



New concepts for multilayer roller covers

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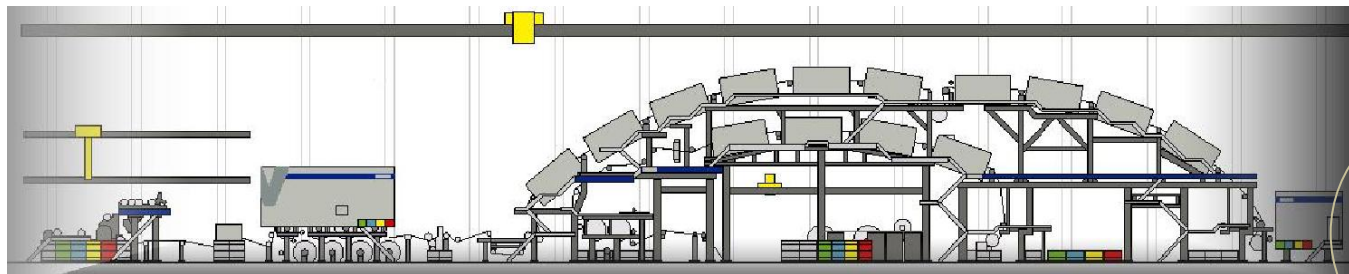
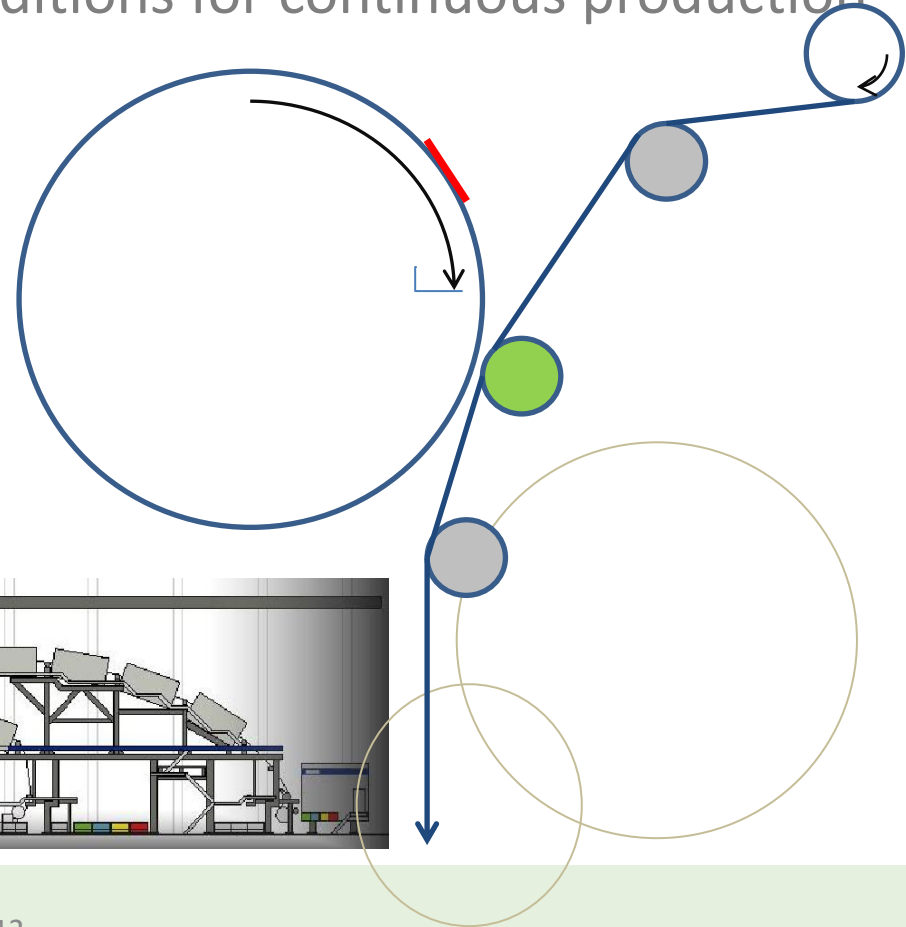
Lüraflex GmbH, Neuss



Introduction

The most important boundary conditions for continuous production (splice):

- Bonding
- Winding quality
- Sequential control
- Employee training
- Machine speed

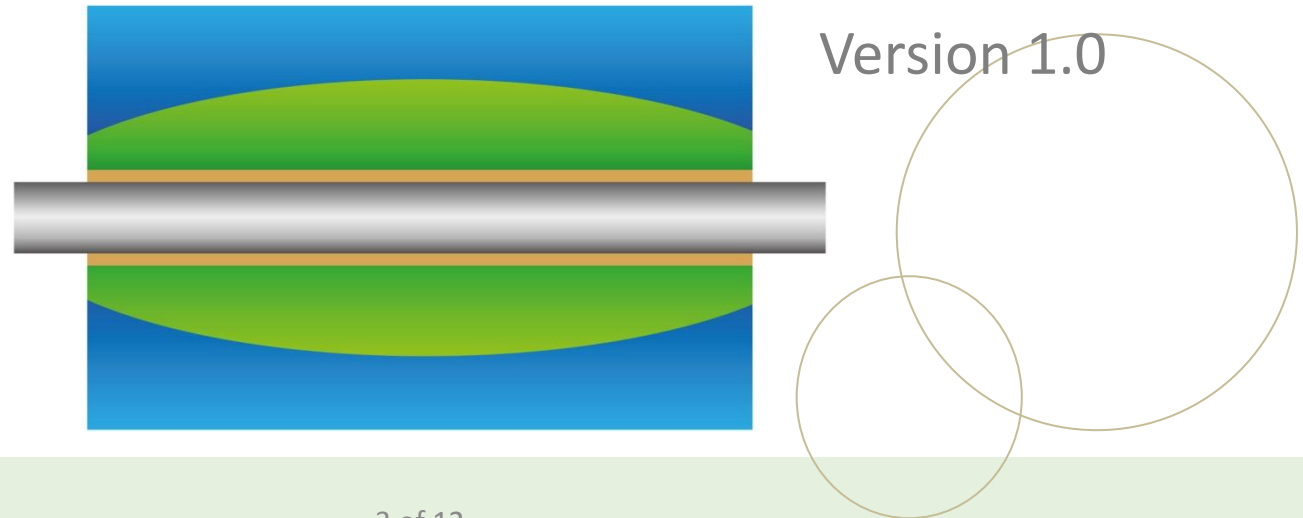


Requirement

- A higher surface pressure at the edge
- Sufficient surface pressure in the center
- Cylindrical shape

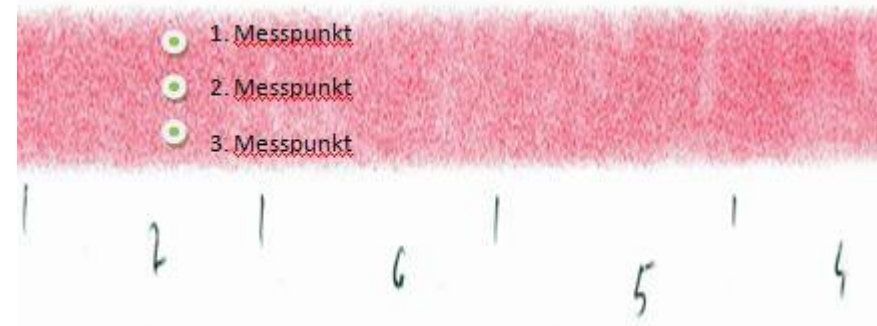
Solution

- Dual layer system
- Different hardness
- Convexly ground in the central structure



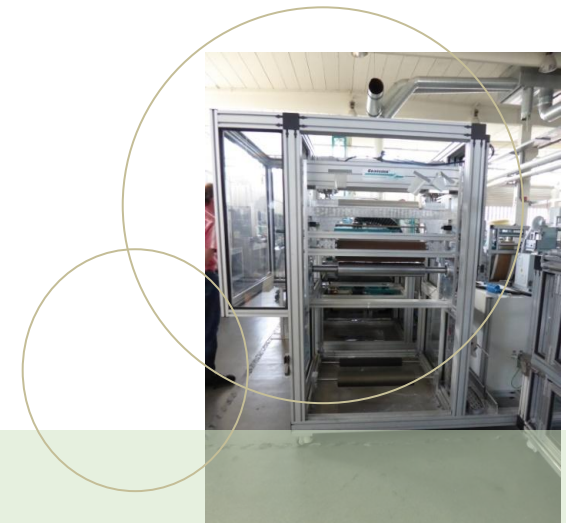
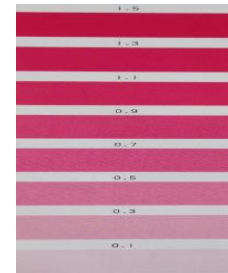
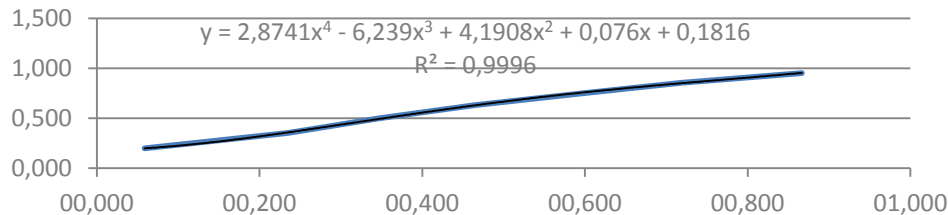
Test

- Surface pressure and nip width with Fuji Film type "Ultra Super Low"
- 36 measuring points
- Color densitometer GretagMacbeth D19C



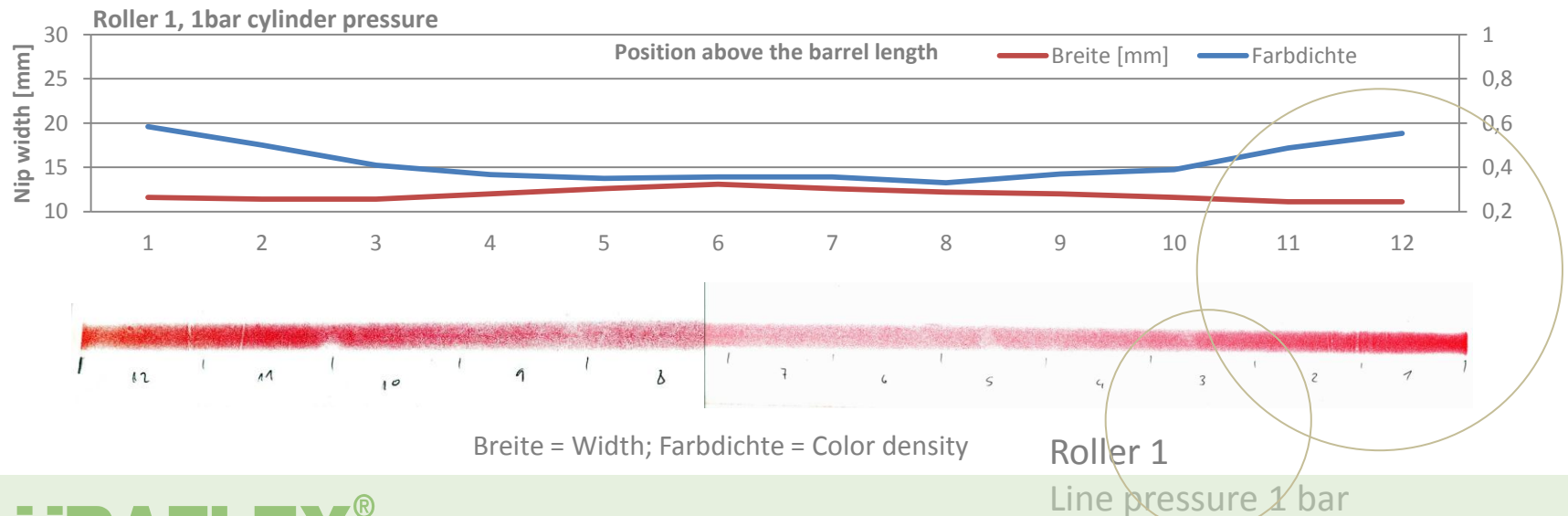
[Color density]		1	2	3	4	5MW	Pressure [MPa]	MW
7	1.3	0.96	0.94	0.97	0.98	0.92	0.954	0.8664
6	1.1	0.87	0.88	0.86	0.83	0.85	0.858	0.7196
5	0.9	0.77	0.76	0.72	0.73	0.77	0.750	0.5972
4	0.7	0.65	0.63	0.63	0.62	0.63	0.632	0.4650
3	0.5	0.52	0.51	0.49	0.48	0.5	0.500	0.3476
2	0.3	0.37	0.35	0.32	0.35	0.38	0.354	0.2350
1	0.1	0.22	0.2	0.18	0.22	0.18	0.200	0.0587

Measurement of color density to pressure



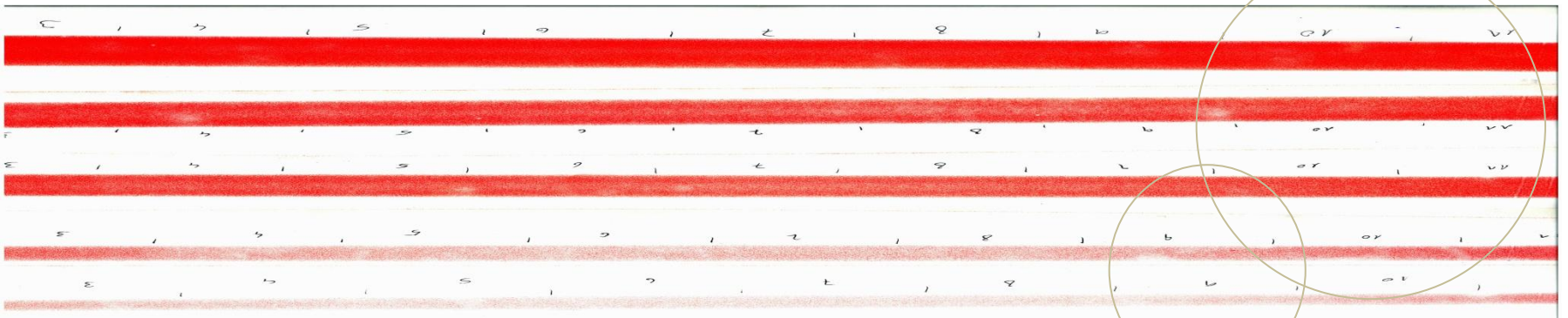
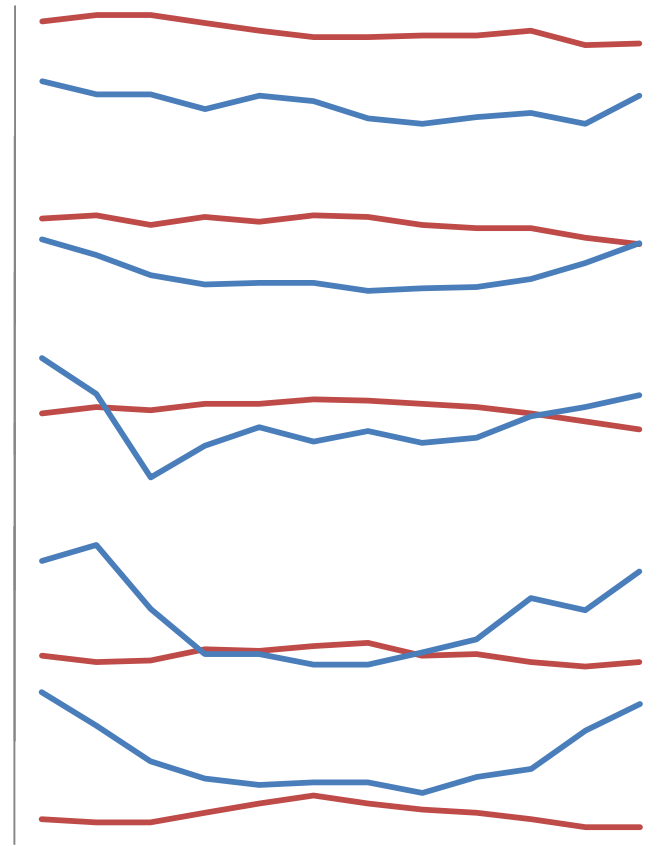
Test - 1st trial

- Surface pressure
 - Edge 66.7/65.3 N/cm²
 - Center 50.5 N/cm²
- Nip width
 - Edge 11.4/11.1 mm
 - Center 12.9 mm



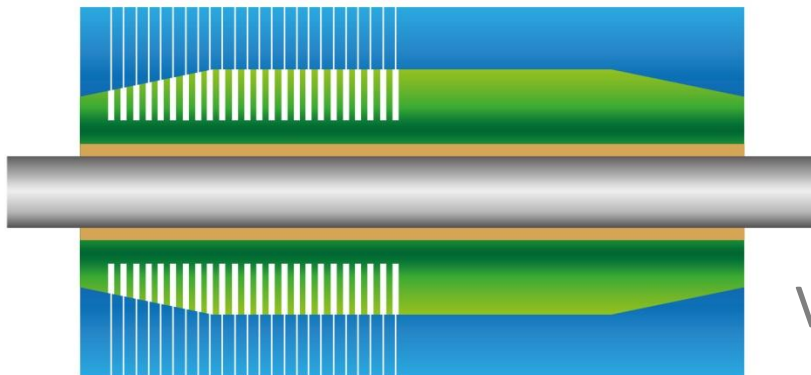
Test - 1st trial

- All graphics and impressions
- Pressing force:
8, 6, 4, 2 and 1 bar



New concept 2nd trial

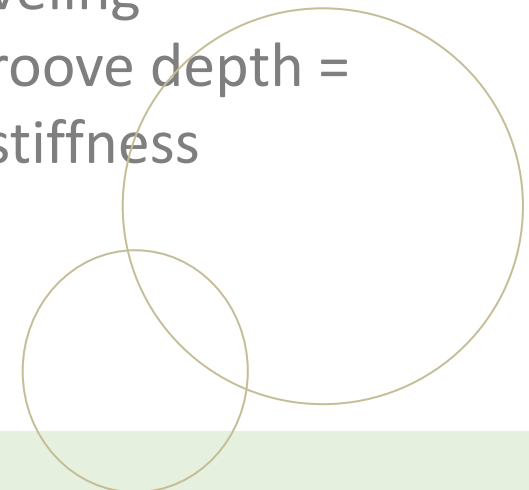
- Lower rebound energy
- Higher surface pressure at the edges
- Greater deformability (paper weals)



Version 3.0

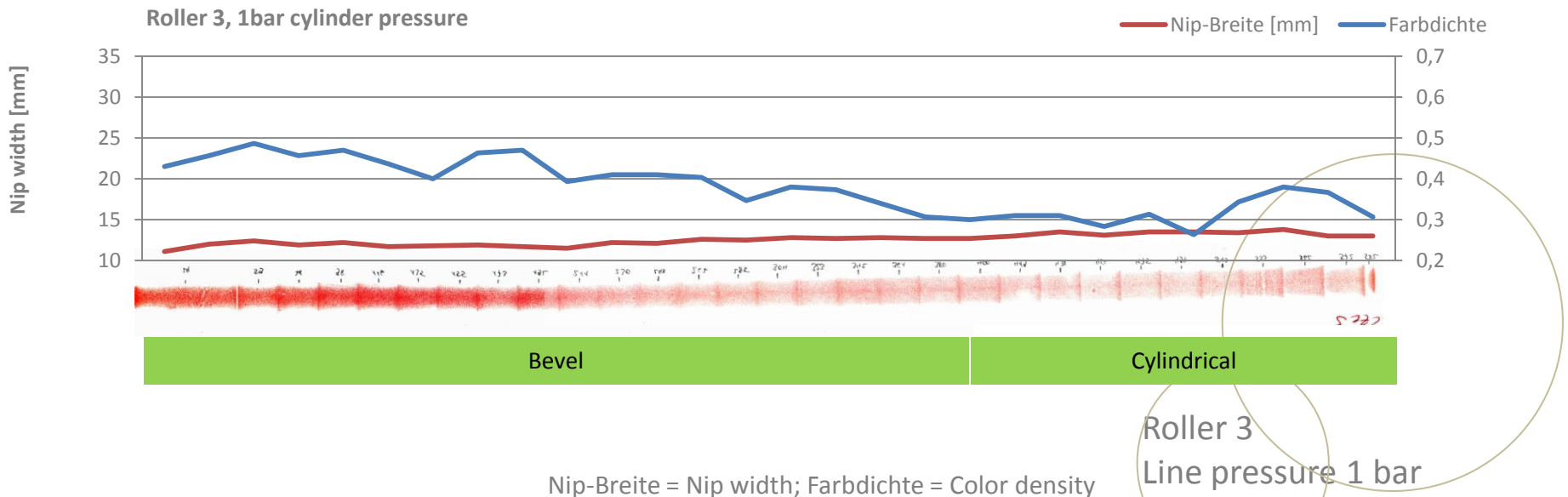


- Radial grooves/slots
- Webs function as individual spring assemblies
- Greater deformability of the individual webs
- Edge beveling
Lower groove depth = greater stiffness



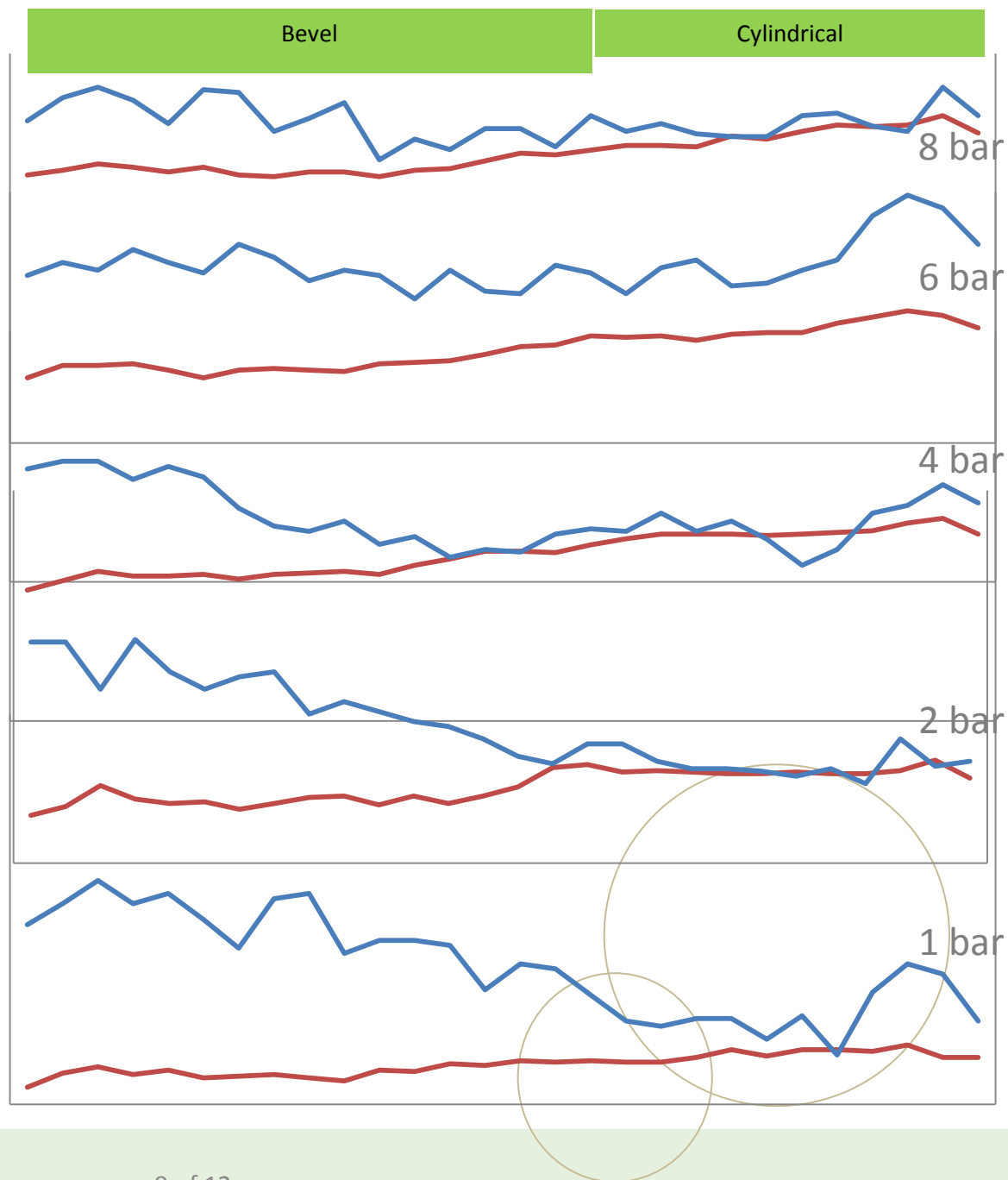
Test - 2nd trial

- Surface pressure
 - Cylindrical 46.2 N/cm²
 - Bevel 63.3 N/cm²
- Nip width
 - Cylindrical 13.4 mm
 - Bevel 12.2 mm



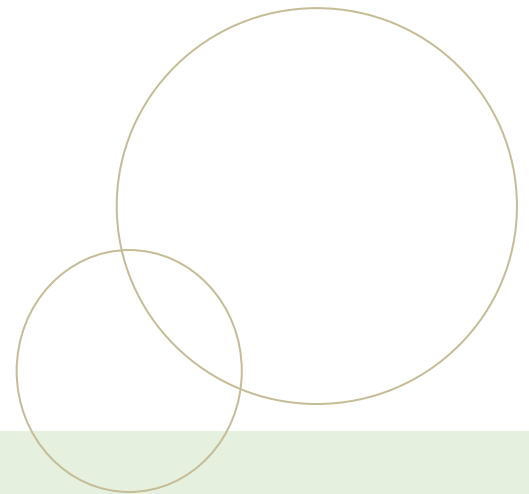
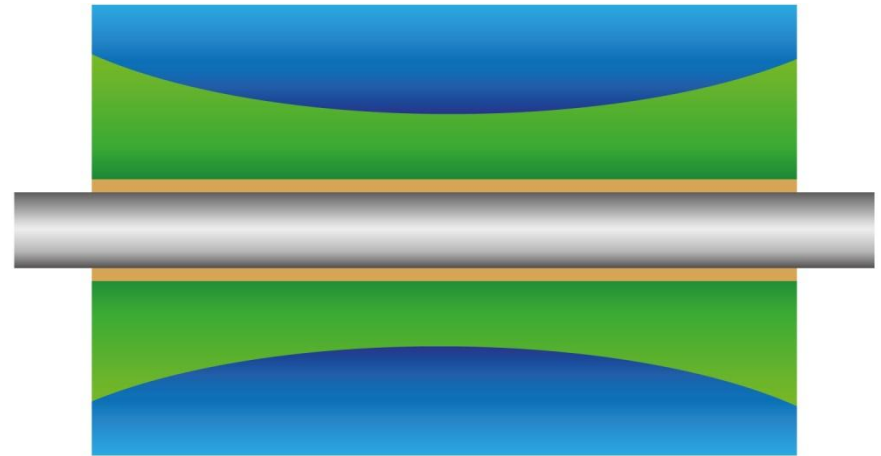
Test - 2nd trial

- All graphics and impressions
- Pressing force: 8, 6, 4, 2 and 1 bar



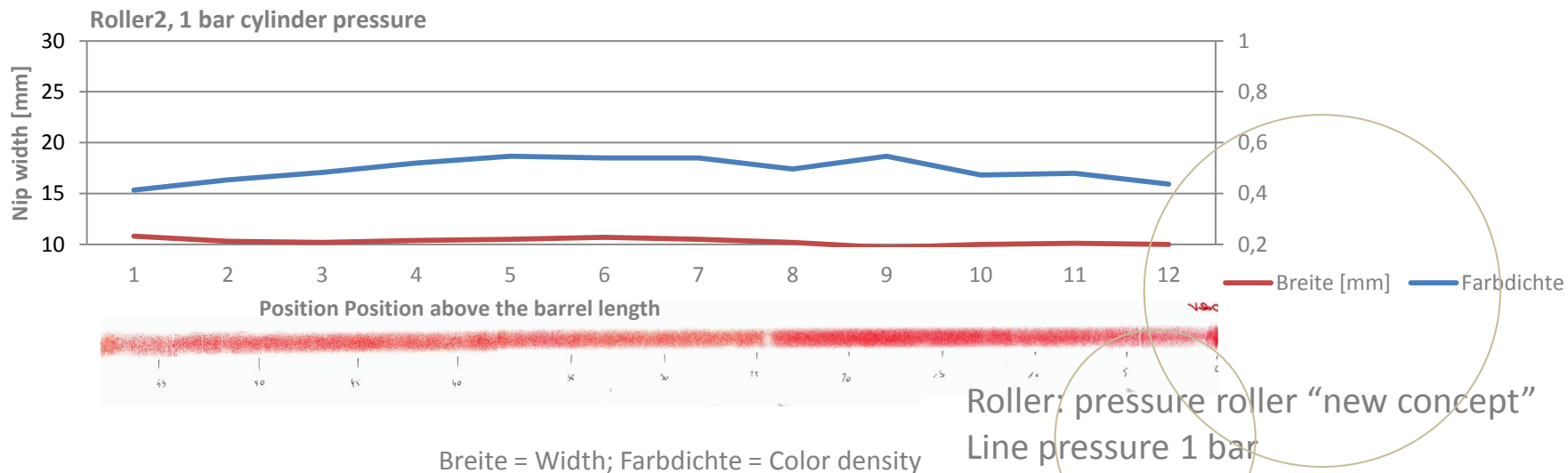
Pressure roller innovation

- Cylindrical shape
- Concave central structure
- Higher surface pressure at the center
- Lower surface pressure at the edges



Pressure roller test

- Surface pressure
 - Edge 66.7/65.3 N/cm²
 - Center 70.7 N/cm²
- Nip width
 - Edge 10.3/10.1 mm
 - Center 10.6 mm



Pressure roller test

- All graphics and impressions
- Pressing force:
8, 6, 4, 2 and 1 bar

