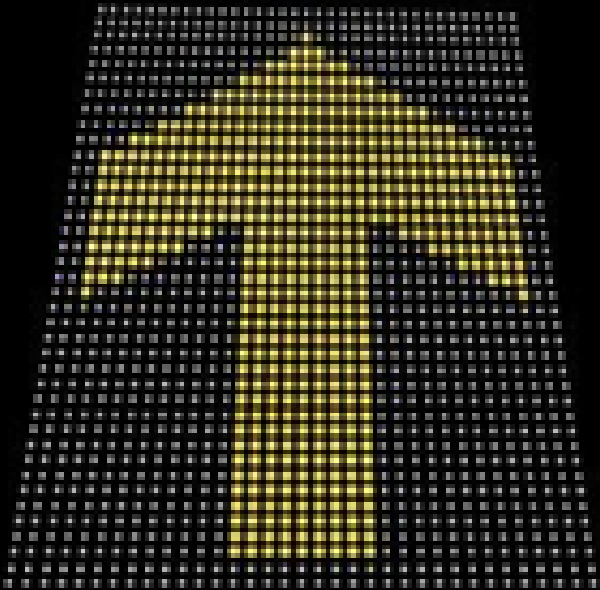


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Screenprinting **The Future**

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AUTOMATION

STANDARDIZATION

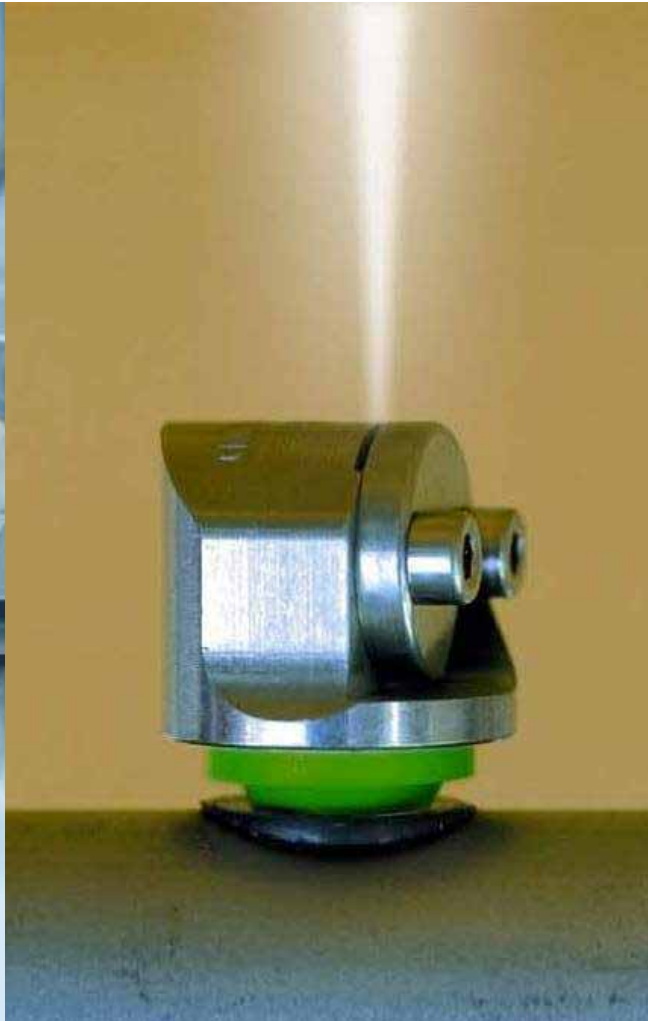
IN-LINE PRODUCTION

4+5+6
October 2011



- **Grünig-Interscreen AG – Switzerland**
 - 100% of the stock is family-owned
 - Innovative solutions since 44 years
 - Own development department F+E
 - Own manufacturing site
 - User-friendly and customized solutions
 - 40 staff members
 - More than 40 distribution partners worldwide
 - Every year, we export to 40 different countries
 - Production of more than 200 machines/year
 - 25% STRETCHING
 - 25% COATING
 - 40% WASHING
 - 10% DRY, PREP and special products

TRENDS



What are the general **TRENDS** in the **screen printing Industry** ?

- Improvement of quality
- Higher degree of standardization and reproducibility
- More flexibility
- Faster reaction times, shorter delivery times
- High pricing pressure
- Competing new technologies (digital)

What are the **TRENDS** where **customers** are concerned ?

- Less customers / Printing shops ... **BUT**
- The remaining customers are more professional and willing to invest more
- The **SMALL ONES** specialize – niche strategy
- The **BIG ONES** keep getting bigger
- The **MEDIUM-SIZED ONES** are having a hard time
- Differentiation is important = **BE DIFFERENT**

What are the **TRENDS** in **screen preparation** ?

- Growing importance of **CtS** which will be the new standard
- The **COSTS PER SCREEN** must be known
- Modular and customized concepts
- Health and safety issues are important
- The “**OFFSET plate way**” of thinking (**CtP**) will more and more prevail
Manufacture standardized screens without a great deal of effort,
costs and problems

IN-LINE production = automation !

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IN-LINE PRODUCTION

some installations...



NO WAY !

Who wants to work like him?

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IN-LINE screen cleaning - coating

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IN-LINE CtS (2400 dpi) - developing

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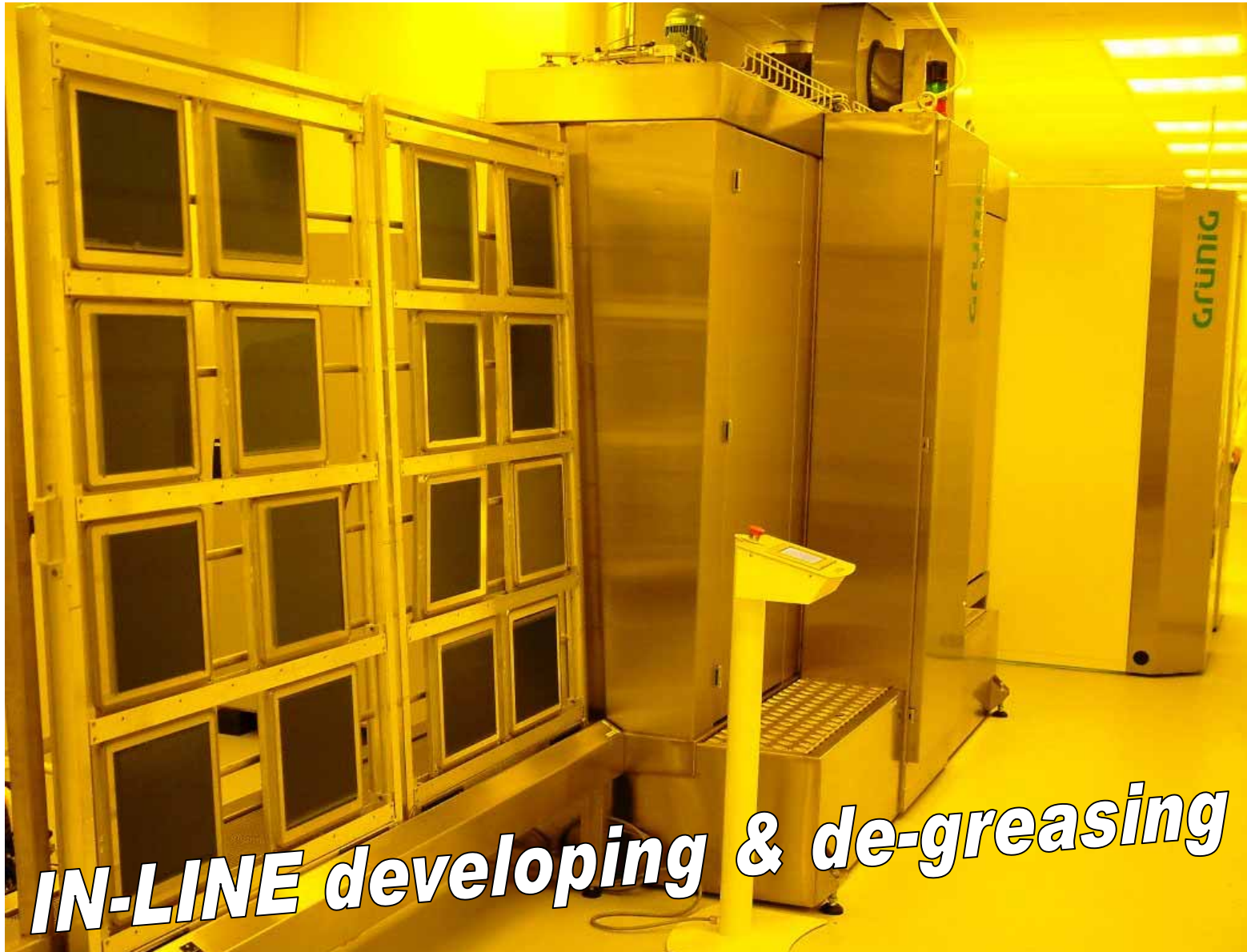
IN-LINE CtS (1270 dpi) - developing

screen cleaning - water / solvent treatment



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IN-LINE developing & de-greasing

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80 m IN-LINE screen production

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the future is now!

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IN-LINE PRODUCTION

modular solutions
work-flow concepts

GRUNIG G-LINE SYSTEM: MODULAR IN-LINE CONCEPT



G-LINE 190XS IN-LINE SCREEN HANDLING SYSTEM

Single frame handling (1 screen per slot)

- Loading / unloading station (A10L, left hand side / A10R, right hand side)
- Magazine stationary (A20L, left hand side / A20R, right hand side)
- Magazine revolving (A40L, left hand side / A40R, right hand side)

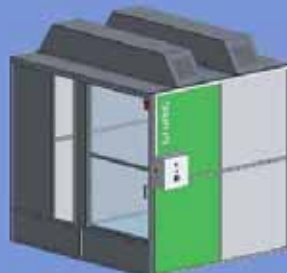
Multi frame handling (multiple screens per slot)

- Magazine stationary (A25L, left hand side / A25R, right hand side)
- Transfer modul (A85L, left hand side / A85R, right hand side)

Options

- Direction of movement to the left (Option DL)
- Direction of movement to the right (Option DR)

G-DRY 590XS IN-LINE DRYING SYSTEM




All G-LINE 190XS magazines can be extended with the G-DRY 590XS IN-LINE dryer.

CIS-INTEGRATION

The G-LINE 190XS will change your CIS Equipment to a full working IN-LINE system.

G-COAT 415 IN-LINE COATING SYSTEM



Edge cleaning (Option R)

Emulsion refilling (Option AF)

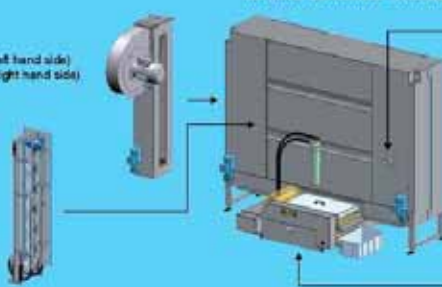
G-WASH 170XS IN-LINE WASHING SYSTEM

Blow-off systems

- Blow-off module (A00L, left hand side)
- Blow-off module (A00R, right hand side)

Nozzle systems

- Washing (A10)
- Decoating (A20)
- Developing (A30)



Exhaust air systems

- Connection tube (Option V1)
- Fan (Option V2)
- Aerosol filter (Option V3)

G-WASH 040XS Filter systems

- Coarse filter (Option F0)
- Infrared filter (Option F3)

RECYCLEAN Tank and Pump systems

- Washing (A10, A120)
- Decoating (A210, A211)
- Developing (A300, A310, A311)

oGen

Linien-Länge / line length = 10820 → Durchlaufrichtung run direction

Linien-Länge / line length = 13010 → Durchlaufrichtung run direction

Name: Hans Muster GmbH

Quotation Nr.: 123 456

Projekt name: G-Line Full version

Language: english

Measuring unit: mm

Machine parameter

input unit = mm

SB: 1250

SH: 1200

Line distance: 5000

Run direction: right

Layout

4-Modules 8-Modules

U-Turn

	G190XS - A25	G170XS - A10	G170XS - A10	G170XS - A20	G190XS - A20	G190XS - A85	
	A25L-DR	A10 + FS	A10 + FS	A20 + FS + H1 + A80R	A20R + TR	A85R	

Linien-Breite / line width = 7580

1360

1880

1220

5000

1880

1230

A

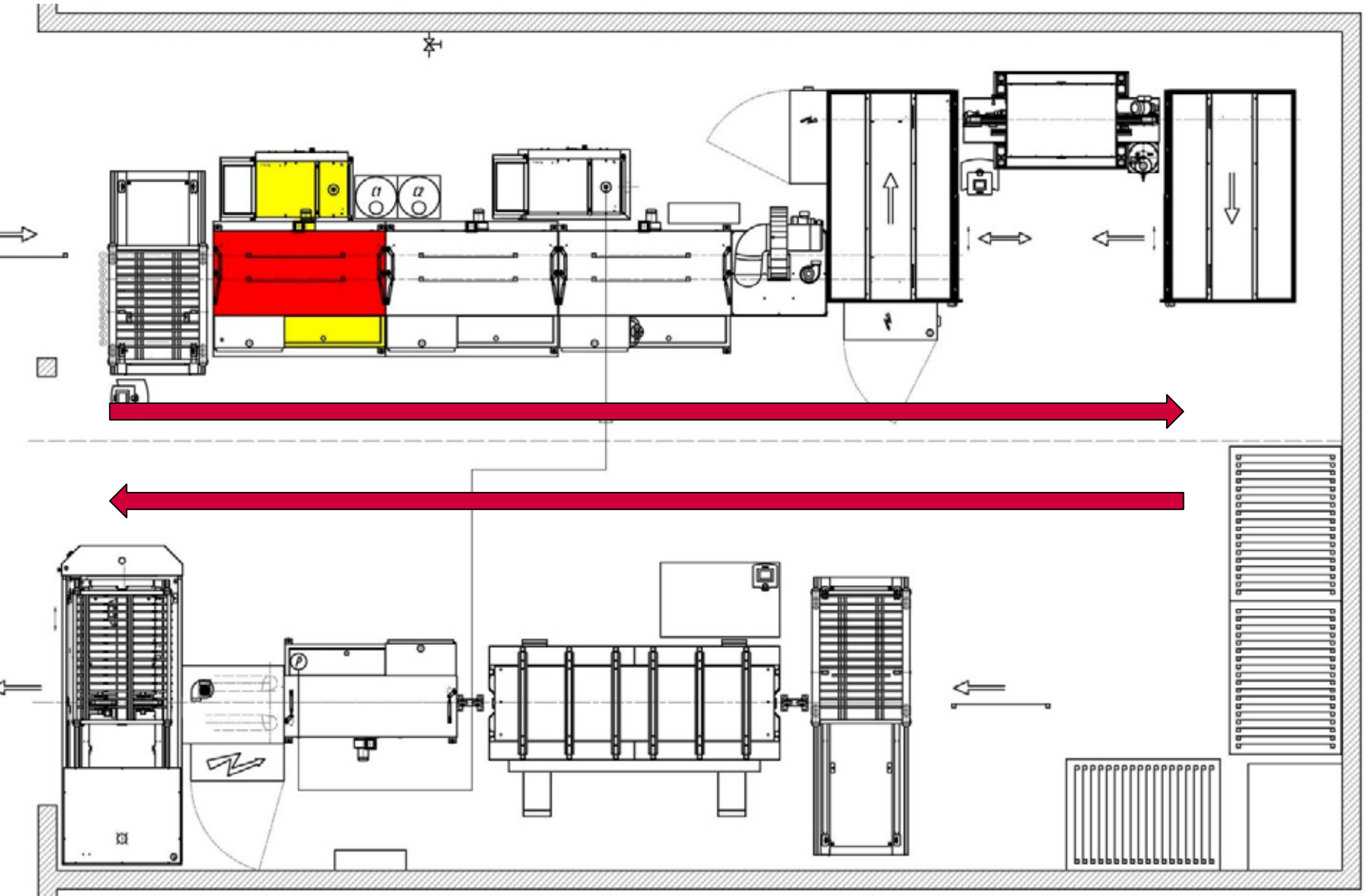
B

	G190XS - A25	G170XS - A30	Signtronic	G190XS - A20	G415	G190XS - A85	
	A25R-DR + TR	A300 + A80R	STM 1612	A20R + TR	A40 + AF	A85R	

Blättern

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IN-LINE PRODUCTION

practicle example:

DANIELSON NL

Requirements for automatic screen preparation

(Membrane switches, Touch Screens and industrial graphics)

- 120 screens in 8 hours / single-shift operation
- Screen size 900 x 1050 mm, PORTRAIT or LANDSCAPE
- Cycle time per screen: 4 minutes
- All the processes are automated, NO direct operator required
- Installation of the IN-LINE plant into the existing space
- Reduction of all the consumption values – thus lower operating costs
- Considerable reduction of the retouching costs to <10%
- No films, no film storage, CtS technology with a resolution of 2400 dpi

1. Loading feeder after the printing process

- The screens are placed into the loading feeder direct after printing
- Load – select program - RUN



2A. Washing process – INK removing

- Use the solvent in a closed circuit system
- Reduce the loss of solvent
- Less emissions / closed chamber
- Solvent with a **flashing point of $>55^{\circ}\text{C}$ / 131°**



2B. Solvent conditioning

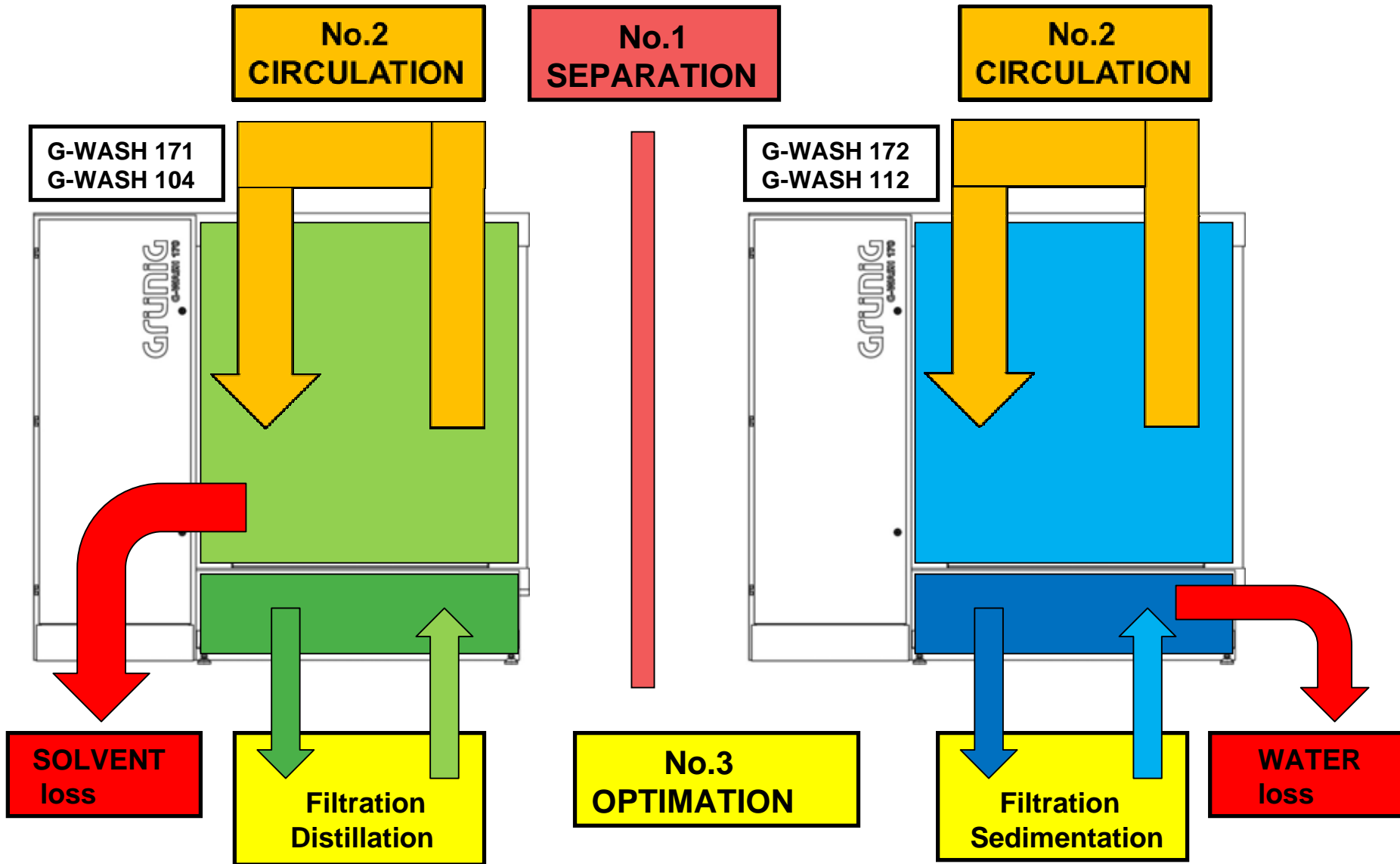
- IN-HOUSE cleaning of the solvent
- Filtering fleece 4, 7 or 12 micron
- Increase the service life of the solvent
- Lower the operating costs



3A. De-coating / De-greasing

- Closed-circuit use the de-coating product
- Improved de-coating results
- Less emissions / closed chamber
- Lower the operating costs





4. Feeder with intermediate drying

- Intermediate screen storage
- Automatic drying
- No dust, no handling
- Access provided for inspection / control



5. Coating / mounting the capillary film

- Automatic film mounting
- Automatic film cutting from the reel
- Ionization / Antistatic = dust-free
- Possibility to coat with emulsion



6. Feeder with final drying

- Final screen storage
- Automatic drying
- Unloading feeder with 20 screen places
- Optimal handling



7. Loading feeder before illustration

- Loading feeder offering 14 screen places
- Load – select program - RUN



8. CtS imaging

- Direct-to-Screen process
- Film free production
- Automatic screen registration
- Higher quality / 2400 dpi



9. Developing / Rinsing

- Automatic developing process
- Standardized processes
- No emissions / closed chamber
- Closed circuit water system / reduction of the water consumption



10. Blow-out / Preliminary drying:

- Automatic preliminary drying
- Removes >95% of the water
- No scale lines on the screen
- Reduces the drying time by more than 95%



11. Feeder with final drying

- Final screen storage
- Automatic drying / dust-free
- Unloading feeder with 14 screen places
- Perfect and easy handling



Consumption values / costs

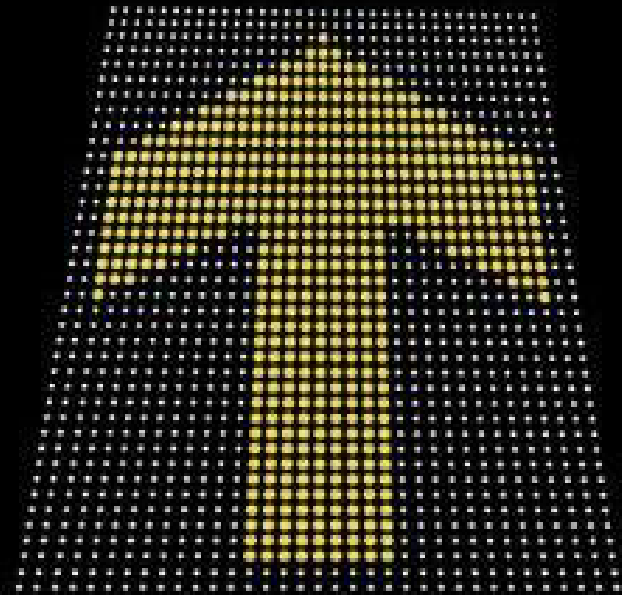
- Daily production of 100 screens **7-8 h**
- Solvent consumption **5,8 liters / 100 screens**
- De-coating **0,5 liters / 100 screens (concentrate)**
- De-greasing product **0,8 liters / 100 screens (concentrate)**
- Water **1600 liters / 100 screens per shift / 8h**

COSTS PER SCREEN € 80.— / 100 screens (screen cleaning)

- NO film **CtS technology**
- Retouching work **1 h / 100 screens (before 6 h)**
- Share of the operator **50% / 100 screens (before 400% = 4 people)**
- Refinishing of ghost image **< 5% / 100 screens**

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CONCLUSION

- Standardization – automation is needed
- “Hybrid” printing – use different print technologies
- Increasing importance of the screen quality
- CtS systems – today's technology / CtP → CtS
- The costs per screen must be known
- Work-flow considerations are crucial and save costs
- Don't forget: a dust-free screen preparation reduces costs
- The screen preparation department must be IMPORTANT !
- **BETTER screens – MORE OUTPUT – less costs !**

Screenprinting The Future

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Questions ?

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THANK YOU !

WASHING possibilities - according your needs

PLUG & WASH

A compact, vertical industrial machine with a grey cabinet and a large glass door. The door is open, revealing a green interior panel. A yellow starburst callout points to the machine.

PLUG & STRIP

A vertical industrial machine with a grey cabinet and a large glass door. The door is open, revealing a green interior panel. A yellow starburst callout points to the machine.

Multiple process

A large industrial machine with a grey cabinet and a large glass door. The door is open, revealing a yellow interior panel. A yellow starburst callout points to the machine.

XL

A long, horizontal industrial machine with a grey cabinet and a large glass door. The door is open, revealing a yellow interior panel. A yellow starburst callout points to the machine.

WASHING possibilities - IN-LINE

IN-LINE BASIC



IN-LINE MEDIUM



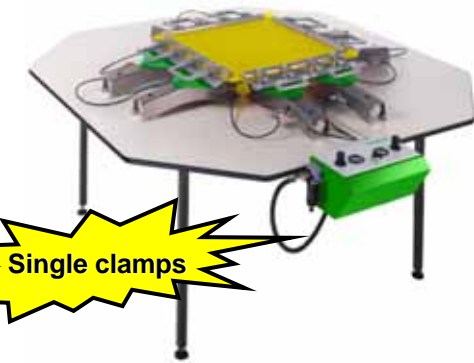
IN-LINE CD



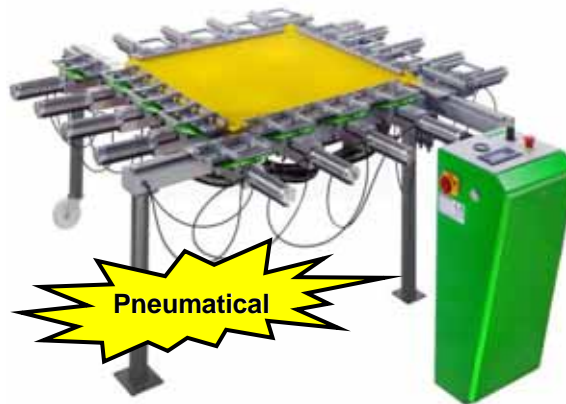
IN-LINE XS



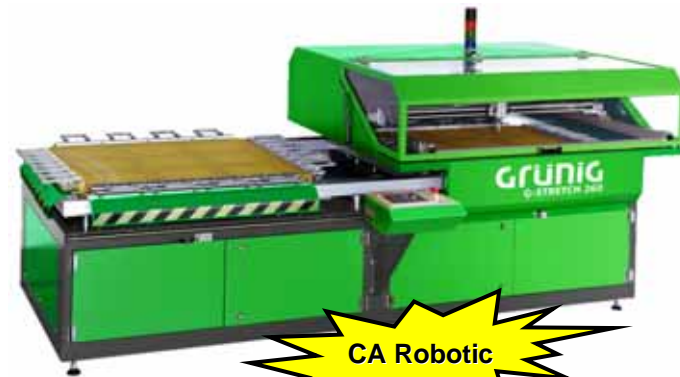
STRETCHING possibilities - according your needs



Single clamps



Pneumatical



CA Robotic



Mechanical



Bonding UV



XL

COATING possibilities - according your needs

PLUG & COAT



MODULAR



XL



DUPLEX



IN-LINE

