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ISSUE 07 • Autumn 2005 **N E W S L E T T E R**



Watch the next step to larger roll diameters

Over the past 25 years paper roll diameters have progressively increased in a series of steps from 1000 mm to 1100 to 1150 and then 1250 mm — which has been the norm for the last 15 years. This trend has been driven by printers wishing to improve their efficiency through handling and splicing fewer rolls and has been accomplished by improvements in paper making, logistics and paster technologies.

Commercial and newspaper printers have begun to ask what advantages and constraints are associated with now moving from 1250 to 1500 m Ø rolls. PrintCity's Web Systems & Publishing Group has investigated the impact of

changing to larger diameter 1500 mm rolls paper rolls by drawing on the cross-industry expertise of member companies and other specialists. Weblines's Special Report N° 1 is an evaluation of the complete value chain — from paper making, roll cores, transport, logistics at the print plant and the paster.

MOSCOW CONFERENCES

PrintCity's Web Systems & Publishing Group initiated a series of conferences in Moscow for the Russian graphic arts industry. They each addressed how equipment and materials technologies are linked through best practices to achieve optimum performance.

INFORMATION FROM PRINTCITY

WEB SYSTEMS



PUBLISHING



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Watch the next step to larger roll diameters

Key contributors and sponsors companies:



MAN Roland:
Roland Birke, Ralf Henze, Wilfried Rill;



MEGTEC Systems:
Andreas Keil (project leader);



UPM:
Erik Ohls, Martin Schorn, Atte Lindström.



Sappi Fine Paper Europe:
Nico Meusen

Other contributors: Eurografica, David Cannon; Sonoco-Alcore, Ton Eussen, Markku Ronnila; Ifra, Manfred Werfel;

Managing editor: Nigel Wells, VIM.
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The right size?

In this report we refer to a roll diameter of 1500 mm (59") but in North America the diameter is 60" (1524 mm); and internal core diameter of 76 mm (3") and 150 mm (6"). There are no significant differences between these 'standards' for the purposes of this study.

Impacts of larger diameter

Impact	Better	Worse
High	✓✓✓	XXX
Moderate	✓✓	XX
Low	✓	X
Neutral	=	

About the project

Over the past 25 years paper roll diameters have progressively increased in a series of steps from 1000 mm to 1100 to 1150 and then 1250 mm Ø which has been the norm for most new press installations during the last 15 years. This trend has been driven by printers wishing to improve their efficiency through handling and splicing fewer rolls and has been accomplished by improvements in paper making, logistics and paster technologies. Commercial and newspaper printers have begun to ask what advantages and constraints are associated with now moving from 1250 to 1500 mm Ø rolls.

PrintCity's Web Systems & Publishing Group has investigated the impact of changing to larger diameter paper rolls by drawing on the cross-industry expertise of member companies and other specialists. Whilst some printers have already changed from 1250 mm to 1500 mm Ø rolls, many companies are unsure about the impact of changing size. This evaluation covers the complete value chain - from paper making, roll cores, transport, logistics at the print plant and the paster - but does not make specific recommendations as to whether printers should switch to the larger size rolls because viability will depend on each individual company's circumstances.

Further actions

PrintCity's Web Systems project team has identified a number of areas where the group will continue to work together to improve the viability and performance of using larger diameter rolls, including:

- Developing a draft protocol on issues related to core specifications, testing, identification and labelling in order to propose that relevant international bodies amend and introduce more appropriate standards.
- Optimising chuck and core interaction.
- Identifying best practises to improve performance throughout the production cycle.

The optimum method to improve performance is a cross-industry approach involving relevant suppliers and organisations

Executive summary

Impact of change from 1250 mm to 1500 mm Ø rolls

Principal advantages: Potentially lower operating costs from reduced paper waste, lower splice tape consumption, more efficient press time utilisation and possibly reduced manning with:

- 31% fewer rolls to handle, store and strip
- 31% fewer splices to prepare
- 31% fewer roll changes, associated waste and web break risk

Principal constraints: Higher investment costs because all related equipment must be sized for the larger dimension and 44% greater roll weight:

1. Paper mill trimming efficiency, handling, rewinding and wrapping lines may need to be substantially upgraded to allow widespread availability of larger roll sizes.
2. Logistics required to handle and store rolls at paper mill, in transit and at printer.
3. More robust pasters with larger dimensions and automated roll loading.
4. In some cases, more expensive or larger cores will be required.

The economic viability of change will be different for commercial printers, wide web width newspapers and single-width newspaper operations. In addition, each plant will have its own variables including operating hours, manning levels, number of pasters, run lengths, variety of paper types and local logistics.

Relationship between roll weight - width - core

The 1500 mm Ø roll increases the weight and size of a paper roll by 44% and all roll handling, cores and pasters must be sized and specified accordingly.

Roll core quality

The roll core is the essential link in the production chain at the paper mill (winding and re-winding) and the paster (acceleration, braking and unwinding). The challenge for cores and chucks for 1500 mm Ø rolls is that together they must handle the 44% increase in weight that doubles the inertia at an E-stop, and requires torque to be increased by 62% (in comparison to 1250 mm).

The current 76 mm size core should be suitable for many 1500 mm Ø web offset rolls. However, higher grade, more expensive or larger diameter cores may be required in some wide web width and weight combinations where the relationship between the core and the chucks becomes a critical issue, and on which there is no clear industry consensus at this time. For this reason, paster manufacturers like MAN Roland and MEGTEC have taken the decision to set performance limitations even where the risks to people and machines are minimal:

1: Very heavy rolls: Currently defined as being over 3,5 tonnes will require larger 150 mm paperboard cores to ensure secure torque during E-stops. A benefit from larger cores is that they provide a better run/roundness with less residual paper layers on the core.

2: Very wide web widths (both 1250 and 1500 mm Ø rolls): Currently defined as being over 2000 mm wide and web speeds over 11 m/s. An expiring roll on a 76 mm Ø paperboard core can reach its resonance frequency and under certain circumstances this will cause a web break and possibly a core can break just prior to splicing. Although this risk is small, machine manufacturers are obliged to apply a principle of precaution by defining what cores can be used and providing safety protection around the paster. Solutions include using a specified 76 mm Ø paperboard core quality with a sufficient E-modulus/density ratio; or aluminum cores (currently a non-standard and very limited regional proposal); or 150 mm Ø paperboard cores.

These limitations could change in the future because manufacturers are researching improved solutions that may include higher performance cores and different chuck designs.



Early adopters' comments

Newspaper: The Augsburg Allgemeine commissioned their new MAN Roland XXL COLORMAN newspaper press this year. The press will run 1500 mm Ø rolls with a web width of 2100 mm at up to 12,75 m/s. The newspaper's Deputy Technical Director, Eike Bühring, explains that their choice to use larger rolls is based on the increased efficiency of materials utilisation (particularly paper), a reduction in missplices, and decreased roll movements. He believes that with larger diameter rolls and very wide webs it is essential to improve the overall logistics.

Commercial heatset: George R. Newkirk of MEGTEC USA comments: "Major North American heatset printing companies are either considering, or have already purchased, 60" diameter rolls to use on large format presses. They believe that larger rolls are an advantage on wide webs widths (72"/1828 mm, 75"/1905 mm and possibly 81"/2057 mm) that will be the dominant future formats and want to prepare for this change now. Their key considerations are that fewer splices will allow manpower reduction on presses, combined with reduced annual materials costs from lower paper waste and consumption of splicing tape."



Photo UPM.



Photo UPM.



Photo Megtec.

Photo Sappi.



Paper making

The two key issues for paper makers are trimming efficiency and the core types required. Paper suppliers will frequently need to make substantial investments to manufacture and handle the larger 1500 mm Ø. The consequences for the customer will initially be a more restricted choice of paper mills; higher minimum order quantity for 1500 mm Ø rolls; and perhaps higher price if the roll widths do not cut out efficiently from the parent roll; cores may be more expensive.

Delivery logistics

Increased delivery costs might be incurred for some 1500 mm Ø roll weight/web width combinations if they use transport payload capacity less efficiently. In some cases, more transport will be needed to deliver a given tonnage of paper, probably leading to increased costs. The current automatic roll loading/unloading systems are not adapted to the different loading patterns required for this size.

Logistics in printing plants

The increased roll size means less movement of rolls and more stable production conditions. Currently installed equipment may not be able to handle the larger dimensions and weight of bigger rolls and, consequently, investment may be needed to safely increase capacity limits. The principal impacts for different applications are:

Commercial heatset: Handling of larger rolls will require higher capacity roll trucks and clamps, adapted paper store and driveway layout, and higher capacity automated roll loading at the paster.

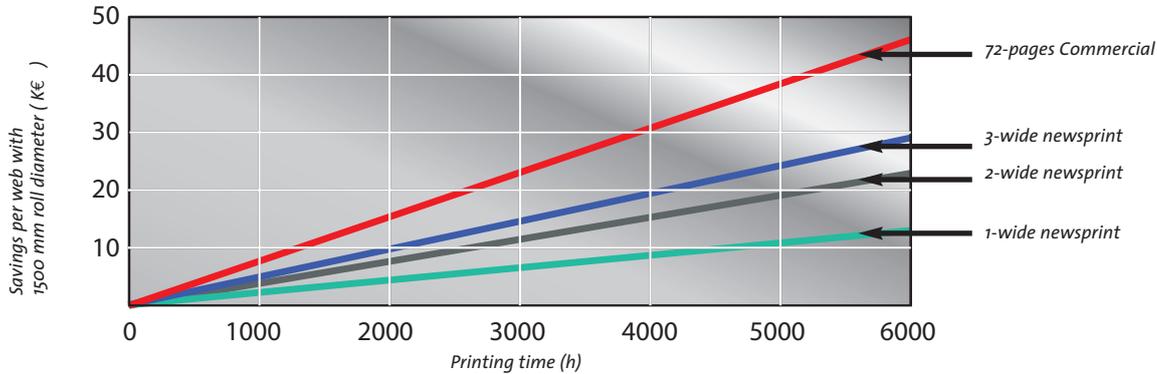
Single-width newspapers: The larger rolls will require higher capacity roll trucks and clamps (but not a significant cost) with an adapted paper store and drive way layout.

Double- and triple-width newspapers: Large volume newspaper installations tend to use customised automated roll handling and logistics systems. The impacts will be variable on different components of the system — some will be cost neutral, others will increase costs or in some cases reduce costs.

Pasters

Pasters for larger roll sizes need to be of a much more robust construction to handle the increased roll weight that doubles the inertia at an E-stop and requires torque to be increased by 62%. The higher inertia also requires more powerful acceleration motors. New chuck designs may be needed to handle the much higher torque from the rolls and in certain cases quick changeover chucks to handle 76 and 150 mm Ø cores. These changes will lead to a higher investment cost. New paster designs for this size use a highly compact turret configuration to support the paster arms that allow 1500 mm Ø rolls to be handled in almost the same space taken today by 1250 mm Ø models.

Economics Return on Investment (ROI)



The economic viability of switching to larger roll diameters in the short to medium term will need to be carefully assessed as it will require printers to invest in new pasters and roll handling equipment.

The potential cost savings at the printing press are related to the number of operating hours and the number of webs — the chart shows savings per web that may be possible to offset the higher capital investments costs of paper handling equipment.
Source MEGTEC.

Return on investment (ROI)

These very approximate financial scenarios show an ROI of 3 to 5 years - these scenarios assume that delivery costs are unchanged but this may be an important cost factor. ROI is highly variable it depending on many factors and small changes can dramatically change the result. Investment and operating costs vary between printing plants and each company should conduct its own detailed feasibility study taking into account all relevant factors (width and number of webs, number of operating hours, manning and wages, hourly press cost, splicing efficiency rate, cost of paper, type and cost of logistics).

Principal implications

- Initially 1500 mm Ø rolls will probably only be economic for very high volume printers (magazines, directories and newspapers) investing in new press lines for printing large tonnages of paper with a narrow range of basis weight, grade and web width.
- Printers adding a new press with 1500 mm Ø rolls to a plant that has older machines running 1250 mm Ø will also have to purchase and manage both roll diameters. This will constrain flexibility to switch jobs from the machine with 1500 mm Ø to other machines (but not vice versa).
- In the short to medium term, only a limited number of paper makers will have capacity to make and process 1500 mm Ø rolls and where required with 150 mm Ø cores. Many mills will have to make substantial investment upgrades that will probably take several years to complete. It is therefore essential for printers to verify which of their current paper suppliers can supply larger roll diameters for all paper grades. The two key issues for paper makers are trimming efficiency and the core types required. Increased delivery costs may be incurred on some roll weight/web width combinations due to less efficient payload utilisation.
- The combination of increased web width and roll diameters can be dramatic. For example: 100 x 1250 Ø mm rolls for a 1400 mm web width reduces to 66 rolls for 2100 mm web width and this falls to 46 with 1500 Ø mm — a reduction in the number of rolls to be processed by over half for an equivalent total tonnage. This effect is valid for all applications.

	COMMERCIAL		NEWSPAPER		
Web/width mm	1980	1980	700	1500	2100
Total webs	1	2	8	6	4
Shifts	3	3	2	2	2
Total cost savings	37 562 €	75 124 €	68 730 €	88 415 €	77 866 €
Total extra investment	145 000 €	270 000 €	210 000 €	380 000 €	330 000 €
ROI months	46	43	45	63	61

Impact on roll core quality

ROLL CORES

	Better	Same	Worse	
Cores - roll weights over 3,5 tonnes			XXX	Safety issue. Higher core cost.
Cores - web widths > 2000 mm and speed > 11 m/s			XXX	Safety issue. Higher core cost.
Cores - all other roll dimensions		=		



Paster chuck torque transmission is not proportional with length - both the type of design and expansion pressure have variable influences. Photo Sonoco-Alcore.

The roll core is the essential link in the production chain at the paper mill (winding and re-winding) and the paster (acceleration, braking and unwinding). The challenge for cores and chucks for 1500 mm Ø rolls is that together they must handle the 44% increase of weight that doubles the inertia at an E-stop, and requires torque to be increased by 62% (in comparison to 1250 mm). Current 76 mm Ø size cores should be suitable for many 1500 mm Ø web offset rolls, but higher grade or larger cores may be required for some wide webs and heavy rolls.

Normally paper suppliers ensure that the cores on which paper is supplied conform to the printer's needs that are determined by the web width, roll diameter and weight, and speed of each press-core performance criteria become critical as these parameters become larger. High performance cores are available from some suppliers that provide higher critical speeds, less vibration and deformation and reduced risk of delamination. These cores are straighter and stiffer with tighter tolerances for internal and external diameters (as a prerequisite for optimal winding quality), use higher grade materials and are manufactured to more exacting specifications.

Today the current status is:

1. Beware of misleading comparisons with publication gravure that uses rolls < 2640 mm wide with a 76 mm Ø paperboard core because these rolls are 1250 mm Ø and are not comparable with 1500 mm Ø for offset that has double the inertia at an E-stop.
2. Using longer paster chucks may resolve some issues but torque transmission is not proportional with length and both the type of design and expansion pressure have variable influences.
3. There is a need for a single global standard to specify core qualities and testing methods (currently different and incompatible methods are used). A common labelling protocol on the roll to define core quality is also recommended as paper may be switched between machines or printing plants.
4. It is not possible today to reliably differentiate between highly variable qualities of paperboard cores at the time of loading a roll onto the paster. This should also be the subject of a global standard.
5. Core manufacturers cannot give a categorical guarantee of core performance because many conditions of use are beyond their control. This means that safety responsibility is passed to the paster manufacturer and the printer.
6. The use of larger core diameters, non-standard internal and external core diameters, or non-paperboard materials will complicate the paper manufacturing and logistics processes.

These limitations may change in the future but this will be conditional on a completely proven core/chuck interface that addresses all operational and safety issues. It might also be possible to reliably identify the quality of a paperboard core at the time of loading a roll onto the paster by using either colour-coded cores (to an international standard); or by RFID tags in the cores to allow automatic screening that only specified cores can be loaded but using this technology will require appropriate safety conditions.

Under today's conditions, paster manufacturers like MAN Roland and MEGTEC, have taken the decision to set performance limitations under the principal of precaution - even where the risks to people and machines are minimal:

1: Very heavy rolls: Currently defined as being over 3,5 tonnes and requiring 150 mm Ø paperboard cores to ensure adequate torque during E-stops. This is a standard size for gravure web widths over 2640 mm; however, many of the winders producing offset grades are either

unsuitable to run 150 mm Ø cores or cannot work with them in combination with 76 mm Ø. A benefit from larger cores is that they provide a better run/roundness with less residual paper layers on the core and tend to provide better roundness. The cost difference between a high performance 76 mm core and a 150 mm core is minimal.

2: Very wide web widths (1250 and 1500 mm Ø rolls): Currently defined as being over 2000 mm wide at web speeds over 11 m/s. An expiring roll on a 76 mm Ø paperboard core can reach its resonance frequency and under certain circumstances this will cause a web break and possibly a core break just prior to splicing. The consequences of a core break to the machine are minor; however, the consequences to people are a risk of serious injury or death. Although this risk is small, machine manufacturers are obliged to define what cores can be used and to provide adequate safety protection around the paster similar to that used in publication gravure. The overriding property that influences the risk of core break when attaining resonance frequency is the ratio of E-modulus over density. A high E-modulus and low density jointly increase the natural frequency and reduce the risk of a core break.



At web widths above 2000 mm and web speeds over 11 m/s rest rolls with a diameter of 76 mm can reach their resonance frequency and under certain circumstances a paperboard core can break just prior to splicing. This is usually preceded by a web break. Source MAN Roland.

Prevention of accident risks for wide & fast webs (1250 & 1500 mm Ø rolls)

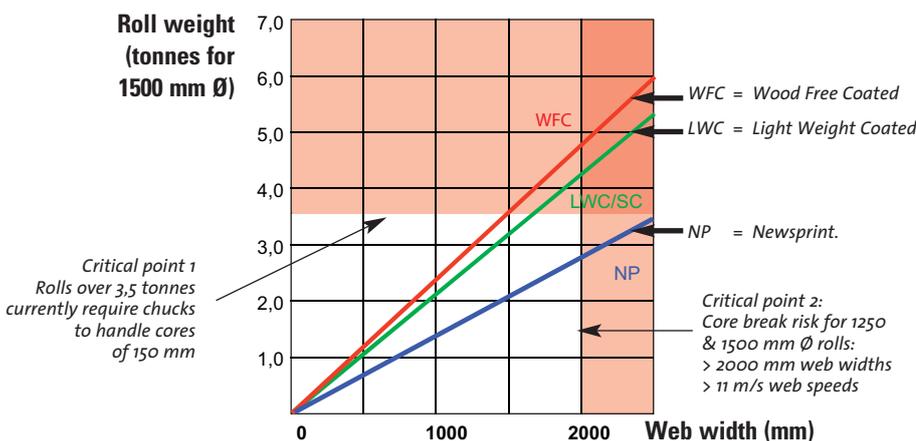
76 mm Ø Paperboard cores: Requires a specified core quality with a sufficient E-modulus ratio to its specific weight. However, a web and core break risk may arise from a variation of these values; cores with too high humidity or that delaminate; and loose, or soft winding of the inner paper layers (depending on their grade and substance). Because these variations are invisible a roll with inadequate properties can be loaded onto the paster with a consequent risk. Therefore, paperboard cores can only be used when nobody is in the danger-area if critical frequencies can be reached and "worst case" protection measures are required for personal safety. Printers should implement standard operating procedures to prevent non-conforming materials and/or poor working practices being used.

Reusable 76 mm Ø aluminium cores have a sufficient E-modulus ratio to specific weight and are being tested by some double-width newspaper printers but this is a non-standard option that will be complex to put into operation because (a) they are difficult for paper mills to automatically process and rewind, (b) logistics will restrict which paper mills can handle these cores for a specific printing plant location, and (c) safety issues, ownership, responsibilities and cost impacts are not yet fully established.

150 mm Ø Paperboard cores: Cores with an interior diameter of 150 mm and an exterior diameter of 176 mm have only 60% of the rotation frequency of 76 mm cores. The larger diameter significantly increases stiffness for the same material properties and a core break can be excluded under all conditions.



E-modulus quality control measurement - a high E-modulus and low density reduce the risk of a core break. Photo Sonoco-Alcore.



Under current conditions MAN Roland and MEGTEC have set performance limitations at two critical points even if the risks to people and machines are minimal. Source MAN Roland/Megtec

Paper making impact

PAPER MILL ABILITY TO PROCESS 1500 MM ROLLS	VARIABLE BETWEEN MILLS			
	Better	Same	Worse	
Paper dimension efficiency from parent roll			XX	Depends on each paper machine
Winder trimming efficiency			XXX	Depends on existing equipment
Adequate rewinder equipment - size and quality			XXX	Depends on existing equipment
Availability paperboard cores to defined specifications		=		
Ability to rewind on 150 mm cores			XXX	Depends on existing equipment
Packing line dimensions			XX	Depends on existing equipment
Conveyor dimensions			XX	Probable upgrade
Hi-bay storage capacity			XX	Difficult to change existing dimensions
Automated roll loading trucks/containers			XX	Not currently possible
Minimum order requirements			X	Related to parent roll and rewinder



Photo UPM.

Rolls of 1500 mm Ø are standard in the converting industry. Two newspaper presses are already running with them. However, many mills are not yet equipped to handle heatset web offset and newspaper rolls in this size and many will need to make substantial capital investment to do so.

Larger diameter rolls represent a challenge for paper manufacturers who need to ensure that their manufacturing operations the paper machine, finishing, internal logistics, trimming, dimensioning, and delivery logistics are adequate and capital investment may be necessary to overcome existing constraints. The two most significant challenges are trimming and core types.



Photo Sappi Fine Paper Europe.

Paper making quality

The paper making process, and particularly winding, will require even more attention to maintain good profiles across the web to ensure that rolls correctly unwind at very high speeds. The friction properties of different papers play an important role and become more critical as roll diameters increase. There are two general rules for paper making quality:

- the wider the web, the better the paper profiles must be, and
- the bigger the roll diameter the better the profiles must be.

Achieving optimal profiles is more difficult on older machines and an upgrade investment may be needed.

New dimensions

A key issue is paper dimensioning at the mill. The diameter of the parent roll usually yields 1, 2 or 3 customer rolls. Normally the parent roll produced has enough paper to make three sets of 1250 mm Ø rolls in the winder. If the same method is used for 1500 mm, the diameter of the parent roll becomes so large that moving it from the paper machine to the winder may become difficult or impossible particularly for coated paper. Some plants may find it difficult to move even a two-set parent roll of 1500 mm Ø.

Trimming

Trimming becomes more difficult with a new larger diameter. An increased 1% of trim loss means 5 - 10 tonnes/day reduced output and consequent higher production costs. Two criteria are extremely important for efficient trimming: 1, Customer roll widths when combined must make a set that is as close as possible to 100 % of the width of the parent roll (varies from 6 to 10 m wide); 2, Only one diameter can be wound at a time - mixing 1500 and 1250 mm Ø rolls is not possible.



Photo Sappi Fine Paper Europe.

Trimming efficiency tends to decline as customer roll width increases. A possible consequence may be that the order volume for 1500 mm Ø rolls in a given web width and grade may need to be determined by the paper machine's trimming efficiency. Coldset papers tend to be easier to trim because newspapers require both full and partial web widths. Trimming coated rolls will be a bigger problem. A further complication is any requirement for different core diameters (internal and external). Adding a new larger diameter roll size increases product

variation making production planning more complicated, e.g. print jobs that are printed on more than one press may need mixed diameters.

Winders and rewinders

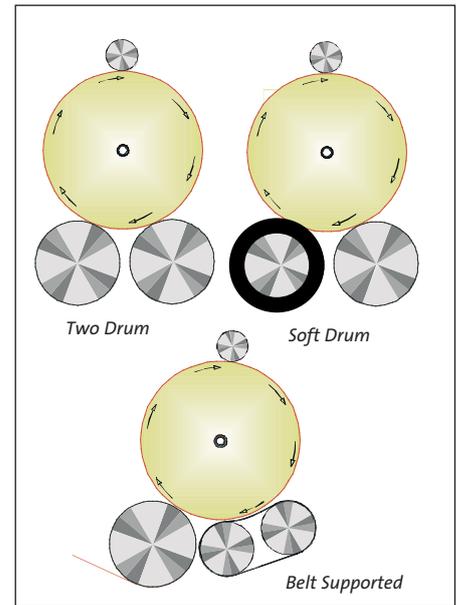
Almost all new winders at paper mills are capable of making a roll with 1500 mm Ø. However, the capacity of slitter-winders (and rewinders) to produce this diameter is limited for older installations. The heavier parent roll may require new rewind stands, stronger electric drives, gears with more accurate tension and improved speed controls. Not all winder types can handle the bigger 150 mm Ø cores (or combine them) that may be required by some roll dimensions — this will be more difficult for newsprint than other grades. Single drum winders can mix 76 and 150 mm Ø cores but two drum winders cannot. The implications are both investment and possibly higher paper core costs.

Roll packing & wrapping

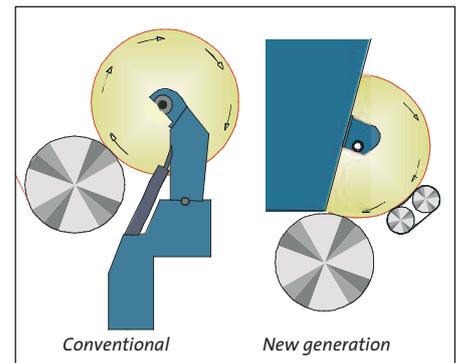
Many mills have roll wrapping lines and conveyors that are not designed for larger roll sizes and in some cases the heavier weight rolls may also exceed the capacity of conveyors and wrapping equipment. Although wrapping lines are often designed for a 1500 mm roll diameter they have not been used in this size for heavy coated papers.

In-mill logistics

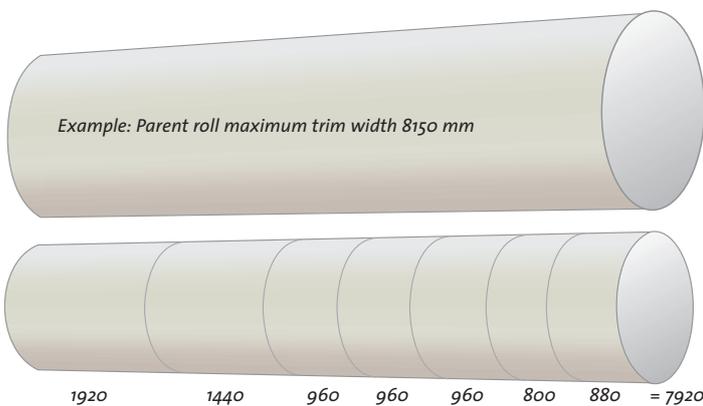
Larger diameters and heavier roll weights may require redesign of the whole logistics chain. The dimensions of internal storage at paper mills particularly automated intermediate storage systems and the delivery chain handling equipment may not be adequate for larger roll sizes and increased weight and may require investment in upgrades. This will also apply to roll clamp truck dimensions, their turning geometry and warehouse layout.



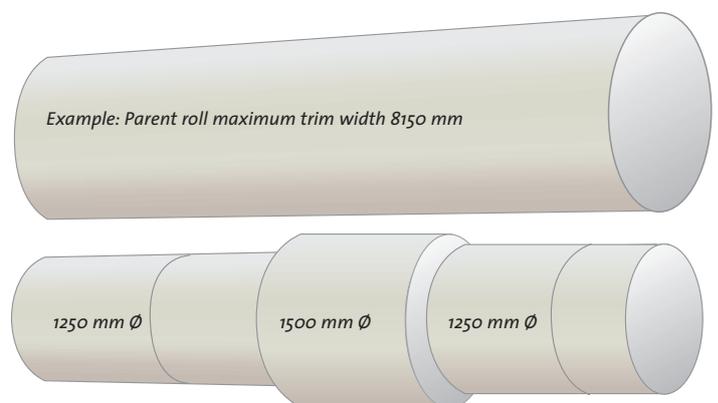
Two drum winders



Single drum winders. Source Metso.



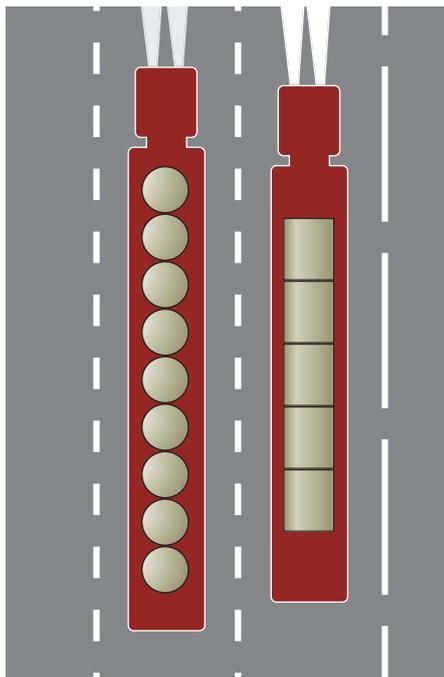
1, Customer roll widths when combined must make a set that is as close as possible to 100 % of the width of the parent roll. The width of paper making machines varies from 6 to 10 m wide.



2, Only one diameter can be wound at a time - mixing 1500 and 1250 mm rolls is not possible.

Delivery and printing plant logistics

LOGISTIC				
	Better	Same	Worse	
Overall impact positive	✓✓✓			Number of rolls handled reduced by 31%
Overall impact negative			X	Roll weight increased by 44%
Maximum use of truck/container weight capacity		=	?	Depends on web width & weight
Highly automated systems				
Roll unloading facilities			XX	Not currently possible
Conveyor dimensions			X	Upgrade to higher dimensions & weight
Hi-bay storage		=		Total storage tonnage/cost equal
Hi-bay storage cranes		=	X	Higher capacity add 30000 € each
Automated splice preparation	✓✓			Fewer units required
Capacity AGV roll transport		=		Fewer units, but add 10-20% to unit cost
Capacity other intermediate transport		=		Minimal impact
Waste handling		=		Minimal impact
Manning reduction		=		Minimal impact on an automated system
Low automated systems				
Higher capacity roll trucks and clamps			X	Minimal impact
Storage, wider access alleys and curves			X	Minimal impact
Assisted roll handling at paster			X	Minimal impact
Manning reduction	✓			Increases with number of pasters



It will be important to optimize logistics throughout the total supply chain to minimize any additional costs. All roll handling, loading, transport and storage operations from the paper mill to the printing press should be evaluated.

Loading patterns

The dimensions of road delivery trailers and containers may pose a problem with 1500 mm Ø rolls. It will be important to select a loading pattern that maximizes payload utilisation to avoid increasing delivery costs. The type of pattern will be influenced by the web width and specific weight of the paper that changes with grade (e.g. newsprint or coated).

1500 mm Ø rolls can be loaded in three patterns:

- 1 - Vertically (on their ends) in a staggered pattern
- 2 - Vertically along the trailer centre line
- 3 - Horizontally (on their belly) along the trailer centre line — see opposite page for an example for coated paper.

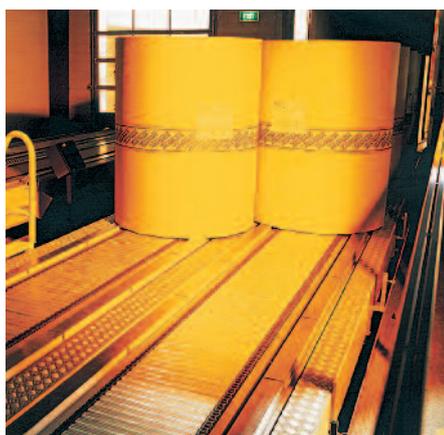
Truck loading/unloading

It is obvious that heavier equipment will be needed for larger and heavier rolls, including bigger clamp trucks.

Current automatic roll loading/unloading systems are not yet adapted to these types of loading patterns. Neither will it be possible to drive roll lift trucks onto the truck and a special roll truck with telescopic clamps will be needed; this will increase loading and unloading time and tend to increase costs.

Printing plant logistics

The increased roll size means 31% fewer movement of rolls and more stable production conditions. Existing installed equipment might not be able to handle the larger dimensions and weight of bigger rolls and investment may be needed to safely increase capacity limits. The dimensions of conveyors, corners and turning radius will need to be assessed and local area floor loading weight needs to be checked to confirm it can withstand a 44% increase in weight load. Pre-storage areas in front of the press may be reduced by up to 20% because fewer rolls are required than for the equivalent weight in 1250 mm. Larger rolls will need a longer climatic adjustment period, particularly cold rolls. The clamping forces for roll trucks will need to be set and monitored regularly but experience to date shows no other difficulties in this area.



Road logistics and safety

Special equipment is required to load large rolls on their ends along the centre of the trailer. In addition, securing rolls loaded on their ends for transport is far more complicated than for rolls loaded on their belly (side). It is best to avoid special trailers that can only be used for carrying big rolls of paper. Therefore, from a road transportation point of view, it is recommended to load large diameter rolls on their belly as a standard practice — although delivery on their end is possible.

The belly loading method eliminates the need to invest in special trailers; reduces the loss of payload efficiency to almost zero; and makes loading operations easier. Another very important point is that safety will be at the highest level — not only for loading and unloading — but even more importantly during transportation. This procedure is particularly suitable for coated paper.

Load securing example for coated rolls

This proposed procedure for belly loading rolls of coated paper on to a Joloda trailer was developed in cooperation with Gehlen Schols Logistics, Kerkrade, Holland and Intakt Transport Advisor, Hamburg, Germany. (The delivery of newsprint will be addressed in more depth in the next edition of Weblines.)

Load of 5 x 1500 mm Ø coated rolls, web width 2000 mm, total payload 25 000 kg:

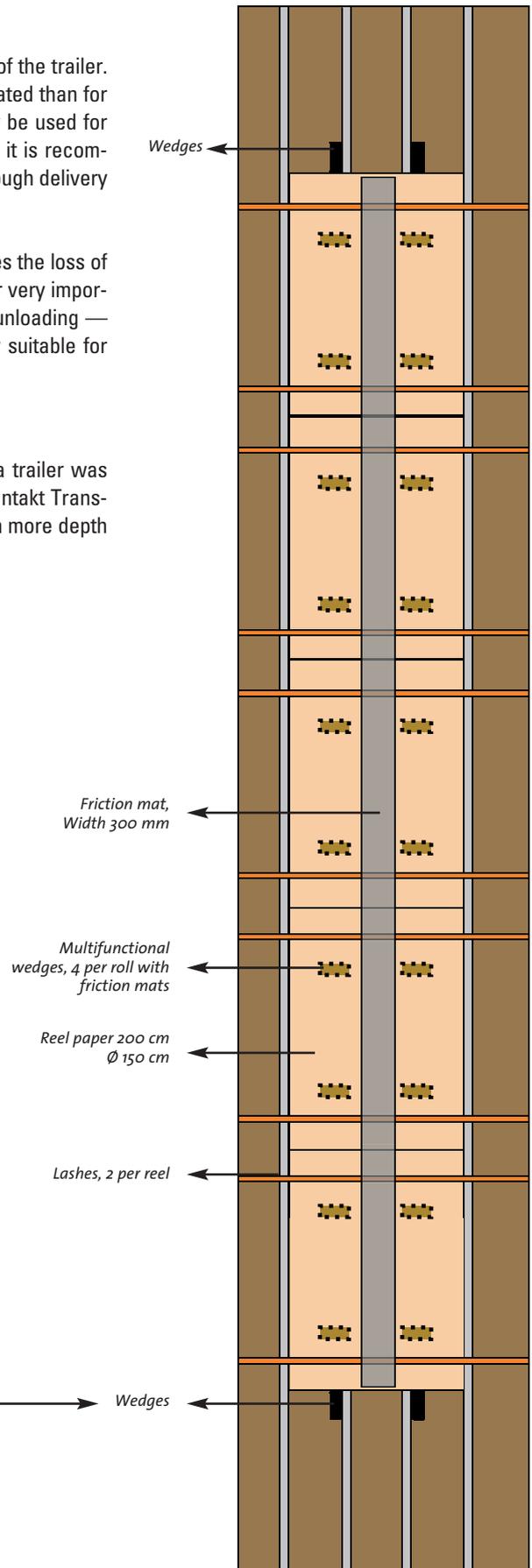
Requirements:

- Joloda trailer as per illustration
- 24 multi-functional wedges
- 10 lashes with sufficient capacity
- Friction mats friction coefficient $\geq 0,6 \mu$
- 20 pads 240 x 80 x 3-6 mm (between wedge and roll)
- 9 strips 1200 x 300 x 3-6 mm (lengthwise under the rolls)

Application - see facing drawing:

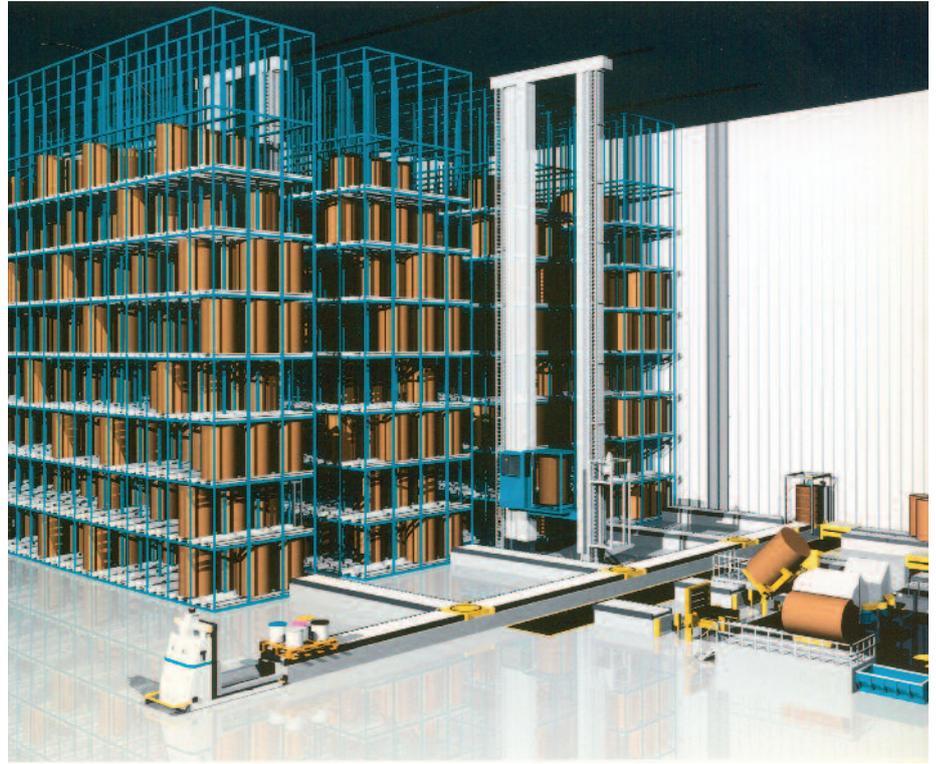
- Rolls of paper are loaded lengthwise on their belly.
- Friction mats as detailed above
- Wedges and lashes to be placed as shown in the drawing.

A trailer bed with multifunctional wedges and friction mats. Photo Sappi Fine Paper Europe.





There should be little cost impact on storage for 1500 mm Ø rolls for the same total tonnage as 1250 mm .
Photo MAN Roland.



Drawing MAN Roland.



Conveyors will need to be able to handle increased roll weight and width, whilst turns require more space.
Photo MAN Roland.



Intermediate transport systems will need a larger capacity to handle increased weight but fewer units may be needed to handle 31% fewer rolls.
Photo MAN Roland.

Printing plant logistics

Commercial heatset printing applications: For most plants using roll lift trucks the handling of larger rolls will require higher capacity forklift trucks and clamps, adapted paper store and driveway layout, and higher capacity automated roll loading at the paster. The weight capacity of roll lift trucks will need to be increased from about 3 000 kg to around 6 000 kg to safely handle heavy rolls. This will increase purchase cost from about 45 000 € to about 60 000 €. In addition, the centre of gravity is 125 mm further outside of the truck and this has to be taken in account when choosing the roll lift truck. A consequence may be an increased turning radius for trucks, which will then require wider alleys. Larger capacity roll clamps will also be more expensive. On the other hand, 31% less rolls need to be handled, which should reduce the number of trucks and drivers required.

Single-width newspaper printing applications: The handling of larger rolls will require roll lift truck capacity to be increased from 1 to 1,5 tonnes (which will not be a significant cost) with an adapted paper store and driveway layout. Assisted roll loading at the paster may be desirable.

Double- and triple-width newspaper printing applications: Large volume newspaper installations tend to use customised automated roll handling and logistics systems that provide significant operating benefits:

- Direct cost saving through personnel reduction
- Standardisation for higher operational safety and reliability
- Structured total material logistics to optimise productivity
- High flexibility in working hours
- Safety orientated, better work practices and conditions.

The impact of changing to 1500 mm Ø rolls for a new installation will vary for different components:

Truck unloading:

Current automatic roll loading/unloading systems are not adapted to the different truck roll loading patterns for 1500 mm Ø. Solution will need to be developed. Cost impact may be high.

Conveyors:

Conveyors for newsprint will need a larger capacity to handle weight increase from around 2,5 tonnes to 4 tonnes. The width and turns will need to be increased accordingly. Cost impact low to moderate.

Main storage:

There should be little cost impact on high bay storage for 1500 mm Ø rolls for the same total tonnage as 1250 mm Ø. The additional weight capacity for stacker cranes will add around 40 000 € per unit. Minimum back-up security means that the same number of cranes will probably be required and there will be no savings. If at a later stage it is decided to revert to 1250 mm Ø there will not be enough storage spaces.

Intermediate transport:

Transport systems will need a larger capacity to handle weight increase from around 2,5 tonnes to 4 tonnes. AGVs will need a larger turning space, higher roll weight capacity. Cost impact add around 10% to AGV unit cost but possibly fewer units needed due to 31% less rolls to handle.

Splice preparation:

31% less rolls to prepare should reduce the number of stations and operators required. Cost impact moderate reduction in capital and running costs, probable reduced manning.

Paster loading/unloading:

The heavier roll weights will require an increase in transfer capacity. Cost impact low to moderate depending on system used.

Waste handling:

No significant impact, except 31% fewer cores to handle.



Photo MAN Roland.



Photo MAN Roland.

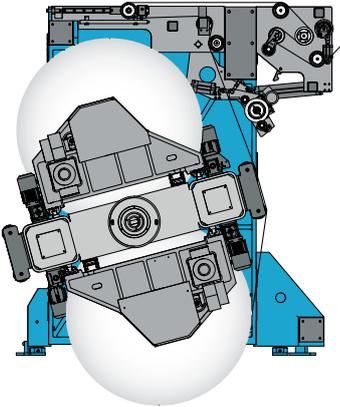


Photo Megtec.

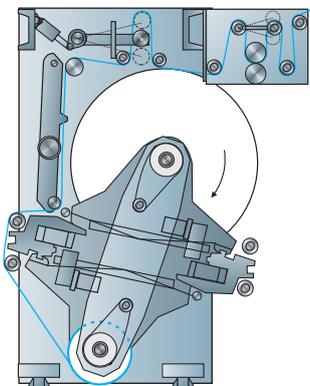
Impact at paster

IMPACT AT PASTER				
	Better	Same	Worse	
Overall impact	✓✓✓			31% fewer splices
More robust paster construction			XXX	Variable cost to w/width & application
Higher capacity acceleration & braking			X	Moderate cost increase
Chucks with higher torque transmission			X	Moderate cost increase
Over 3,5 tonnes roll weight changeable 76 & 150 mm Chucks			XXX	Moderate cost increase
> 2000 mm webs at > 11 m/s need added safety devices			XX	Moderate cost increase
Automated roll loading			X	Moderate cost increase
Installed length, height, width,		=		Design dependent minimal extra size
Pit depth		=		Design dependent minimal extra size

Examples of new paster designs developed for 1524 mm Ø rolls include:



Heatset commercial applications
MEGTEC DLC 5000 flying paster for
< 1524 mm rolls
< 2080 mm wide
< 5000 kg roll weight
< 18 m/s maximum speed



Newspaper applications
MAN Roland CD15XXL-60 flying paster for
1524 mm rolls
< 2520 mm wide
< 3700 kg roll weight
< 15 m/s maximum speed
Reel Diameter

Pasters for larger roll sizes need to be of a much more robust construction to handle the 44% increase in roll weight that doubles the inertia at an E-stop and requires torque to be increased by 62%. The higher inertia also requires more powerful acceleration motors. In addition, the paster must be highly stable with low vibration. New chuck designs may be needed to handle the much higher torque to and from the rolls. All of these changes will lead to a higher investment cost.

The optimum technical solution for very heavy roll weights and wide webs is to use 150 mm roll cores. This requires that pasters for these applications should be fitted with quick change chucks to rapidly switch between 76 and 150 mm diameters. To minimise the total length and height, the roll arms for 1500 mm pasters are supported on a turret (rather than a central bull shaft) that allows the rolls to be much closer together.

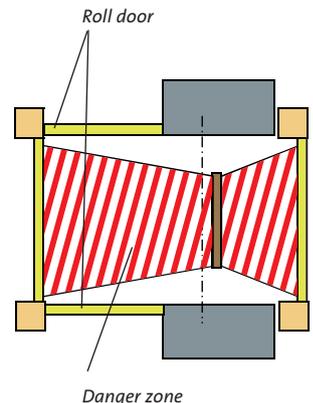
This ensures that there are only minimal changes to the overall dimensions - which is particularly important for newspapers with multiple pasters. The minimum roll size for unloading remains 450 mm. However, the roll rotation pit will need to be deeper.

Offset v Gravure?

Beware of misleading comparisons with publication gravure pasters that handle rolls < 2640 mm wide with a 76 mm Ø paperboard core because these rolls are 1250 mm Ø and are not comparable with 1500 mm Ø for offset that has double the inertia at an E-stop. Gravure pasters usually have longer chucks, belt assisted acceleration and safety cages because of the risk of core explosion. Manufacturing offset pasters to gravure specifications is not financially viable and the applications are also different.

Using longer paster chucks may resolve some issues but torque transmission is not proportional with length (most of the load is at the flange) and both type of design and expansion pressure have variable influences. Longer chucks may increase the risk of chuck damage during automatic roll loading and will significantly increasing overall paster width.

Safety protection for 76 mm cores used on web widths < 2000 mm and speed < 11 m/s. The objectives are to protect people from flying debris if a core breaks whilst avoiding operating and handling problems at the paster. A design to satisfy this uses roll doors instead of the safety cells required for an auto roll loading system. During the loading and unloading cycle the doors operate automatically. The safety system is only activated at high production speed. Access is possible under most production conditions with push button door opening and closing. An open door is optically and acoustically signaled before reaching the critical frequency. If the door is not closed the press speed will slow to 9 m/s.



Printers' check list to assess viability of change to 1500 mm Ø rolls

This list will assist printers in assessing the total impact of changing to 1500 mm under their specific operating conditions. It will help them identify relevant cost impacts from which to calculate the ROI from such a change.

IMPACT ON PROCESS	RECOMMENDED ACTION	COSTS	
ARE SPECIAL CORES NEEDED WEB WIDTH/ROLL WEIGHT ?		ADDED	LOWER
		+	-
Cores - roll weights over 3,5 tonnes	Check requirements with the paster manufacturer		
Cores - web widths > 2000 mm and speed > 11 m/s	Check requirements with the paster manufacturer		
PAPER MILL ABILITY TO PROCESS 1500 MM ROLLS			
Availability of special cores	Check with your paper suppliers for each paper grade used		
Availability of 1500 mm paper rolls	" " " " " " " " " " "		
- Newsprint	" " " " " " " " " " "		
- Super Calendered (SC)	" " " " " " " " " " "		
- Coated papers	" " " " " " " " " " "		
Web width dimension efficiency cut-out from parent roll	" " " " " " " " " " "		
Minimum order requirements related to cut-out from parent roll	Related to parent roll and rewinder		
Identify cost implications on paper supply	Check with your paper suppliers for each paper grade used		
DELIVERY TO PRINTING PLANT			
Roll delivery for web width/roll weights needed.	Cost implications of payload inefficiency		
LOGISTICS AT PRINTING PLANT			
Highly automated systems (e.g. wide web newspapers)			
Roll unloading facilities	Method and cost impact		
Conveyor dimensions	Costs to upgrade to higher dimensions & weight		
Hi-bay storage	Total storage tonnage/cost probably equal		
Hi-bay storage cranes	Higher capacity add € 30000 each		
Automated splice preparation	Are fewer units required, cost/manning savings ?		
Capacity AGV roll transport	Reduced units? but add 10-20% to unit cost		
Capacity other intermediate transport	Any cost impact?		
Waste handling	Any cost impact?		
Manning reduction	Can manning be reduced? If yes cost savings.		
Non automated logistics			
Higher capacity roll trucks and clamps	Additional investment cost compared to 1250 mm Ø		
Storage, wider access alleys and curves	Impact of additional space required		
Assisted roll handling at paster	Additional investment cost compared to 1250 mm Ø		
Manning reduction	Define in relation to 31% reduction in roll movements		
IMPACT AT PASTER			
More robust paster	Additional investment cost compared to 1250 mm Ø		
Over 3500 kg roll weight = changeable 76 & 150 mm Chucks	Cost implications		
2000 mm webs at > 11 m/s need added safety devices	Additional investment cost compared to 1250 mm Ø		
Automated roll loading	Additional investment cost compared to 1250 mm Ø		
Installed length, height and width	Impact on total space required for press-paster		
Ready roll staging area dimensions	Impact on total space required		
Manning reduction	Define in relation to 31% fewer rolls		
IMPACT ON MATERIAL CONSUMPTION & PRESS AVAILABILITY INCREASES WITH N° PASTERS PER PRESS			
Reduced mis-splices & higher press availability	Define savings		
Reduced splice preparation time for total volume	Is there a manning reduction related to N° of pasters?		
Reduced splice preparation costs paper waste & tape used	Define savings		
Reduced damaged rolls reduces paper waste	Define savings		
Reduced paper waste left on core after splicing	Define savings		

Economic impacts

	Better	Same	Worse	
Reduced mis-splices & higher press availability	✓✓✓			Substantial additional benefit
Reduced splice preparation time for total volume	✓✓			Manning reduction related to N° of pasters
Reduced splice preparation costs, paper waste & tape used	✓✓✓			More preparation care required
Reduced damaged rolls reduces paper waste	✓			More handling care required
Reduced paper waste left on core after splicing	✓			From stiffer or larger cores

Higher investment costs of roll handling, storage and paster systems will need to be offset by reduced running costs. Some operating cost scenarios have been modelled to give an idea of potential ROI (Return on Investment). These assume a 99% splicing efficiency rate, higher core cost, and unchanged paper and delivery costs. Principal cost savings come from a 31% reduction of mis-splices, less splice preparation waste and tape, and reduced operator working time per web from fewer rolls to prepare.

The following examples of cost savings are for a heatset 72-page press running 24h x 6 days x 51 weeks at 70% net production = 5140 hours/year, printing at 14 m/s, 1980 mm web width printing 54 gsm LWC (specific weight 1,2). Running 1500 mm Ø rolls reduces number of rolls run per year from 9 536 to 6 664; and the time between roll changes increases from 32 to 46 minutes. Other impacts are:

Roll preparation and waste: Larger diameter rolls will have increased stripping waste per roll both from handling damage and splice preparation. However, under equal conditions bigger rolls have less waste because the stripping waste per roll only increases by 20% whilst the total number of processed rolls decreases by 31%. Processing fewer rolls also requires less preparation time and splice tape. Best practice roll handling and preparation becomes relatively more important for larger diameter rolls to reduce waste because the potential damage per roll increases with diameter. Assumes 1% of the rolls are damaged and paper cost is 0,70 €/kg.

	COST		COST REDUCTION
	1250 mm	1500 mm	
Roll damage			
5 mm deep	4 430 €	3 720 €	710 € €
10 mm deep	6 180 €	5 190 €	990 € €
15 mm deep	9 230 €	7 760 €	1 470 € €
20 mm deep	12 260 €	10 310 €	1 950 € €

Splice preparation: Potential cost saving is 12 140 € per web (assumes 5 minutes to prepare a roll, splice tape 0,50 €/m, 0,70 kg white paper stripping waste). However, this sum is only obtainable if there is a staff reduction or fewer splice preparation machines.

Rest rolls: Residual white paper waste left on cores is reduced because there are 31% fewer cores from 1500 mm Ø than from 1250 mm Ø for an equivalent tonnage. Residual core waste can also be reduced with stiffer cores that reduce length of paper left on the core.

Roll diameter	MISSED SPLICES		LOST PRODUCTION TIME	
	1250 mm	1500 mm	1250 mm	1500 mm
Rolls/year	9536	6664	9536	6664
98,0% splice success	190	133	95 h	67 h
98,5% splice success	143	100	72 h	50 h
99,0% splice success	95	67	48 h	34 h
99,5% splice success	48	33	24 h	17 h

Missed splices: Using larger diameter rolls gives the equivalent of 0,5% increased splice success rate. In addition to these savings there is also reduced waste for each web break and restart. These figures show the importance of using best practices to increase splicing efficiency in existing operations (automated splice preparation systems usually optimise splice efficiency levels). Cost savings increase at low splice efficiency rates because there are 31% fewer splices made with larger rolls. Roll cores that are more rigid tend to reduce missed splice frequency.

ANNUAL OPERATING COST SAVINGS	WEB(S)/PRESS(ES)	1250 MM ROLLS	1500 MM ROLLS	SAVING/YEAR
72-pages Heatset Commercial				
3 shifts / 1980 mm web width / 54 gsm LWC	1	161 884 €	124 322 €	37 562 €
Annual operating costs	2	323 768 €	248 644 €	75 124 €
1-width Newspaper				
2 shifts / 700 mm web width / 45 gsm	1	30 229 €	21 638 €	8 591 €
Annual operating costs	4	120 917 €	86 552 €	34 365 €
	6	181 376 €	129 828 €	51 548 €
	8	241 834 €	173 104 €	68 730 €
2-width Newspaper				
2 shifts / 1400 mm web width / 45 gsm	1	53 346 €	38 610 €	14 736 €
Annual operating costs	2	106 961 €	77 220 €	29 472 €
	4	213 383 €	154 439 €	58 943 €
	6	320 074 €	231 659 €	88 415 €
3-width Newspaper				
2 shifts / 2100 mm web width / 45 gsm	1	71 409 €	51 943 €	19 466 €
Annual operating costs	2	142 819 €	103 886 €	38 933 €
	3	214 228 €	155 829 €	58 399 €
	4	285 638 €	207 772 €	77 866 €

Commercial heatset: This example assumes an average running speed of 14 m/s over three shifts with a € 1 000 hourly rate and current LWC paper cost and shows an annual cost reduction of around € 40 000 per web. Larger diameter rolls will initially be interesting for very high volume magazine and directory printers using large tonnages of the same paper weight, grade and web width. The ROI will be higher when new press lines are ordered; the replacement of pasters on existing presses will be less attractive. Printers making an early change to 1500 mm Ø rolls will also have to continue to purchase and manage 1250 mm Ø rolls used on existing presses until they are replaced.

Newspapers: These examples use the same methodology as Commercial, with current newsprint paper cost and assume no increase in delivery costs. The consolidated savings of multiple webs per press become substantial along with the possibility of reduced manning. The key variables are the total operating hours and paper tonnage per year. The use of 1500 mm Ø rolls should be advantageous to a newspaper investing in new presses with a high number of webs and annual operating hours.

Single-width: The example assumes an average running speed of 10 m/s with an hourly cost of € 225 per printing tower. The ROI will need to consider the slightly increased costs of roll handling within the plant but these are relatively low. However, there are no pasters currently available for 1500 mm Ø rolls for this application.

Double-width & Triple-width: The examples assumes an average running speed of 12 m/s with an hourly cost of € 300 and € 400 per printing tower respectively. The ROI will need to consider the increased costs on automated roll handling within the plant.

Triple-width presses reduce the number of pasters per press by one third in comparison to double-width. If this is combined with using 1500 mm Ø rolls the potential manning and materials savings are substantial. Increasing both roll width and diameter reduces total roll movements by 50% (compared to double-width 1250 mm Ø) to increase logistics efficiency and ROI.

Return on investment (ROI)

These cost saving are incorporated into the ROI scenarios on page 5 that indicate an ROI of 3 to 5 years. However, ROI is highly variable it depending on many factors and small changes can dramatically change the result. Investment and operating costs vary between printing plants and each company should conduct its own detailed feasibility study taking into account all relevant factors (width and number of webs, number of operating hours, manning and wages, hourly press cost, splicing efficiency rate, cost of paper, type and cost of logistics).

Mini case studies of performance enhancement

Weblin's series of case studies provides an overview of some of the answers provided by PrintCity member companies to deliver better production solutions to suit printers specific needs..

ULTRA-EFFICIENT PRODUCTION FACILITY DESIGN

THE IRISH TIMES, DUBLIN/EUROGRAFICA

"This project represented the biggest ever investment in the history of The Irish Times. The breadth of experience of Eurografica complemented and supported the local team. The result is an outstanding plant, built to budget, that has produced international prize-winning editions of The Irish Times and has attracted a significant volume of contract business for the organisation."

Séamus McCague, project director at The Irish Times

A modern newspaper printing plant is no ordinary building. The days are long gone when it was almost a case of buying a machine and then finding a suitable industrial building to fit it into. Today's facilities have to be ultra-efficient in terms of flexibility, productivity and low operating costs. Achieving these objectives requires that as much thought has to go into the design of the process that takes place within the building as that which goes into the design of the building itself. This case history of The Irish Times in Dublin demonstrates how good methodology and multi-disciplinary teamwork are the essential basics for success.

In 1999, The Irish Times began their process and building design project to develop the concept for a new production facility at CityWest, located on the outskirts of the city. The publisher's requirement was a fully integrated and cost-efficient operation that would consistently produce their high quality newspapers on time. To



9949 irish times A10

The total production efficiency of a printing plant is determined initially by the optimal production process concept. However, The Irish Times demonstrates that both a cost-efficient and visually attractive building can be achieved.

assist them in this complex project, Eurografica were retained as consultants.

"When we begin a project we start by analysing every detail of the client's requirements to establish their fundamental needs. This analysis allows us to identify the optimum press configuration along with defining the entire process chain and production environment concept to deliver the objectives," states Bernhard Schaaf, Eurografica's manager of the project, "Once the project concept has been scoped we then proceed through a number of stages."

Strategic Design Phase

The strategic design phase examines more closely the requirements for production systems, storage areas, auxiliaries, staff amenities, and future expansion provisions. The amount of

space required is calculated and defined for the main production and other areas and the site is analysed in relation to this. Different models for accommodating the most efficient production process are developed on a scale of 1:500. Then the strengths and weaknesses of each of the different models are assessed with the client's project team to identify the scenario that best meets their needs and suits the selected site.

Concept Design Phase

The concept design phase then brings together the complete project group including the local design team in this case, the Irish architects, Scott Tallon Walker. The preferred strategic plant layout is established at the larger scale of 1:200 but the final location of the different process elements and related equipment have not been finally established at this stage because a new

production concept provides opportunities to implement new communication and organisation structures.

For example:

- The press control room and platemaking centre are designed as a single area to enable printers to make the printing plates themselves. This area is located between the press hall and the mailroom. It is the main communication and IT (Information Technologies) zone and controls the flow of pages from the city centre editorial offices and from contract clients in other parts of Ireland and the United Kingdom.
- A highly important consideration was that the building be located on the site to allow future extensions to all main production areas to meet future growth on demand. Provision was made for upgrades and extensions to ensure that they can be introduced as simply as possible and fully integrate with the established process system. This forward planning wisdom was borne out by The Irish Times in November 2004 when they announced an expansion of three printing towers, four pasters, automatic roll handling and a paper store extension.
- In addition to process and storage definitions, Eurografica prepared detailed building specifications for every process-relevant area - where doors should be located, which way they should open, the location of lockers and other facilities, what materials to use on the floors in different areas, etc.

Eurografica's philosophy is that form follows function and a really good looking and cost-efficient building can be achieved. However, the total

production efficiency of a printing plant is determined initially by the optimal production process concept. The building services concept is an integral part of the concept design to ensure an efficient production environment in all senses not just for product quality but also a good working environment for the production staff. One example is the enormous amount of heat generated by printing presses and other equipment that can undermine processes and employee productivity. Eurografica's expertise in this area allowed them to define a proven approach to manage and dissipate unacceptable heat build-up.

Implementation

When the final integrated process and building concept was defined it was handed to the local design team to incorporate into the building design and construction. The consultant team participated in the ongoing project development to help ensure that the overall concept was adhered to. After the completion of the planning phase Eurografica provide further project services. This included output and quality assessment from the



The press hall ensures maximum natural daylight plus efficient artificial lighting for night working. Excessive heat build-up from the press, auxiliary equipment and lighting was avoided by ensuring efficient thermal flows within the building.

The press control room and plate making centre are designed as a single area to enable printers to make the printing plates themselves.



PROFILE

The Irish Times, Dublin



Founded 1859
Owned by The Irish Times Trust
Published 6 days a week
Broadsheet format 400 x 578 mm
Pagination 30-72 pages (full colour, up to four sections)
Newspaper of Record
Aimed at ABC1 readership
Print Run 140 000 to 195 000 nightly
Pre-print runs four to five times weekly
Distributed throughout Ireland
http://www.ireland.com

MAIN EQUIPMENT

City West Print Facility

Prepress: Agfa Polaris 200, 2 CtPlate lines.
Press: MAN Roland GEOMAN 75 3/8, 9 pasters, 8 print towers, 2 folders, equipped with DynaChange.
Mail room: Müller Martini Newsliner, 2 automatic inserting lines, buffer storage, 6 stacker lines, trimming & stitching.

Project Time Schedule:

March 1999: Strategic Considerations & Site Analysis
June 1999: Phase 1, Strategic Design
November 1999: Phase 2, Concept Design
March 2000: Phase 3 - Ongoing support role
June 2002: Phase 4 - Project Realisation, construction, production start-up.

existing press and pre-installation training programmes for production and management staff; process optimisation during and after the commissioning phase was also undertaken. Séamus McCague, project director at The Irish Times comments: "During the post-commissioning phase we were able to draw on our relationship with

Eurografica to further optimise workflow and quality procedures." What The Irish Times wanted was a smooth operation that brings the newspaper out at the right time. What the project team has delivered is a printing facility that operates as a single system that efficiently connects every part of the process to achieve that goal.

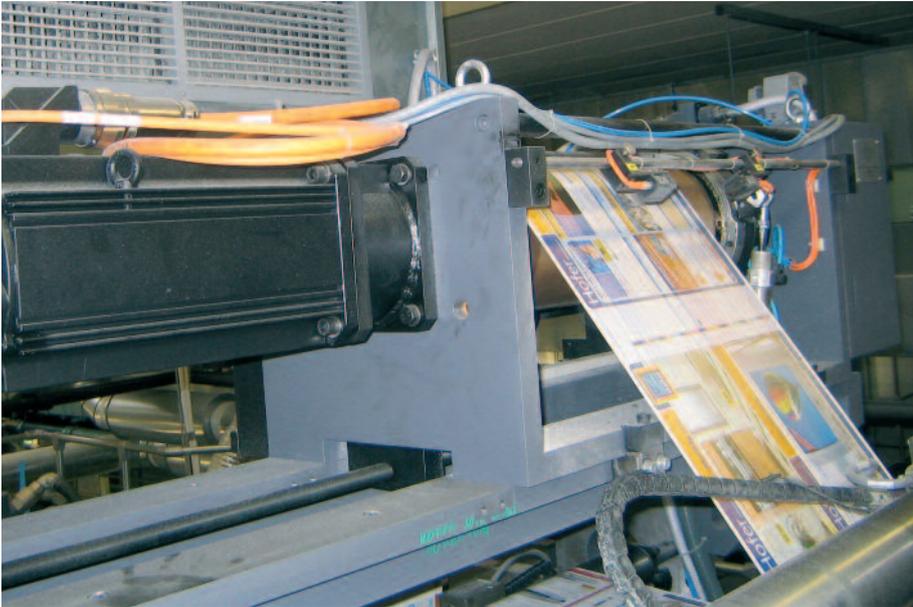
Project team. The multi-disciplinary project team included key staff from The Irish Times, Eurografica and the local architect Scott Tallon Walker.



Eurografica is a dedicated printing industry consultancy with a broad range of competencies. The consultancy has developed its skills during 25 years of international experience in strategic investment and systems planning, printing facility design, equipment feasibility and selection, process optimisation and restructuring. The company's planning methodology focuses on process and material flow that is independent of equipment selection to allow users to select equipment to their specific needs. The multi-disciplinary team includes printing engineers and specialist partners such as engineers (mechanical, electrical, ecological and energy systems) and architects. Eurografica is an independent sister company of MAN Roland. www.eurografica.com

LONG GRAIN CROSS-WEB GLUEING FOR A3 AND A5 FORMATS

NÖP AUSTRIA/ PLANATOL



The OPIMATIC Cross-Web Glueing Unit with synchronous drive operates at the same maximum speed as the printing press.

Short grain fold-glued A4 printed products using cross-web glueing systems (across the web direction) are well known. However, cross-web glueing can also provide innovative finishing solutions for A3 or A5 products (printed in long grain format).

Niederösterreichisches Pressehaus (NÖP) in St. Pölten wanted to increase the production spectrum from its existing presses and requested PLANATOL to equip their machines to spine glue long cut-off pages in an A3 tabloid format.

For NÖP, it was critical to retain the same advantages as for longitudinally glued A4 products. These advantages include improved compensating stacker and robot palletising operations because glued products lie flat in the fold; non-stop operation of newspaper automatic inserting machines; and achieving higher product quality on lightweight paper or on jobs with a small number of pages because glueing prevents the tearing of an inside sheet. In addition, NÖP wanted to extend the range of formats for newspaper supplements that must generally be glued.

PLANATOL drew up a concept for NÖP, based on their requirements, for a cross-web glueing unit of 620 mm cylinder circumference that was fitted to a MAN Roland ROTOMAN to fold-glue A5, A3 and A4 landscape products.

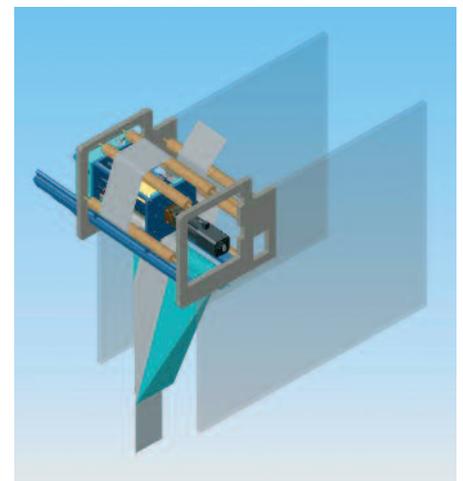
Subsequently a MAN Roland LITHOMAN IV was also equipped with a cross-web glueing unit with a 1260 mm circumference for 32-pages long grain; 8-page tabloid products in double production (2 x 8-pages A3 in collect-run production short grain inseting) ; or up to 2 x 16-page A4 landscape (insetting 2 x 8-pages short grain).

The installed cross-web glueing systems operate at the same maximum performance speed as the printing press. The PLANATOL OPIMATIC cross-web glueing units at NÖP run at up to 60 000 cylinder revolutions per hour, 24 hours a day. Up to 24,99 glue applications are made per second on a cylinder circumference of 1260 mm in cross-direction to the paper web at web speeds of up to 12,5 m/s.

The NÖP projects were individually adapted by PLANATOL's design team

to the web travel in the folders of each MAN Roland press, and the systems technology team monitored the process from planning to commissioning of the cross-web glueing units. This helped ensure that full production speed was attained on the first print order on the ROTOMAN. NÖP's cross-web glueing investment now allows them to offer spine glueing on all standard portrait formats and also in landscape.

Further information info@planatol.de.



The web path through PLANATOL's Cross-Web Unit Glueing increases the number of spine glued formats that can be produced inline.

QUALITY IN A BOX

JOHNSON PRESS, UK/SUN CHEMICAL



Any group of printers would always say yes if asked if they would like to improve their quality and reduce their costs. But time constraints, deadlines and shortage of staff often mean that the time required is not available to set up and initiate a quality control programme.

This is the reason why Sun Chemical developed the SQUIB concept. Sun Quality in a Box is a complete programme that can be implemented with little preparation and has been proven to deliver both quality improvements and consequent cost savings.

Quality requires attitude

There is an assumption that it is easy to teach someone which buttons to press. However quality is much more about having the right approach and attitude rather than just about buttons. Sustainable quality improvements require a positive and open attitude combined with good tools and methodology.



The first stage in a SQUIB programme is for senior management to decide the overall objective of the programme. Is it to reduce costs, improve throughput efficiency, attain the best 4-colour process work, or a clean bound and trimmed book? Different organisations will have different priorities. A directory printer with limited colour will have certain priorities, while a printer producing a gardening, motoring or animal related publication will have significantly different quality requirements.

When the objective is set the SQUIB team can be selected. An effective SQUIB team should be multi-disciplinary with representatives from each stage of the workflow, including staff from advertising, editorial, prepress and the press room. Ideally the team should

have similar seniority (section supervisor level works well). In a complex newspaper printing and publishing workflow each discipline must interact effectively, as each is the supplier to the next in the process chain and each is a customer of the person before him in the chain.

SQUIB begins by getting people talking together in a co-operative climate that should be without blame, recrimination, or mistrust. For example, the printer knows that it is almost impossible to satisfactorily print 6pt type reversed out of 4-colour process, but has he ever had the chance to show the advertising department who still sell it why? SQUIB allows the different disciplines to communicate better and work together towards common goals.

Identifying targets

The SQUIB "box" is individually prepared for each newspaper operation. It contains a schedule of 15 meetings spread over 24 weeks and no meeting should last more than one hour. The first meeting establishes what is meant by the quality objective that has been set by the senior management.

It is important to decide what issues will be tackled as a team of six people - each with a few good ideas - will quickly identify around 25 topics. This can only be described as a wish list, and a wish list of too many topics is doomed to failure. It is essential to prioritise a maximum target list of around four priorities that will have a maximum impact on quality, and will achieve quick results to allow the team to grow in legitimacy and authority. These priorities then should be relevant to the final objective, should be measurable and should be controllable, and be within the scope of the SQUIB team. If any of these parameters are not met then the task should be ignored.

Quantifiable objectives

Quality can be measured in many ways. One of the most effective and most agreeable to senior managers is its effect on reducing costs. A programme is most likely to succeed if it demonstrates that money can be made by improving quality. A good measure is reduced refunds given to dissatisfied advertising customers this is a quantifiable objective that immediately shows impact across the various disciplines.

The team should critically review the product or processes targeted and use the facilities at its disposal to enhance existing good practices.

- Minutes are not taken at SQUIB meetings, nor are senior management present.
- Action points are noted and the team themselves monitor and progress those actions.
- Where appropriate, suppliers are requested to audit equipment, calibrate and report condition, and scheduled corrective actions if needed.

SQUIB encourages training, informs staff of their organisation's capabilities and enables realistic specifications to be set, communicated, and used wherever practicable. People need to understand not only their individual part of the process but how it impacts on those with whom they work. The SQUIB box includes training programmes as hard copy and as self-running Powerpoint presentations and the PressDoctor trouble-shooting guide in PDF format.

Results

- Johnston Press is one of the largest printers in the UK and has implemented SQUIB at over a dozen press rooms across the country. Johnston has a wide range of presses ranging from ultra modern to older and less sophisticated machines. SQUIB was used to help improve overall print quality at all sites an essential requirement in implementing Johnston's policy of better matching print jobs with press locations to improve logistics efficiency.
- Each SQUIB project has saved significant amounts of money and in

most cases the approach has been repeatedly extended beyond the initial 24-week timescale. The first adopter in 2001 is still going strong and is now using a modified system which focusses more specifically on process optimisation and efficiency..

- Staff are also better trained and better motivated to work together more effectively as a team with improved communication and co-operation between departments. There are fewer advertiser complaints, picture quality has improved, while the overall copy has improved due to a better understanding of capabilities and limitations.



HEATSET PRODUCTIVITY WITH METALLIC EFFECTS

WOLSTENHOLME INTERNATIONAL

Heatset web offset provides high speed, good quality, low cost printing. Recent developments both in CtPlate and press technologies, together with concurrent advances in ink and fount technology, have enhanced heatset print productivity and range of application.

With these advances heatset has become acknowledged as more than a simple 4-colour print process, leading to a growth in five and six colour machines for printing spot colours and metallic inks.

Metallics and heatset printing have, until recently, enjoyed a strained relationship because the pigment make-up of a metallic ink can make it difficult to run at high speed with a low film weight. A typical metallic pigment has a particle size of about 3 microns and the tail end particle size distribution can increase to 10 or 12 microns. This is around 100 times larger than the pigments used in heatset process colours and means that metallic inks will always struggle to match the transfer characteristics of process colours.

Experienced heatset printers running metallic inks accept that the press speed must be reduced to ensure a successful result. A typical printing speed for a metallic is around 15-20,000 iph - a significant reduction of productivity. In some cases the use of metallics has raised other issues such as more frequent plate washes and higher plate wear.

From the metallic ink makers' viewpoint these difficulties have been seen as an innovation challenge. Metallic pigment manufacturers have used their ink and pigment expertise to develop inks that enable increased heatset printing speeds to help lift productivity. One product at the forefront of this new ink generation is Wolstenholme's Unipak® SuperWeb, which has been developed with three key properties in mind:



1. Print transfer: This has been maximised by using the latest technology in particle classification to allow the optimum separation of metallic flakes from a pigment distribution.

2. Ink robustness: The careful selection of raw materials and Unipak® SuperWeb's vehicle system combines improved press performance (from emulsion stability) with metallic ink stability and gives the product a 12-month shelf life.

3. Metallic Brilliance: The optimum classification of the metallic particles gives an excellent metallic effect.

In spite of these ink advances there are still some special considerations that must be made to maximise productivity when using metallic heatset inks.

Substrate selection

It is important to consider the wet/pick strength of the substrate used. Metallic inks are more susceptible than process colours to paper piling problems and so the cost of the substrate used must be evaluated against its impact on productivity. A cheaper but poorer quality paper might reduce purchase cost but can increase machine running time with slower printing and extra wash-ups that could negate the initial saving and even increase costs.

Job design

An important consideration when using metallics is achieving an even ink distribution across the sheet.

Incorporating solid take-off bars on waste areas of the sheet will improve pull-through of the metallic ink and reduce the chance of piling or over-emulsification. Again, the minor increase in ink costs will be more than offset in the downtime saving.

Printing densities

Metallic inks will run with fewer potential problems and provide better productivity by ensuring that optimum print densities are used.

When printing Unipak® SuperWeb heatset metallic inks, Wolstenholme recommends the following print densities:

SUBSTRATE	INK		
	Gold	Silver	Mirasheen™
Light Weight Coated Paper	1.1 - 1.3	0.7 - 0.9	0.4 - 0.6
Medium Weight Coated Paper	1.2 - 1.4	0.8 - 1.0	0.5 - 0.7

Readings taken using a polarised filter reflectance densitometer, Geometry 0/45°

GOLD READINGS USING THE YELLOW SCALE.
Silver and Mirasheen™ readings using the BLACK scale.

For further information on metallic heatset inks please contact Wolstenholme International - russell.morris@wolstenholme-int.com

Wolstenholme International is a manufacturer of metallic offset and inks as well as metallic pigments for graphic arts and industrial applications. www.wolstenholme-int.com

INNOVATIVE CONFIGURATIONS - 2 + 1 = MUCH MORE

MAN ROLAND - VALUE ADDED NEWSPAPER PRINTING IN AUSTRALIA

Heatset printing is now almost a standard practice for single-width newspaper printers but is rarely found on double-width presses. However, heatset offers a substantial opportunity for higher value added printing for wider web width newspapers.

MAN Roland has recently developed two innovative press configurations with double-width newspaper printers that integrate proven single-width heatset systems to deliver entirely new production dimensions.

Publishers' needs

Dietmar Zutt, a member of the MAN Roland team behind these world-first developments comments, "Many newspaper publishers have requested the flexibility of single-width heatset printing for their double-width operations. However, simply adding a dryer on to double-width presses does not fully satisfy their needs, such as easy handling of different web widths to allow maximum product differentiation in size with flexible page positioning of heatset sections. The breakthrough came when we utilized our advanced drive and control technologies to provide the best of both worlds by combining both press types into a single production system when required - 2 + 1 = much more."

The concept allows existing, or new, double-width press to be dedicated to coldset production. A single-width press, one or two around, in horizontal or vertical web lead, with 1,2 or even 3 dryers is then positioned to deliver heatset webs into the double-width folder superstructure to position them within the coldset sections.

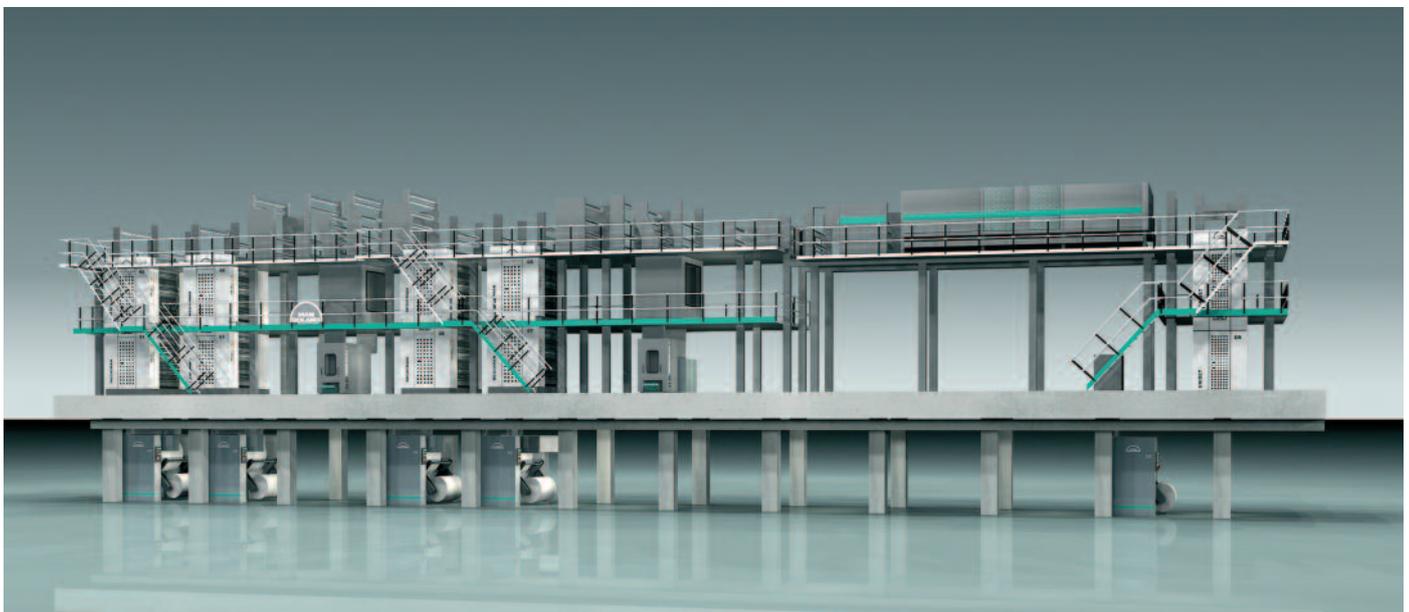
Unique 2 + 1 products

Simultaneous 2 + 1 production (with 1 single-width dryers) allows unique new advertising and editorial possibilities to be added to the coldset newspaper, including:

- 4 or 8 pages tabloid heatset cover for a high point-of-sale profile without marking.
- 4-pages tabloid heatset cover plus 4 pages tabloid heatset in the centre of the product.
- 8 pages tabloid heatset section inside the coldest sections
- Giant pull-out posters
- Run of Paper (ROP) heatset pages in between coldset pages
- Different sizes of sections within the product

With higher quality printing on coated paper these products give publishers significant new revenue and differentiation opportunities. In addition, both presses can be run entirely separately. The single-width heatset line can also pre-print special newspaper sections, magazines and advertising material; as well as selected commercial printing in heatset, coldset or combined printing.

APN's world-first 2 + 1 installation combines coldset REGIOMAN webs and UNISET heatset webs at a central folder.



MATERIALS INNOVATION IMPROVES PRODUCTIVITY

MACDERMID PRINTING SOLUTIONS

Configuration choices

“Site layouts are always different and require tailored solutions. Therefore MAN Roland have designed and developed both inline and parallel configurations. The world’s first 2 + 1 installation will have both presses and their folders inline. When running in combined operation, the towers feed coldset and heatset webs directly to the double-width folder superstructure. This press will be put into operation in 2006 at APN in Queensland, Australia. The double-width single circumference REGIOMAN will have four 4-high towers, four pasters, two folders with inline stitching and trimming. This will be combined with a single-width double circumference UNISET with one 4-high towers and a heatset dryer - with provision to add 2 more heatset webs.

“The pressline is designed to be completely interchangeable so we can run webs from both the REGIOMAN and UNISET through either folder and we can control either press from any control desk, running either coldset or heatset,” explained Gary Osborne, Group Production Manager, Australia, for APN Newspapers who helped develop the concept.

A second configuration developed for another Australian publisher positions the double- and single-width presses alongside each other. When required for combined production, the webs from the single-width press use a 'bridge' with 90° turner bars to transfer the webs into the double-width folder superstructure. Turner bars and balloon formers enable page positioning with heatset sections in one book within a coldest paper.

Improving press productivity starts with reducing makeready time which includes changing blankets — taking around 45-50 minutes for a five colours on a B1 sheetfed press. Blanket manufacturer, MacDermid, has invested a lot of resources in developing a new technology that gives more stable and resistant blankets, Stabil-X.

Kevlar carcass

Unlike other conventional blankets, Stabil-X substitutes the cotton in the carcass with high tech Aramid fibres (e.g. Kevlar). These fibres are much stronger than cotton (90 kg/cm) and paradoxically require less space. The highly improved stretch resistance means the printer no longer has to re-tension the blanket and there are less registration changes after washes. The presence of the Aramid fibres allows Stabil-X to use a polymer-based back which has no risk of solvent infiltration. The space then saved in the structure enables the size of Stabil-X's compressible layer to be doubled. Moreover, this oversized layer is no longer made up of conventional rubber, but polymers.

No more sinking

The traditional compressible layer is composed of 20-30 “slices” of rubber that are plastered on top of each other with the help of Toluene. Over time, the Toluene molecules confined between the slices will evaporate and cause “static sinking”. When the blankets start sinking, the loss of thickness reduces quality and requires blankets to be changed. However, Stabil-X never sinks, thereby increasing the overall productivity of the machine.

In addition, the unusual thickness of the polymer-based compressible layer plays an important role in making the blanket much more robust and resilient.

Robustness is crucial to ensure longevity on press and the resilience (provided by the high-roughness polymers) enables Stabil-X to recover from smashes after only 50 - 70 impressions. The resilience property is also significant in optimising the ink/water balance, which is reached more rapidly and which can reduce ink consumption by 5 to 7 %.

Reduced washing

A direct consequence of this is the reduction of washing cycles because the amount of unused ink on the rubber surface is reduced. Consequently, the blankets are less dirty over the same period of time and thereby require less washing.

A longer lifetime, higher resistance, faster ink/water balance, no more re-tensioning, and better registration are proven benefits from excellence in Research & Development and the use of innovative materials. The resulting unmatched chemical and mechanical properties impact on the overall productivity by reducing press downtime that translates into cost savings.

Modular print training courses

UK WEB OFFSET PRINT ACADEMY

The printing industry is becoming more technologically complex, with higher production speeds, faster turnarounds and higher quality demands. At the same time staffing is being minimised and operators require multi-skill competencies. In spite of this the level of staff training provided to operate rapidly evolving technology is at a much reduced level.

The reasons for this are understandable and form the subject of a debate in its own right. However, the challenge is what to do about it? Sun Chemical, UPM, Kodak Polychrome Graphics and other industry players have decided to take a firm training lead with the creation of the Print Academy. It is hoped that this will be carried out in conjunction with the University of Wales at Swansea

The Academy is a series of modular courses that together offer a unique and comprehensive insight into the web offset printing process. The aim is not to teach printers how to printing skills need to be learned elsewhere - it is to provide the background and underpinning knowledge to enable industry personnel to carry out their duties more effectively.

The modules take between half a day and two days. They are designed and delivered by experts with thorough and up-to-date knowledge, sourced from industry suppliers and technical bodies. Modules covering ink will be delivered by Sun Chemical, paper by UPM, fount solution from Sun SAS, imaging and plates by Kodak Polychrome Graphics, blankets (to be announced), plus an industry wide overview from Polestar.

There will be intensive two-day courses covering ICC profiling, press profiling, process optimisation, on-press quality control, and all aspects of prepress from selection of originals to proofing. These will be provided by IFRA and Pira. An advanced approach to solving print and press related problems will be addressed by a two day printing simulator course provided by Sun Chemical.

The courses will be held at various venues, usually the premises of the module supplier. The aim is to keep the price modest just to cover costs. There will be a small registration fee, and then modules will be charged for individually as they are taken. Modules will be fully documented using conventional hard copy and a wide selection of digital visual aids, both over the Internet and on CD or DVD.

No entry qualifications are required and candidates can pick and choose individual modules or take the full course. Candidates taking the full course will be required to undergo assessment in order to be granted a formal qualification.

The Print Academy will commence courses during the second half of 2006, but anyone interested should contact Sun Chemical and full details will be sent out early in 2006.

paul.casey@eu.sunchem.com

Three pillars of productivity



More than 100 people attended the first PrintCity Weblines conference in Moscow that focussed on the importance of the three pillars of productivity working efficiently together in the value chain to improve overall productivity and profitability.

PRINTCITY MOSCOW CONFERENCES

PrintCity's Web Publishing Group recently initiated a series of conferences in Moscow for the Russian graphic arts industry. More than 100 printers, publishers and specialists from the graphic arts industry participated in PrintCity's first Weblines seminar in Moscow last December.

The theme "Three pillars of productivity for high volume heatset web offset" focussed on improving the efficiency of the production value chain to lift profitability.

The programme was initiated through PrintCity's Web Publishing Group and addressed how equipment and materials technologies were linked through best practices to achieve best performance. Key subjects included the interaction between paper, ink and fountain solution to achieve both higher productivity and print quality.

The unique collaboration between world-leading companies Gämmerler, MAN Roland, MEGTEC, Sun Chemical and UPM plus the Web Offset Champion Group proved so successful that a second seminar was held in July.

Project leader Erik Ohls, Marketing Director Service and New Business Development for UPM, said: "Russia is one of the world's fastest growing printing markets - driven by an average economic growth of around 7% a year - which made it the ideal choice to launch this important initiative. Our expectations were more than exceeded by the high-level attendance of over 100 people, who showed phenomenal interest in the best practices that we discussed."

Rainer Kuhn, Managing Director of PrintCity, adds: "These are very exciting times for PrintCity. The enthusiasm and desire to work together and to 'connect competences' is stronger than ever."



The July PrintCity workshop in Moscow was organised by MAN Roland and HGS.

This is just one initiative that we have been working on as PrintCity's reputation as a leading organisation within the graphic arts industry continues to grow."

In July, a follow-up event was held in Moscow in cooperation with MAN Roland-HGS. Subjects included UPM on product support, Sun Chemical on the four rules of competence efficiency, MAN Roland on press productivity, MEGTEC on heatset drying, and Gämmerler on postpress equipment efficiency. The programme included a Web Offset Champion Group workshop on Web Break Prevention and Diagnosis given by members from Sun Chemical, MEGTEC and MAN Roland.



More than 100 people attended the first PrintCity Weblines conference in Moscow last December.

Integrated environmental business strategy



This is an extract from the best practice guide "Environmental considerations" published by the Web Offset Champion Group.

Other guides include: "Roll to web processing", "Web break prevention & Diagnosis", "How to avoid surprises when changing paper grades".

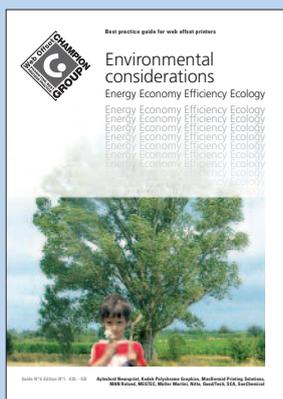
The Web Offset Champion Group was formed in 1998 to "champion" best practice in the web offset printing industry as a tool to improve productivity, quality and safety.

The Group is a joint project of international suppliers working with other industry specialists, printers and associations throughout the world to identify and promote generic best practice. Its members cover the complete process loop from pre-press to printing to post-press:

Aylesford Newsprint, Kodak Polychrome Graphics, MacDermid Printing Solutions, MAN Roland, MEGTEC Systems, Müller Martini, Nitto-Permacel, QTI, SCA and Sun Chemical.

Guides cost € 30 each and are available from www.piranet.com or www.gain.net.

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"A major payback from a proactive environmental programme is improved business efficiency. An increase in productivity often takes place when a printer works towards environmental compliance, so much so that the profitability of operations frequently increases significantly." 'Environmental Regulations for Printers', Fred Shapiro.

Waste is a good measure of plant efficiency and a little effort can yield cost savings that increase productivity. A waste minimisation programme can often cut waste by 25% — if total waste is 12% of turnover this would add 3 % to company profits. Waste is often seen as valueless but its recycling/re-use value can be many times higher than the cost of its disposal (Environwise UK).

The integration of an effective environmental policy will improve business performance through:

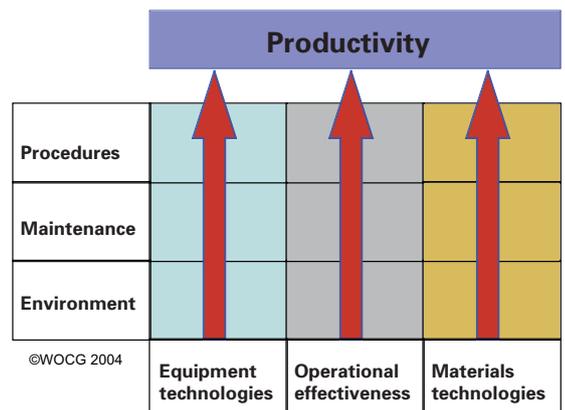
- Reduced purchasing cost from using less ink, paper, solvent, water and energy;
- Cost savings from waste reduction, reuse, recycling and lower disposal costs;
- Reduced Volatile Organic Compound (VOC) emissions;
- Improved product quality and process control;

- Sound basis to comply with regulations to avoid risk of non-compliance costs;
- Improved employee working conditions and motivation;
- Reduced insurance premiums;
- Improved brand image and differentiation to customers, financiers, investors, neighbours and regulators.

Environmental compliance does not ensure superior environmental performance. Effective environmentalism should be a natural part of business, going beyond simple compliance and aiming to enhance overall economic performance whilst improving the quality of life for employees and the community. The balanced use of all resources (including finance) will conserve raw materials, minimise waste and reduce environmental impact.

Printers working with their clients and suppliers to improve the manufacturing processes, logistics and the use of materials, achieve the best results. The 4Es (Energy, Economy, Efficiency, Ecology) require a longer-term business view. Life Cycle Management (LCM) helps control and reduce the operating costs of a printing system for its entire lifetime and provides better environmental performance.

Manufacturing efficiency is largely determined by how effectively the three pillars of productivity work together. Each pillar — equipment, materials and operational effectiveness — includes standard procedures, maintenance and environmental issues. Poor performance in any one will impair overall performance. Environmental or maintenance programmes developed in isolation tend to be much less effective.



THE 4 RS - REDESIGN, REDUCE, REUSE, RECYCLE

Redesign: How can processes be made more resource and cost efficient?

Examples are the elimination of film and processing by CtPlate, direct drives that reduce energy consumption, closed loop colour control and automation to reduce makeready and running waste. New production investments should be considered as both tangible and non-tangible costs: tangible costs are standard business practice and should account for waste reduction; the intangible potential costs are the risk of non-compliance with environmental and other regulations.

Reduce: Less material in and less waste out: improved resource efficiency through continual attention to waste streams and processes to reduce emissions, energy use and waste. A waste reduction plan is an opportunity to improve overall business efficiency by reducing manufacturing and waste disposal costs without compromising quality. Waste is not just solids and liquids that require disposal; it is also wasted time and costs.

Reuse: Identify waste materials that can be reused for another purpose to reduce purchase and disposal costs; or find ways of converting waste energy into re-useable energy.

Recycle: Waste materials (ink, plates, paper and plastics) transformed into other products typically use less energy and resources than for products made from virgin materials. However, in some cases, the viability of recycling-to-reuse may be an issue if significant additional energy is needed.

Resources that cannot be redesigned, reduced, reused or recycled should be disposed of responsibly.

MAIN ENVIRONMENTAL MANAGEMENT ISSUES FOR PRINTERS

1. Air emissions
2. Dangerous and hazardous materials
3. Liquid waste
4. Solid non-hazardous waste
5. Packaging waste reduction
6. Energy management
7. Workplace
8. Regulations and Permits
9. Neighbours

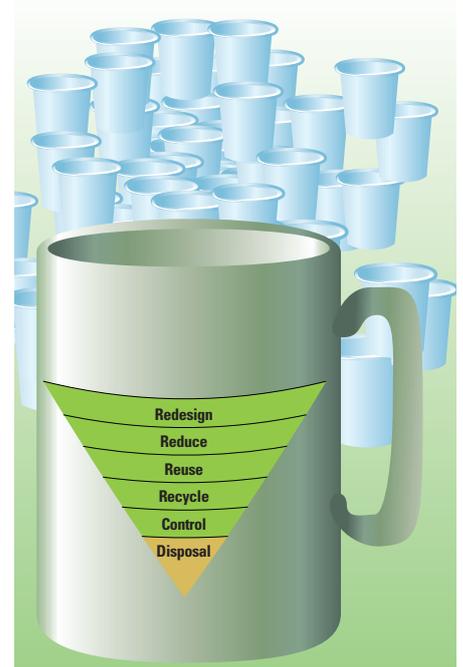
Most of these issues are subject to environmental, health or safety regulation. Understanding the regulations and the process path of each can help identify actions to minimise waste, save money and stay ahead of environmental legislation. Environmental compliance does not ensure superior environmental performance.

ENVIRONMENTAL POLICY

An effective environmental policy sets out the company's commitment to respect its legal obligations and good environmental practice. A good policy should be clear, simple and short (explaining the company's aims and commitments; responsibilities; resource availability; objectives; monitoring and review). It should be relevant to all operations and communicated to employees, customers and suppliers. The policy needs to be followed, otherwise it will be meaningless and counter productive.

KEY ENVIRONMENTAL MANAGEMENT SUCCESS FACTORS

- Clear management motivation with a policy that integrates environmental issues into a global purchasing and manufacturing strategy.
- Appoint a responsible person for environmental issues.
- Create multi-competence project teams (production, quality, health,



An innovative internal communication by one company was to give its employees a ceramic mug to replace disposable vending machine cups. At 2-4 cups per person/a day this represents a saving of 500-1 000 plastic cups a year to dispose of for each employee.

safety, environment, finance, purchasing, suppliers) to identify actions and implement change.

- Address one issue at a time. Set quantitative targets over time — challenging but achievable.
- Provide adequate resources and time to achieve measurable objectives.
- Systematically use appropriate tools to identify, analyse and record issues.
- Communicate the waste programme and results in a way that motivates the interest and involvement of staff, shareholders, customers and suppliers.
- Motivate and train staff to develop a more efficient and sensitive attitude to environmental questions. Give them an active role in redesigning systems and a responsibility to ensure that the policy objectives are met.
- If needed, establish partnerships with experts from different fields for environmental problem solving.

PrintCity Web Systems & Publishing Activity Group

PrintCity is a strategic alliance of independent best-in-class companies in the graphic arts industry. It has over 50 member companies present in more than 180 countries and with a combined turnover in excess of 30 billion Euros and 160 000 employees. Members' activities cover the three major market segments of publishing, packaging and commercial printing.

PrintCity is a long-term alliance with its management head office in Augsburg, Germany. The organisation has a modular structure based around cross-functional activity groups for print markets (commercial, publishing and packaging) and process (sheetfed, web and digital). In addition two others groups – networking and knowledge management – seek to help integrate systems and share specialist information respectively. The chairmen of these groups form PrintCity's management board.

The Activity Groups work on common issues in their sectors and share expertise and knowledge with printers. By combining the knowledge, experiences and skills of its members, PrintCity aims to help printers to improve their profitability, productivity and efficiency.



Gämmerler AG www.gammerler.de - MacDermid Graphic Arts SAS www.macdermid.com
 MEGTEC Systems SAS www.megtec.com - MAN Roland Druckmaschinen AG www.man-roland.com
 PLANATOL System GmbH www.planatol.com - Sun Chemical Corporation www.sunchemical.com
 sappi www.sappi.com - UPM-Kymmene Corporation www.upm-kymmene.com
 OCE NV www.oce.com

Previous editions of Weblines are available in English and German version on www.printcity.de.



Weblines n2



Weblines n3



Weblines n4



Weblines n5



Weblines n6



Special Report n1