See chapter "3. Results" of the article "*The reduction of rotating conveyor roller vibrations by the use of plastic* 1 *brackets*" 2

pages 9-12

3.1. The plastic trestle of a fixed conveyor idler, the plastic casing of the conveyor roller

With regard to the scope of the paper, the measured graphs of the effective values of vibration velocities $v_{(*)RMS(fi)}$ [mm·s⁻¹] are not presented in paper "The reduction of rotating conveyor roller vibrations by the use of plastic brackets" for circumferential speeds $v_r = 2.5 \text{ m·s}^{-1}$ and $v_r = 1.25 \text{ m·s}^{-1}$ for conveyor rollers with a diameter of 89 mm.

<u>These measured courses (conveyor rollers with plastic casing, whose axles are placed in plastic trestle, of the fixed conveyor idler) are presented in the appendix entitled:</u>

conveyor roller with a diameter of 89 mm plastic casing at the measuring points A and B (Table 12
 3); C and D (Table 4) for a fixed conveyor idler with plastic brackets – see address folder "Chapter 3.1", files: "Plast_plast_89mm_16,2Hz.pdf", "Plast_plast_89mm_32,4Hz.pdf" and 14
 "Plast_plast_89mm_50Hz.pdf"

Table 4 indicates effective vibration velocity values $v_{(^{\circ})RMS(fi)}$ [mm·s⁻¹],17which have been read from the DEWESoft X measurement software, for the18vibration measurements of a conveyor roller with a diameter of 89 mm plas-19tic casing at the measuring points C and D for a fixed conveyor idler with20plastic brackets.21

Table 4. Roller axle placement – plastic trestle, measuring points C and D, roller22casing - plastic, $D_r = 89$ mm.23

fi	n	nr vr	Measuring point "C"			Measuring point "D"		
11	III		$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	V(z)RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]			[mm·s⁻¹]	
50	825	3.84	0.87^{1}	0.25^{1}	0.13^{1}	0.40 2	0.142	0.93 2
32.4	535	2.49	1.61	0.20	0.12	1.03	0.12	0.65
16.2	267	1.25	0.12	0.12	0.08	0.26	0.06	0.23
		1 co	- Eig $1(a)$ 2	rac Eig 1(h)				

¹ see Fig. 1(a), ² see Fig. 1(b).

Fig. 1 shows the measured effective values of the vibration speed25 $V(^{*})RMS(50)$ [mm·s⁻¹] in three mutually perpendicular axes of the coordinate26system at circumferential speed $v_r = 3.84 \text{ m·s}^{-1}$ of the conveyor roller with a27plastic casing diameter 89 mm. Vibration sensors have been placed at measuring points C and D.28

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Figure 1. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], plastic roller ϕ 89 mm, the circumferential speed of the roller $v_r = 3.84 \text{ m·s}^{-1}$, plastic trestle, **(a)** measuring point C, **(b)** measuring point D.

In paper "The reduction of rotating conveyor roller vibrations by the use of plastic brackets", the measured graphs of the effective values of vibration velocities $v_{(*)RMS(fi)}$ [mm·s⁻¹] are not presented for the circumferential speeds of the conveyor rollers (with diameter 108 mm and 133 mm.) other than $v_r = 2.5 \text{ m} \cdot \text{s}^2$ 36 ¹. As mentioned above, if you are interested in these measured vibration waveforms, it is necessary to ask 37 the authors of this article via e-mail for documentation of the measured vibration records of the conveyer 38 rollers taken at various circumferential speeds v_r [m·s⁻¹].

These measured courses are presented in the appendix entitled:

- conveyor roller with a diameter of 108 mm plastic casing at the measuring points A and B (Table 5); C and D (Table 6) for a fixed conveyor idler with plastic brackets – see address folder
 "Chapter 3.1", files: "Plast_plast_108mm_13,4Hz.pdf", "Plastic_plastic_108mm_26,4Hz.pdf"
 and "Plastic_plastic_108mm_50Hz.pdf"
- conveyor roller with a diameter of 133 mm plastic casing at the measuring points A and B (Table 7); C and D (Table 8) for a fixed conveyor idler with plastic brackets – see address folder "Chapter 3.1", files: "Plast_plast_108mm_10,9Hz.pdf", "Plastic_plastic_133mm_21,8Hz.pdf", 47 Plastic_plastic_133mm_33,7Hz.pdf" and "Plastic_plastic_108mm_50Hz.pdf". 48

Table 5 indicates effective vibration velocity values $v_{(*)RMS(fi)}$ [mm·s⁻¹],50which have been read from the DEWESoft X measurement software, for the51vibration measurements of a conveyor roller with a diameter of 89 mm plas-52tic casing at the measuring points C and D for a fixed conveyor idler with53plastic brackets.54

Table 5. Roller axle placement – plastic trestle, measuring points A and B, roller55casing - plastic, $D_r = 108$ mm.56

fi	nr	Vr	Measuring point "A"			Measuring point "B"		
			$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$	[mm·s ⁻¹]					
50	824	4.66	0.92	0.26	0.25	0.46	0.22	0.70
41.3	681	3.85	0.88	0.36	0.22	0.53	0.29	1.03
26.8	442	2.5	0.60^{1}	0.14^{1}	0.13^{1}	0.25 ²	0.10 ²	0.342
13.4	220	1.24	0.09	0.08	0.06	0.08	0.05	0.17

¹ see Fig. 2(a), ² see Fig. 2(b).

Fig. 2 shows the measured effective values of the vibration speed 58 V(*)RMS(50) [mm·s⁻¹] in three mutually perpendicular axes of the coordinate 59 system at circumferential speed $v_r = 2.5$ m·s⁻¹ of the conveyor roller with a 60

plastic casing diameter 108 mm. Vibration sensors have been placed at 61 measuring points A and B. 62



Figure 2. Effective vibration values $V(^{\circ})_{RMS(fi)}$ [mm·s⁻¹], plastic roller $\phi 108$ mm, the circumferential speed of the roller $v_r = 2.5$ m·s⁻¹, plastic trestle, (a) measuring point A,64(b) measuring point B.66

Table 6. Roller axle placement – plastic trestle, measuring points C and D, roller67casing - plastic, $D_r = 108$ mm.68

f:	n,	۱ _۲ Vr	Measuring point "C"			Measuring point "D				
11	III	VI	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)		
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]						
50	824	4.66	0.55	0.55 0.23 0.11 0.36 0.21 0.72						
41.3	681	3.85	0.52	0.33	0.09	0.41	0.26	0.96		
26.8	442	2.5	0.56^{1}	0.12^{1}	0.07^{1}	0.21 ²	0.09 ²	0.342		
13.4	220	1.24	0.11	0.06	0.06	0.09	0.10	0.15		
13.4	220	1.24	0.11	0.06	0.06	0.09	0.10	0.15		

¹ see Fig. 3(a), ² see Fig. 3(b).

Fig. 3 indicates the measured effective values of the vibration speed70V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a plastic71casing of 108 mm diameter.73



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Figure 3. Effective vibration values $v_{(^{\circ})RMS(fi)}$ [mm·s⁻¹], plastic roller $\phi 108$ mm, the circumferential speed of the roller $v_r = 2.5$ m·s⁻¹, plastic trestle, (a) measuring point C,75(b) measuring point D.77

Table 7 indicates effective vibration velocity values $v_{(*)RMS(fi)}$ [mm·s⁻¹],78which have been read from the DEWESoft X measurement software, for the79

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vibration measurements of a conveyor roller with a diameter of 133 mm 80 plastic casing at the measuring points A and B for a fixed conveyor idler 81 with plastic brackets. 82

Table 7. Roller axle placement – plastic trestle, measuring points A and B, roller83casing - plastic, $D_r = 133$ mm.84

fi	nr	nr Vr	Measuring point "A"			Measuring point "B"			
11	III	٧r	V(x)RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	V(z)RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$			[mr	n·s⁻¹]			
50	824	5.74	0.70	0.70 0.37 0.21 0.51 0.29 0.					
33.7	555	3.86	0.46	0.36	0.15	0.50	0.28	0.85	
21.8	360	2.51	0.20^{1}	0.21^{1}	0.09^{1}	0.24 ²	0.13 ²	0.58 ²	
10.9	179	1.25	0.07	0.11	0.06	0.10	0.08	0.18	
		1 50	$a \operatorname{Fig} A(a)^2$	soo Fig 4/h)				

see Fig. 4(a), ² see Fig. 4(b).

Fig. 4 indicates the measured effective values of the vibration speed86V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system at circumferential speed $v_r = 2.5$ m·s⁻¹ for a conveyor roller with a plastic87casing of 133 mm diameter.89



Figure 4. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], plastic roller ϕ 133 mm, the cir-91cumferential speed of the roller $v_r = 2.5 \text{ m·s}^{-1}$, plastic trestle, (a) measuring point A,92(b) measuring point B.93

Table 8 indicates effective vibration velocity values v(*)RMS(fi) [mm·s⁻¹],94which have been read from the DEWESoft X measurement software, for the95vibration measurements of a conveyor roller with a diameter of 133 mm96plastic casing at the measuring points C and D for a fixed conveyor idler97with plastic brackets.98

Table 8. Roller axle placement – plastic trestle, measuring points C and D, roller99casing - plastic, $D_r = 133$ mm.100

fi	nr	nr vr	Meas	Measuring point "C"			Measuring point "D"		
11	IIr		$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]					
50	825	5.75	0.46	0.46	0.19	0.66	0.43	1.11	
33.7	555	3.86	0.73	0.35	0.11	0.55	0.34	0.88	
21.8	360	2.50	0.18^{1}	0.20^{1}	0.09^{1}	0.27 ²	0.13 ²	0.68 ²	
10.9	179	1.25	0.08	0.09	0.06	0.10	0.08	0.19	

¹ see Fig. 5(a), ² see Fig. 5(b).

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Fig. 5 indicates the measured effective values of the vibration speed102V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a plastic103casing of 133 mm diameter.105



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Figure 5. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], plastic roller ϕ 133 mm, the circumferential speed of the roller $v_r = 2.5 \text{ m·s}^{-1}$, plastic trestle, (a) measuring point C, (b) measuring point D.

pages 12-14 110 3.2. The plastic trestle of a fixed conveyor idler, the steel casing of the conveyor roller 111 112 These measured courses (conveyor rollers with steel casing, whose axles are placed in plastic trestle, 113 of the fixed conveyor idler) are presented in the appendix entitled: 114 conveyor roller with a diameter of 89 mm steel casing at the measuring points A and B (Table 115 9); C and D (Table 10) for a fixed conveyor idler with plastic brackets – see address folder 116 "Chapter 3.2", files: "kov_plast_89mm_10sec". 117 118 Table 10 displays the effective vibration velocity values v(*)RMS(fi) [mm·s-119 ¹] that were read from the DEWESoft X measurement software provided for 120 the vibration measurements of a steel casing roller with a diameter of 89 121 mm. These were taken in measuring points A and B of the conveyor idler 122 with plastic brackets on our laboratory device. 123 Table 10 indicates effective vibration velocity values v(*)RMS(fi) [mm·s⁻¹], 124 which have been read from the DEWESoft X measurement software, for the 125

vibration measurements of a conveyor roller with a diameter of 89 mm steel 126 casing at the measuring points C and D for a fixed conveyor idler with plastic brackets. 128

Table 10. Roller axles placement – plastic trestle, measuring points C and D, roller129casing - steel, Dr = 89 mm.130

fi	n.	nr Vr	Measuring point "C"			Measuring point "D"			
11	III	٧r	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$	[mm·s ⁻¹]						
50	823	3.84	1.09^{1}	0.18^{1}	0.26 1	0.432	0.28 ²	0.46 ²	
32.3	533	2.48	0.81	0.51	0.22	0.70	0.52	0.52	
16.12	266	1.24	0.17	0.10	0.09	0.11	0.07	0.18	

¹ see Fig. 6(a), ² see Fig. 6(b).

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Fig. 6 indicates the measured effective values of the vibration speed132 $V^{(*)RMS(50)}$ [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system at circumferential speed $v_r = 3.84 \text{ m·s}^{-1}$ for a conveyor roller with a steel133casing of 89 mm diameter. Vibration sensors have been placed at measuring135points C and D.136



Figure 6. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], stell roller ϕ 89 mm, the circum-138ferential speed of the roller $v_r = 3.84 \text{ m·s}^{-1}$, plastic trestle, (a) measuring point C, (b)139measuring point D.140

In paper "The reduction of rotating conveyor roller vibrations by the use of plastic brackets", the measured graphs of the effective values of vibration velocities V(*)RMS(F) [mm·s⁻¹] are not presented for the circumferential speeds of the conveyor rollers (with diameter 108 mm and 133 mm.) other than $v_r = 2.5 \text{ m} \cdot \text{s}^{-1}$ 143 ¹. As mentioned above, if you are interested in these measured vibration waveforms, it is necessary to ask the authors of this article via e-mail for documentation of the measured vibration records of the conveyer rollers taken at various circumferential speeds v_r [m·s⁻¹].

These measured courses are presented in the appendix entitled:

- conveyor roller with a diameter of 108 mm plastic casing at the measuring points A and B (Table 11); C and D (Table 12) for a fixed conveyor idler with plastic brackets – see address folder
 "Chapter 3.2", files: "kov_plast_108mm_10sec",
- conveyor roller with a diameter of 133 mm plastic casing at the measuring points A and B (Table 13); C and D (Table 14) for a fixed conveyor idler with plastic brackets see address folder
 "Chapter 3.2", files: "kov_plast_133mm_10sec"

Table 11 indicates effective vibration velocity values $v_{(*)RMS(fi)}$ [mm·s⁻¹],155which have been read from the DEWESoft X measurement software, for the156vibration measurements of a conveyor roller with a diameter of 108 mm157steel casing at the measuring points A and B for a fixed conveyor idler with158plastic brackets.159

Table 11. Roller axles placement – plastic trestle, measuring points A and B, roller160casing - steel, Dr = 108 mm.161

fi	nr	Vr	Measuring point "A"			Measuring point "B"				
11	IIr		$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)		
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]						
50	826	4.67	0.75	0.24	0.15	0.39	0.19	0.48		
41.4	682	3.86	0.36	0.31	0.12	0.32	0.18	0.56		
26.84	442	2.5	0.60^{1}	0.11^{1}	0.07^{1}	0.202	0.122	0.32 ²		
13.36	220	1.25	0.12	0.08	0.08	0.10	0.08	0.14		

¹ see Fig. 7(a), ² see Fig. 7(b).

Fig. 7 indicates the measured effective values of the vibration speed163 $V(^{\circ})_{RMS(50)}$ [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a steel164casing of 108 mm diameter. Vibration sensors have been placed at measuring points A and B.165



Figure 7. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], stell roller $\phi 108$ mm, the cir-169cumferential speed of the roller $v_r = 2.5$ m·s⁻¹, plastic trestle, (a) measuring point A,170(b) measuring point B.171

Table 12 indicates effective vibration velocity values $v_{(*)RMS(fi)}$ [mm·s⁻¹],172which have been read from the DEWESoft X measurement software, for the173vibration measurements of a conveyor roller with a diameter of 108 mm174steel casing at the measuring points C and D for a fixed conveyor idler with175plastic brackets.176

Table 12. Roller axles placement – plastic trestle, measuring points C and D, roller177casing - steel, Dr = 108 mm.178

f.	n	n. v.	Measuring point "C"			Measuring point "D"		
11	IIr	Vr	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	V(x)RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$			[mm	·s-1]		
50	826	4.67	1.40	0.20	0.31	0.38	0.19	0.44
41.34	681	3.85	1.27	0.25	0.28	0.61	0.19	0.52
26.85	443	2.5	0.67^{1}	0.14^{1}	0.15^{1}	0.26 ²	0.12 ²	0.30 ²
13.37	220	1.25	0.11	0.12	0.09	0.08	0.07	0.13

¹ see Fig. 8(a), ² see Fig. 8(b).

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Fig. 8 indicates the measured effective values of the vibration speed180V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system181tem at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a steel182casing of 108 mm diameter. Vibration sensors have been placed at measuring points C and D.184

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Figure 8. Effective vibration values V(*)RMS(fi) [mm·s-1], stell roller \$108 mm, the cir-186 cumferential speed of the roller $v_r = 2.5 \text{ m} \cdot \text{s}^{-1}$, plastic trestle, (a) measuring point C, 187 (b) measuring point D. 188

Table 13 indicates effective vibration velocity values v(*)RMS(fi) [mm·s-1], 189 which have been read from the DEWESoft X measurement software, for the 190 vibration measurements of a conveyor roller with a diameter of 133 mm 191 steel casing at the measuring points A and B for a fixed conveyor idler with 192 plastic brackets. 193

Table 13. Roller axles placement – plastic trestle, measuring points A and B, roller 194 casing - steel, Dr = 133 mm. 195

f.	nr	nr Vr	Meas	Measuring point "A"			Measuring point "B"		
	III	V I	$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$			[mn	n·s⁻¹]			
50	825	5.75	0.47	0.24	0.11	0.35	0.24	0.55	
33.64	554	3.86	0.64	0.17	0.10	0.48	0.18	0.37	
21.92	361	2.52	0.23^{1}	0.12^{1}	0.07^{1}	0.21 ²	0.13 ²	0.26 ²	
10.89	179	1.25	0.19	0.09	0.07	0.14	0.09	0.16	
		1 1		\mathbf{T}^{*} $\mathbf{O}(\mathbf{I})$					

¹ see Fig. 9(a), ² see Fig. 9(b).

Fig. 9 indicates the measured effective values of the vibration speed 197 V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate sys-198 tem at circumferential speed $v_r = 2.5 \text{ m} \cdot \text{s}^{-1}$ for a conveyor roller with a steel 199 casing of 133 mm diameter. Vibration sensors have been placed at measur-200 ing points A and B. 201



Figure 9. Effective vibration values v(*)RMS(fi) [mm·s-1], stell roller \$133 mm, the cir-203 cumferential speed of the roller $v_r = 2.5 \text{ m} \cdot \text{s}^{-1}$, plastic trestle, (a) measuring point A, 204 (b) measuring point B.

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Table 11 indicates effective vibration velocity values v(*)RMS(fi) [mm·s⁻¹],206which have been read from the DEWESoft X measurement software, for the207vibration measurements of a conveyor roller with a diameter of 133 mm208steel casing at the measuring points C and D for a fixed conveyor idler with209plastic brackets.210

Table 14. Roller axles placement – plastic trestle, measuring points C and D, roller211casing - steel, Dr = 133 mm.212

fi	n,		Measuring point "C"			Measuring point "D"				
	N r	Vr	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(\mathbf{z}) \mathrm{RMS}(\mathrm{fi})$	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)		
[Hz]	[min ⁻¹]	$[\mathbf{m} \cdot \mathbf{s}^{-1}]$		[mm·s ⁻¹]						
50	825	5.75	0.49	0.24	0.18	0.27	0.19	0.48		
33.67	555	3.87	0.32	0.18	0.17	0.30	0.14	0.31		
21.87	361	2.51	0.21 1	0.11^{1}	0.14^{1}	0.13 ²	0.09 ²	0.23 ²		
10.89	179	1.25	0.11	0.07	0.08	0.08	0.06	0.14		

¹ see Fig. 10(a), ² see Fig. 10(b).



Figure 10. Effective vibration values $v(*)_{RMS(fi)}$ [mm·s⁻¹], stell roller ϕ 133 mm, the circumferential speed of the roller $v_r = 2.5 \text{ m·s}^{-1}$, plastic trestle, (a) measuring point C,215(b) measuring point D.217

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These measured courses (conveyor rollers with plastic casing, whose axles are placed in steel trestle, of the fixed conveyor idler) are presented in the appendix entitled:

conveyor roller with a diameter of 89 mm steel casing at the measuring points A and B (Table 223 15); C and D (Table 16) for a fixed conveyor idler with plastic brackets – see address folder 224 "Chapter 3.3", files: "Plast_kov_89mm_10s.pdf".

Table 16 indicates effective vibration velocity values V(*)RMS(fi) [mm·s⁻¹],227which have been read from the DEWESoft X measurement software, for the228vibration measurements of a conveyor roller with a diameter of 89 mm plas-229tic casing at the measuring points C and D for a fixed conveyor idler with230steel brackets.231

^{3.3.} The steel trestle of the fixed conveyor idler, the plastic casing of the conveyor roller

Manusing point C// Manusing point D//	
ing - plastic, Dr = 89 mm.	235
Table 16. Roller axles placement – steel trestle, measuring points C and D roller cas	- 234

f:	nr Vr	Measuring point "C"			Measuring point "D"					
11	III	V I	$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)		
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]						
50	826	3.85	0.28^{1}	0.37^{1}	0.15^{1}	0.77 ²	0.27 ²	1.04 ²		
32.35	533	2.48	0.26	0.28	0.12	0.89	0.17	0.79		
16.15	266	1.24	0.11	0.17	0.13	0.31	0.14	0.33		
		1	$E_{in} = 11(a) - 2$	rac Eig 11/b	.)					

¹ see Fig. 11(a), ² see Fig. 11(b).

Fig. 11 indicates the measured effective values of the vibration speed237V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system at circumferential speed $v_r = 3.85$ m·s⁻¹ for a conveyor roller with a plas-238tic casing of 89 mm diameter. Vibration sensors have been placed at measuring points C and D.241



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Figure 11. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], plastic roller ϕ 89 mm, the circumferential speed of the roller $v_r = 3.85 \text{ m·s}^{-1}$, steel trestle, **(a)** measuring point C, 244 **(b)** measuring point D. 245

In paper "The reduction of rotating conveyor roller vibrations by the use of plastic brackets", the measured graphs of the effective values of vibration velocities $v_{(*)RMS(fi)}$ [mm·s⁻¹] are not presented for the circumferential speeds of the conveyor rollers (with diameter 108 mm and 133 mm.) other than $v_r = 2.5 \text{ m} \cdot \text{s}^{-1}$ ¹. As mentioned above, if you are interested in these measured vibration waveforms, it is necessary to ask the authors of this article via e-mail for documentation of the measured vibration records of the conveyer rollers taken at various circumferential speeds v_r [m·s⁻¹].

These measured courses are presented in the appendix entitled:

- conveyor roller with a diameter of 108 mm plastic casing at the measuring points A and B (Table 17); C and D (Table 18) for a fixed conveyor idler with plastic brackets see address folder
 "Chapter 3.3", files: "Plast_kov_108mm_10s.pdf",
- conveyor roller with a diameter of 133 mm plastic casing at the measuring points A and B (Ta ble 19); C and D (Table 20) for a fixed conveyor idler with plastic brackets see address folder
 "Chapter 3.3", files: "Plast_kov_133mm_10s.pdf.

Table 17 indicates effective vibration velocity values $v_{(*)RMS(fi)}$ [mm·s⁻¹],260which have been read from the DEWESoft X measurement software, for the261vibration measurements of a conveyor roller with a diameter of 108 mm262plastic casing at the measuring points A and B for a fixed conveyor idler263with steel brackets.264

		0	1 '						
f.		V.	Measuring point "A"			Measuring point "B"			
11	III	V I	$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]					
50	825	4.66	0.44	0.53	0.36	0.66	0.32	2.16	
41.24	680	3.84	0.28	0.41	0.22	0.76	0.32	1.33	
26.73	441	2.50	0.33^{1}	0.261	0.14^{1}	0.78 ²	0.202	0.81 ²	
13.34	220	1.24	0.08	0.13	0.06	0.17	0.10	0.32	
		1 1	$-10(-)^{2}$)				

Table 17. Roller axles placement - steel trestle, measuring points A and B roller cas-265 ing - plastic, $D_r = 108 \text{ mm}$. 266

¹ see Fig. 12(a), ² see Fig. 12(b).

Fig. 12 indicates the measured effective values of the vibration speed 268 $V^{(*)RMS(50)}$ [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate sys-269 tem at circumferential speed $v_r = 2.5 \text{ m} \cdot \text{s}^{-1}$ for a conveyor roller with a plastic 270 casing of 108 mm diameter. Vibration sensors have been placed at measur-271 ing points A and B. 272



Figure 12. Effective vibration values v(*)RMS(fi) [mm·s⁻¹], plastic roller \$\phi108 mm\$, the circumferential speed of the roller $v_r = 2.5 \text{ m} \cdot \text{s}^{-1}$, steel trestle, (a) measuring point A, 275 (b) measuring point B. 276

Table 18 indicates effective vibration velocity values v(*)RMS(fi) [mm·s⁻¹], 277 which have been read from the DEWESoft X measurement software, for the 278 vibration measurements of a conveyor roller with a diameter of 108 mm 279 plastic casing at the measuring points C and D for a fixed conveyor idler 280 with steel brackets. 281

Table 18. Roller axles placement - steel trestle, measuring points C and D roller cas-282 ing - plastic, $D_r = 108$ mm. 283

f.	n .	n. v.	Measuring point "C"			Measuring point "D"			
11	IIr	Vr	$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]					
50	823	4.65	0.58	0.86	0.23	0.61	0.45	2.54	
41.29	681	3.85	0.66	0.48	0.18	0.76	0.40	1.30	
26.68	440	2.49	0.35^{1}	0.24^{1}	0.11^{1}	0.63^{1}	0.18^{1}	0.64^{1}	
13.35	220	1.24	0.08	0.13	0.06	0.14	0.09	0.32	

¹ see Fig. 13(a), ² see Fig. 13(b).

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Fig. 13 indicates the measured effective values of the vibration speed285 $v_{(*)RMS(50)}$ [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate sys-286tem at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a plastic287casing of 108 mm diameter. Vibration sensors have been placed at measur-288ing points C and D.289



Figure 13. Effective vibration values v(*)RMS(fi) [mm·s⁻¹], plastic roller $\phi108$ mm, the291circumferential speed of the roller $v_r = 2.5 \text{ m·s}^{-1}$, steel trestle, (a) measuring point C,292(b) measuring point D.293

Table 16 indicates effective vibration velocity values v(*)RMS(fi) [mm·s-1],294which have been read from the DEWESoft X measurement software, for the295vibration measurements of a conveyor roller with a diameter of 133 mm296plastic casing at the measuring points A and B for a fixed conveyor idler297with steel brackets.298

Table 19. Roller axles placement – steel trestle, measuring points A and B roller cas-299ing - plastic, Dr = 133 mm.300

f.	n	¥.,	Measuring point "A"			Measuring point "B"		
11	III VI	V I	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(y)$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$			[mn	n•s⁻¹]		
50	825	5.75	0.44	0.66	0.41	0.76	0.41	2.31
33.48	552	3.84	0.46	0.43	0.20	0.57	0.38	0.97
21.83	360	2.51	0.13^{1}	0.25^{1}	0.14^{1}	0.35 ²	0.21 ²	0.61 ²
10.84	179	1.24	0.08	0.12	0.09	0.16	0.09	0.20
10.04	1/9	1,24	0.00	0.12	0.09	0.10	0.09	0.20

¹ see Fig. 14(a), ² see Fig. 14(b).

Fig. 14 indicates the measured effective values of the vibration speed302 $V(^{\circ})_{RMS(50)}$ [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a plastic303casing of 133 mm diameter. Vibration sensors have been placed at measuring points A and B.306

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Figure 14. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], plastic roller ϕ 133 mm, the308circumferential speed of the roller $v_r = 2.5 \text{ m·s}^{-1}$, steel trestle, (a) measuring point A,309(b) measuring point B.310

Table 17 indicates effective vibration velocity values v(*)RMS(fi) [mm·s⁻¹],311which have been read from the DEWESoft X measurement software, for the312vibration measurements of a conveyor roller with a diameter of 133 mm313plastic casing at the measuring points A and B for a fixed conveyor idler314with steel brackets.

Table 20. Roller axles placement – steel trestle, measuring points C and D roller cas-316ing - plastic, Dr = 133 mm.317

7(a) DMS(G)
/ (Z)KW3(II)
1.94
0.92
0.57 ²
0.19

¹ see Fig. 15(a), ² see Fig. 15(b).

Fig. 15 indicates the measured effective values of the vibration speed319V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate sys-320tem at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a plastic321casing of 133 mm diameter. Vibration sensors have been placed at measur-322ing points C and D.323





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3.4. The steel trestle of the fixed conveyor idler, the steel casing of the conveyor roller

conveyor roller with a diameter of 89 mm steel casing at the measuring points A and B (Table 330 21); C and D (Table 22) for a fixed conveyor idler with steel brackets – see address folder "Chapter 3.4", files: "kov_kov_89mm_10sec".
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Table 22 indicates effective vibration velocity values V(*)RMS(fi) [mm·s⁻¹],334which have been read from the DEWESoft X measurement software, for the335vibration measurements of a conveyor roller with a diameter of 89 mm steel336casing at the measuring points A and B for a fixed conveyor idler with steel337brackets.338

Table 22. Roller axles placement – steel trestle, measuring points C and D roller cas-339ing - steel, Dr = 89 mm.340

f:	n.	n	Measuring point "C"			Measuring point "D"		
11	III	٧r	$\mathbf{V}(\mathbf{x}) \mathrm{RMS}(\mathrm{fi})$	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$			[mn	n·s⁻1]		
50	826	3.85	0.92^{1}	0.361	0.26^{1}	0.79 ²	0.18 ²	1.15 ²
32.4	534	2.49	0.92	0.57	0.13	0.96	0.57	0.80
16.17	267	1.24	0.09	0.11	0.07	0.21	0.07	0.24

¹ see Fig. 16(a), ² see Fig. 16(b).

Fig. 16 indicates the measured effective values of the vibration speed342 $v_{(^*)RMS(50)}$ [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate sys-343tem at circumferential speed $v_r = 3.84$ m·s⁻¹ for a conveyor roller with a steel344casing of 89 mm diameter. Vibration sensors have been placed at measuring345points C and D.346



Figure 16. Effective vibration values v(*)RMS(fi) [mm·s⁻¹], steel roller ϕ 89 mm, the cir-348cumferential speed of the roller $v_r = 3.85 \text{ m·s}^{-1}$, steel trestle, (a) measuring point C,349(b) measuring point D.350

In paper "The reduction of rotating conveyor roller vibrations by the use of plastic brackets", the measured graphs of the effective values of vibration velocities $v_{(*)RMS(fi)}$ [mm·s⁻¹] are not presented for the circumferential speeds of the conveyor rollers (with diameter 108 mm and 133 mm.) other than $v_r = 2.5 \text{ m} \cdot \text{s}^{-1}$ ¹. As mentioned above, if you are interested in these measured vibration waveforms, it is necessary to ask the authors of this article via e-mail for documentation of the measured vibration records of the conveyer rollers taken at various circumferential speeds v_r [m·s⁻¹].

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These measured courses are presented in the appendix entitled:

- conveyor roller with a diameter of 108 mm plastic casing at the measuring points A and B (Table 23); C and D (Table 24) for a fixed conveyor idler with plastic brackets see address folder
 "Chapter 3.4", files: "Kov_kov_108mm_10s.pdf", 362
- conveyor roller with a diameter of 133 mm plastic casing at the measuring points A and B (Table 25); C and D (Table 26) for a fixed conveyor idler with plastic brackets see address folder
 "Chapter 3.4", files: "Kov_kov_133mm_10s.pdf".

Table 23 indicates effective vibration velocity values v(*)RMS(fi) [mm·s⁻¹],367which have been read from the DEWESoft X measurement software, for the
vibration measurements of a conveyor roller with a diameter of 108 mm368steel casing at the measuring points A and B for a fixed conveyor idler with
steel brackets.371

Table 23. Roller axles placement – steel trestle, measuring points A and B roller cas-372ing - steel, $D_r = 108$ mm.373

f.	n .	17	Measuring point "A"			Measuring point "B"			
11	III	v r	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]					
50	823	4.65	0.61	0.35	0.15	0.83	0.24	0.94	
41.25	680	3.85	0.35	0.36	0.11	0.90	0.24	1.12	
26.73	441	2.49	0.38^{1}	0.16^{1}	0.09^{1}	0.44^{2}	0.10 ²	0.50 ²	
13.30	219	1.24	0.06	0.10	0.05	0.14	0.08	0.25	

¹ see Fig. 17(a), ² see Fig. 17(b).

Fig. 17 indicates the measured effective values of the vibration speed375V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate sys-376tem at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a steel377casing of 108 mm diameter. Vibration sensors have been placed at measur-378ing points A and B.379



Figure 17. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], steel roller ϕ 108 mm, the cir-381cumferential speed of the roller $v_r = 2.5 \text{ m·s}^{-1}$, steel trestle, (a) measuring point A, (b)382measuring point B.383

Table 24 indicates effective vibration velocity values v(*)RMS(fi) [mm·s⁻¹],384which have been read from the DEWESoft X measurement software, for the385vibration measurements of a conveyor roller with a diameter of 108 mm386steel casing at the measuring points C and D for a fixed conveyor idler with387steel brackets.388

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f.		V.	Meas	uring poir	nt "C"	Measuring point "D"			
11	IIF	V I	$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(x)$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]					
50	823	4.66	1.14	0.30	0.28	0.99	0.24	0.84	
41.20	679	3.84	1.19	0.40	0.33	1.03	0.33	1.10	
26.73	441	2.49	0.46^{1}	0.20^{1}	0.14^{1}	0.522	0.12 ²	0.59 ²	
13.32	220	1.24	0.07	0.10	0.07	0.13	0.07	0.21	
		1 600	$E_{12} = 10(a) 2$)				

Table 24. Roller axles placement – steel trestle, measuring points C and D roller cas-389ing - steel, Dr = 108 mm.390

¹ see Fig. 18(a), ² see Fig. 18(b).

Fig. 18 indicates the measured effective values of the vibration speed392V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a steel393casing of 108 mm diameter. Vibration sensors have been placed at measuring points C and D.396



Figure 18. Effective vibration values $v(*)_{RMS(fi)}$ [mm·s⁻¹], steel roller $\phi108$ mm, the circumferential speed of the roller $v_r = 2.5$ m·s⁻¹, steel trestle, (a) measuring point C, (b)398measuring point D.400

Table 25 indicates effective vibration velocity values $v_{(*)RMS(fi)}$ [mm·s⁻¹],401which have been read from the DEWESoft X measurement software, for thevibration measurements of a conveyor roller with a diameter of 133 mmsteel casing at the measuring points A and B for a fixed conveyor idler withsteel brackets.401

Table 25. Roller axles placement – steel trestle, measuring points A and B roller cas-406ing - steel, Dr = 133 mm.407

f:	n	¥7	Measuring point "A"			Measuring point "B"		
11	III	v r	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	V(z)RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$		[mm·s ⁻¹]				
50	826	5.75	0.29	0.29	0.13	0.46	0.18	0.87
33.66	555	3.86	0.43	0.21	0.11	0.49	0.14	0.68
21.89	361	2.51	0.14^{1}	0.13^{1}	0.08^{1}	0.26 ²	0.09 ²	0.39 ²
10.87	179	1.25	0.10	0.06	0.11	0.14	0.09	0.18

¹ see Fig. 19(a), ² see Fig. 19(b).

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Fig. 19 indicates the measured effective values of the vibration speed409 $V(^{\circ})_{RMS(50)}$ [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate sys-410tem at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a steel411casing of 133 mm diameter. Vibration sensors have been placed at measur-412ing points A and B.413



Figure 19. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], steel roller ϕ 133 mm, the cir-415cumferential speed of the roller $v_r = 2.5 \text{ m·s}^{-1}$, steel trestle, (a) measuring point A, (b)416measuring point B.417

Table 26 indicates effective vibration velocity values $v_{(*)RMS(fi)}$ [mm·s⁻¹],418which have been read from the DEWESoft X measurement software, for the419vibration measurements of a conveyor roller with a diameter of 133 mm420steel casing at the measuring points A and B for a fixed conveyor idler with421steel brackets.422

Table 26. Roller axles placement – steel trestle, measuring points C and D roller cas-423ing - steel, Dr = 133 mm.424

f.	n		Measuring point "C"			Measuring point "D"		
11	iir Vr	VI	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)	$\mathbf{V}(\mathbf{x})$ RMS(fi)	$\mathbf{V}(\mathbf{y})$ RMS(fi)	$\mathbf{V}(z)$ RMS(fi)
[Hz]	[min ⁻¹]	$[m \cdot s^{-1}]$			[mi	m·s⁻¹]		
50	824	5.74	0.33	0.30	0.17	0.42	0.20	0.83
33.59	554	3.86	0.26	0.21	0.12	0.33	0.14	0.59
21.87	361	2.51	0.23^{1}	0.15^{1}	0.10^{1}	0.23 ²	0.10 ²	0.40 ²
10.87	179	1.25	0.10	0.14	0.09	0.11	0.09	0.18

¹ see Fig. 23(a), ² see Fig. 23(b).

Fig. 20 indicates the measured effective values of the vibration speed426V(*)RMS(50) [mm·s⁻¹] in the "x", "y" and "z" axes of the selected coordinate system at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a steel427tem at circumferential speed $v_r = 2.5 \text{ m·s}^{-1}$ for a conveyor roller with a steel428casing of 133 mm diameter. Vibration sensors have been placed at measuring points C and D.430

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Figure 20. Effective vibration values $v_{(*)RMS(fi)}$ [mm·s⁻¹], steel roller ϕ 133 mm, the cir-432cumferential speed of the roller $v_r = 2.5$ m·s⁻¹, steel trestle, (a) measuring point C, (b)433measuring point D.434