PAPERS ANALISIS IN REAL CSWO TECHNOLOGY

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Problem Definition

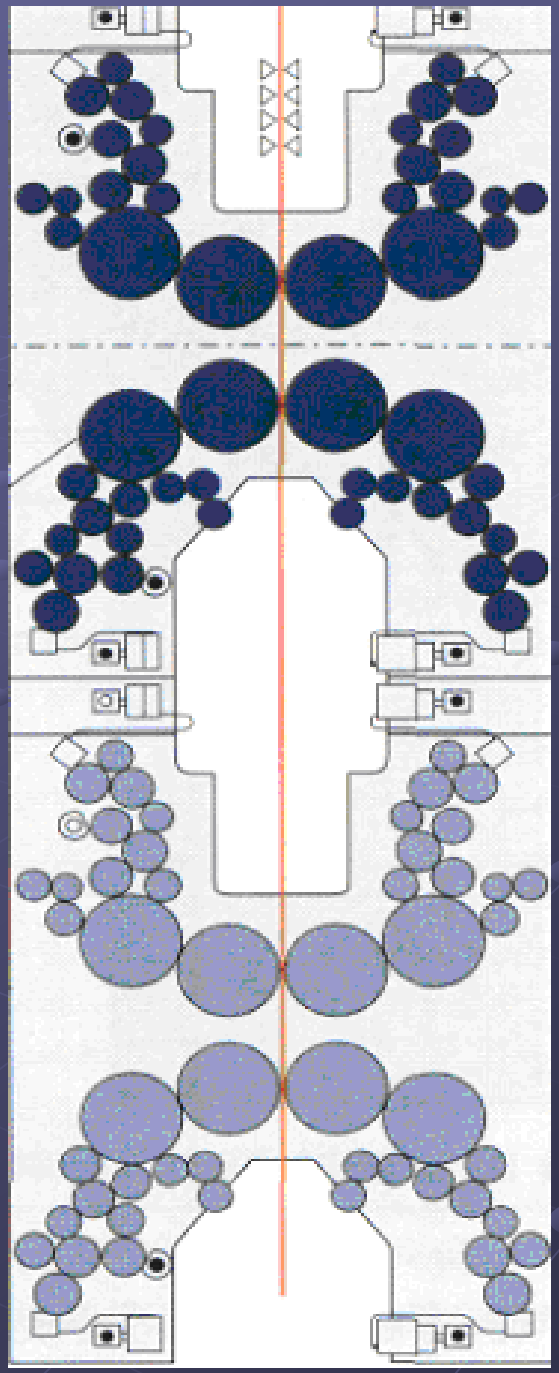
- CSWO technology is a newspapers technology, means newsprint + coldset web offset printing.
- This article is a trial to present different papers in real CSWO printing, using GEOMAN web offset printing press.
- **The purpose is to compare and evaluate different brands of papers of various composition, belonged to newsprint (NP) group** - NP of 100% virgin fibres, NP of mix composition (virgin+recycled) and NP of 100% recycled fibres. All these papers are prodiced by different papers mills and are named accordingly.
- Thus it is possible to achieve high quality level of newspapers and overcome such big problem as poor setting of inks on standard newsprint, causing smearing, marking, print through etc.

Conditions for Problem Solution

- **GEOMAN** is typical coldset web press, 8-couple tower, offers the highest inking with the shortest web path for double-sided process colors.
- Our GEOMAN contains four towers each of them of 8-couple printing units. These units involve two H-type printing sections arranged on top of each other. It is set of the horizontal blanket-to-blanket cylinder groups with vertical web lead, permitting for multi-web production. This is the simplest and most compact configuration for producing a 4/4 job with one single tower (cut-off 578mm

Machine Configuration:

- GEOMAN – 8 coupled tower, blanket-to-blanket system, consisted of two H-type printing units, arranged on top of each other.



Machine Description

- All inking units operate with pre-dampening.
- Dampening system is a non-contact, turbo-dampening unit with a kind of oscillator roller, resulted of no reverse transfer of soiling dampening solution to the water fountain.
- This machine runs a range of different papers from 40 to 60 gsm that do not require any additional drying on press.


manroland
GEOMAN

Permanent Operating Conditions

- Euro scale coldset inks (“Newsking TOP”);

- sequence: cyan-magenta-yellow-black;
- standard conventional negative printing plates;
- alcohol free damping solution, with 3,5% “Hydrofast” additive, pH value 4,8 to 5,2 and t°~ 12°C, conductivity ~ 1500 µS/cm;

- offset blankets “Rollin Reporter”, thickness 1,95 mm and underline 0,16 mm;
- printing speed - 28 to30 thousands rph;

RESULTS AND CONCLUSION

- Combination of different papers in CSWO lines for newspapers production is suitable way to improve print quality, but there is some restrictions related with papers printability and runability in the practice;

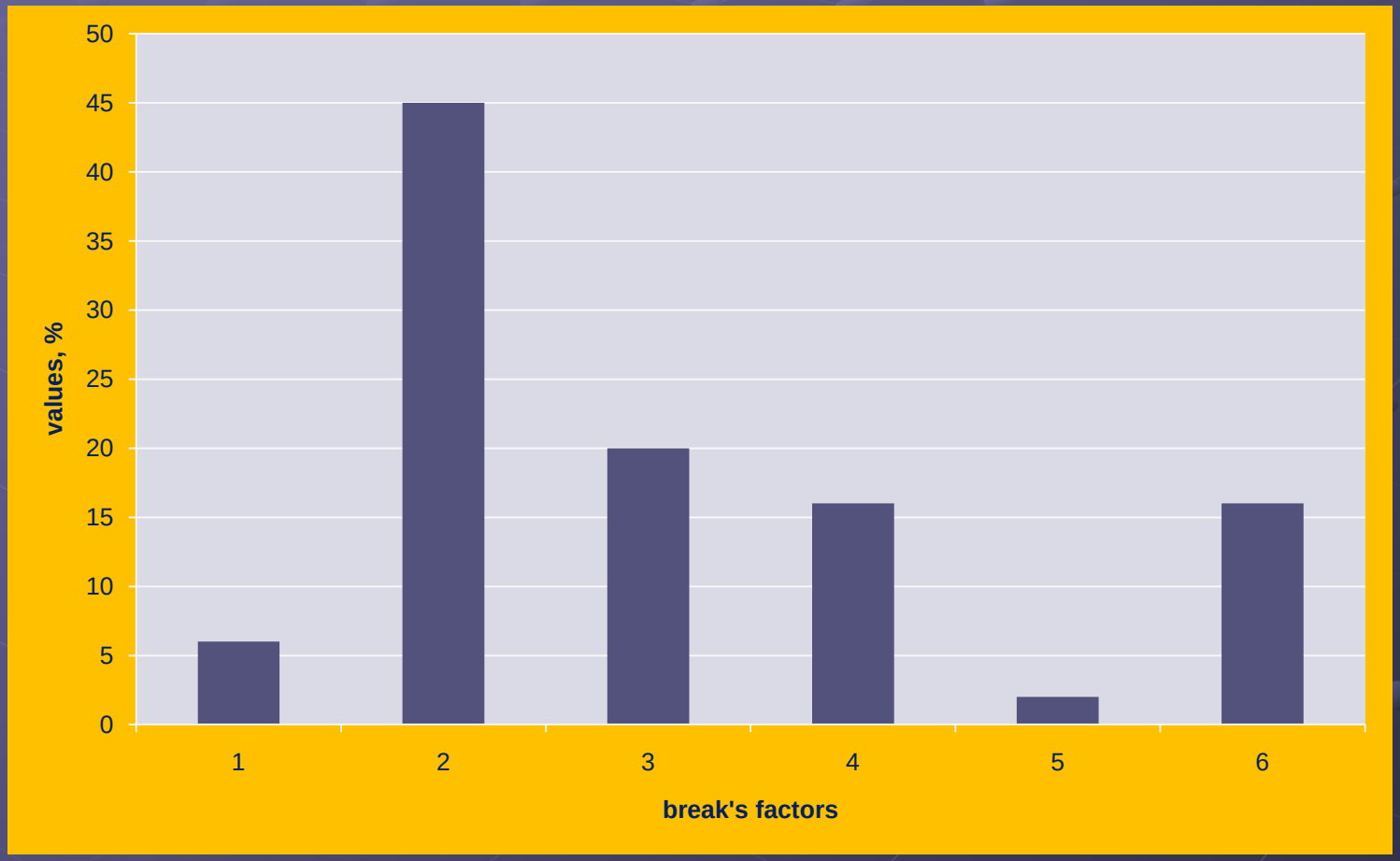
- Newsprint solely is the most popular paper in optimal CSWO technology for high runs of print products with stable printing process;

- But high flexibility using different type of papers is accepted. Here there is a reason for more qualitative papers - higher investments (as for papers), but afterwards print's expenses will be the same as in CSWO on the newsprint.

Newsprint Breaks in Real CSWO,

according to different factors:

1-start; 2-autopasting; 3- during print; 4- techn. reasons; 5-fabrics labels; 6-others



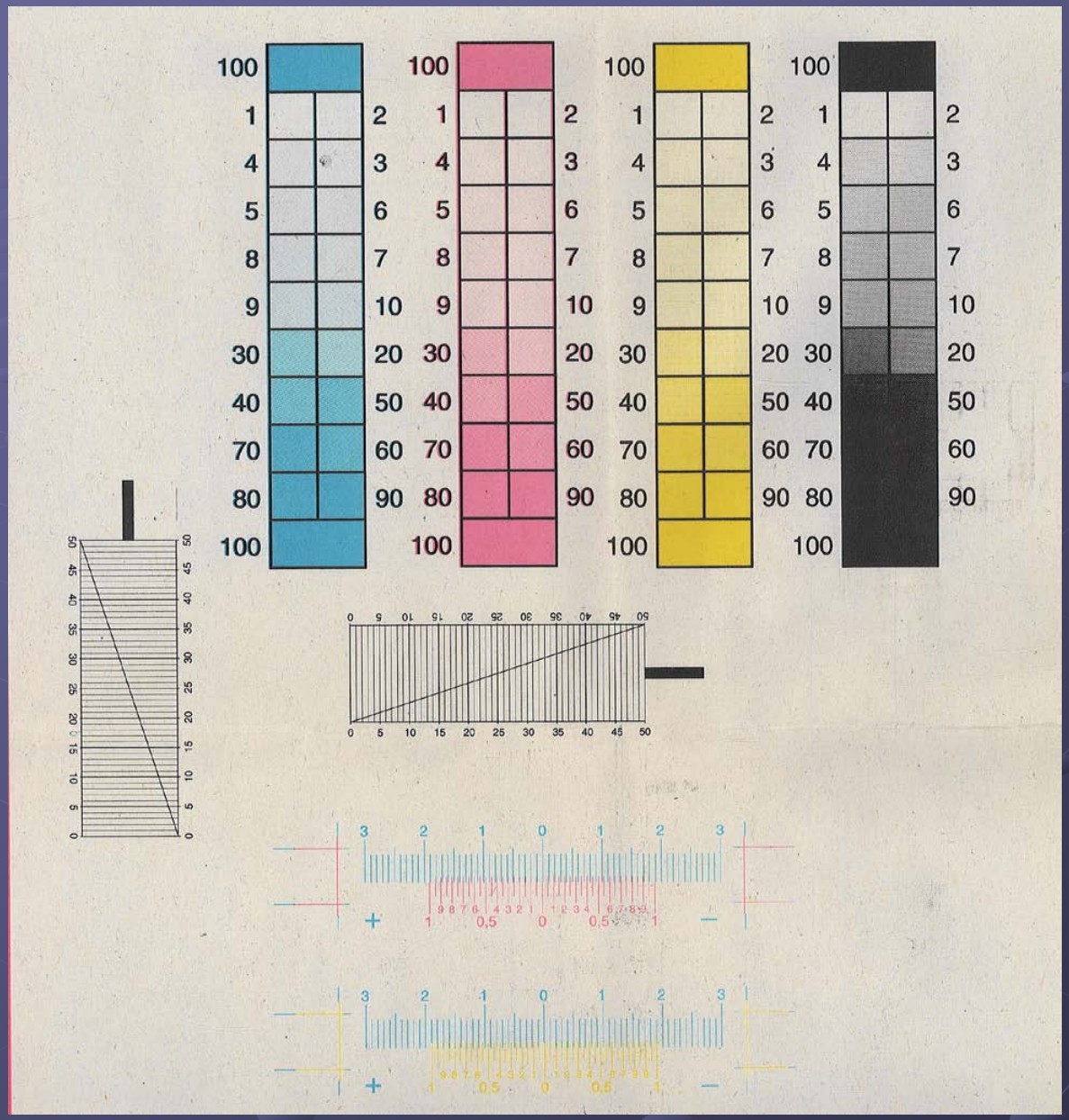
Important Criteria for Production Process

- **MAKULATURES:**
- Sacshen -100% recycled - 1,57; Rhein- 70% recycled- 1,61
- Norske Skog (Roto) – 30% recycled - 2,24;
- Solikamsk - 100% virgin - 3,51;
- Volga - 100% virgin -2,15;
- Kondopoga - 100% virgin – 2,50

- **BREAKS:**
- Sachsen - 4,4 ; Rhein – 3,9
- Norske Skog - 7,9;
- Solikamsk- 15,2;
- Volga- 7,7;
- Kondopoga - 9,6

№	Quality properties	Sachsen recycled	Solikamsk virgin		Norske Skog	Kondopoga virgin		Volga virgin
	Reel's width, cm	*168*	*168*	*84*	*126*	*168*	*126*	*168*
1.	Grade, [g/m²], ISO 536	44,9	45,1	45,2	45,5	46,0	45,0	45,0
2.	Thickness, [µm], ISO 534	60	72	71	71	70	69	67
2.	Density, [g/cm3], ISO 534	0,75	0,63	0,64	0,64	0,66	0,65	0,67
3.	Bulk, [cm3/g], ISO 534	1,34	1,59	1,57	1,56	1,52	1,53	1,48
4.	Breaking length, [m], ISO 1924-2	5100	4300	4900	4600	4500	4100	4250
5.	Tear resistance, [mN], ISO 1974	363	216	255	284	294	353	345
6.	Smoothness Bekk, [s]	>60	56	46	50	58	52	55
7.	Brightness, [%], ISO 2470	59	62,3	61,6	61,4	62,5	62	61
8.	Opacity, [%], ISO 2471	93,7	95,4	96,2	94,5	95,5	96,5	95
9.	Humidity, [%], ISO 287	8,2	7,4	6,2	8,6	8,2	9,8	8,1

Properties	**NP** standard	**INP** improved	**NP** recycled	**MFS** UPM Brite	**MFS** UPMOpal	**MFC** matt	**WFU** fine
Grade, [gsm]	42;42,5;45 48,8	45 - 55	42,5, 45, 48,8	42, 45, 48,8, 52, 55, 60	36 - 45	48, 54, 60	60
Furnish	100% virgin fibre	mechanical bleached, virgin fibre	50-100% recycled fibres	100% mechanical or recycled	mechanical and recycled fibres	mechanical, chemical fibres	wood free, sulphate pulp
Surface description	machine finished newsprint	improved, soft calendered newsprint	machine finished newsprint	Uncoated, machine finished, specialties	machine finished directory paper	machine finished, coated, satin	uncoated, machine finished
Brightness [%] ISO (D65)	58-60	65, 67, 69	57 - 59	63 – 76; 80	55 - 60; 63	70 - 80	>85
Calliper, [µm] ISO 534	65 - 70	68 - 90	60-64	65 - 100	55 - 75	66 - 87	-
Bulk [cm^3/g]	1,53	1,45 - 1,60	1,34– 1,43	1,55 – 1,82	1,53- 1,67	1,38– 1,45	-
Opacity, [%]	95- 96	93 - 95	93-94	91 - 96	87 - 93	91- 95	86 - 99
End uses	newspapers advertising	newspapers inserts, advertisings	newspapers inserts, advertising	inserts, week newspapers, catalogues	week newspapers inserts, tel directories	supplement special newspaper advertising	advertisings, comics, newspaper supplemen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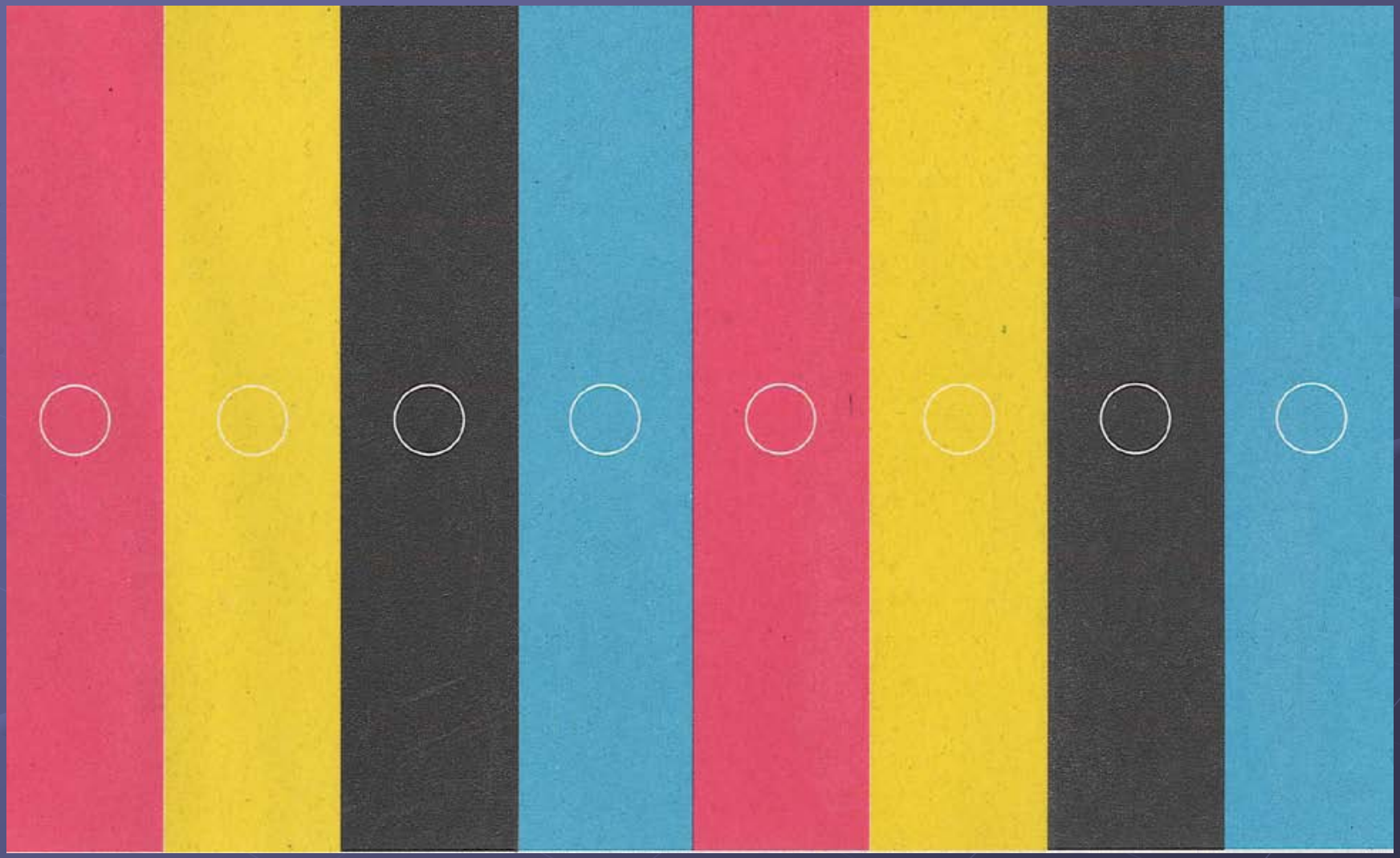

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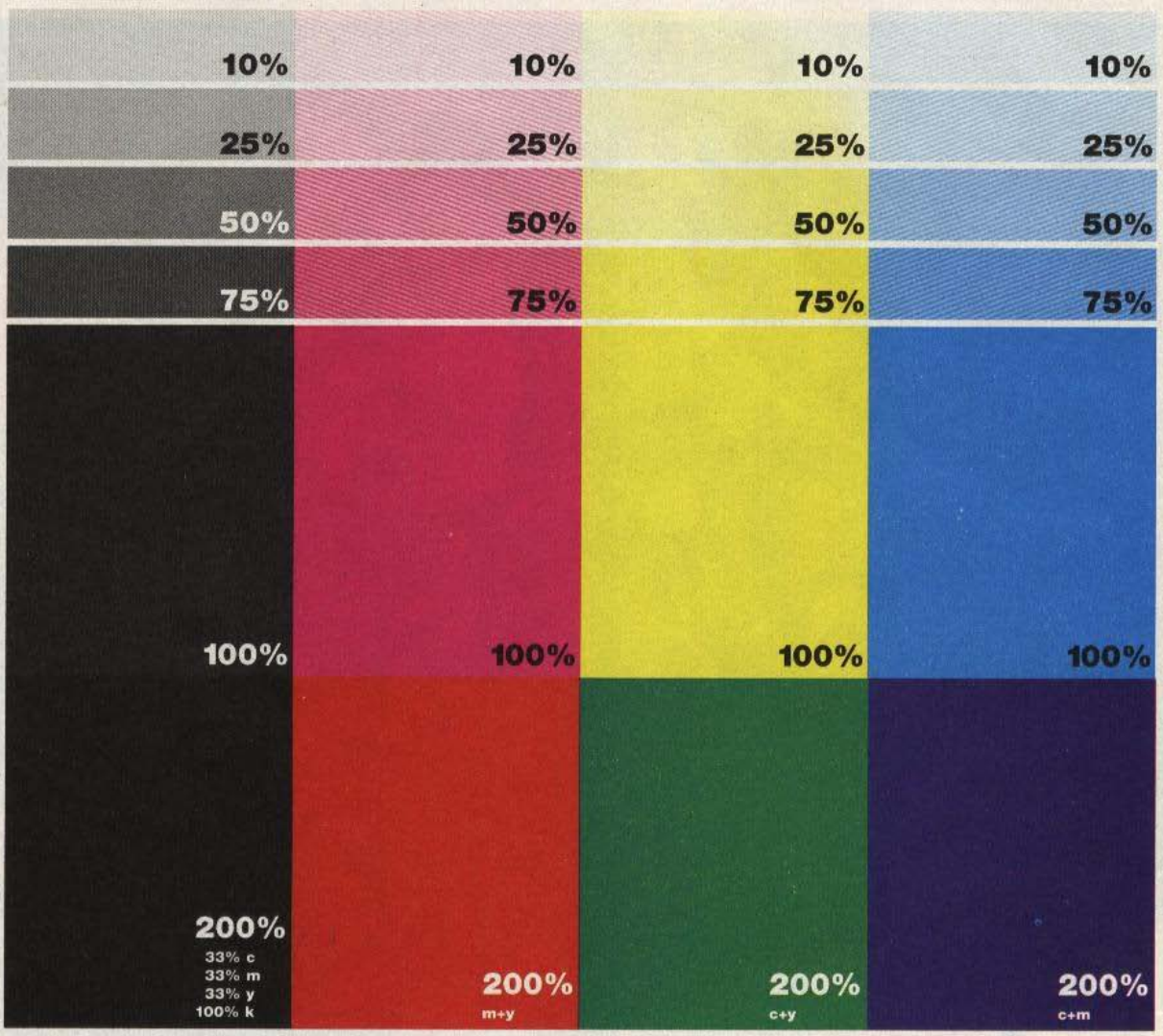

CONCLUSIONS

- Newsprint recycled (NP) paper, grade 45gsm, was not high appreciated for newspaper production in CSWO (with ink-through, smearing and print-off difficulties). 100% recycled NP of 45gsm is recommended for very high run newspapers, where print performance will be better, with high printability and runability (breaks and makulatures);
- Different NP with 100% of virgin fibres have acceptable performance in conventiona CSWO – open surface of virgin fibres is improving coldset setting (inks are sucked up in open pores).

CONCLUSIONS

- The best way to improve newspapers quality is print them on high quality of paper with different grade and composition. Thus can be bring to newspapers a print quality closer to commercial printing products;

- CSWO is acceptable as a print proces for NP, INP, MFS, MFC, WFU, grade up to 60 gsm – expenses are almost the same as in case of 100% recycled paper;
- Using MFS in CSWO, newspapers could be improved their visual quality without any additional process expenses; In case of coated MFC setting problems may appeared.

MAIN CONCLUSION

- There is a direct link between the perceived newspaper's quality and its flexibility of used papers. The higher the number of different types of papers, the higher the possibilities for newspapers production.
- Newspapers is the only medium that offers an endless combination of papers types, substrates, surfaces, shapes, colors, smells and tastes and all these appeal to our senses and create emotional value to suit a specific audience.

THANK YOU
FOR YOUR ATTENTION