Foot- and Load-print Tester FPT

Load Distribution Measurement and Footprint Analysis System

Key facts

- **Stiff and compact H-frame design**
- **Loadprint/ Pressure map**
- **Footprint**
- **Use with standard rims**
- **Combined spindle and hydraulic loading**
- **Inflation pressure control system**
- **Intake for matrix sensors or paper for ink-footprint**
- **Re-usable optical precision measurement equipment (optional)**
- **MC, PC, LT, T&B**
- **Customized versions for OTR tires**
- **Optional extension for rolling (dynamic) footprint testing**

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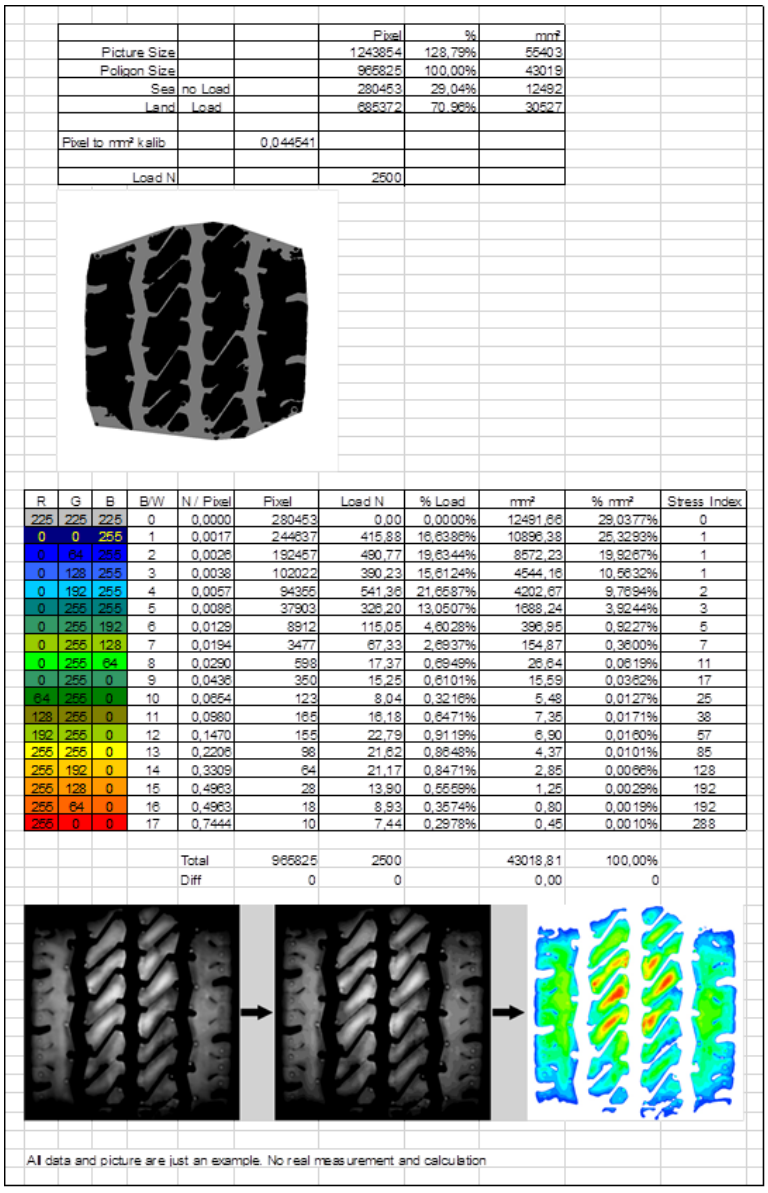
The Foot- and Loadprint Tester for passenger car and light truck tires is based on a stiff H–frame design base with spindle loading of the tire. A combined spindle positioning and hydraulic loading system is optional available.
The tests are done with the non-spinning tire. The wheel/ tire is loaded to a flat load plate with fixations for paper to do ink-loadprints, for electric sensor mats i.e. made by Tekscan®, or a glass-plate with a camera system underneath, both mounted on top of a load table at the machine base. (Might be arranged under floor). The wheel spindle is locked for the test. The vertical force is measured with precision load cells and synchronously recorded with the vertical motion.
The wheel/ tire is loaded to a flat surface, which consists of a crystal clear glass plate while the wheel spindle is locked. Special lighting of the glass plate allows to visualize the contact patch and to record it either with a video camera or with a photo camera from underneath through the glass plate. Vertical force and deflection of the tire are synchronously measured and recorded. The glass plate can also be covered with a special foil, which is calibrated for its grey scale appearance depending on the load being applied. This will be used to visualize and calculate the contact pressure distribution.

All relevant conditions of the tire/ wheel will be controlled or measured. Data are stored in a system data base.



			Pixel	%	mm²
Picture Size			1243854	128,79%	55403
Poligon Size			965825	100,00%	43019
Sea	no Load		280453	29,04%	12492
Land	Load		685372	70,96%	30527
Pixel to mm² kalib		0,044541			
Load N			2500		

R	G	B	B/W	N / Pixel	Pixel	Load N	% Load	mm²	% mm²	Stress Index
225	225	225	0	0,0000	280453	0,00	0,0000%	12491,66	29,0377%	0
0	0	255	1	0,0017	244637	415,88	16,6386%	10896,38	25,3293%	1
0	64	255	2	0,0026	192457	490,77	19,6344%	8572,23	19,9267%	1
0	128	255	3	0,0038	102022	390,23	15,6124%	4544,16	10,5632%	1
0	192	255	4	0,0057	94355	541,36	21,6687%	4202,67	9,7694%	2
0	255	255	5	0,0086	37903	326,20	13,0507%	1688,24	3,9244%	3
0	255	192	6	0,0129	8912	115,05	4,6028%	396,95	0,9227%	5
0	255	128	7	0,0194	3477	67,33	2,6937%	154,87	0,3600%	7
0	255	64	8	0,0290	598	17,37	0,6949%	26,64	0,0619%	11
0	255	0	9	0,0436	350	15,25	0,6101%	15,59	0,0362%	17
64	255	0	10	0,0654	123	8,04	0,3216%	5,48	0,0127%	25
128	255	0	11	0,0980	165	16,18	0,6471%	7,35	0,0171%	38
192	255	0	12	0,1470	155	22,79	0,9119%	6,90	0,0160%	57
255	255	0	13	0,2206	98	21,62	0,8648%	4,37	0,0101%	85
255	192	0	14	0,3309	64	21,17	0,8471%	2,85	0,0066%	128
255	128	0	15	0,4963	28	13,90	0,5559%	1,25	0,0029%	192
255	64	0	16	0,4963	18	8,93	0,3574%	0,80	0,0019%	192
255	0	0	17	0,7444	10	7,44	0,2978%	0,45	0,0010%	288
				Total	965825	2500		43018,81	100,00%	
				Diff	0	0		0,00	0	

All data and picture are just an example. No real measurement and calculation

typical load print analysis report

TECHNICAL DATA

PARAMETER	SPECIFICATION
MC/ PC/ LT tires	
Tire Diameter Range	≤ 1.100 mm
Max. Section Width	450 mm
Max. Load	≤ 3.000 kg / 5.000 kg
Internal Tire Pressure	0 – 6 bar
Pressure Accuracy	0.25 % of FS
Bead Diameter	≥ 10"
Ambient Temperature	0 - 45° C
Temperature Accuracy	0,1° C
Radial Force	30 kN/ 50 kN
Load Accuracy	≤ 0.5% set range load Fz (depending on measuring system)
Load plate	500 x 500 mm
Force Measurement Fz	50kN
Force-measurement accuracies	≤ ± 0,5% set range (depending on measuring system)
Vertical positioning	Z = 600 mm/ ± 0,1 mm
Vertical (radial) deflection	≤ 250 mm/ ± 0,01 mm
Standard supply voltages	400 V (50/ 60 Hz, 3 phase)
Camber adjustment (optional)	+/- 10°/ ± 0,1°
T&B tires	
Tire Diameter Range	≤ 1.400 mm
Max. Section Width	480 mm
Max. Load	≤ 10.000 kg
Internal Tire Pressure	0 – 12 bar
Pressure Accuracy	0.25 % of FS
Bead Diameter	≥ 15"
Radial Force	100 kN
Load Accuracy	≤ 0.5% set range load Fz (depending on measuring system)
Load plate	600 x 600mm
Force Measurement Fz	100 kN
Force-measurement accuracies	≤ ± 0,5% set range (depending on measuring system)
Vertical positioning	Z = 800 mm/ ± 0,1 mm
Vertical (radial) deflection	300 mm/ ± 0,01 mm
Standard supply voltages	400 V (50/ 60 Hz, 3 phase)