

Considerations of Papermaking Design for the Change of Printing Environments

인쇄환경 변화에 따른 제지설계의 고려사항

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**Consideration of Papermaking Design
for the Change of Printing Environment**
(인쇄환경변화에 따른 제지설계의 고려사항)

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CONTENTS

- ◆ The present state of Korean Printing Industry
- ◆ The niche market strategy in Printing Industry
- ◆ The change of Printing environment and papermaking design

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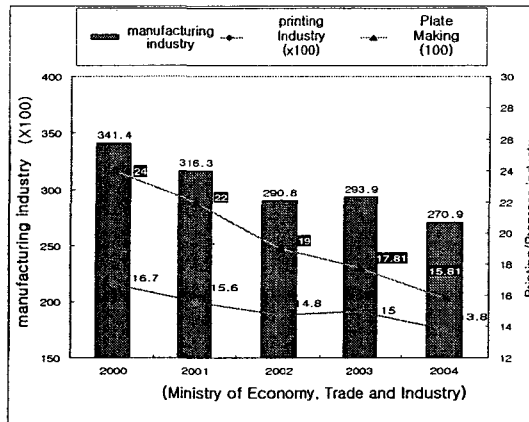
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The present state of Korean Printing Industry

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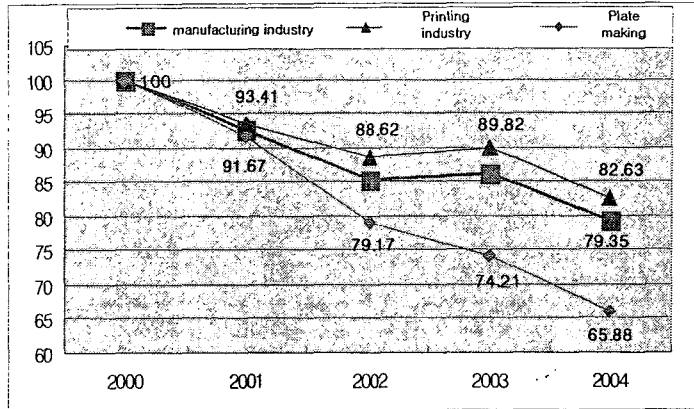
Printing industry and Manufacturing industry in Japan



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Decrease of Japanese printing industry

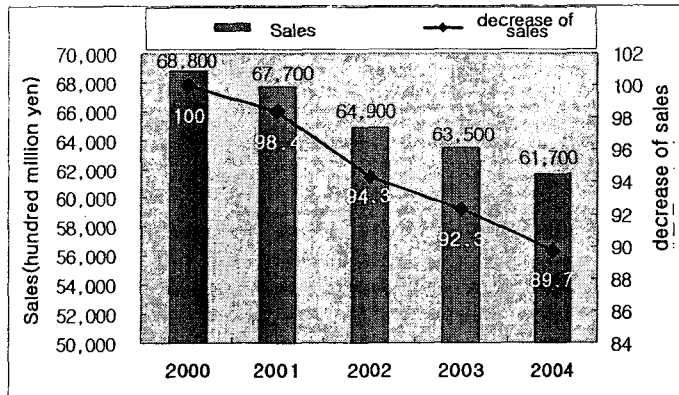


(Ministry of Economy, Trade and Industry)

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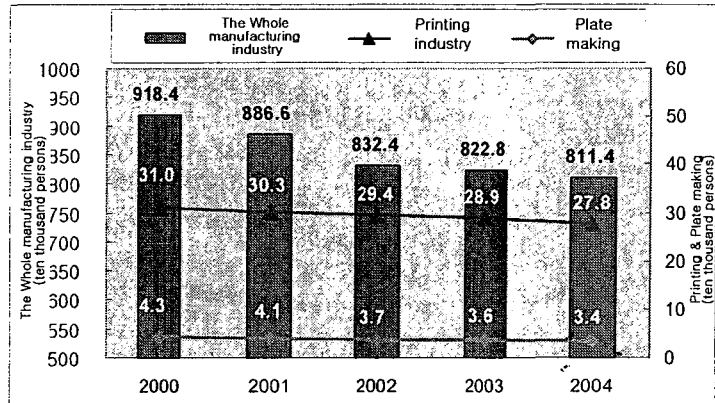
The sales of Japanese printing industry



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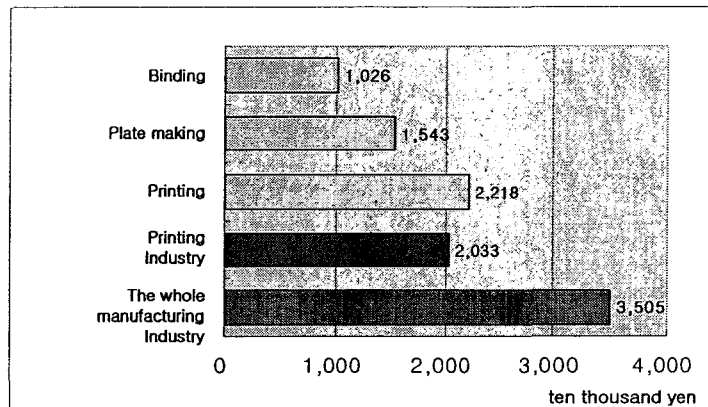
Employee of Japanese printing industry



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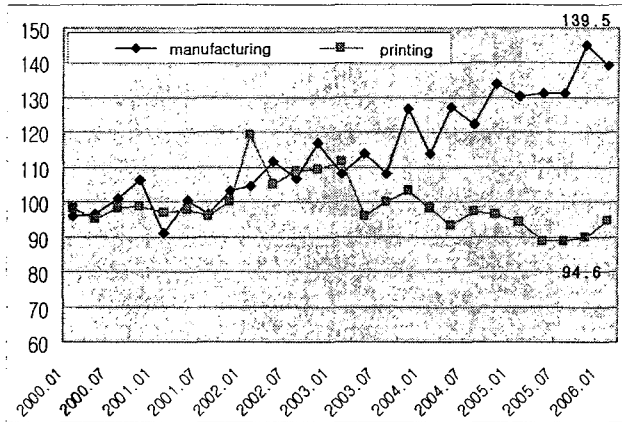
Production per worker in Japan



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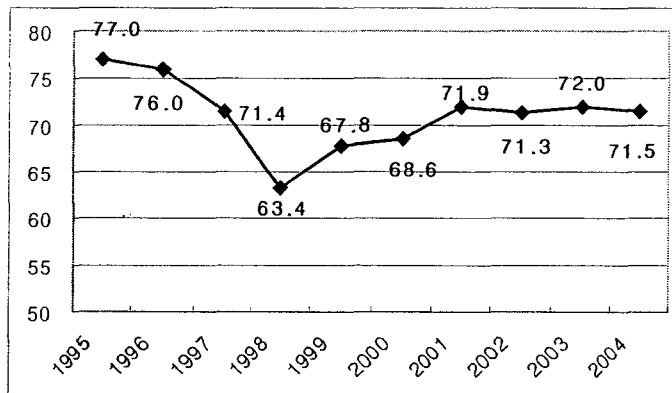
Changes of production index in Japan



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Employee of printing industry in Korea

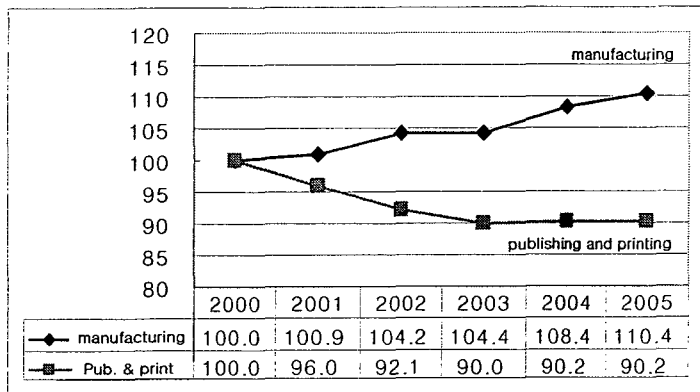


(the National Statistical Office : ten thousand person)

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Changes of domestic production index

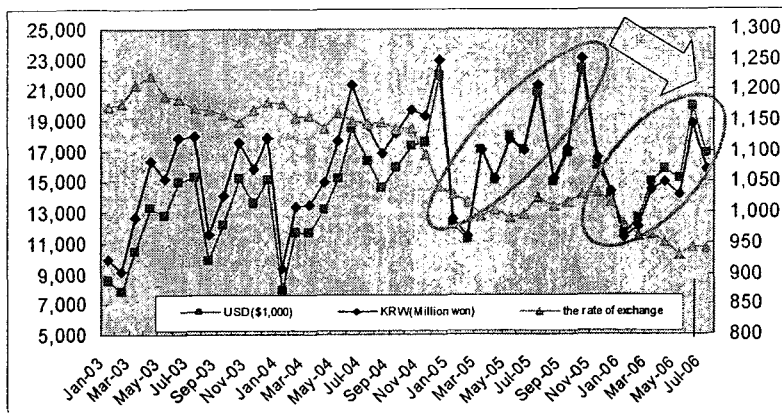


(Industrial bank of Korea, business survey index)

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The amount of exported prints



(Korea Customs Service)

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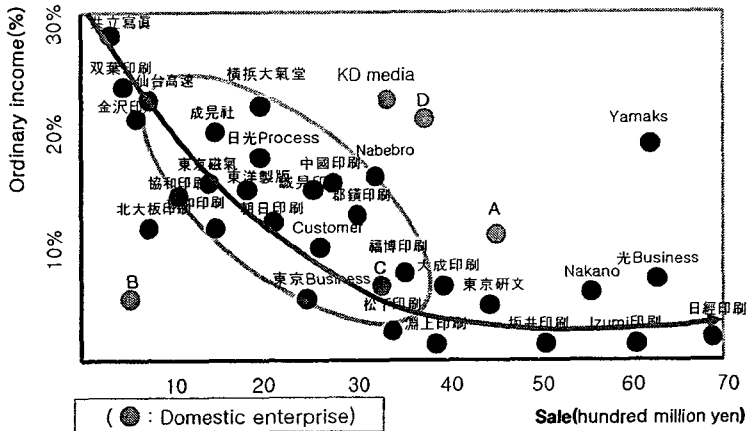
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The niche market strategy in Printing Industry

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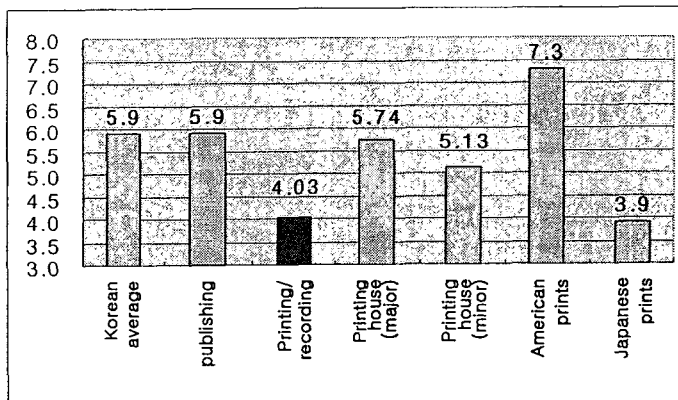
Business analysis of Japanese print enterprise



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Business profit rate in 2005

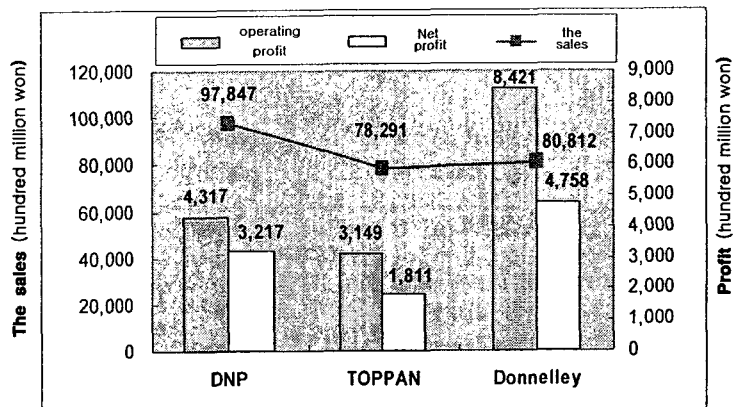


(The bank of Korea)

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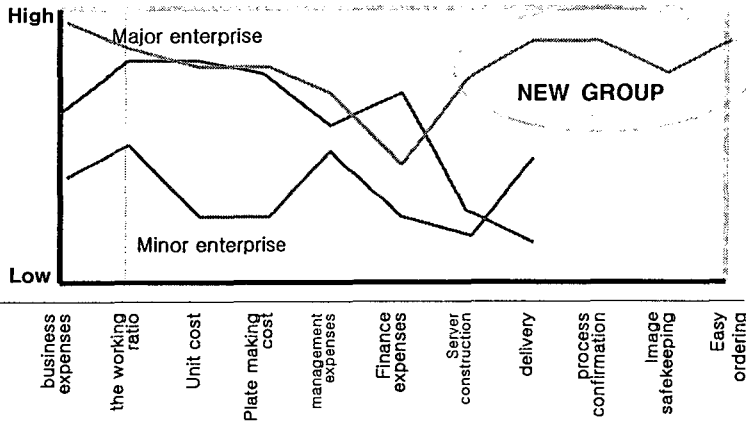
Performance of global printing company in 2005



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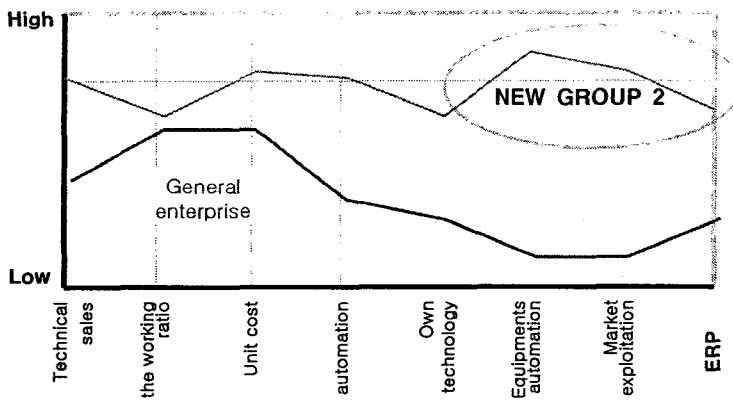
Competitiveness analysis (example1)



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Competitiveness analysis (example2)



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Printing enterprise prospects

- ◆ **Change to large scale & Reconstruction**
 - ✓ Scale up(ex, E MART, Wal-mart)
 - ✓ Small house : Fall into a decline

- ◆ **Go to IT & Digital**
 - ✓ Be attacked from some other industry
 - ✓ Net-Work : Use of Internet, Digital Data

- ◆ **Own technology & R&D(a patent etc)**

The Change of Printing Environment and Papermaking Design

Change of printing industry

◆ A higher value-added business

- UV Coating, Special effects
- Multi-color

◆ A high productivity

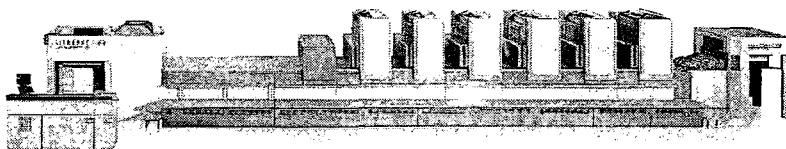
- Increase of perfecter
- Printing Speed up
- Expanding of printing area

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High value added in printing

- Paper change due to multi-color
- UV, Aqueous coating, Gold, Silver coating and paper

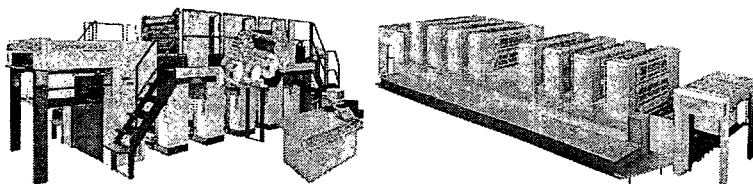


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Increasing demand for perfecter

- Productivity Increase : Max 250%
- Ink drying(interdeck/after final unit),
Scratch prevention of printing surface etc.

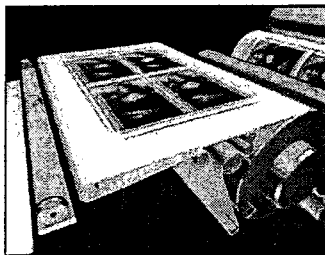


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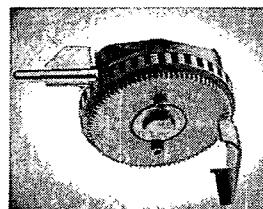
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Auxiliary equipment for perfecter

- 1 . Exclusive belt for printing materials at delivery
- 2 . Variety of suction wheels
- 3 . Jacket for ink setoff prevention



Exclusive belt

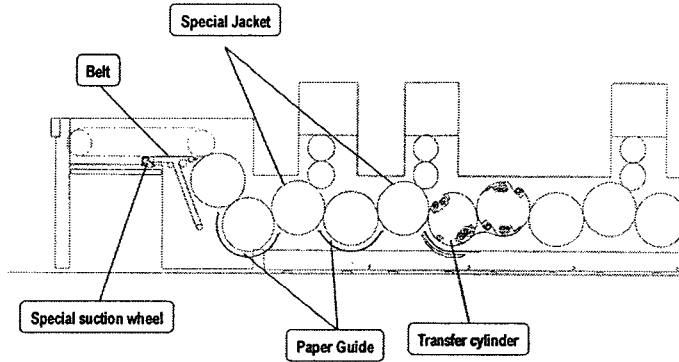


Suction wheel

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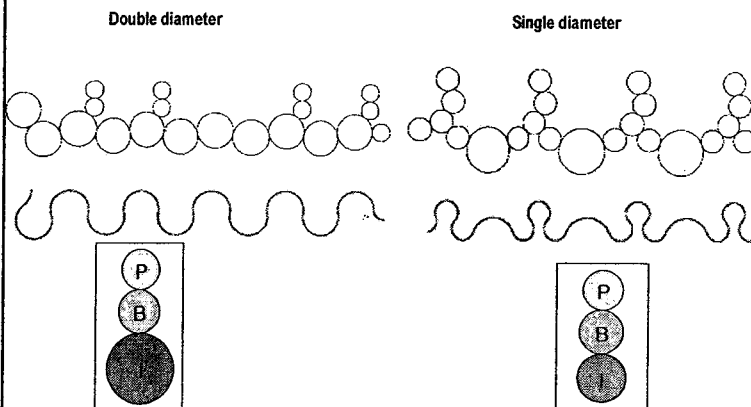
Perfecter Press



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Cylinder arrangement



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Improvement of printing speed

- Sheet-fed: 15,000/h → 18,000/h, 20,000/h

Printing speed	13,000/h	18,000/h	20,000/h
Paper speed	2.3m/s	3.2m/s	3.5m/s

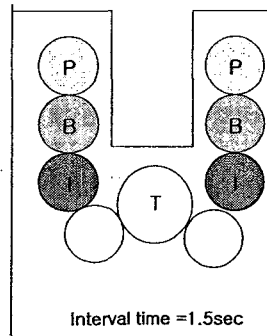
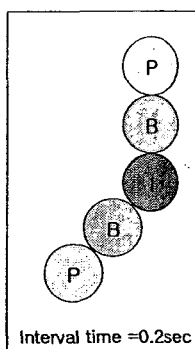
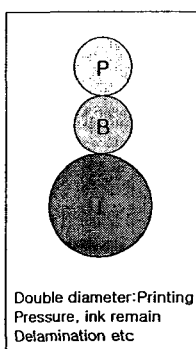
- Web press : 48,000/h → 60,000/h

Printing speed	36,000/h	48,000/h	60,000/h
Paper speed	6.3m/s	8.3m/s	10.4m/s

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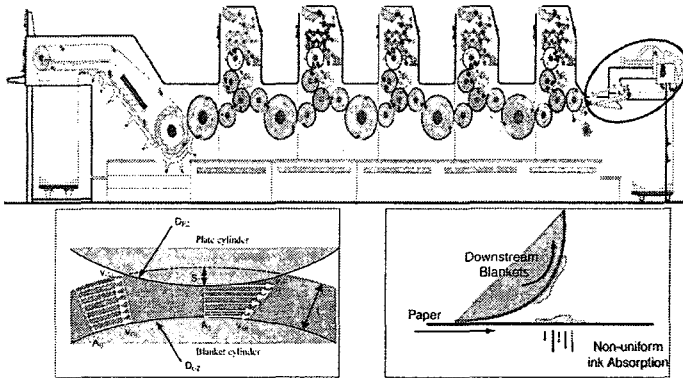
Difference in impression cylinder



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Printing speed and printability



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Printing and roller speed

Model A Printing form: Diameter=180 mm;Circumference=565.2 mm

Pan roller : Diameter=74.1 mm;Circumference=232.7 mm

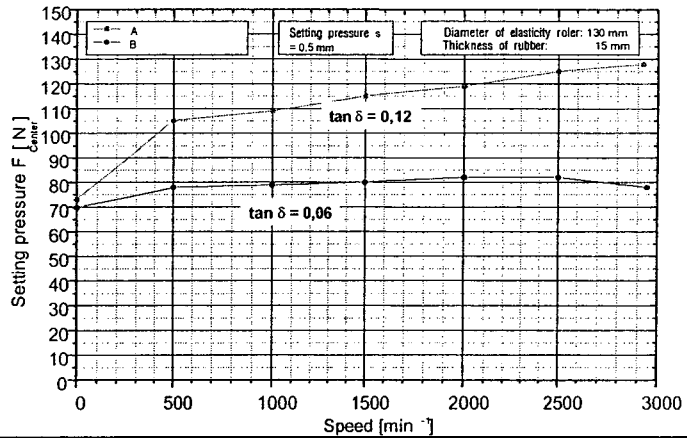
$$\frac{\text{Printing form speed}}{\text{Pan roller speed}} = \frac{3}{1}$$

Printing Speed sheets/hr	Printing form m/min	Pan roller m/min	RPM
1000	9	3	13
4000	38	13	54
8000	75	25	108
12000	113	38	162
15000	141	47	203

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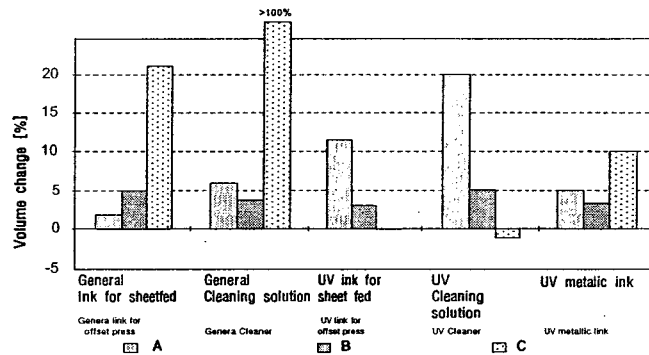
Printing speed and roller pressure (example)



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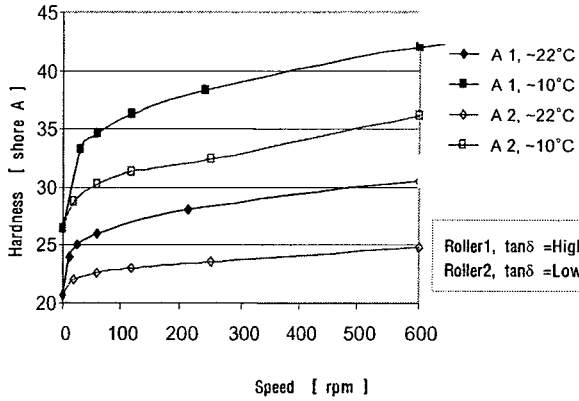
Deformation of roller



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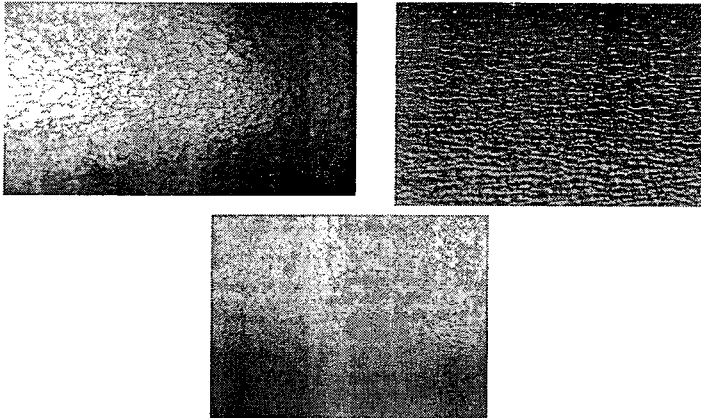
Hardness of roller and RPM



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Damaged roller due to printing materials



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