



FACE CONSULTANTS LTD
Global Flooring Consultants

A piece of paper dramatically reduces the performance of a VNA truck?

**Kevin Dare,
Managing Director,
Face Consultants Ltd.**



COGRI GROUP

Superior Floor Technology

design > consultancy > Q.A. > surveying > testing

A piece of paper dramatically reduces the performance of a VNA truck?

The VDMA guideline on 'Floors for use with VNA trucks' implies a single piece of paper can dramatically affect the performance of a VNA truck.

A piece of copy paper is about 0.1mm thick. In fact the piece we measured was 0.108mm thick (Fig. 1)

A VNA truck weighs many tonnes and runs on polyurethane wheels that deform slightly when loaded, increasing the actual contact area with the floor.



Fig. 1 - A piece of copy paper- 0.108mm thick

Does a VNA truck feel a piece of paper as it runs over it?

Face Consultants decided to find out and conduct a controlled experiment.

Stage 1.

A sample floor was ground with the latest grinding machine from the CoGri Group; the Laser Grinder XPT (Fig. 2).



Fig. 2 -The CoGri Group's new Laser Grinder XPT.

Stage 2.

Survey the ground track with the Face Digital profileograph fitted with the VDMA Fx meter.

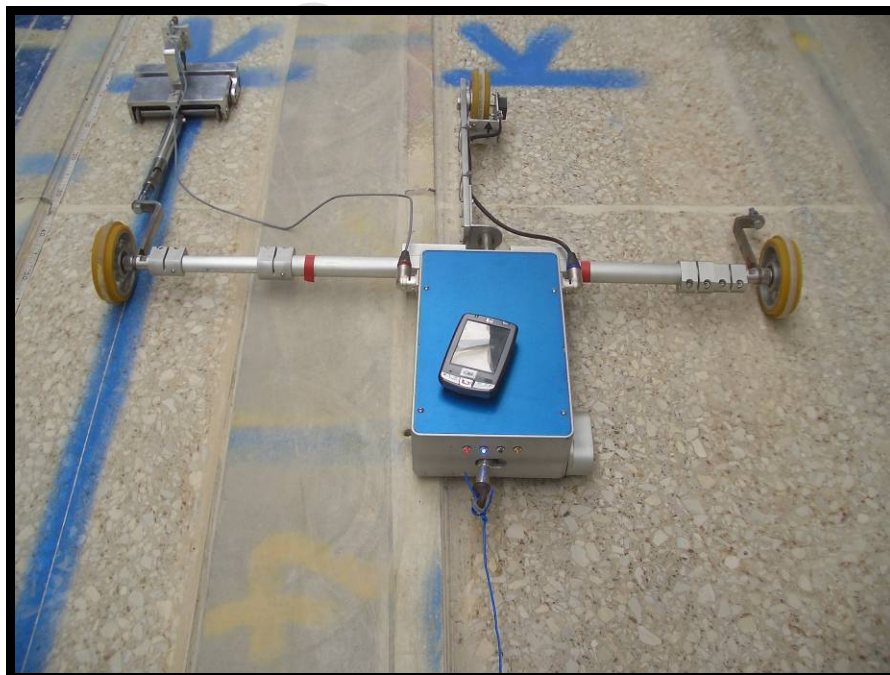


Fig 3 – The Face Digital Profileograph fitted with the VDMA Fx meter

The results of the VDMA Fx meter on the ground floor can be seen in appendix 1. A summary of the results are detailed in table 1 below.

Distance in metres	VDMA Fx number
0 to 2	806
2 to 4	739
4 to 6	836
6 to 8	821
8 to 10	1109
10 to 12	864

Table 1 – VDMA Fx number results on the floor ground by the Laser Grinder XPT

Stage 3

Strips of copy paper were accurately measured and cut 50mm wide. These strips of paper were then placed on the floor with a 50mm gap between (Fig. 4). The strips were placed in this manner from the 2 metre mark to the 6 metre mark down the ground track (Fig. 5)



Fig. 4 – Placing the 50mm strips at 50mm spacing.



Fig. 5 – The strips were laid out between 2 and 6 metres (4 metre length)

Stage 4

The same section of floor was then re-surveyed with the Face Digital profileograph fitted with the VDMA Fx meter (Fig. 6). The first two metres and the last 6 metres of this run were reading the floor in its original ground state. The readings from 2 metres to 6 metres ran on the pieces of 50mm wide paper.



Fig. 6 – Re-run of the Face Digital profileograph with the VDMA Fx meter

The results of the VDMA Fx meter on the ground floor with the paper strips can be seen in appendix 2. A summary of the results are detailed in table 2 below.

Distance in metres	VDMA Fx number
0 to 2	887
2 to 4	270
4 to 6	289
6 to 8	811
8 to 10	1117
10 to 12	881

Table 2 – VDMA Fx number results on the floor with the paper strips between 2 and 6 metres

Stage 5

We removed alternate paper strips thus leaving a gap of 150mm (see Fig. 7) and re-run the Profileograph.

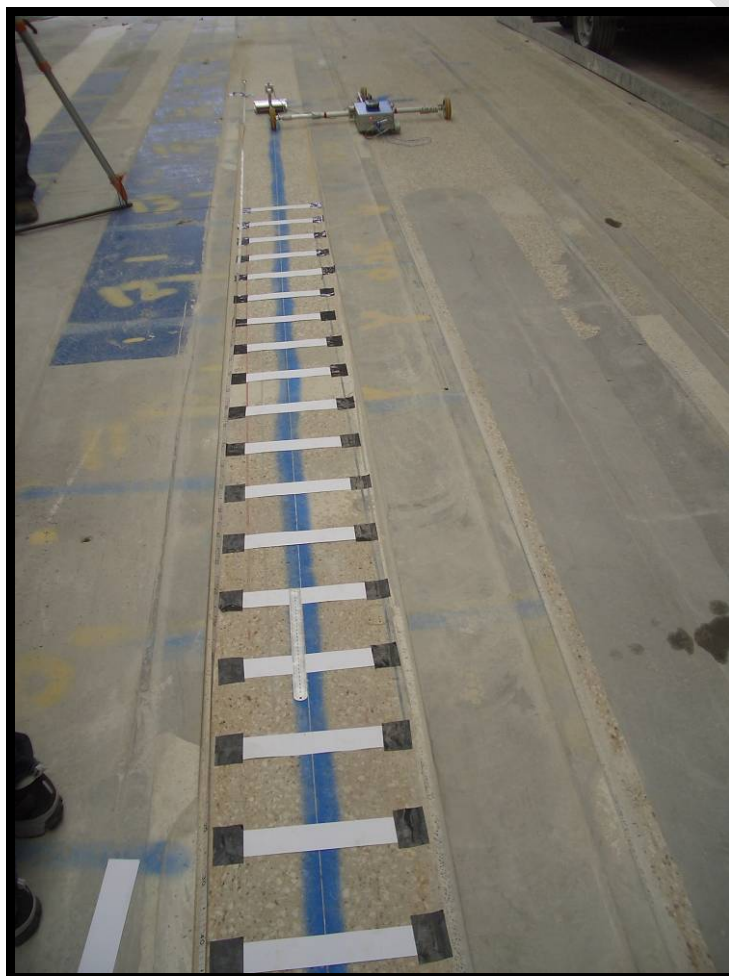


Fig 7 – Measuring the floor with 150mm gap between the paper strips.

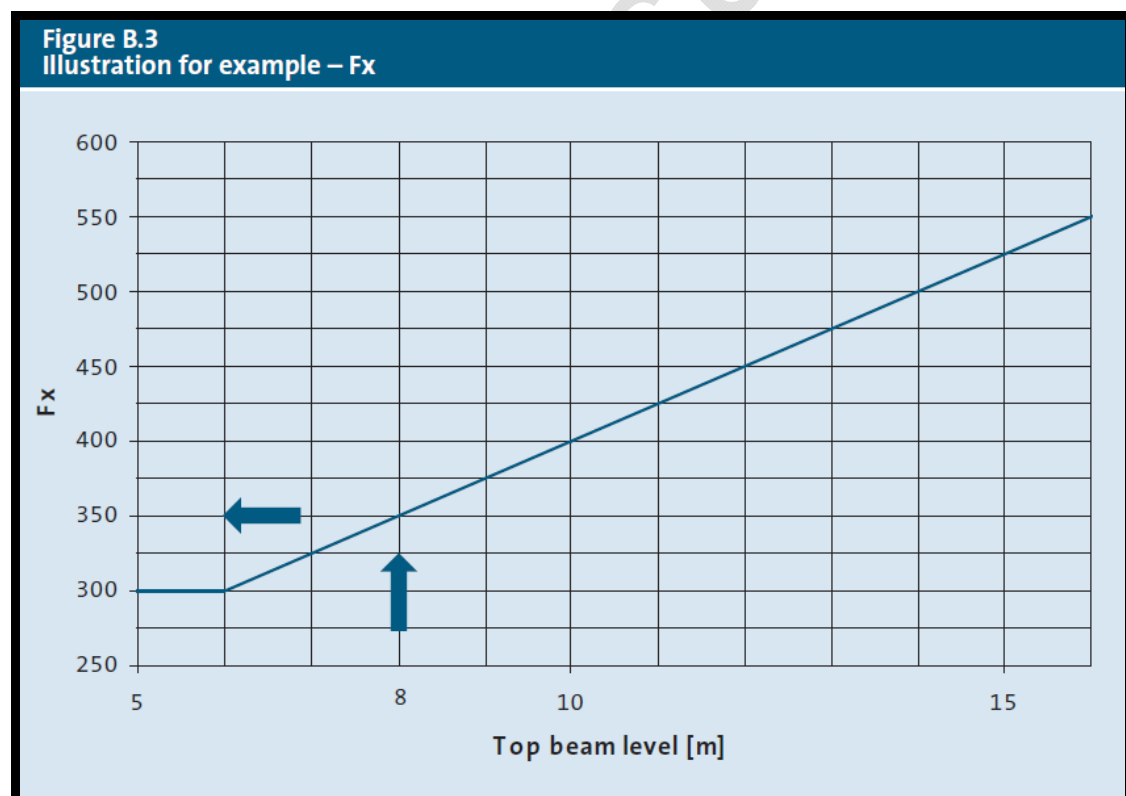
The results of the VDMA Fx meter on the ground floor with the paper strips with a gap of 150mm can be seen in appendix 3. A summary of the results are detailed in table 3 below.

Distance in metres	VDMA Fx number
0 to 2	798
2 to 4	395
4 to 6	422
6 to 8	758
8 to 10	1009
10 to 12	959

Table 3 – VDMA Fx number results on the floor with the paper strips between 2 and 6 metres but with 150mm gap between strips.

Summary:

The VDMA guidelines state a minimum Fx number for different rack heights. The higher the racking, the higher the Fx number, as can be seen in the table below, taken from the VDMA guideline.



From the above table we can see that the floor surface created by the Laser Grinder XPT, having the lowest Fx number of 739, would be suitable for a VNA truck working in an aisle with a racking top beam in excess of 16 metres.

However, when we place strips of paper on the floor 50mm wide with a gap between them of 50mm, the VDMA guideline now state that the truck should not operate in an aisle with a beam height over 5 metres.

Even when we remove some of the 50mm strips so that there is a gap of 150mm between each strip of paper, the VDMA guidelines now tell us that we should not operate a VNA truck in an aisle where the beam height is over 10 metres. This on an underlying floor that VDMA says is OK to run a truck over 16 metres high.

Conclusion:

Does a VNA truck running over a piece of paper 0.1mm thick really reduce its operating capacity from well over 16 metres down to less than 5 metres?

We need to ask forklift truck manufacturers.

Report Author:

Kevin Dare – Managing Director
Face Consultants Ltd

March 2012

Face Consultants Ltd

Appendix 1

FX metres graphs

Laser Grinder XPT

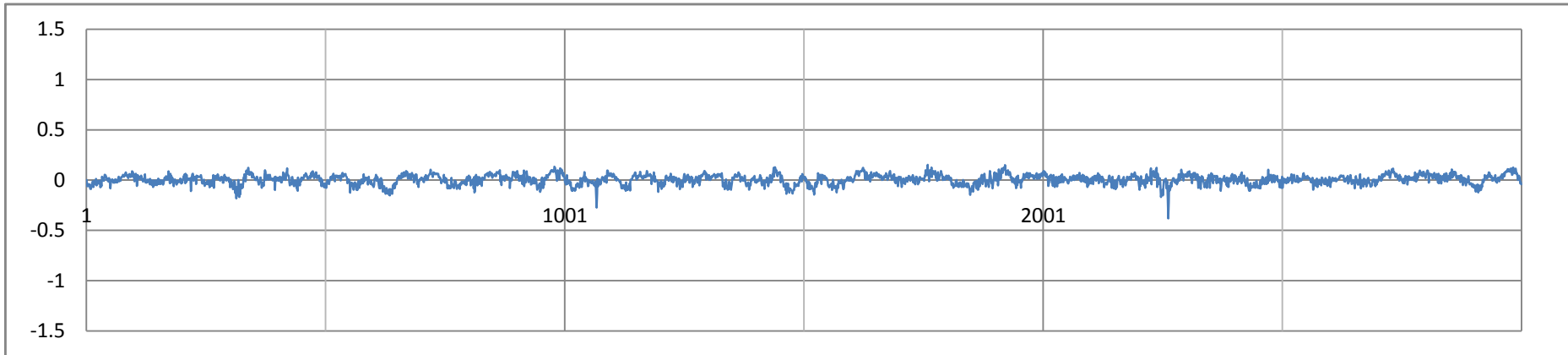
Face Consultants

Site Aisle Left/Right Pass No

No Paper No Paper No Paper 2

Graph: 0 To 12

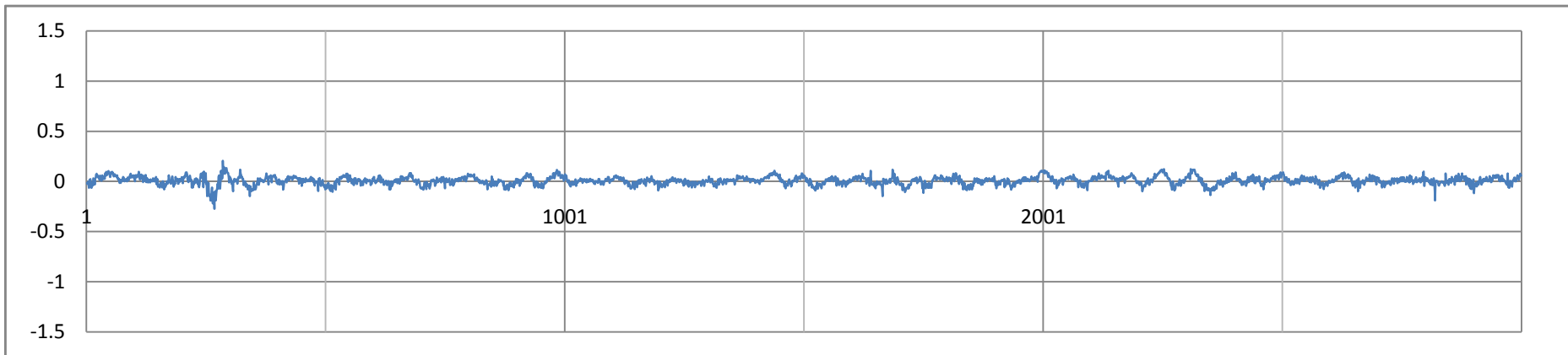
Page: 1 / 0



0 To 2 Average 0.005
SD 0.047
Fx 806

2 To 4 Average 0.003
SD 0.052
Fx 739

4 To 6 Average 0.005
SD 0.045
Fx 836



6 To 8 Average 0.005
SD 0.046
Fx 821

8 To 10 Average 0.002
SD 0.035
Fx 1109

10 To 12 Average 0.012
SD 0.041
Fx 864

Appendix 2

FX metres graphs

50mm strips of paper with 50mm gap, from 2 metres to 6 metres

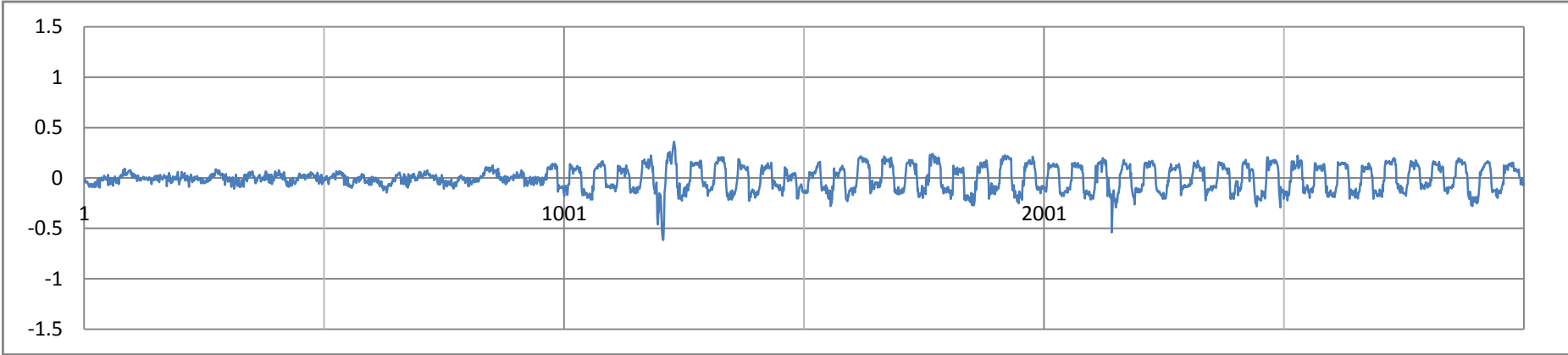
Face Consultants

Site Aisle Left/Right Pass No

50mm Paper 50mm Paper 50mm Paper 1

Graph: 0 To 12

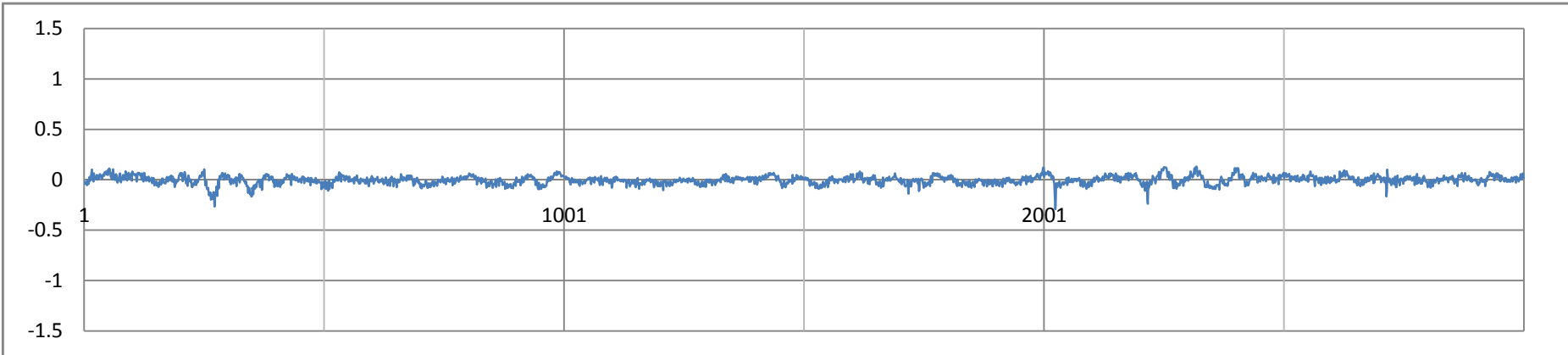
Page: 1 / 0



0 To 2 Average 0.007
SD 0.042
Fx 887

2 To 4 Average 0.009
SD 0.143
Fx 270

4 To 6 Average 0.010
SD 0.135
Fx 286



6 To 8 Average 0.009
SD 0.045
Fx 811

8 To 10 Average 0.011
SD 0.031
Fx 1117

10 To 12 Average 0.005
SD 0.044
Fx 881

Appendix 3

FX metres graphs

50mm strips of paper with 150mm gap, from 2 metres to 6 metres

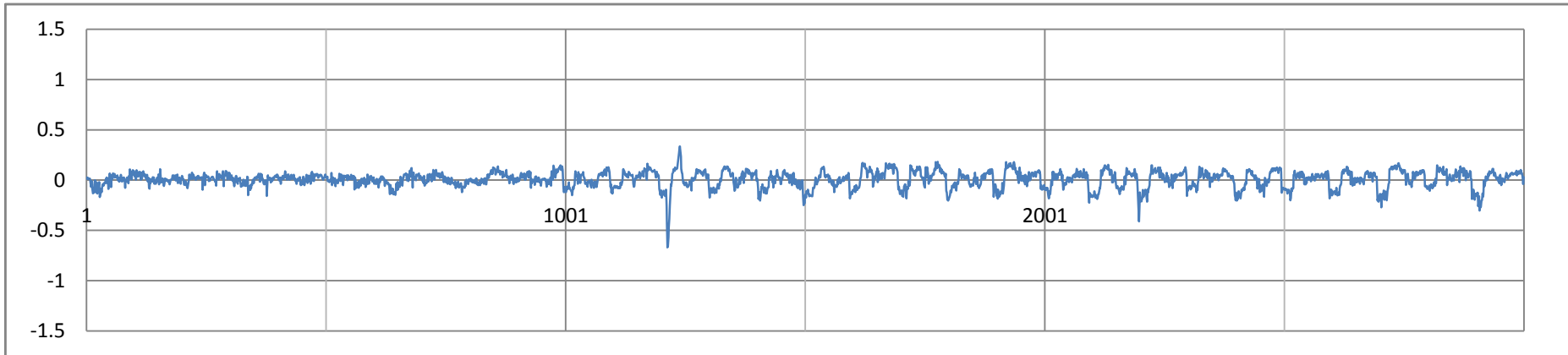
Face Consultants

Site Aisle Left/Right Pass No

150mm Paper 50mm Paper 50mm Paper 1

Graph: 0 To 12

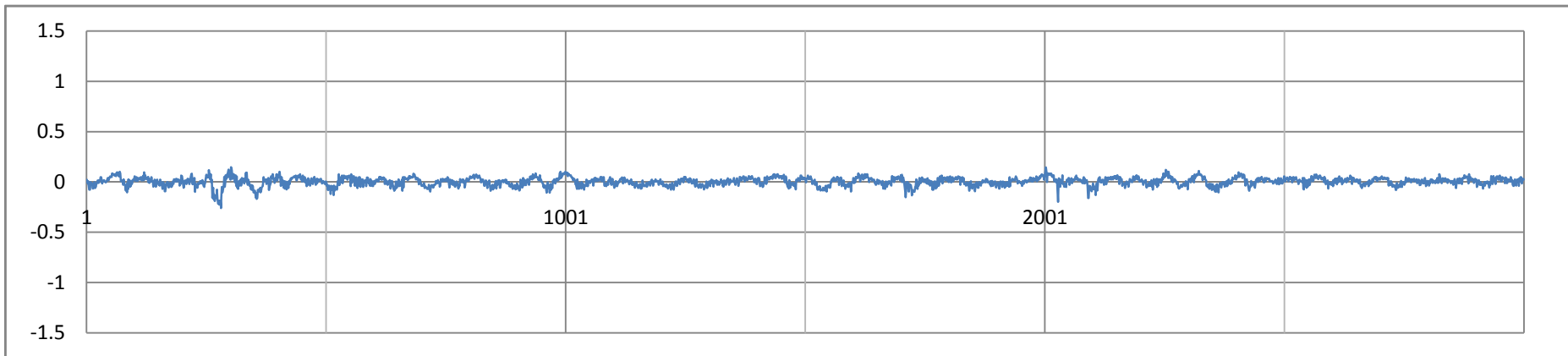
Page: 1 / 0



0 To 2 Average 0.007
SD 0.046
Fx 798

2 To 4 Average 0.008
SD 0.098
Fx 395

4 To 6 Average 0.003
SD 0.092
Fx 422



6 To 8 Average 0.003
SD 0.051
Fx 758

8 To 10 Average 0.003
SD 0.038
Fx 1009

10 To 12 Average 0.008
SD 0.038
Fx 959



Global Flooring **Consultants...**

Proving the
World is **Flat...**

www.face-consultants.com

Face Consultants Ltd.

Dene House
North Road
Kirkburton
Huddersfield
United Kingdom
HD8 0RW

Tel: +44 (0)1484 600090
Fax: +44 (0)1484 600095
Email: info@face-consultants.com
Website: www.face-consultants.com