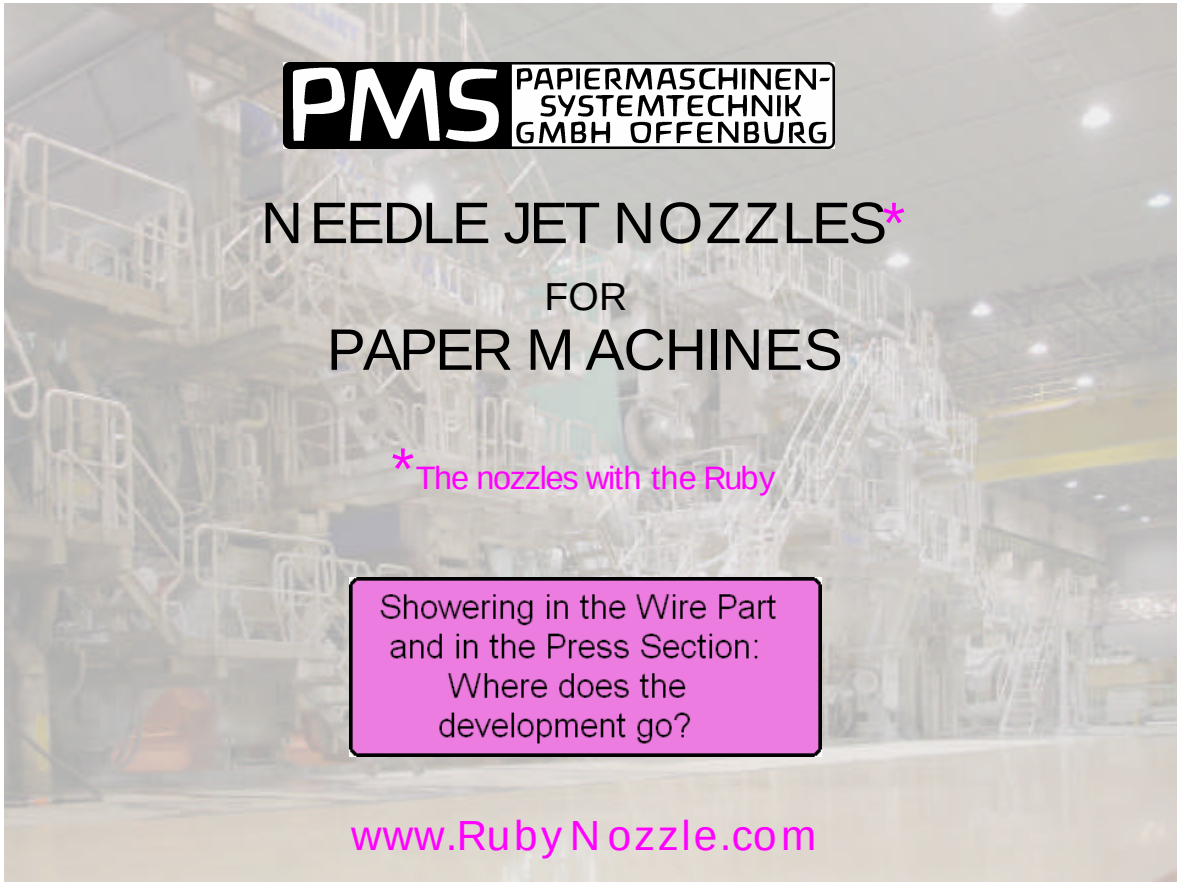
PMS
PAPIERMASCHINEN-
SYSTEMTECHNIK
GMBH OFFENBURG
NEEDLE JET NOZZLES*
FOR
PAPER MACHINES
*The nozzles with the Ruby
Showering in the Wire Part
and in the Press Section:
Where does the
development go?
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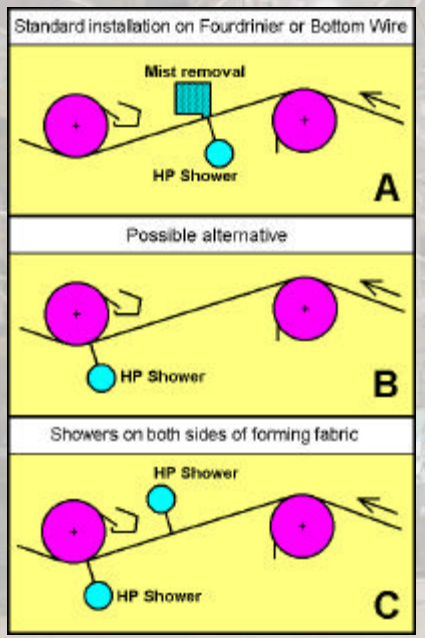
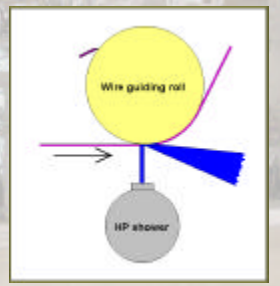


Brouillard dans le brin de retour



Rinceur orienté contre un rouleau de retour de toile

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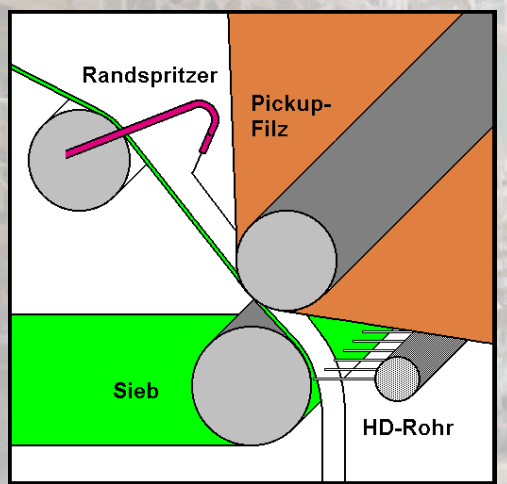
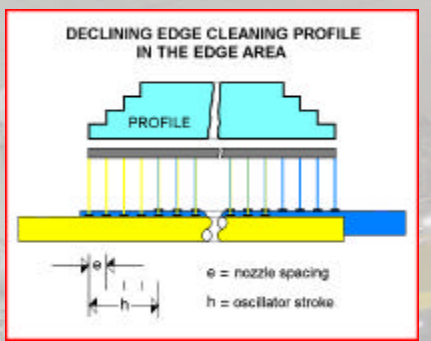
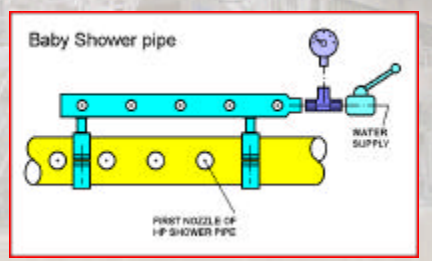
Declining cleaning profile

Rinceur de toile sur rouleau d'entrainement







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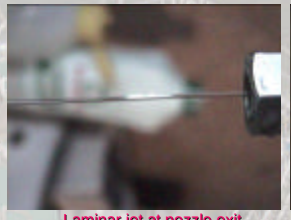
Dureté Mohs

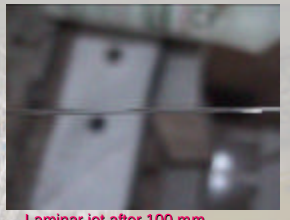
Mohs Hardness of various minerals and other material

Name	Chemical formula	Hardness
DIAMOND	C	10
CORUNDUM (**RUBY**,SAPPHIRE, PADPARADSHAH)	Al2 O3	9
CHRYSOBERYLL	Al2 Be O4	8,5
TOPAZ	Al2 Si O4 (F, OH2)	8
CERAMICS		7 – 8
ZIRCONIA	Zr Si O2	7,5
ROCK CRYSTAL	Si O2	7
TUNGSTEN CARBIDE		7
AGATE	Si O2	6,5 – 7
GLASS		5 – 6
HARDENED STAINLESS STEEL		5,6 – 5,8
STAINLESS STEEL AISI 316		4,8
CALCITE	CaCO3	3
GYPSUM	Ca(SO4).2H2O	2
TALC	Mg3((OH)2 Si4O10)	1

Images stroboscopiques de jets d`eau



Laminar jet at nozzle exit

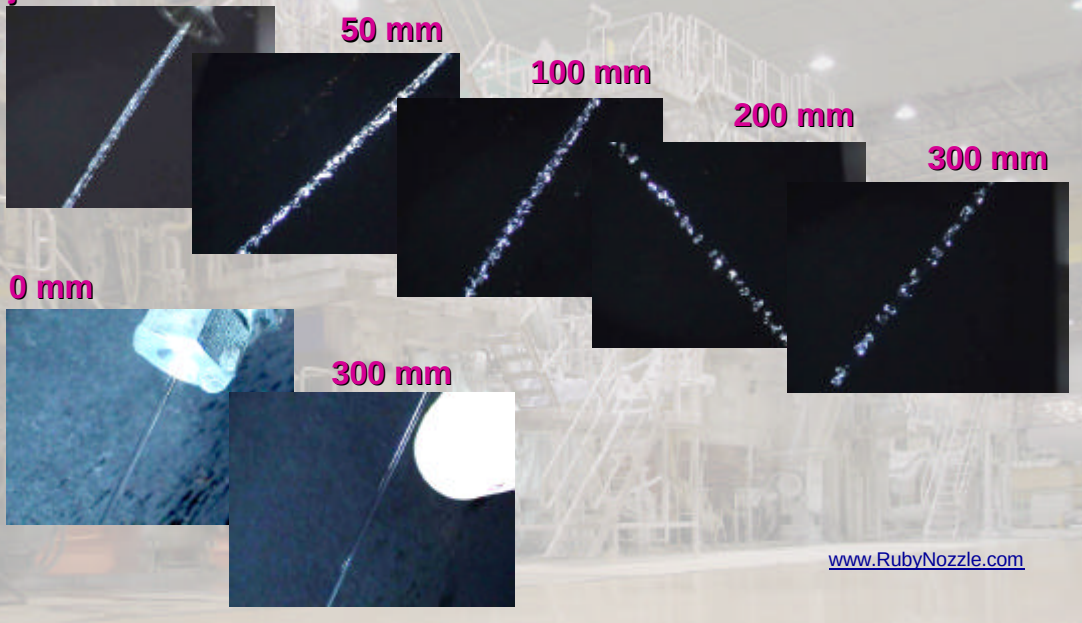


Laminar jet after 100 mm

Turbulent jet at nozzle exit

Turbulent jet after 100 mm

Qu’est-ce que la “Laminarité” ?



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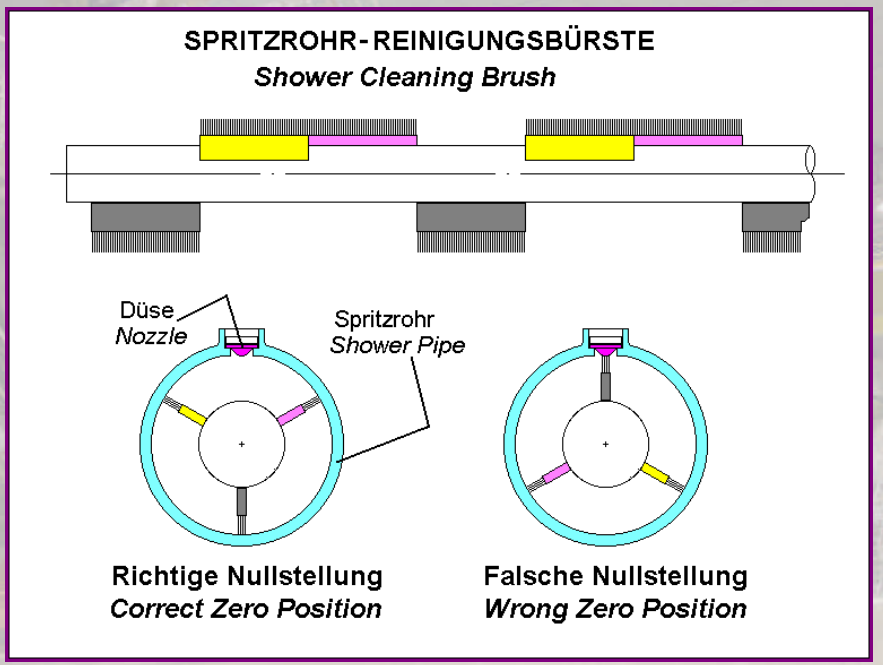
Brosse de Nettoyage



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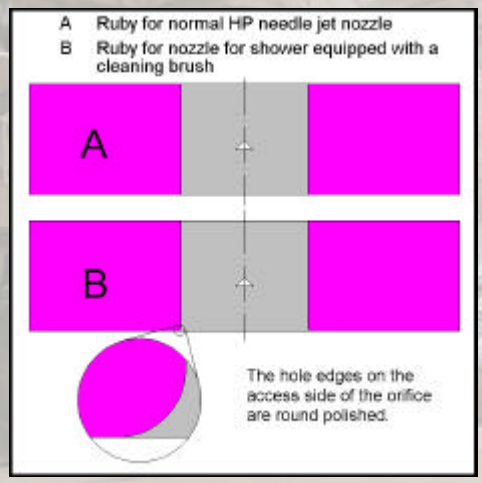
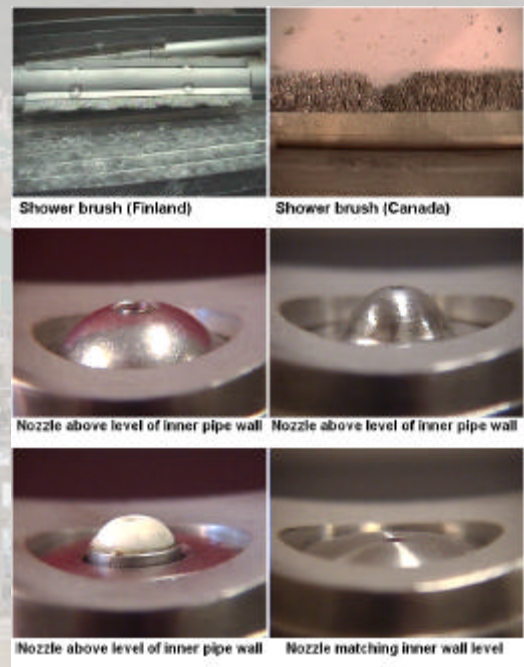
Géometrie du rubis pour rinceurs avec brosse de nettoyage



Les brosses de nettoyage et differents types de buses



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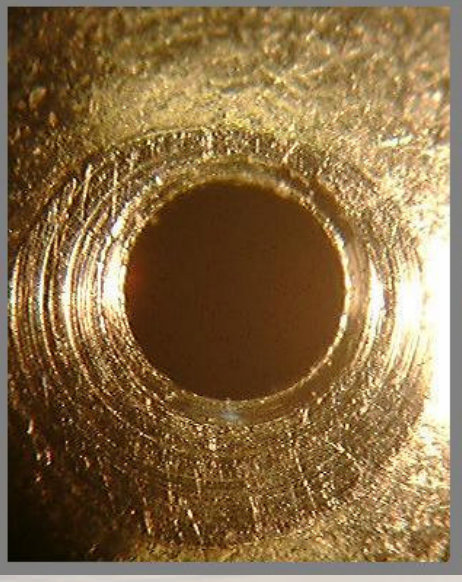
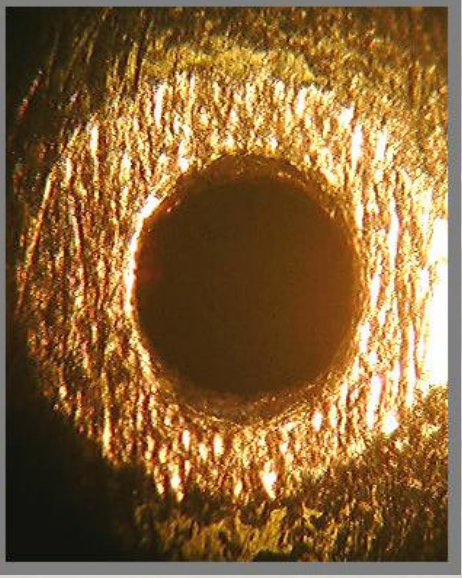
Buse acier

condition neuve



usure par la brosse de nettoyage



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Mauvais état des buses acier conventionnelles, causé par l'usure par la brosse de nettoyage

Bon état des buses PMS après plusieures d'années de marche (avec brosse de nettoyage)

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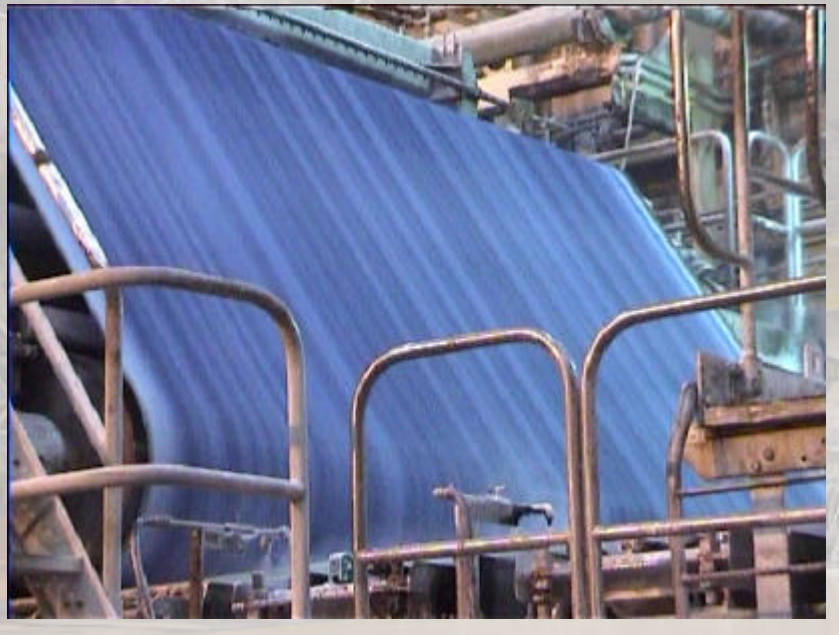
Bandes prononcées sur une toile supérieure



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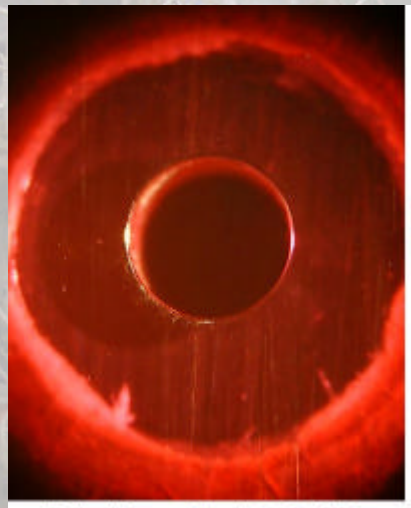
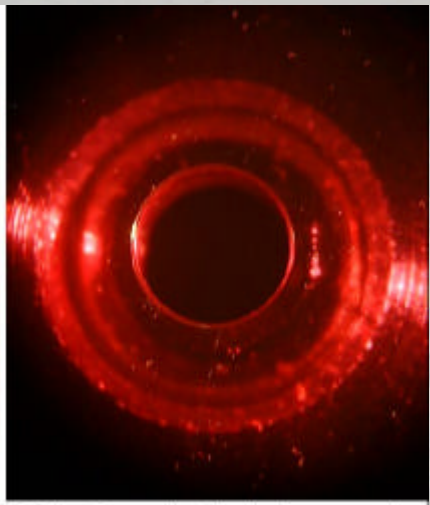
Résistance à l'abrasion du rubis (rinceur avec brosse de nettoyage)



Ruby (.9 mm jet dia.) of a HP Shower nozzle, after a running time of 6 years (SC machine, Finland)



Ruby (.9 mm jet dia.) of new nozzle

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Buses Rubis PMS

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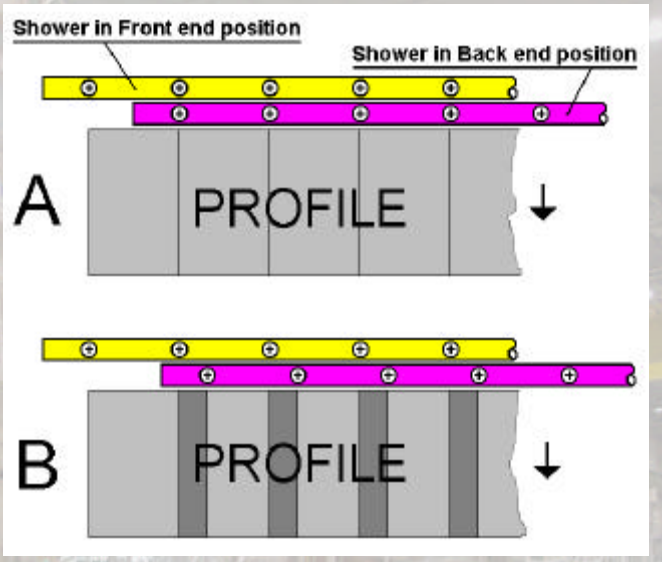
Relation entre la distance entre les buses et la course d'oscillation



$$V_{osc} = \frac{\text{PM speed (m/min)} \bullet \text{Jet diameter (mm)}}{\text{Cloth length (m)} \bullet 60} = \text{mm/sec}$$

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Consommation d'eau suivant le diamètre de jet et la pression

Jet dia. (mm)	Water Pressure (bar) 5	10	15	20	25	30	40
0,3	0,10	0,14	0,17	0,20	0,22	0,25	0,28
0,4	0,17	0,23	0,28	0,33	0,36	0,41	0,46
0,5	0,25	0,36	0,44	0,51	0,57	0,64	0,72
0,6	0,36	0,51	0,63	0,73	0,81	0,91	1,02
0,7	0,49	0,69	0,86	0,99	1,10	1,23	1,38
0,8	0,63	0,89	1,10	1,26	1,41	1,59	1,79
0,9	0,80	1,14	1,39	1,59	1,80	2,03	2,28
1	1,00	1,43	1,75	2,00	2,30	2,58	2,87
1,1	1,24	1,79	2,15	2,48	2,85	3,18	3,58
1,2	1,50	2,18	2,58	3,00	3,45	3,90	4,36