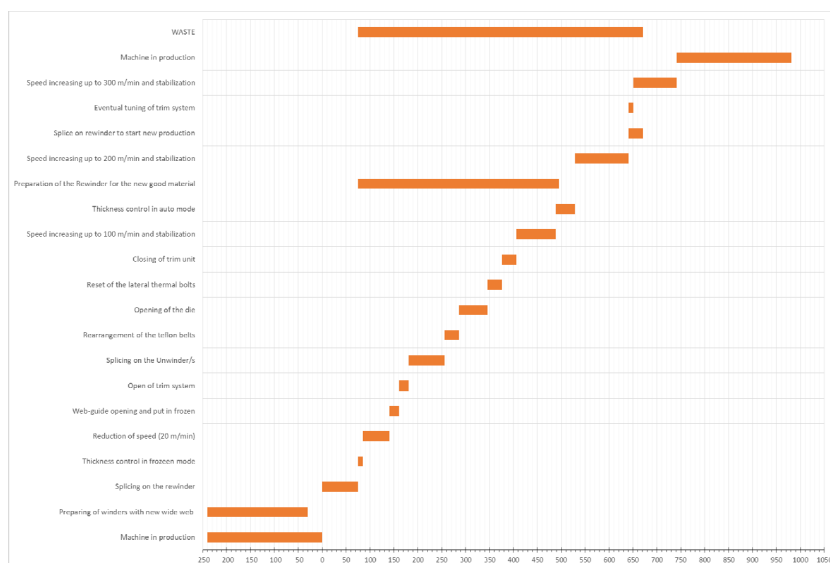
● ADJUSTMENT SEQUENCES (after passage of the tail in the bonding unit)

- Reposition of the Teflon belts;
- Opening of the deckles of the die;
- Closing of the trim group;
- Machine speed increasing (first step) and stabilization of the process;
- Thickness control in auto mode;
- Increase of the speed (second step) and stabilization of the process;
- Splice on the rewinder and STOP WASTE;
- Eventual adjustment of the trims;
- Increase of the speed at requested operative speed;
- Eventual fine tuning of trims, die and belts.

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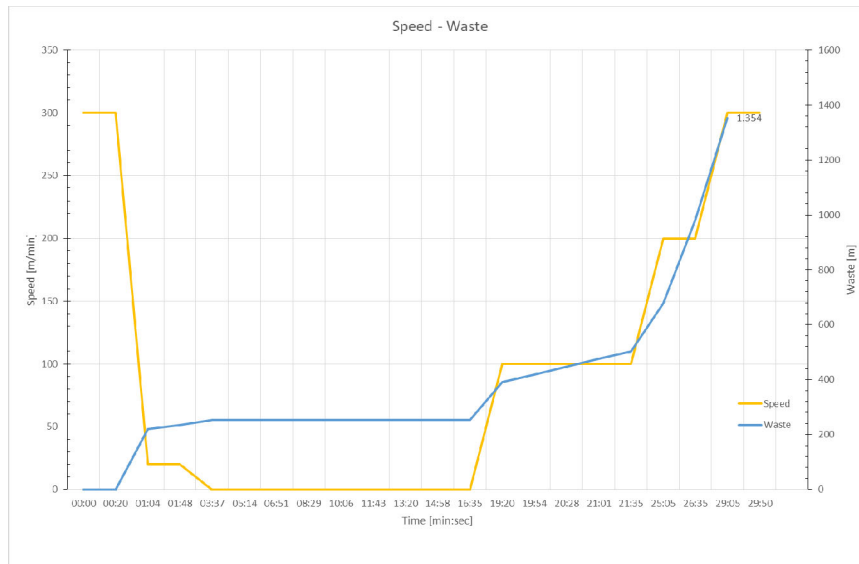
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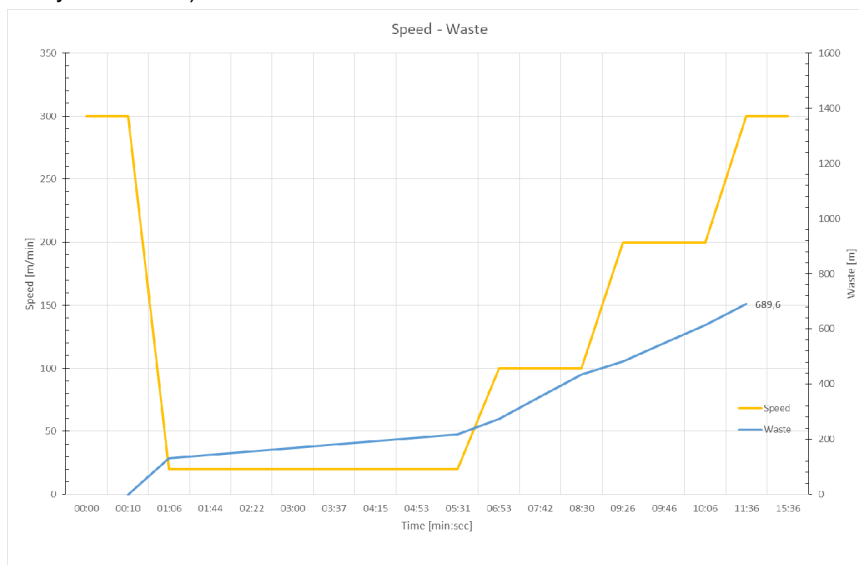
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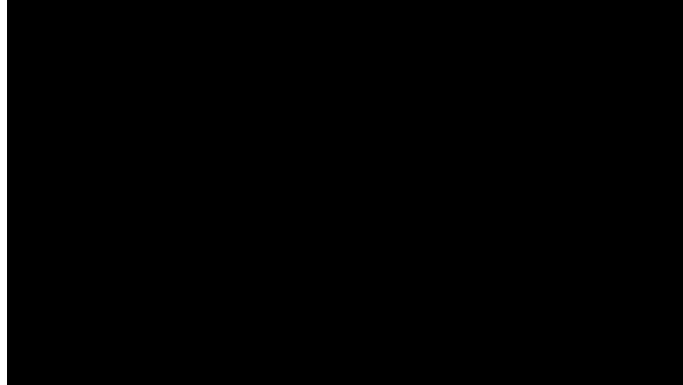
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Change of web width (from narrow to wider)

(same extrusion structure)



Complete video on www.youtube.com/watch?v=46bArjV273M

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Conclusion

- Time saving
- Waste saving
- More capacity
- Cost saving



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Next steps

- Fine tuning of the sequences
- Change of web width from Wider to Narrow
- Automatization of the die opening
- Fully automatic job change (web width)
- Fast job change with resins exchange

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Thanks to

- BOBST Coating Team
- *Diego Ferrari, Gigi Trecate and Gabriele Casagrande*



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**Thanks
for your attention**

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