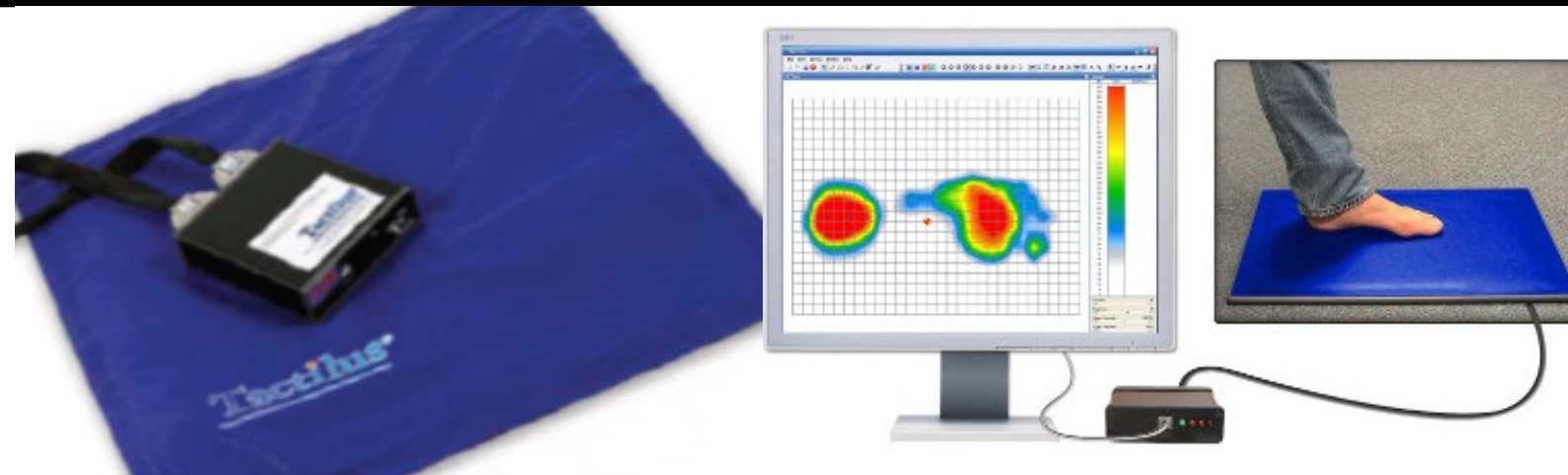


# Surface Pressure Measured in Real Time



**Tactilus Matrix**

**TIEDEMANN**

# Tactilus Electronic Pressure Film

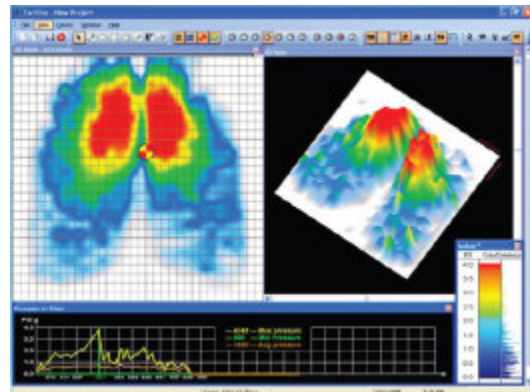
## Measure Surface Pressures in Real Time

### Tactilus, the electronic Pressure Sensitive Film

In the field of electronic surface pressure measuring Sensor Products Inc. is our partner for many years.

The electronic pressure film Tactilus® is a matrix based tactile surface sensor, that works by the principle of piezoresistance, can be placed as a thin mat between all bodies. Tiny sensing cells cover the entire surface area of our sensor "skin" allowing for discrete spot pressure analysis at any point in the contact region.

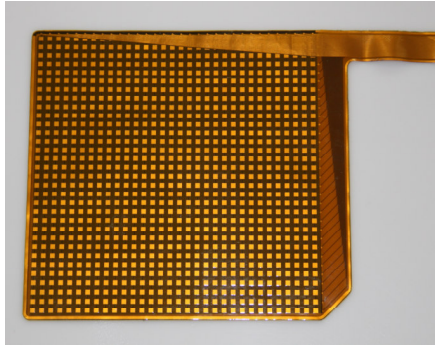
Tactilus opens up numerous possibilities that are not covered by the Prescale pressure measuring film. The measured data are routed through an amplifier to the notebook for evaluation. The intuitive program visualizes the results via easy-to-understand graphics in real-time.



The Tactilus seat sensor system delivers real-time surface pressure distribution between a person and their seating surface.

Tiedemann's primary proposition is to offer our clients precisely what they require or need. To that end, everything we design can be completely tailored to your unique situation. Only the temperature and max pressure range is limited.

Tactilus Standard Electronic Pressure Matrixs									
	No.	Quantity	Sensor Size	Matrix	Sensors	Sensor Distance	Frequency	Thickness	Pressure Range
A	1	1	25,4 x 25,4 mm	16 x 16	256	1,6 mm	100 Hz	0,36 mm	0,007 – 1,1 MPa
A	2	1	50,8 x 50,8 mm	32 x 32	1024	1,6 mm	100 Hz	0,36 mm	0,007 – 1,1 MPa
A	3	1	102 x 102 mm	32 x 32	1024	2,2 mm	100 Hz	0,36 mm	0,007 – 1,1 MPa
A	4	1	153 x 153 mm	32 x 32	1024	4,8 mm	100 Hz	0,36 mm	0,007 – 1,1 MPa
A	5	1	203 x 203 mm	32 x 32	1024	6,6 mm	100 Hz	0,36 mm	0,007 – 1,1 MPa
A	6	1	277 x 277 mm	32 x 32	1024	9,3 mm	100 Hz	0,36 mm	0,007 – 1,1 MPa
A	7	1	357 x 357 mm	32 x 32	1024	11,2 mm	100 Hz	0,36 mm	0,007 – 1,1 MPa
B	8	1	432 x 432 mm	32 x 32	1024	10,31 mm	50 Hz	1,00 mm	0,007 – 0,7 MPa
B	9	1	2032 x 889 mm	32 x 32	1024	60 x 24 mm	5 Hz	1,00 mm	0 – 0,014 MPa
C	10	1	433 x 432 mm	32 x 32	1024	10,31 mm	90 Hz	1,00 mm	0,007 – 0,7 MPa
C	11	1	2033 x 889 mm	32 x 32	1024	60 x 24 mm	5 Hz	1,00 mm	1 – 0,014 MPa
D	12	16	D = 4 mm	1 x 1	1		100 Hz	0,14 mm	0 – 1,1 MPa
D	13	16	D = 15 mm	1 x 1	1		100 Hz	0,25 mm	0 – 1,4 MPa
D	14	16	D = 18 mm	1 x 1	1		100 Hz	0,22 mm	0 – 0,35 MPa
D	15	16	D = 25 mm	1 x 1	1		100 Hz	0,25 mm	0 – 1,4 MPa
D	16	16	10 x 10 mm	1 x 1	1		100 Hz	0,22 mm	0 – 1,4 MPa
D	17	16	25 x 25 mm	1 x 1	1		100 Hz	0,25 mm	0 – 1,4 MPa
D	18	16	44 x 44 mm	1 x 1	1		100 Hz	0,25 mm	0 – 0,35 MPa
F	19	1 Pair	foot sole sensor, size EU >35	depend on size	Wire less Bluetooth	5 mm and bigger	500 Hz	0,33 mm	0,0002 – 1,4 MPa
E	20	2	Washer Sensor	1 x 1	1	D <sub>s</sub> = 13,2 mm, d = 2,8 mm	100 Hz	0,35 mm	0 – 1,75 MPa



All values of surface pressures between 70 mbar to 17 bar can be analyzed by the electronic pressure measuring film. The shape and range of Tactilus mat corresponds to the applications.

The above table shows the different standard sensors. Sensor A (on the left, sensor 4) are very thin sensors with max 11 bar and a wide temperature range up to 95°C.

The sensors B and C are large, packed sensor to measure seating pressure or other loadings. Beside the standard version all sizes up to 220 x 100 cm are possible. The size and range is made according to customer requirements. Moreover now these type of sensors are available with an elastic sensing element as well. This called Tactilus *Stretch* (Sensor C) has 1024 sensors as well, the measurement range last up to 6.9 bar. The elastic elongation can be chosen for 20 or 60%. This film is especially made for uneven surfaces or seat covers because wrinkles will be avoided.



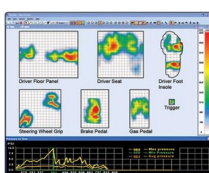
The type D systems comes each with 16 individual sensors. They are available in different sizes. All sensors are measured simultaneously. The calibration range will be customized same as with the other sensors. Typical applications can be found for example in medical technology for measurements under bandages or masks or for measuring the pressure in steel coils or paper rolls. It is important that the sensor is completely loaded. Sensor E is made for measurements under washers.

An additional sensor can be added to an existing system, but within the sensor type groups only (A, B and C, D and F)

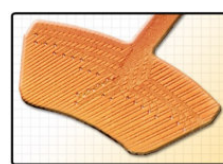
Over the years a collection of different applications has been build up. Whether seating or footprints, door seals, tire profile measurements or wafer polishing, pressing or rolling, laminating press tests. Other applications can be found in foot sole (sensor F) of seat belts in a crash tests with a high frame rate of 65 KHz, for presses, brakes, adjustment of saddles or spray jets.

As a special solution we offer a product for grip strength test, which finds its main application in the medical field.

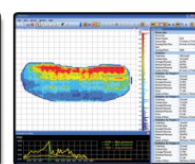
Below we have compiled some examples out of this portfolio.



Automotive Kit

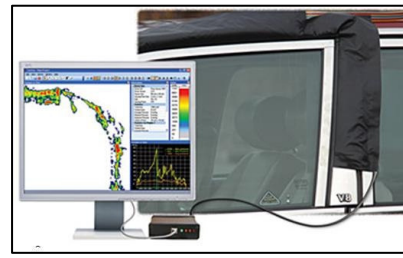


Brake Sensor

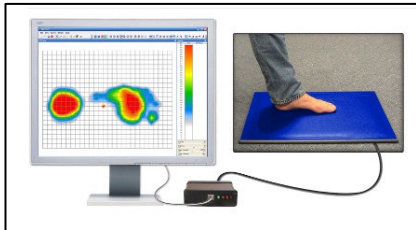




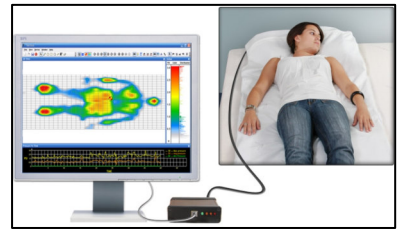
Impact Measurement



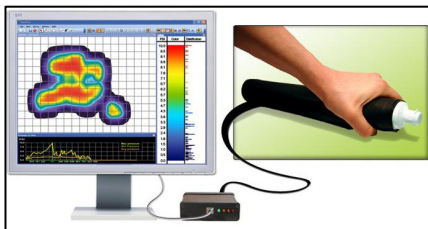
Door seal test



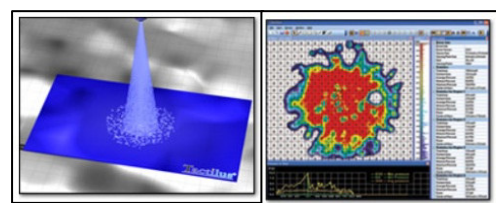
Footprint



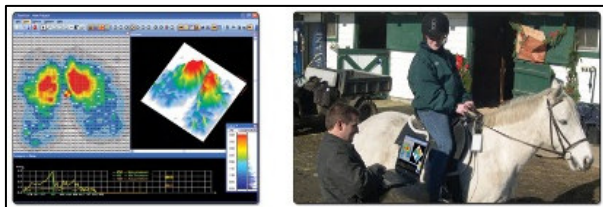
Mattress



Gripping Force tube



Spray pressure



Saddle fitting



Wafer Polishing

### General Sensor Specifications

<b>Sensor Technology</b>	Piezoresistive
<b>Pressure Rang</b>	70 mbar – 11 (17) bar on request, dynamic only
<b>Matrix Size</b>	16 x 16, 32 x 32, 32 x 64 (special), rectangular
<b>Mat Thickness</b>	0,3 mm to 1 mm
<b>Mat Size</b>	0,4 – 12250 mm <sup>2</sup> on request
<b>Elastic sensor</b>	20% or 60% elongation available
<b>Scan Frequency</b>	Up to 100 Hz, single sensors up to 0.7 kHz, shock sensor 65 kHz
<b>Resolution</b>	1 mm and bigger
<b>Accuracy</b>	+/- 10 %
<b>Reproducibility</b>	+/- 2 %
<b>Hysteresis</b>	+/- 5 %
<b>Non Linearity</b>	+/- 1,5 %
<b>Calibration</b>	Calibrated for requested range
<b>Temperature range</b>	Room temperature
<b>HUB/PC Connection</b>	2x 16x16 or 1x 32x32, USB to PC (A, D)
<b>Operating System</b>	Win 7, 8, 10

Tactilus will be delivered “ready to go” with all necessary parts. It includes the sensor mat, the connection HUB, all necessary cables, the analysis software and a notebook.



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