

“How to Find out the Uniqueness Of an Offset Press”
(Finger Printing of a Press)
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ZAGREB (CROATIA)



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Dobrodošli

स्वागतम्
Welcome!

Willkommen!

Tervetuloa!

Vitajte!

أهلا وسهلا

Bienvenu!

Benvenuto!

Καλωσορισατε!

TISKARSTVO:2011

Добро пожаловать!

स्वागतम्

(International Scientific Conference In Printing)

ようこそ

Vítejte!

ZAGREB:CROATIA

Witamy was!

Üdvözöljük!

Boa vinda!

Bienvenido!

Välkommen!

欢迎 안녕하세요!

Today's topic of discussion

**“HOW TO FIND OUT THE UNIQUENESS OF AN
OFFSET PRESS”**

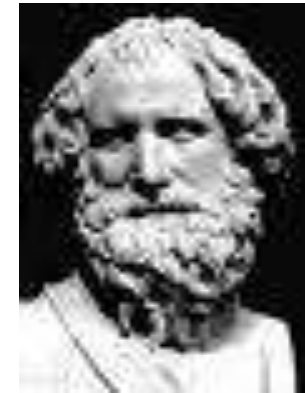
OR

“FINGER PRINTING A PRESS”

So many people have seen apple falling down!
*But **Sir Issac Newton** looked it in a different way!*



So many people must have observed water
 over flowing the bath tub while bathing !
*But **Archimedes** observed it in a different way.*



So many people must have certainly
 noticed oil and water do not mix together!
*But **Alois Senefelder** noticed it in
 a different way!*



So many people used rubber blankets for
 different uses.
*But **Ira W Rubel** used it in a different way!*



All these inventions still hold very true and strong

Have you ever thought

WHY ?

Reason is simple:

No science based fundamental principles can change.

Offset technology is purely science based.
It will hold true as long as printing exists!

WHY OFFSET IS STILL FASCINATING ?

Offset is still maintaining its reign among all the printing methods of today. It has proven its effectiveness over time. Even if the world has digital printing capabilities already, many people still opt for offset printing.

Why is it about offset printing that makes it an all-time favorite?

This presentation is an answer to that question:

1. Consistency in terms of high quality prints and images:

Offset printing method irrespective of the texture of the paper or medium you are printing the offset plate and ink conform and adapt to it. Because of this, offset printing tends to be much cleaner and sharper once the final print is made.

2. Printing plates in a jiffy (with in no time) :

Today's plate making technology is capable to produce printing plates quite easy and fast. You can produce as many plates as you want depending on the kind of applications with the most cost effective way.

3. Usability:

In offset printing you have the capability of printing on any kinds of substrate/surface. It can be a paper that has a smooth or rough surface or plastic or metal or even clothes, it really does not matter. You can still achieve the desired result with variety of special applications and value additions.

4. Affordability:

The existence of many now has paved the way for offset printing to be more affordable. This is besides the fact that modern machines and tools are making it easier for offset printing to be done with variety of substrates.

5. Modern applications:

Modern applications such as Printed Electronics, RFID, Conductive Inks, Electroluminescence, Printed Push Button Switches, Printed Batteries etc “Offset Technology” proved to be one among the most suitable and preferred technology for mass production.

Everything is fine.....

But how can you achieve this?

How to Maintain this?

The answer is:

FINGER PRINTING A PRESS

Press adjustment and its Importance:

- ▶ **THIS PAPER WILL DISCUSS ON.....**
- ▶ Why “fingerprinting” the press ?
- ▶ What does “fingerprinting” mean at all?
- ▶ Why is “fingerprinting not enough?
- ▶ What we have to do first and why”
- ▶ How “managing” color?
- ▶ What “tools” have we got to keep the process consistent & stable?
- ▶ What role does the “chemical cocktail” play in the press?
- ▶ Why is gray balance crucial?

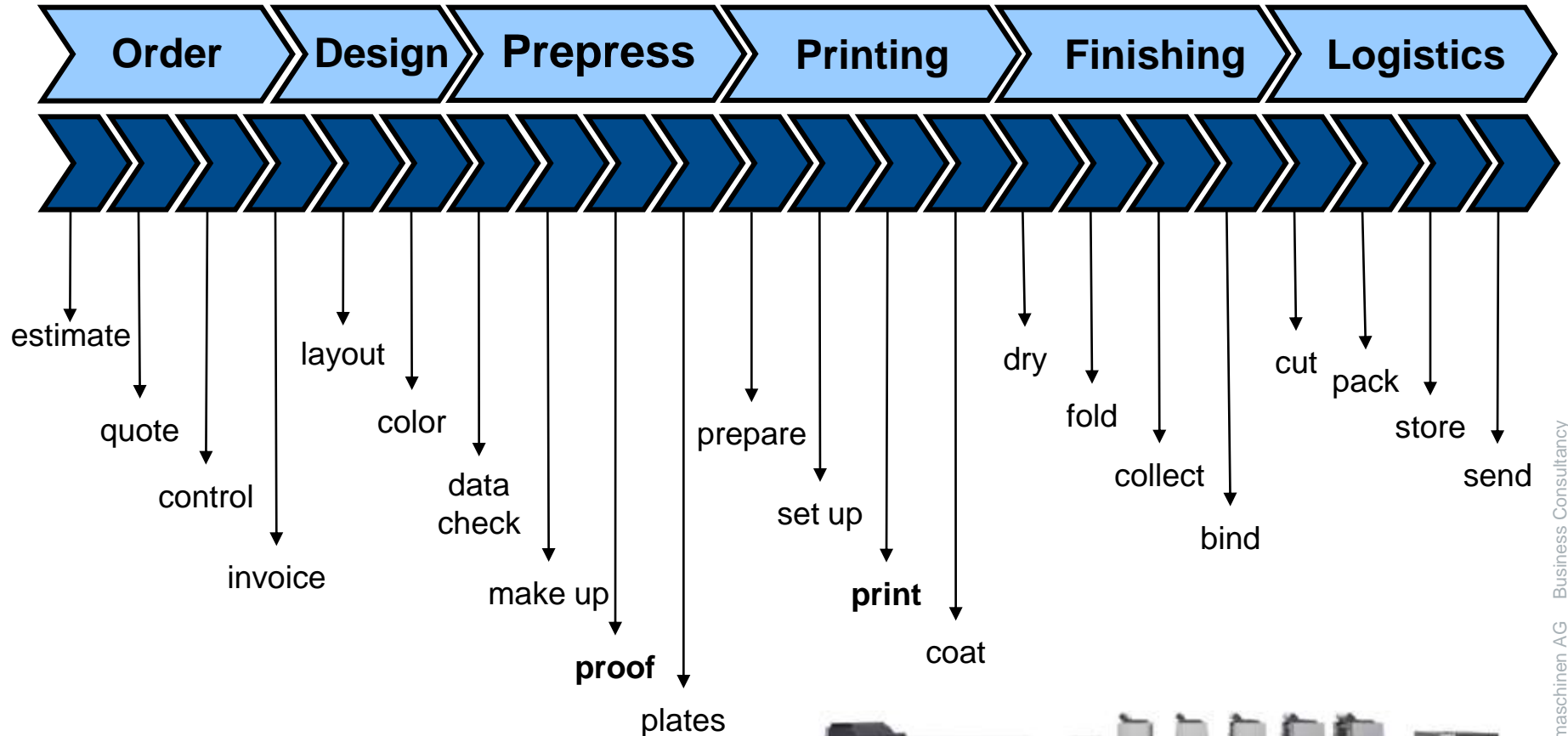
FINGER PRINTING:

**Finding the capability and limits of image reproduction
by a sheet fed offset press**

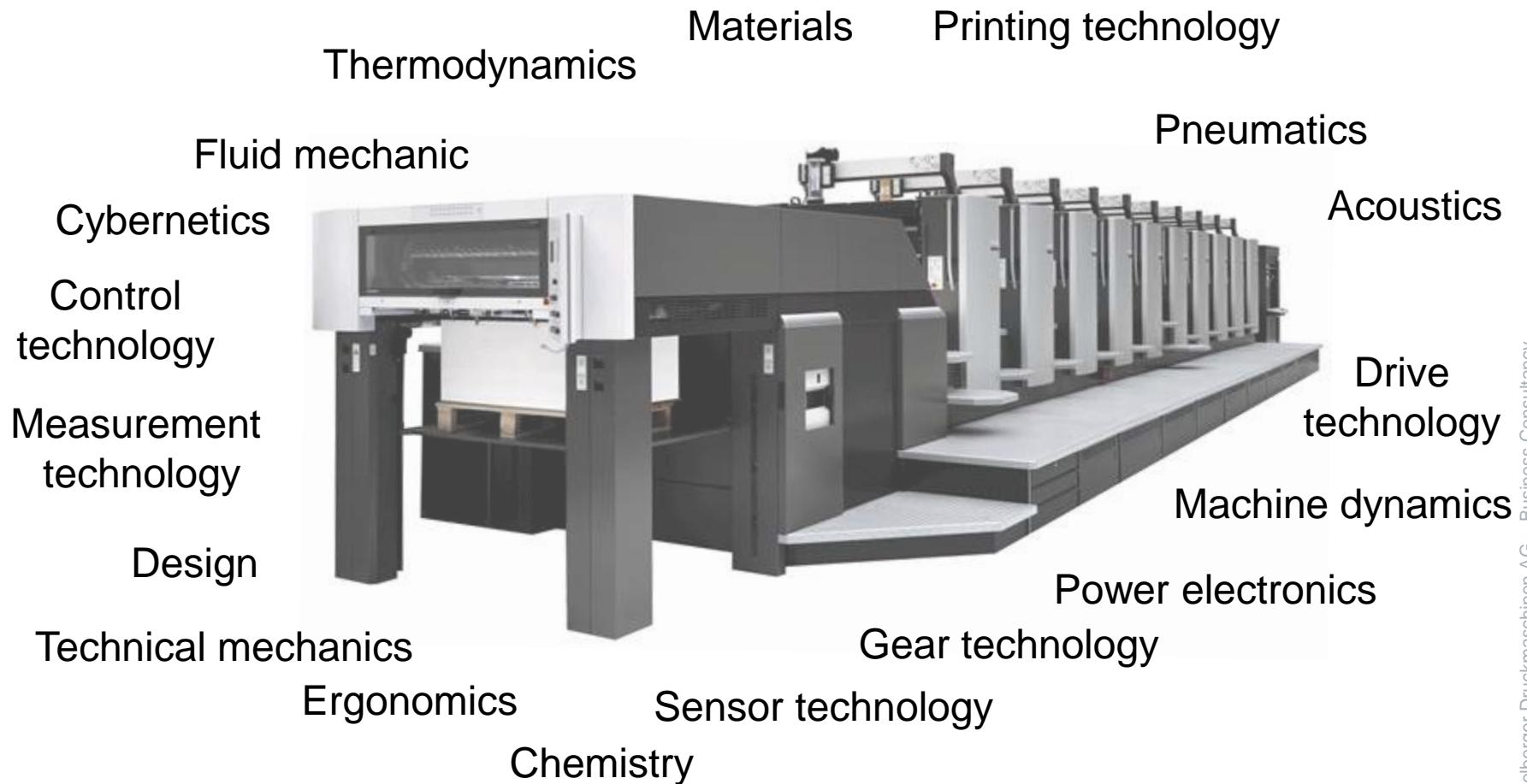
Adjust the press first and then do the “fingerprint”



Print production comprises several process steps



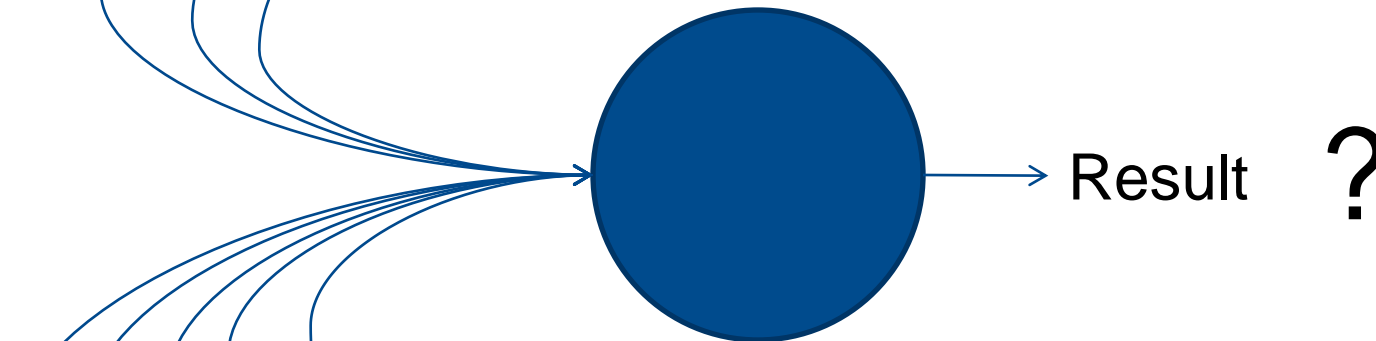
Great variety of engineering and technologies interacting



Adjusting the press

Mechanical/electronically adjustments

- ▶ Registration, side lay, front lay precision,
- ▶ Geometrical precision,
- ▶ Sheet transfer, paper flow,



Ingredients, maintenance, interaction of “consumables”

- ▶ Ink/water balance (influenced by the “chemical cocktail”)
- ▶ Conditions of the rollers (inking & dampening)
- ▶ Blanket type and packing
- ▶ Type of substrate/paper
- ▶ Upkeeping and maintenance



What really counts

- ▶ More sheets per hour
- ▶ More jobs per day (shorter make ready)
- ▶ Less wastage
- ▶ Faster turn around (inventory)
- ▶ Highest and consistent print quality
- ▶ Reliability

What do we need for that?

- ▶ Adequate and appropriate technology
- ▶ Skilled people
- ▶ Proper organization
- ▶ Control of cost

Highest and consistent print quality: The proper split of ink

Goal in printing:

- ▶ Highest possible print contrast
- ▶ Gray balance giving the a maximum on spatial perception

The “chemical cocktail” in the press is decisive:

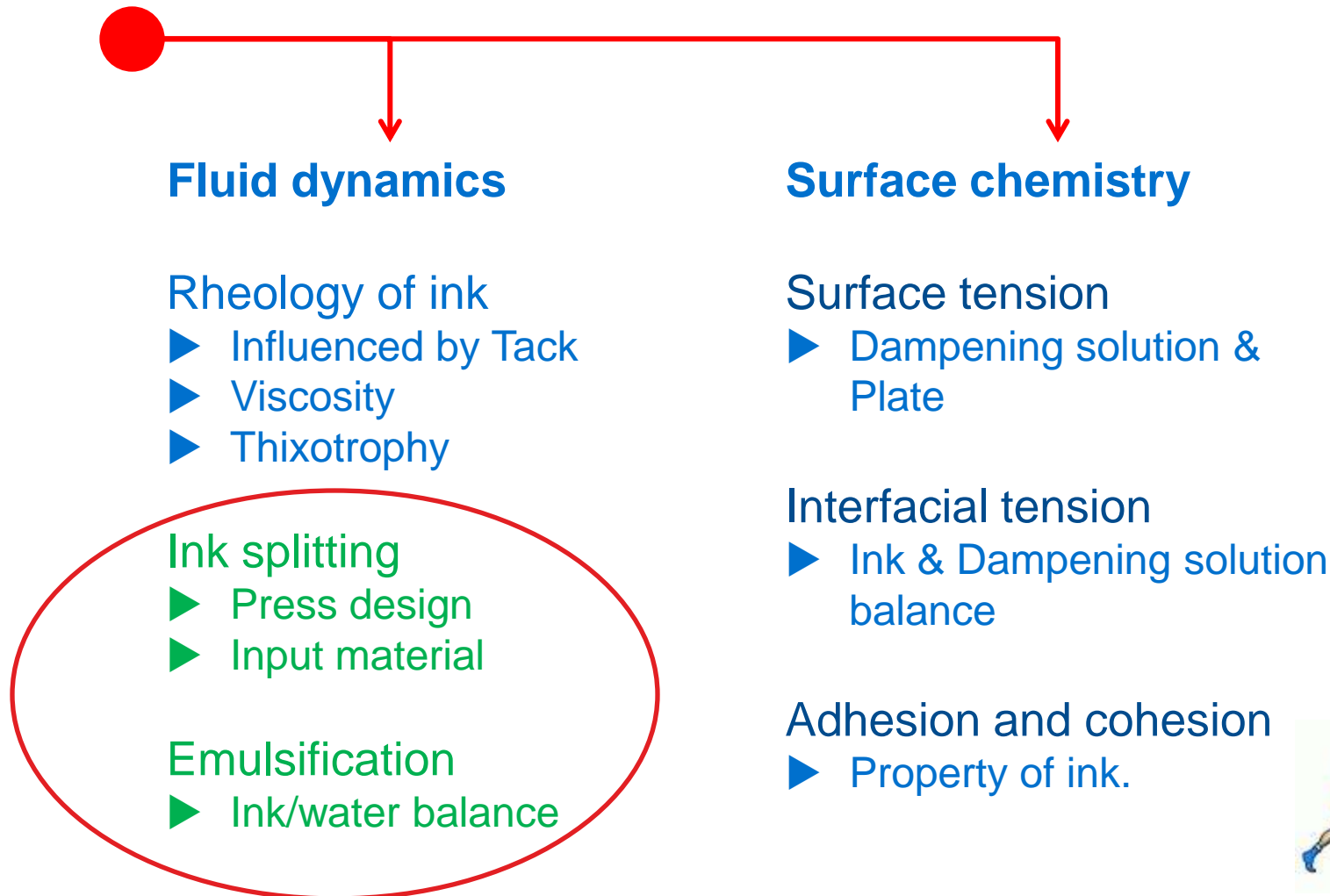
- ▶ Compliancy of dampening additives and ink
- ▶ Ink that meets at least ISO guidelines
- ▶ As less “water” as possible

Damage of ink split causes:

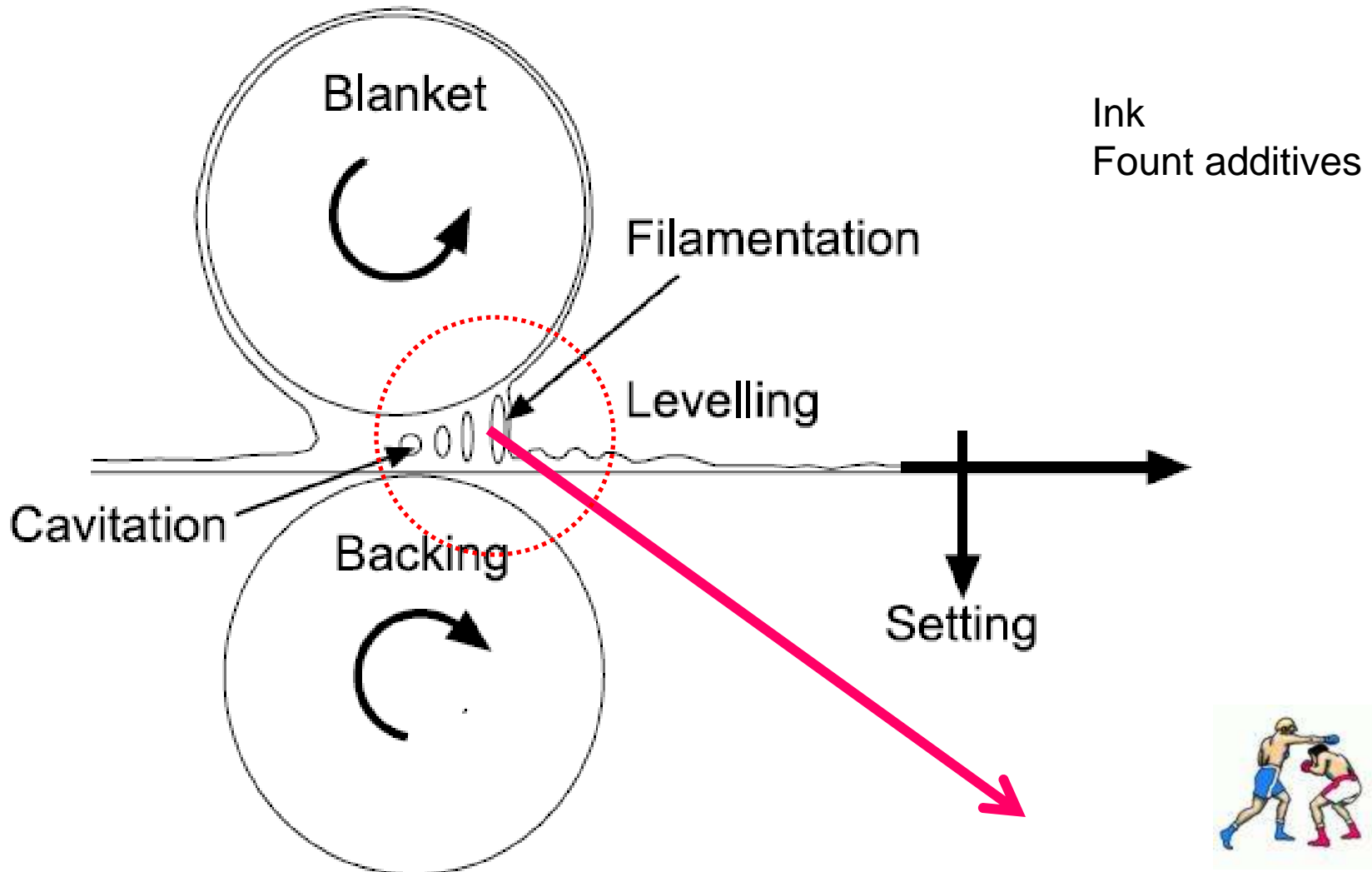
- ▶ Reduced ink lay down, hence reduced printing contrast
- ▶ Uncontrolled dot gain, roller stripes
- ▶ Negative drying behavior



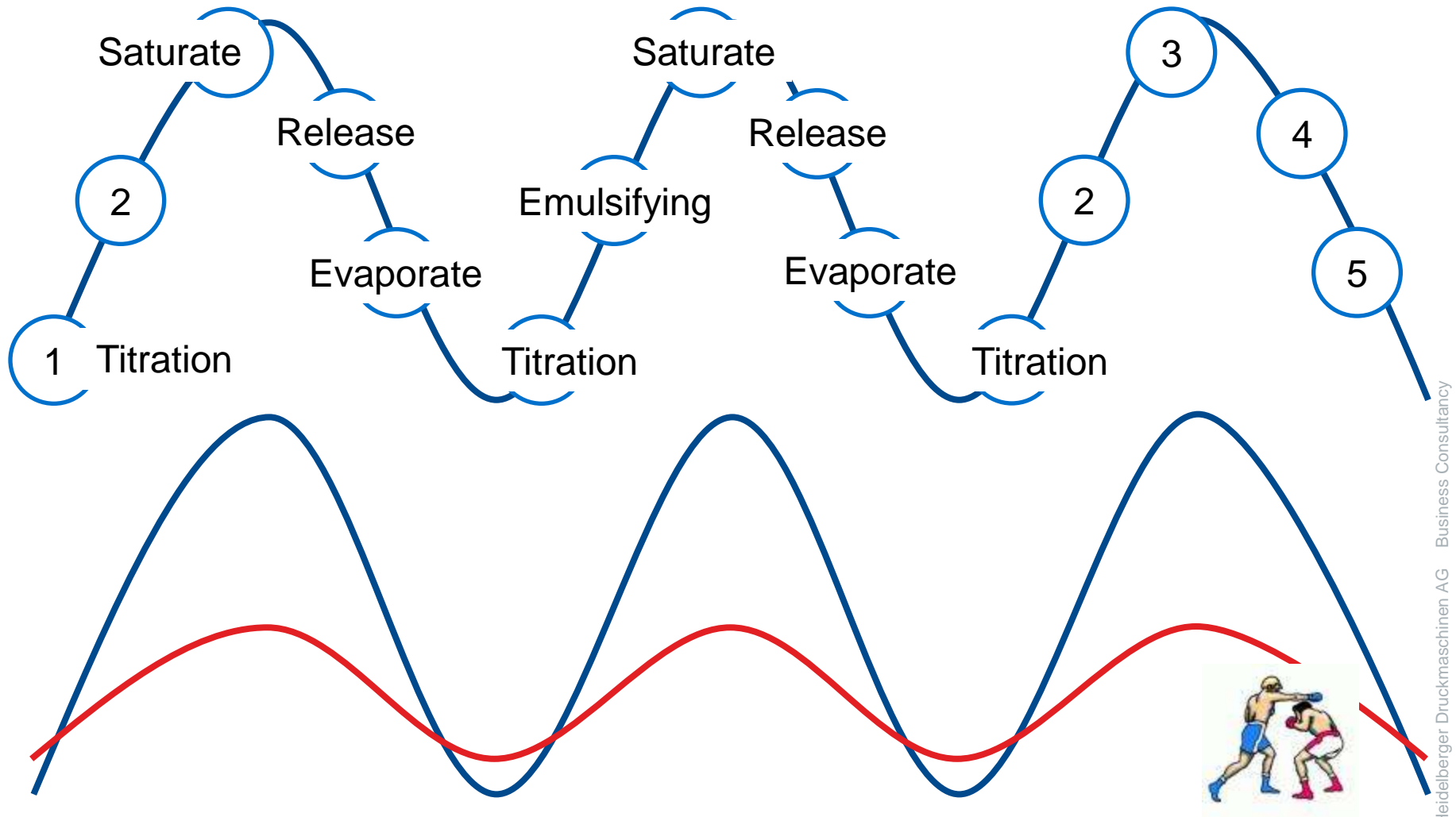
Immediate and stable print depends primary on two complexes



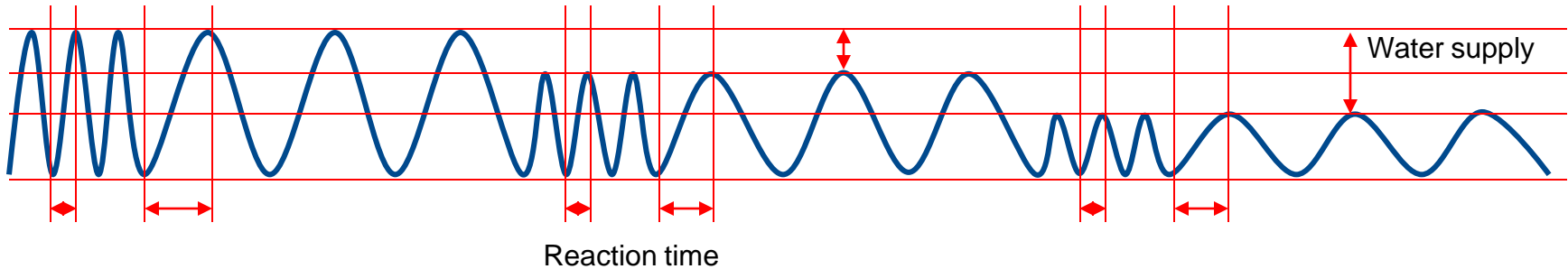
Press design and “input material” are decisive for ink split



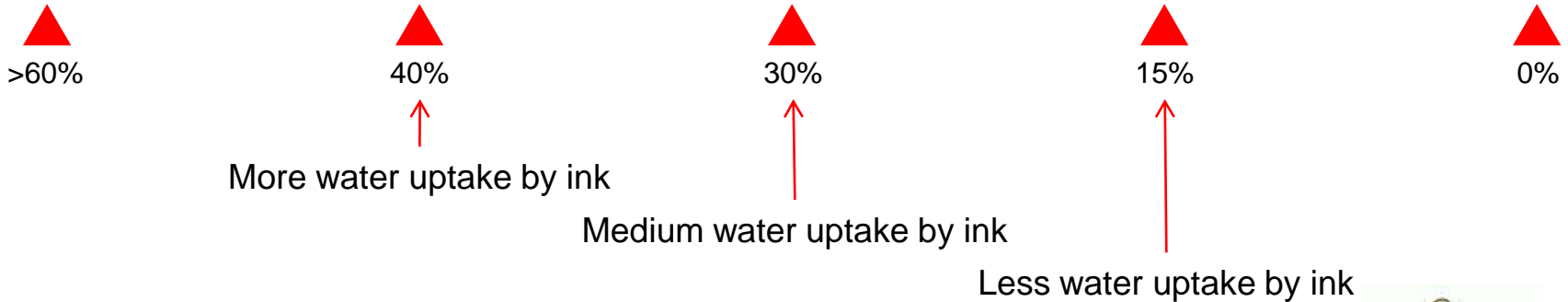
Emulsification: Offset printing is an “oscillating” process



Goal: Medium water uptake and medium reaction time



water feed to plate



Consistency depends on the amount of “dampening feed”

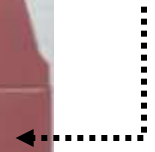


Consistency depends on the amount of “dampening feed”



Tertiary hues reacting fast on ink/water balance oscillation

C 45%
M 65%
Y 50%



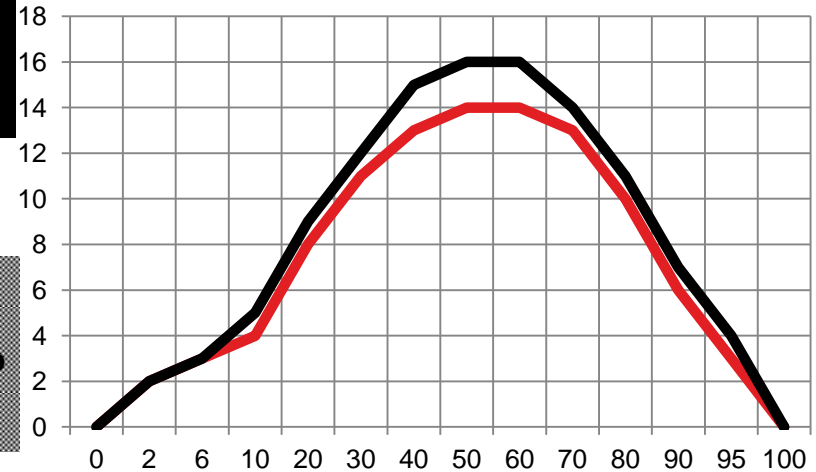
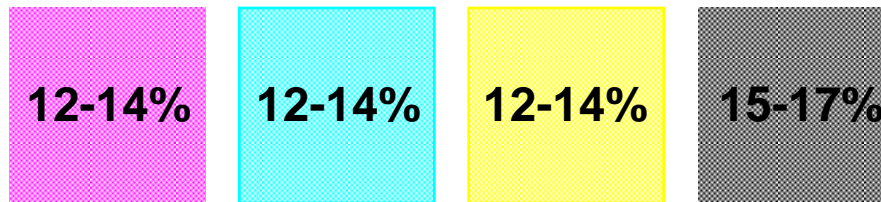
Keep print run consistent within boundaries of ISO standard



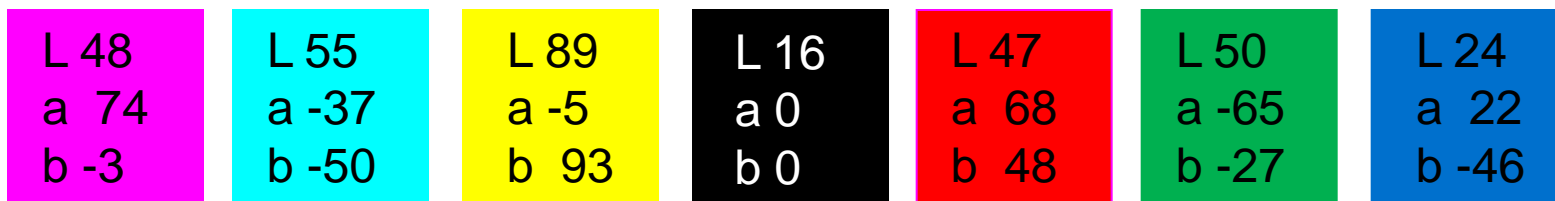
Solid density



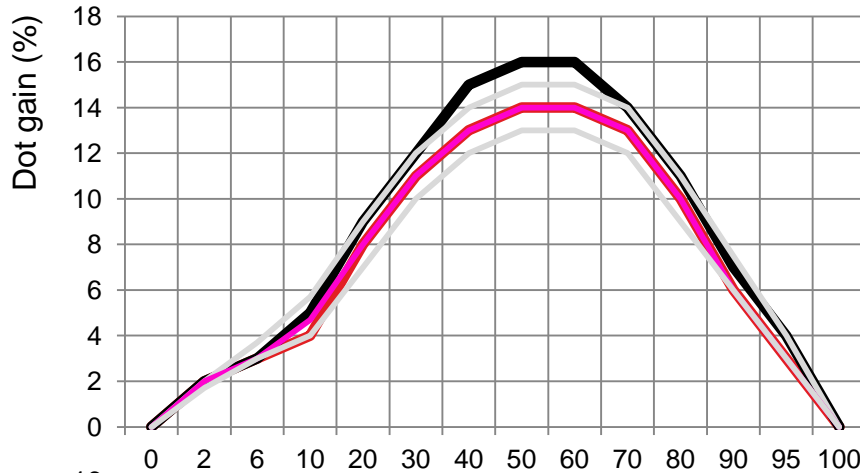
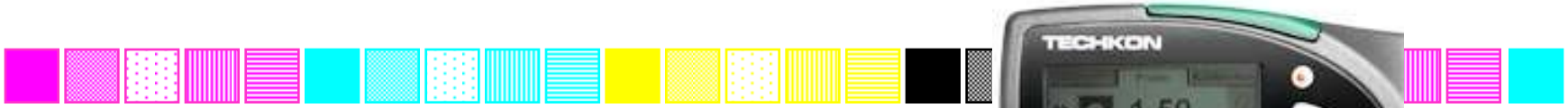
Dot gain



L/a/b (paper type 1, gloss, 115 g/m²)

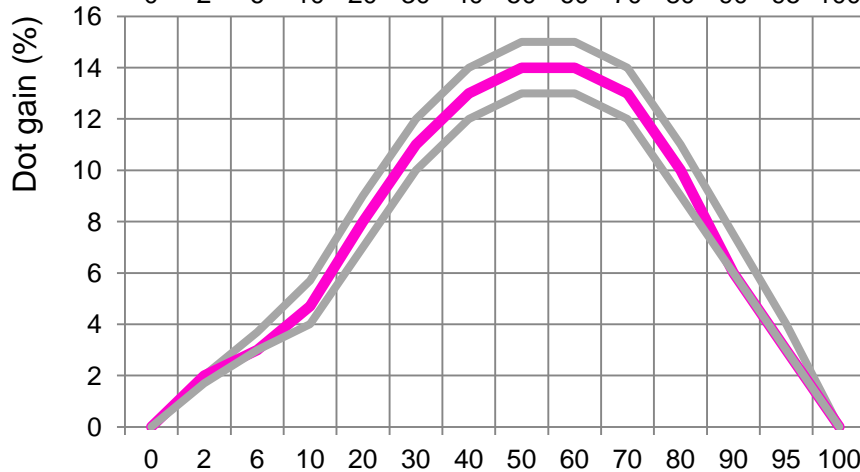


Spread of dot gain of different colors should be as less as possible



Magenta/cyan/yellow dot gain curve (red) and black

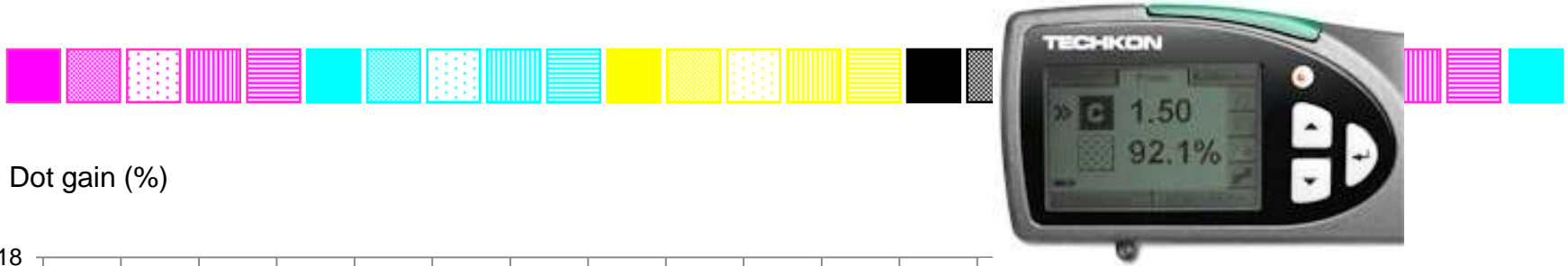
Screen area coverage (%)



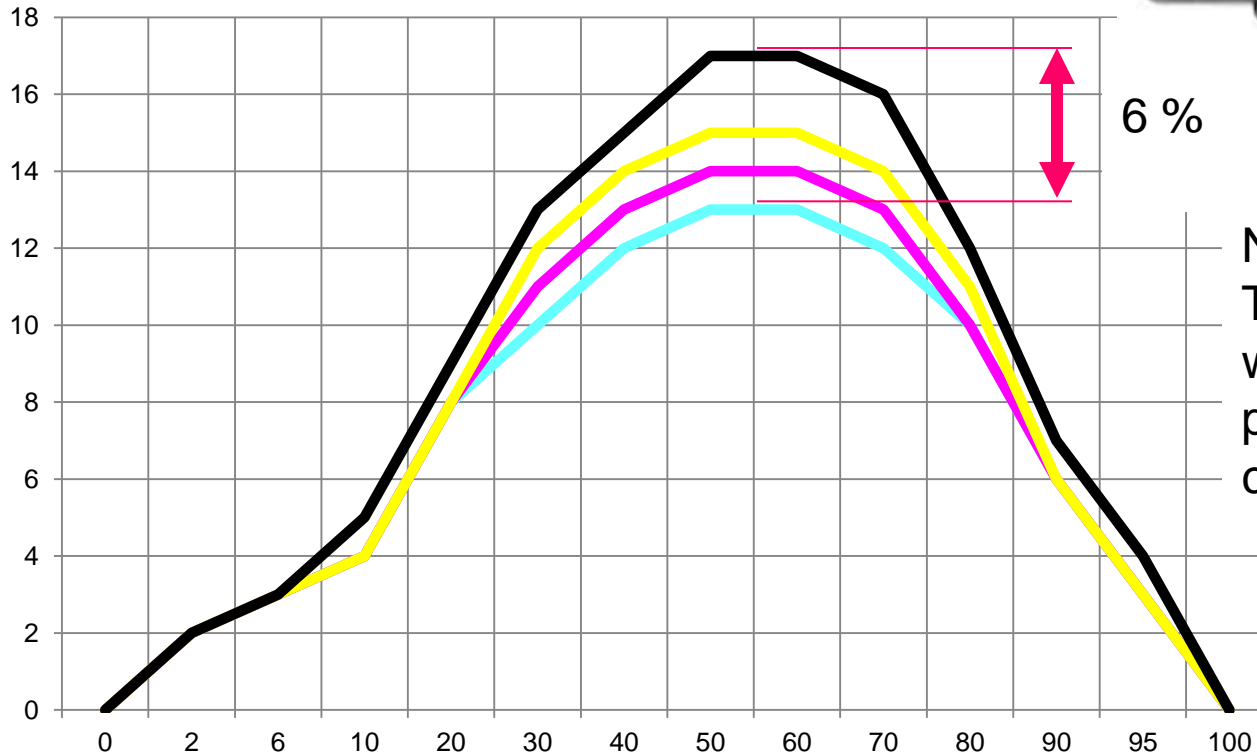
Magenta dot gain curve with plus/minus 1% corridor (gray borders)

Screen area coverage (%)

Keep print run consistent within boundaries of ISO standard



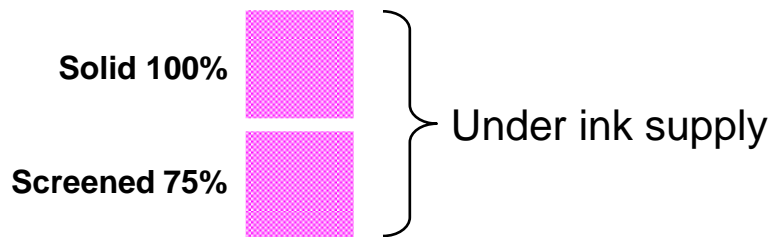
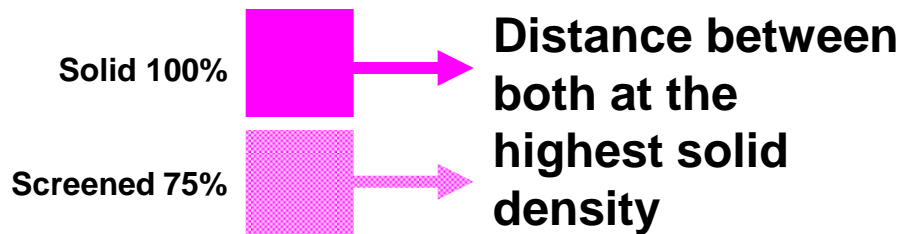
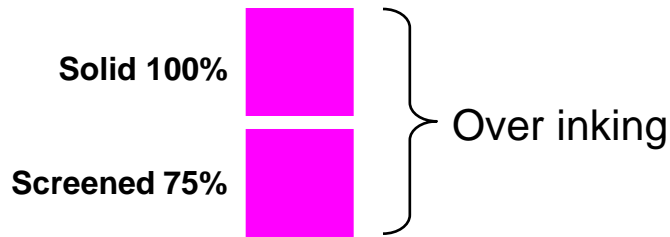
Dot gain (%)



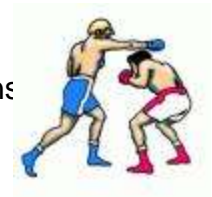
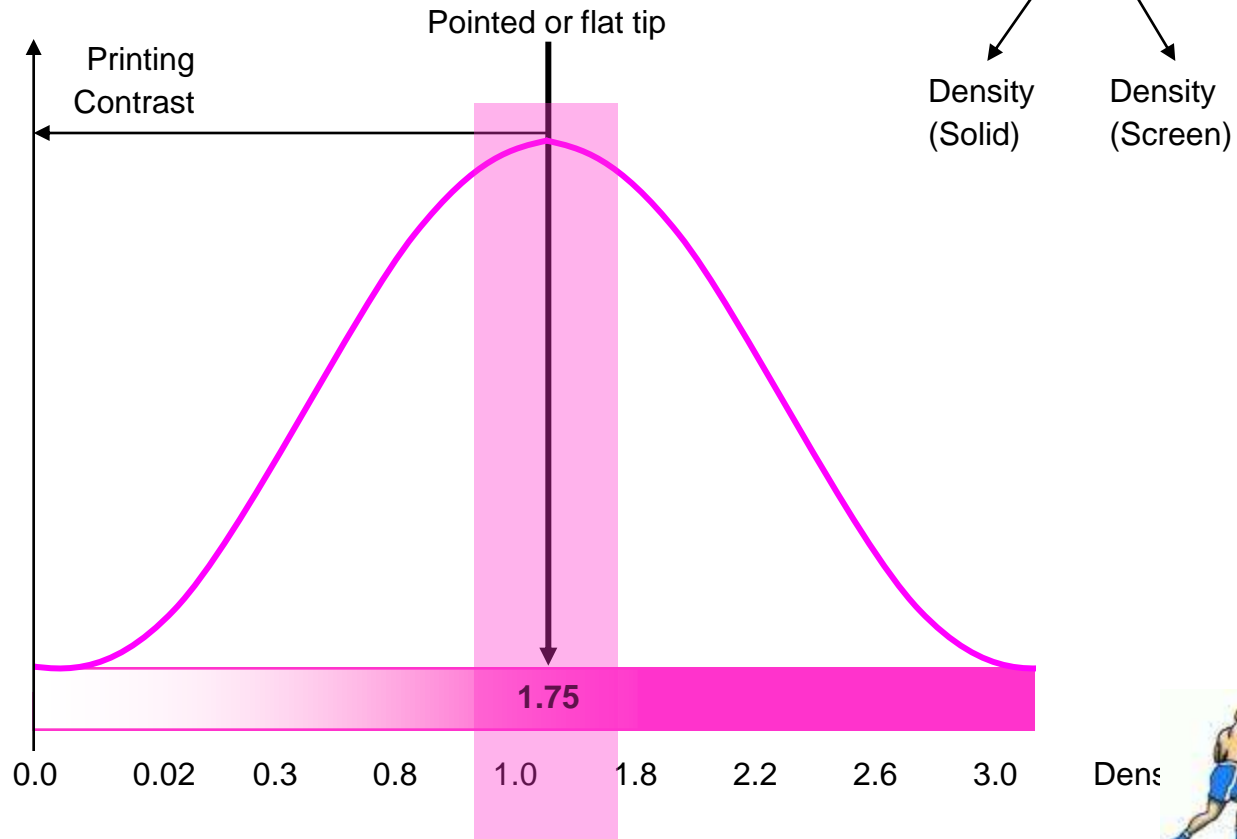
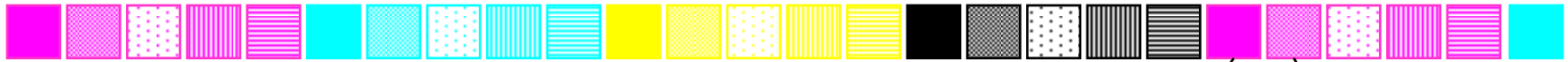
6 %

Negative example:
The 4 curves are not within the plus/minus 3% corridor

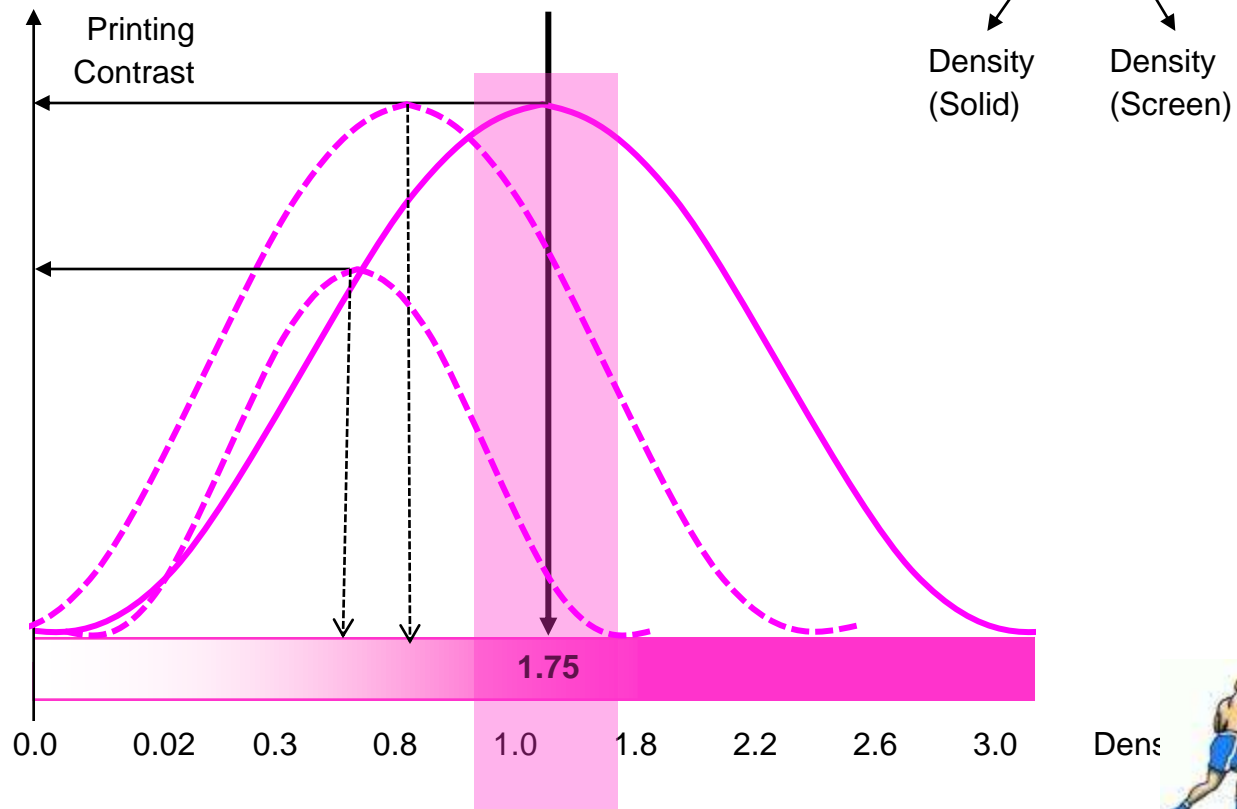
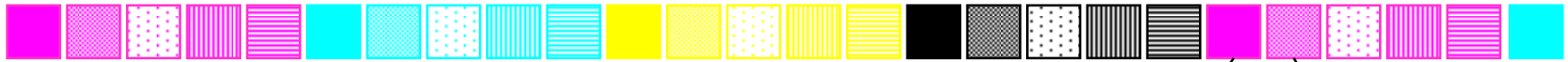
The printing contrast serves as a benchmark for the achievable quality of a press.



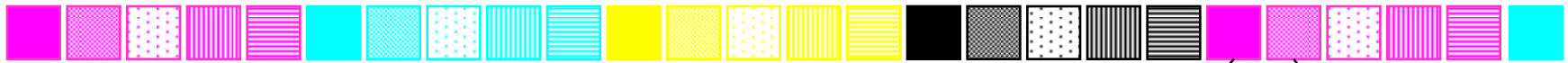
Finding out the standard is not a miracle. Printers have tools available



Finding out the standard is not a miracle. Printers have tools available



Modern press design reduces oscillation to a minimum and keeps the contrast stable



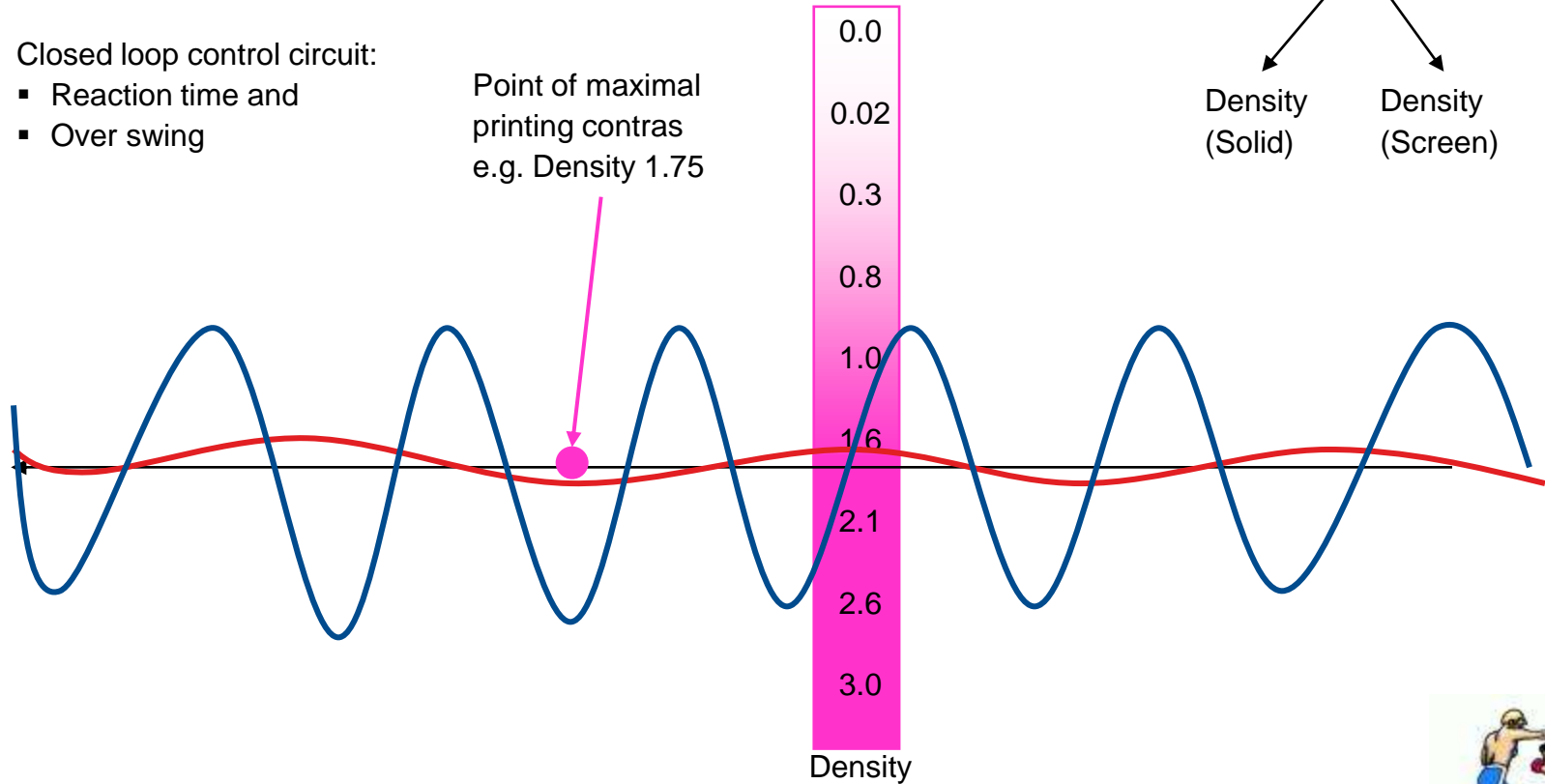
Closed loop control circuit:

- Reaction time and
- Over swing

Point of maximal printing contrast
e.g. Density 1.75

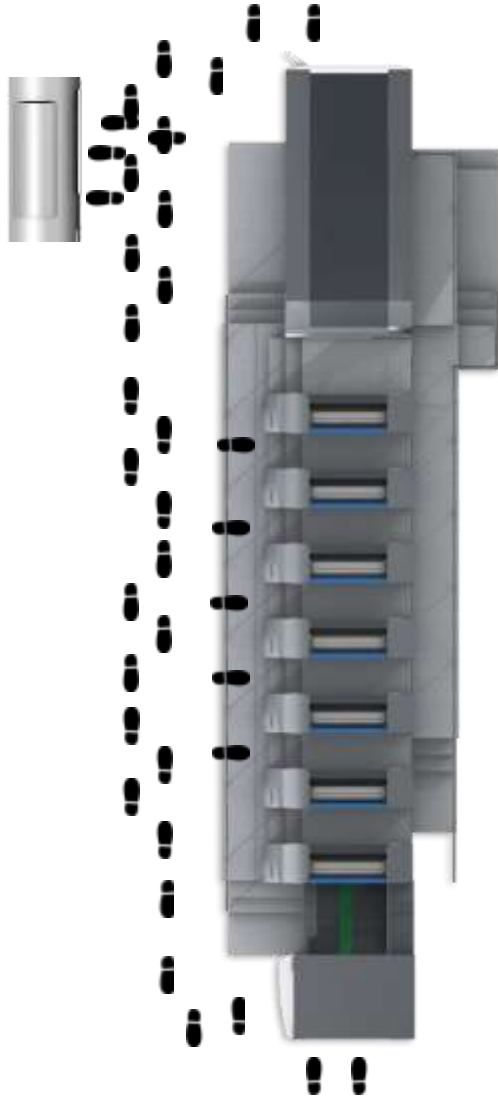
Density (Solid)

Density (Screen)

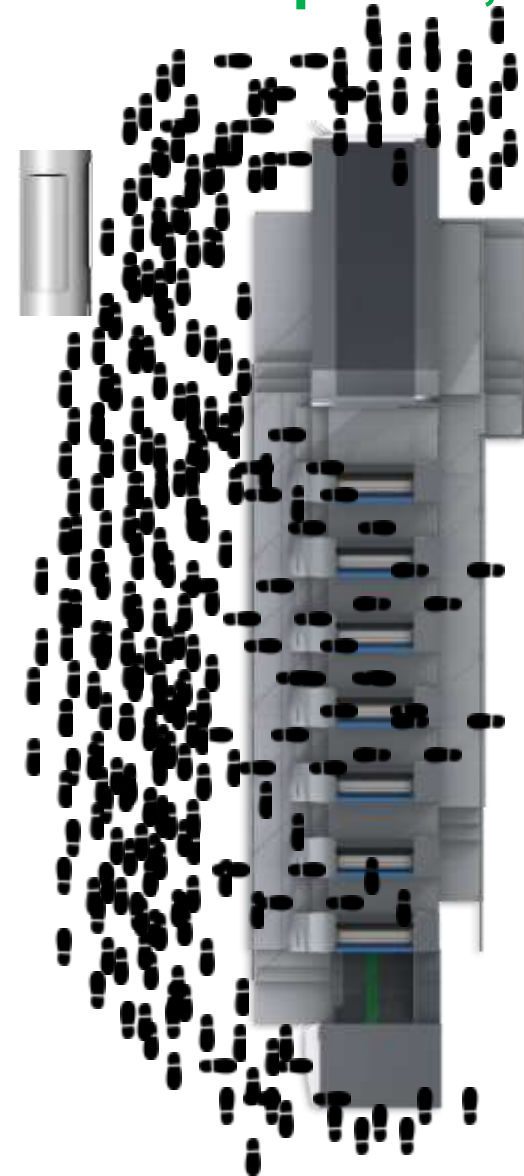


50 meters or 500 meters matters. Reduce setup time, more jobs/shift

Press
with
Intellistart



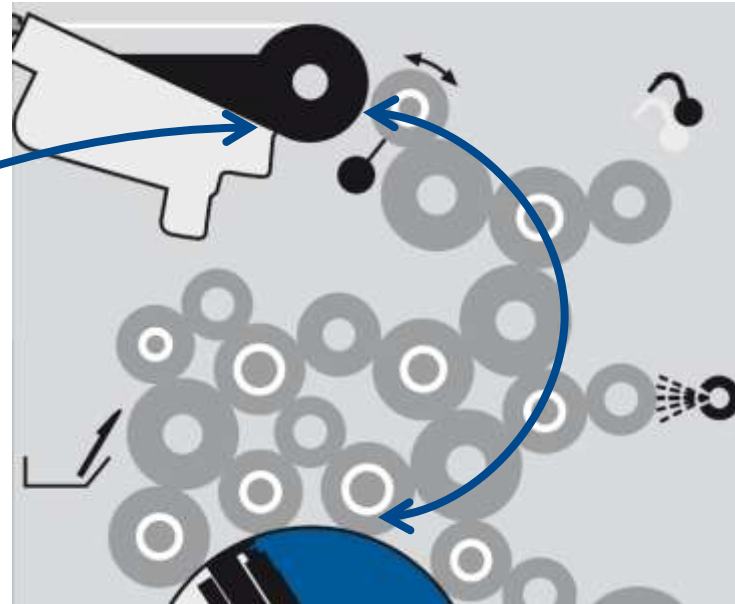
Press
without
Intellistart



Consistency and press control alternatives

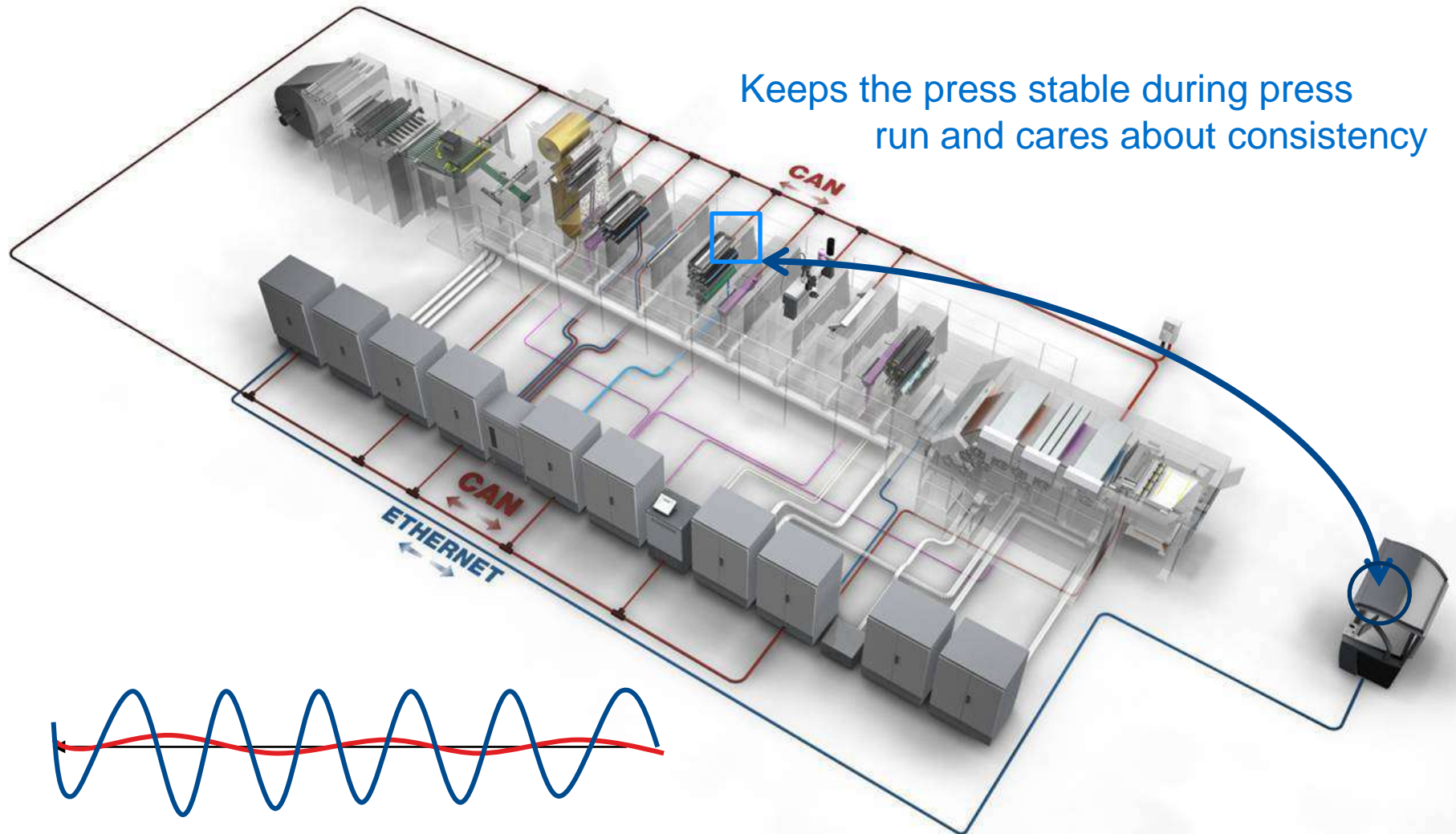
			InpressControl
		ImageControl	
	AxisControl		
Offline measuring			
Prepress Interface	Prepress Interface	Prepress Interface	Prepress Interface

Ink Zone Adjustments: Speed and reaction time is key



Less wastage, more
saleable sheets

Reduce waste, more saleable sheets, reduce cost by fastest ink zone positioning



Tools to control color (ink) during press run to keep consistency

Semi automatic
Prinect AxisControl

Ink keys



Investment:

small

Cost of production:

mid

Material savings:

reasonable

Tools to control color (ink) during press run to keep consistency

Automatic
Prinect ImageControl

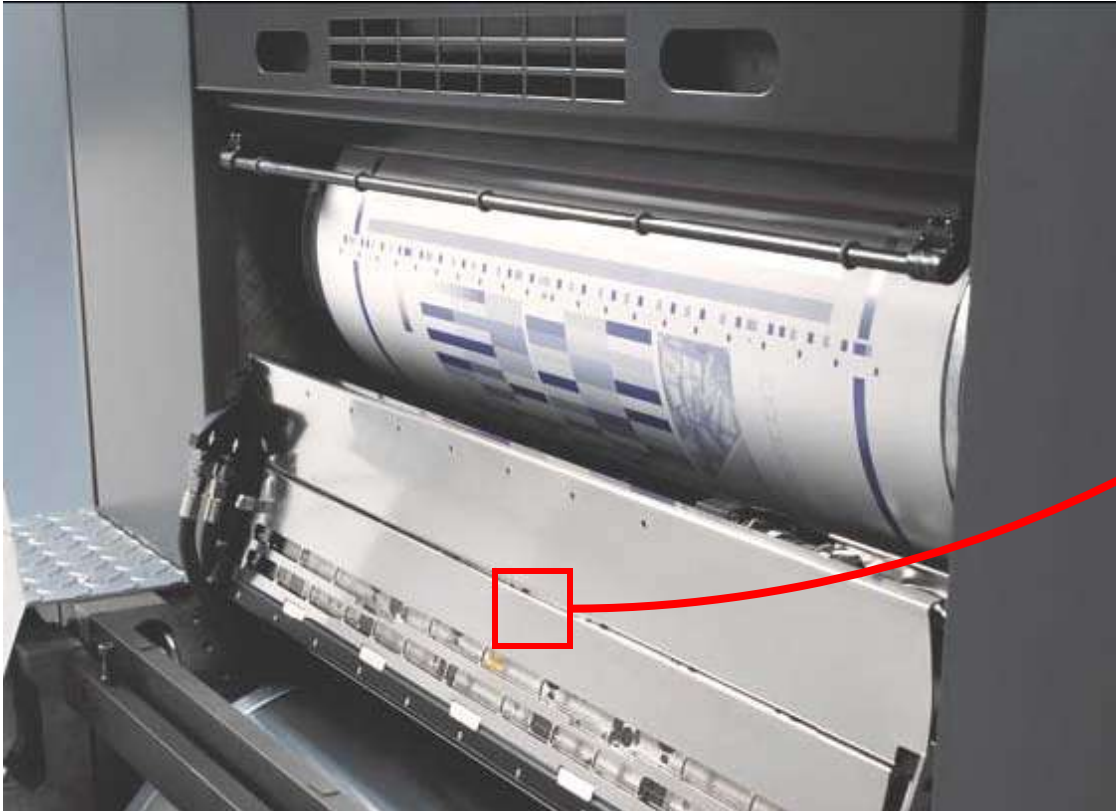
Ink keys



Investment:
reasonable
Cost of production:
low
Material savings:
high

Tools to control color (ink) during press run to keep consistency

Industrial closed loop
Prinect InpressControl



Ink keys



Investment:

Higher side

Cost of production:

Very low

Material savings:

Very high

Conclusion:

- ▶ **Adjust the press prior to fingerprinting**
- ▶ **Find the proper “chemical cocktail”**
- ▶ **Less “water” for best print contrast and consisted quality**
- ▶ **Offline, online and inline tools to keep the press run consistent**
- ▶ **Achieve the best possible gray balance and that bring the “Punch” or “Feel” or “Strike” in the print**



THANK YOU FOR YOUR ATTENTION