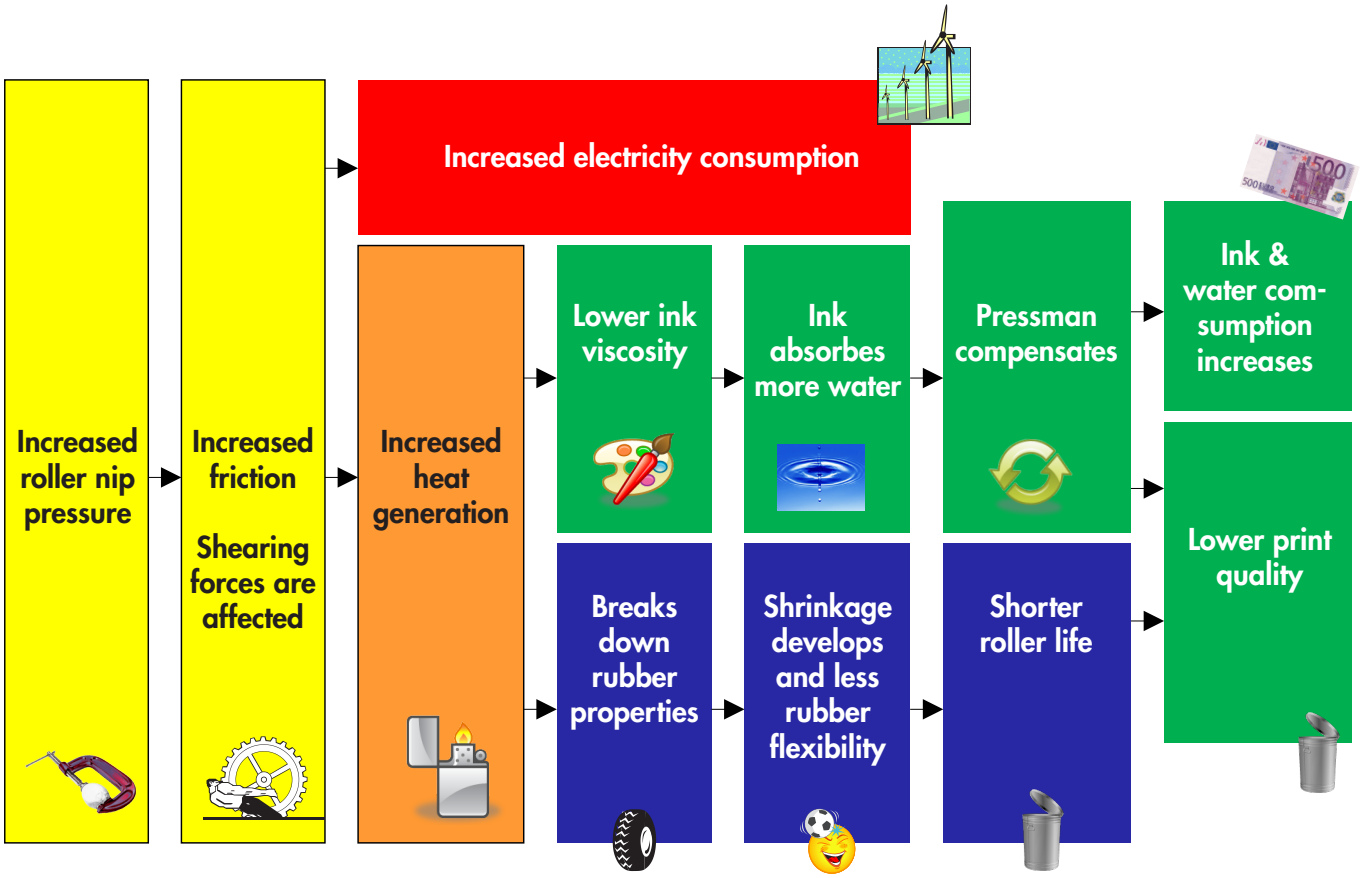
Green offset control

Energy efficient digital & exact roller setting

Consequences of setting the rollers with too high pressure



Too HIGH pressure: poor printing and increased energy consumption

Optimal printing and energy consumption

Too LOW pressure: no or poor printing

nip control

Process correct

Pressure Indicator™ – *Low Pressure version*

A true revolution

New nanotechnology enables control and setting of the pressure between offset rollers, ensuring a stable printing process and a reduction in the cost of consumables. At present, most printers still set rollers by estimating an ink stripe – the visual imprint when two rollers are pressed together. The conventional ink stripe setting method completely fails to measure nip pressure, which is the crucial process factor.

Shear force & peak pressure

The ink and dampening solutions are processed and transported by the "shear force" created when two roller surfaces are in contact under pressure, with different surface speeds.

Besides the shear force, the offset process is also affected by ink adhesion to the rollers (viscosity) and surface roughness.

Rubber change = nip change

When adjusting a roller nip, a common error is applying excess force to maintain a consistent ink stripe in spite of aging rollers, as they lose their flexibility and become harder.

Consequently, to maintain a consistent ink stripe, the rollers are forced together with increasing force over time – resulting in incorrect and excessive nip pressure.

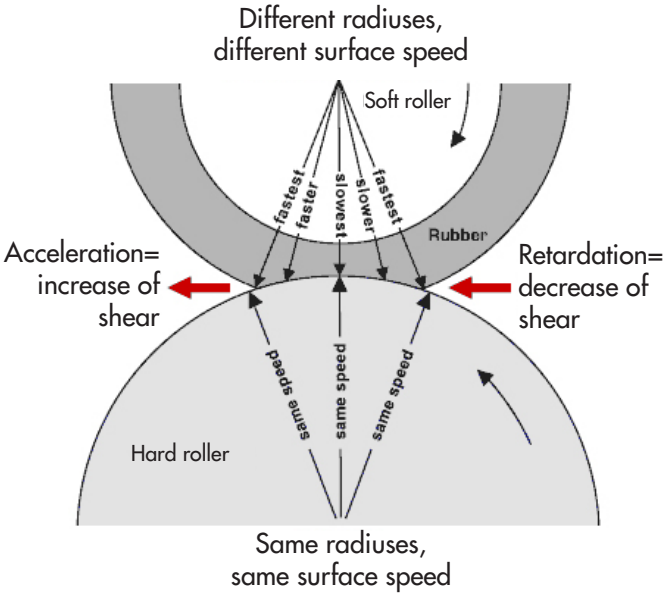
This increases the shear force, the pressure curve and the ink temperature (influencing the viscosity) – having a negative effect on the offset process.

Perhaps surprisingly, the two rollers are not actually in direct physical contact during printing, being separated by a very thin liquid film (ink, water and emulsion), some mere thousandths of a millimeter thick.

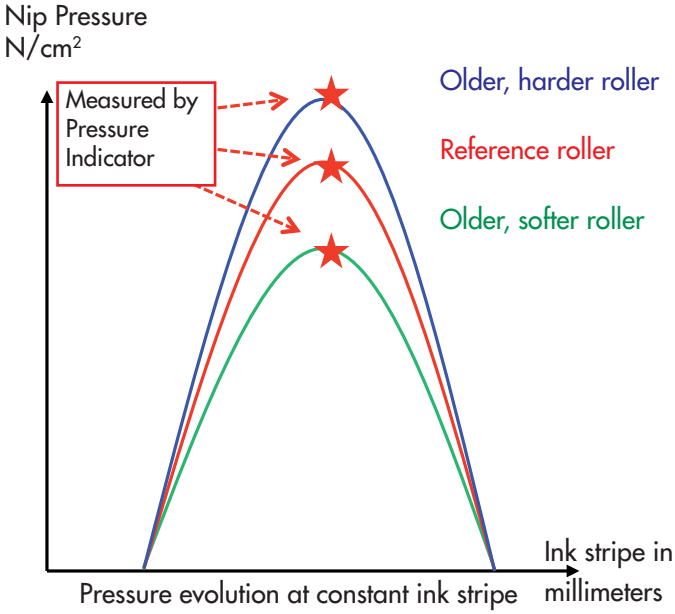
Gradually, the offset process will deteriorate and, if not controlled, may even cease, if the rollers are pressed together to a point at which the thin film of fluid no longer moves through the nip.

A roller may soften too. This will reduce nip pressure, changing nip characteristics and print quality.

Shear force transports offset solutions



Rubber hardness determines roller pressure



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ENERGY SAVING

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Cost & Energy savings

Ink, water and energy consumption can be reduced if roller pressure is optimal. Excessive roller force raises nip temperature, lowering ink viscosity. Consequently, the ink absorbs more water and the pressman compensates by increasing the amount of ink and water. A higher roller force also reduces roller life and increases electrical consumption.

Energy saving can be substantial. A general rule is that about half of the energy/electricity to drive an offset printing press goes into the roller train.

The Pressure Indicator – *Low Pressure version* measures nip pressure instead, rapidly detecting changes in roller settings and rubber hardness/softness. The Pressure Indicator ensures that excessive or inadequate roller pressures are avoided.

Nip alignment is also more easily checked, as nip pressure responds more rapidly to change than nip width.

Measurements are made in a semi-dynamic mode with moving rollers, similar to real-life printing. In short, roller settings are based on the principles of offset printing.

Simple to use

Allow the rollers to draw the tip of the sensor blade through the nip. Then stop. Nip pressure is displayed instantaneously in Newton/cm^2.

Traceable Calibration™

– the ultimate quality control feature

Calibration is easy and traceable. Every calibration unit is checked against a reference administered by a "National Competent Body", ensuring that measurements are traceable according to quality standards.

NOTE!

Must I change the way I work?

No! If you prefer, continue using the ink stripe to set the rollers. The Pressure Indicator – *Low Pressure version* can serve as a control device to ensure that your pressure levels are within press-process tolerances.

Eventually, you will become accustomed to this new method. Then, to achieve maximum print stability and minimize consumable costs – start setting the rollers with the Pressure Indicator – *Low Pressure version.*

Stay confident that your measurements are firmly based on the principles of the offset process itself.

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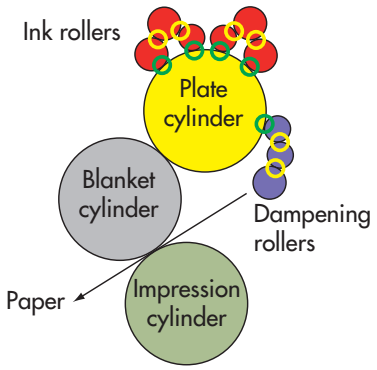
Pressure Indicator™ – *Low Pressure version*

Process-correct measuring system for offset roller nips

- hand device
+ sensor blade
+ calibration unit

Where to measure in the offset printing press

- nips between rollers
- nips between form rollers and plate



Specification

Pressure Indicator instrument	Part Number P102LP
Semi-dynamic sensor blade	Part Number PS35005
Calibration unit	Part Number CAL40PS
Sensor blade length	350 mm / 13.8″
Sensor blade thickness	0.2 mm / 0.008″
Optimal nip width	≥ 5 mm / 0.2″
Nip temperature	10–60° C / 50–140° F
Measurements per sensor	Tested up to 4000
Measuring units (force/area)	Newton / cm^2
Measurement range	3–60 N / cm^2
Display resolution	0.1 N / cm^2
Patent	No 519918. No 537884

Simple to Use

- One-button control
- Only one operator needed
- Bright LED display for easy readings
- Standard AAA batteries and power-save function
- Sensor blade can measure with either side towards either roller
- Safety front to protect the operator
- Can be used on all offset presses from any manufacturer
- Delivered in a robust instrument case

PRACTICAL ADVANTAGES

- Up to 50 percent quicker than an ink stripe
- Pressman-independent. Objective and standardized. Facilitates printing by numbers
- Fast and easy troubleshooting. Supports pre-emptive maintenance
- A clean measuring technique: no ink or cleaning agent
- Correct measurement regardless of ink type and ink viscosity
- Easy to detect uneven nip width from swelling, shrinking or non-parallel alignment
- A better controlled process results in more production time, higher quality and lower cost

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HISTORY OF ROLLER NIP MEASUREMENTS

1.
A tape was placed between the rollers and drawn out as the pressman gauged the pressure manually

The method was subjective, not repeatable and could not be formalized in an instruction manual

2.
The next method was estimating an ink stripe

It can be formalized in a manual, but is not pressure-related

3.
The Pressure Indicator and digital measurement of nip pressure

With modern nanotechnology process-critical nip pressure can be measured ensuring a stable offset process.
The measure of nip pressure is neutral to ink variations

"If the rollers are set right they run cooler, allowing for less water and subsequently less ink. Ink-water balance is achieved faster, reducing waste and, as a side benefit, the rollers last longer. Nip Control is one more piece to this printing puzzle".

Simon Cave, Service Manager, Timson Inc.
US & UK manufacturer of special offset presses