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EC Type Examination Certificate

DK0199.468

WB/x-nn / WN/x-nn / WBBx-y / WBBNx

AUTOMATIC GRAVIMETRIC FILLING INSTRUMENT

Issued by **DELTA Danish Electronics, Light & Acoustics**
EU - Notified Body No. 0199

In accordance with the requirements for the automatic weighing instruments in Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on Measuring Instruments (MID).

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In respect of A family of automatic gravimetric filling instruments designated **WB/x-nn / WN/x-nn / WBBx-y / WBBNx** with variants of modules of load receptors, load cells and peripheral equipment.
Reference class 0.2
Accuracy class X(1)
Maximum capacity 30 kg to 1500 kg
Verification scale interval: $e \geq 10$ g
Number of verification scale intervals: $n \leq 3000$ for single-interval
(however, dependent on environment and the composition of the modules)
Variants of modules and conditions for the composition of the modules are set out in the annex.

The conformity with the essential requirements in Annex 1 and the specific requirements in Annex MI-006, chapter I & III of the Directive 2004/22/EC is met by the application of OIML R61-1:2004, section 12 & 13 of OIML D11:2004, WELMEC Guide 7.2:2011, and WELMEC Guide 8.16-2:2006.

The principal characteristics and approval conditions are set out in the descriptive annex to this certificate.

The annex comprises 30 pages.

Issued on **2014-09-30**
Valid until **2024-09-30**

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Descriptive annex

Contents

1. Name and type of instrument and modules

The family of automatic weighing instruments designated WB/x-nn / WN/x-nn / WBBx-y / WBBNx are automatic gravimetric filling instruments consisting of an electronic weighing indicator connected to a separate load receptor and peripheral equipment such as printers or other devices, as appropriate.

The instruments are self-indicating filling instruments with single-interval.

WB/x-nn and WN/x-nn are indented for filling bags (x: feeder system, nn: MaxFill)
WBBx-y and WBBNx are indented for filling big bags (x: feeder system, y: model no.).

2aWN/x-50 is a high capacity filling machine consisting of two WN/x-50 built together and with interlocking signals between the two weighing indicators.

Table of models.

Pos.	Model name	Weighing controller/ indicator used	MaxFill [kg]	MinFill [kg]	Scale interval [g]	Accuracy class	Net/ gross weighing	Feeding system	No. of load cells
1	WB/G-50	W200 or TLB485	50	10	20	X(1)	gross	gravity feeder	2
2	WB/G-30	W200 or TLB485	30	5	10	X(1)	gross	gravity feeder	2
3	WB/T-50	W200 or TLB485	50	10	20	X(1)	gross	belt feeder	2
4	WB/T-30	W200 or TLB485	30	5	10	X(1)	gross	belt feeder	2
5	WB/S-50	W200 or TLB485	50	10	20	X(1)	gross	screw feeder	2
6	WB/S-30	W200 or TLB485	30	5	10	X(1)	gross	screw feeder	2
7	WB/W-50	W200 or TLB485	50	10	20	X(1)	gross	vibratory feeder	2
8	WB/W-30	W200 or TLB485	30	5	10	X(1)	gross	vibratory feeder	2
9	WN/G-50	W200 or TLB485	50	10	20	X(1)	net	gravity feeder	2
10	WN/G-30	W200 or TLB485	30	5	10	X(1)	net	gravity feeder	2
11	WN/T-50	W200 or TLB485	50	10	20	X(1)	net	belt feeder	2
12	WN/T-30	W200 or TLB485	30	5	10	X(1)	net	belt feeder	2
13	WN/S-50	W200 or TLB485	50	10	20	X(1)	net	screw feeder	2
14	WN/S-30	W200 or TLB485	30	5	10	X(1)	net	screw feeder	2
15	WN/W-50	W200 or TLB485	50	10	20	X(1)	net	vibratory feeder	2
16	WN/W-30	W200 or TLB485	30	5	10	X(1)	net	vibratory feeder	2
17	WBBG-1	W200 or TLB485	1500	100	500	X(1)	gross	gravity feeder	4
18	WBBT-1	W200 or TLB485	1500	100	500	X(1)	gross	belt feeder	4
19	WBBS-1	W200 or TLB485	1500	100	500	X(1)	gross	screw feeder	4
20	WBBG-2	W200 or TLB485	1500	100	500	X(1)	gross	gravity feeder	4
21	WBBT-2	W200 or TLB485	1500	100	500	X(1)	gross	belt feeder	4
22	WBBS-2	W200 or TLB485	1500	100	500	X(1)	gross	screw feeder	4
23	WBBNG	W200 or TLB485	1500	100	500	X(1)	net	gravity feeder	3
24	WBBNT	W200 or TLB485	1500	100	500	X(1)	net	belt feeder	3
25	WBBNS	W200 or TLB485	1500	100	500	X(1)	net	screw feeder	3

The modules appear from Sections 3.2, 3.3, and 3.4; the principle of the composition of the modules is set out in Sections 6.1 and 10.

2. Description of the construction and function

2.1 Construction

2.1.1 Electronic weighing indicator

The electronic weighing indicator can either be W200 (Evaluation Certificate DK0199-R61-12.04) or TLB485 (Evaluation Certificate DK0199-R61-12.06), where W200 is for panel mount while TLB485 is for DIN rail mounting. The specifications for the two indicators are the same.

2.1.2 Load cells

Set out in Section 3.3.

2.1.3 Load receptor

Set out in Section 3.4.

2.1.4 Interfaces and peripheral equipment

Set out in Section 4.

2.2 Functions

2.2.1 Functions and devices

The automatic weighing instrument has the following permitted functions and devices that are subject to the Measurement Instrument Directive.

- Initial zero setting device (max. 20 % of Max)
- Automatic zero-setting device
- Automatic tare balancing device

2.2.2 Software

The software version of the weighing controller is displayed at start-up of the controller.
The format for the software version is x.yy.zz, where x is the legal version number, yy is a sub-revision number for software changes not related to the legal functionality of the software, and zz is a sub-revision number used for error corrections.
The approved software version is 1.yy.zz

3. Technical data

The automatic weighing machine and its modules are set out as follows:

3.1 WB/x-nn / WN/x-nn / WBBx-y / WBBNx automatic gravimetric filling machine

Reference class (Ref(x) =):	0.2
Accuracy class:	X(1)
Maximum fill (MaxFill):	30 kg to 1500 kg
Minimum fill (MinFill):	≥ 200d
Maximum capacity (Max):	= MaxFill
Minimum capacity (Min):	20 g
Verification scale interval (d):	≥ 10 g
Weighing range:	Single-interval
Number of Verification Scale Intervals (n):	≤ 3000
Maximum tare effect:	- Max
Extra warm-up time:	None for net weighing and for gross weighing with aut. zero-setting as part of each cycle,. else 41 minutes
Temperature range:	-10° to +40° C
Electromagnetic class:	E2
Humidity:	Non-condensing
Automatic zero-setting:	For each weighing cycle
Mains power supply:	230 VAC, 50 Hz 60 Hz
Peripheral interface:	Set out in Section 4

3.2 W200 and TLB485 weighing controllers

Reference class (Ref(x) =):	0.2
Weighing range:	Single-interval, multi-range or multi-interval (2 or 3)
Maximum number of verification scale intervals (n):	10000
Minimum input voltage per VSI:	0.2 µV
Maximum capacity of interval or range (Max_i):	$n_i \times e_i$
Verification scale interval, e_i =:	Max_i/n_i
Initial zero-setting range:	± 10 % of Max
Maximum tare effect:	100 % of Max
Fractional factor (pi):	0.5
Excitation voltage:	5 VDC
Circuit for remote sense:	Active (see below)
Minimum input impedance:	43 ohm
Maximum input impedance:	1200 ohm
Connecting cable to load cell(s):	See Section 3.1.1
Supply voltage:	12 - 24 VDC, or 230 VAC
Operating temperature range:	-10° C to +40° C

3.3 Load cells

3.3.1 Load cells acceptable to use

The load cells (listed below) are acceptable to use as modules in the stated weighing instruments.

Model	Manufacturer of load cell	Load cell type		Capacity	Y value	Test certificate
WB/x-30 WN/x-30	SCAIME	AB-50	C5	65 kg	13000	SDM C9416
	Flintec	PC60	C3	100 kg	15000	D09-04.38
WB/x-50 WN/x-50	SCAIME	AB-100	C5	130kg	13000	SDM C9416
	Flintec	PC60	C3	100 kg	≥ 7500	D09-04.38
WBBx-1	Zemic	H8C	C3	1000 kg	10000	D09-05.20
WBBx-2	HBM	Z6F	C3	500 kg	11000	D09-08.19
	Flintec	SB8	C3	500 kg	10000	D09-05.13
	Sartorius	MP77	C3	500 kg	10000	D09-09.05
WBBNx	HBM	HLCB	C3	1100	11000	D09-08.20
	Flintec	SB14	C3	1134	11500	D09-97.15
	Sartorius	MP79	C3	1134	11500	D09-09.04

3.3.2 General acceptance of load cells

Any load cell(s) may be used for instruments under this certificate of type approval provided the following conditions are met:

1) A test certificate (EN 45501) or a respective OIML Certificate of Conformity (R60) is issued for the load cell by a Notified Body responsible for type examination under the Directive 2009/23/EC.

2) The certificate contains the load cell types and the necessary load cell data required for the manufacturer's declaration of compatibility of modules (WELMEC 2, Issue 6, 2014), and any particular installation requirements). A load cell marked NH is allowed only if humidity testing to EN 45501 has been conducted on this load cell.

3) The compatibility of load cells and indicator is established by the manufacturer by means of the compatibility of modules form, contained in the above WELMEC 2 document, or the like, at the time of EC verification or declaration of EC conformity of type.

4) The load transmission must conform to one of the examples shown in the WELMEC 2.4 Guide for load cells.

3.4 Load receptors

The net weighers use a bin of painted iron or steel, while the gross weighers are weighing the bag or big bag hanging from a mechanical arrangement placed on the load cells.

3.5 Composition of modules

For the composition of modules EN 45501 paragraph 3.5 and 4.12 shall be satisfied.

3.6 Documents

The documents filed at DELTA (reference No. T208291) are valid for the weighing instruments described here.

4. Interfaces

The following interfaces are incorporated. The interfaces are protective and need not to be secured.

- RS485 - for communication with the non-legal touch screen computer
- RS232 - for connection to a printer or non-legal computer
- Dig. I/O - for internal control of operation.

5. Approval conditions

5.1 Compatibility of modules

In case of composition of modules, WELMEC 2 (Issue 6) 2011, paragraph 11 shall be satisfied.

6. Special conditions for verification

None.

7. Securing and location of seals and verification marks

7.1 Securing and sealing

Seals shall bear the verification mark of a notified body according to ANNEX F of the Directive 2004/22/EC or alternative mark of the manufacturer according to ANNEX D of the Directive 2004/22/EC.

7.1.1 Plc-based touch screen

The software of this unit cannot influence the metrological characteristic of the filling machine and need not to be secured.

7.1.2 Electronic weighing indicator

7.1.2.1 Securing and sealing of W200 / TLB485

The calibration and configuration parameters as well as the software of W200 / TLB485 are secured by a non-resettable event counter. The current values of the event counter of a W200 / TLB485 can be displayed upon request from the keyboard of the indicator.

To indicate the sealed status of the event counter, the inscribed count of the event counter is written on the inscription plate or on a label placed on the inscription plate or next to it.

The event counter's label is sealed by partially covering it with an official sealing label.

The enclosure of W200 / TLB485 shall be sealed against opening.

7.1.2.2 Sealing of indicator connections

Sealing of the connection of the load cell to the indicator is done with two brittle stickers. One covering the screw terminals of the connector and one placed on both the fixed and the removable part of the connector.

7.1.3 Peripheral interfaces

All peripheral interfaces are "protective". They neither allow non-traceable manipulation with weighing data or legal setup, nor change of the performance of the weighing instrument in any way that would alter the legality of the weighing.

7.2 Verification marks

A sticker with verification mark is to be placed on the identification plate of the filling machine.

8. Location of CE mark of conformity and inscriptions

8.1 Identification plate

All inscriptions for the instrument shall be placed on the identification plate, which shall be located on a visible place on the instrument.

8.1.1 CE mark and metrological M

A CE mark of conformity followed by a rectangle surrounding the metrological M and year of production shall be located on the identification plate.

8.1.2 Inscriptions

The identification plate shall bear the following inscriptions:

- Manufacturer's trademark and / or name
- Type designation
- Serial number
- Reference accuracy class Ref(0.2)
- Accuracy class X(1)
- Type examination certificate number
- Maximum fill (MaxFill =)
- Minimum fill (Minfill =)
- Maximum capacity (Max =)
- Minimum capacity(Min =)
- Verification scale interval (d =)
- Temperature range: -10 / +40 °C
- Electromagnetic class: E2
- Humidity: Non-condensing
- Supply voltage
- For each filling station:
  - Serial number of indicator
  - Event counter values for indicator

9. Pictures

Figure 1 W200 weighing indicator.

Figure 2 TLB485 weighing indicator.

Figure 3 Sealing of W200 enclosure.

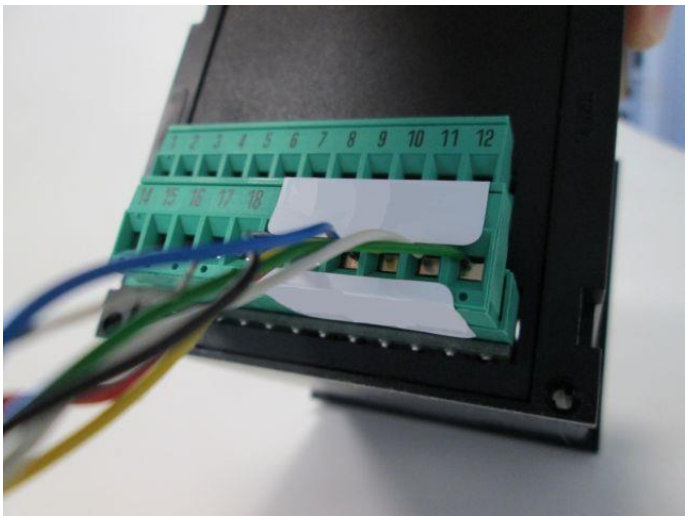

Figure 4 Sealing of the connection of the load cell to W200.

Figure 5 Sealing of TLB enclosure.

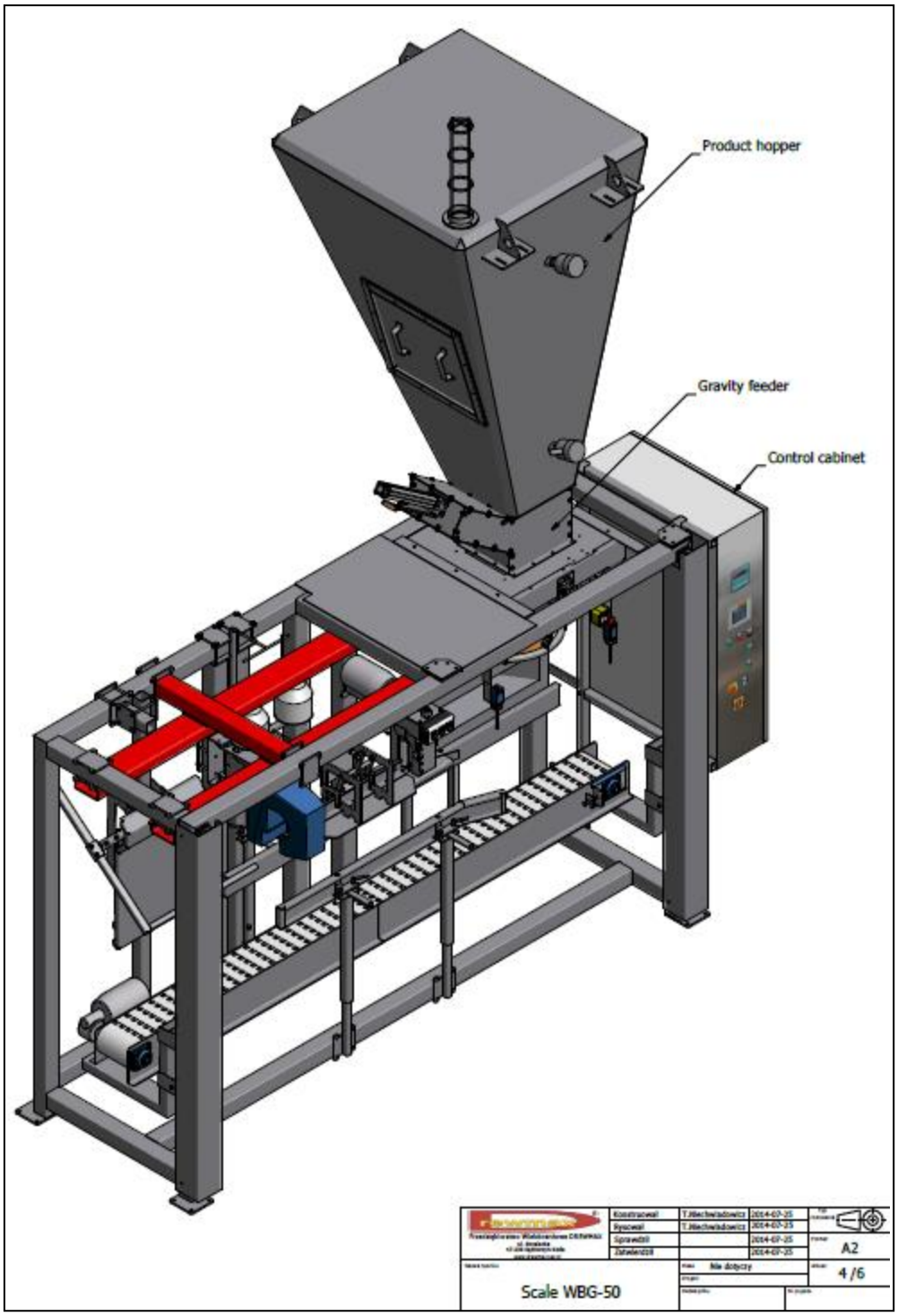

Figure 6 WB/G-50

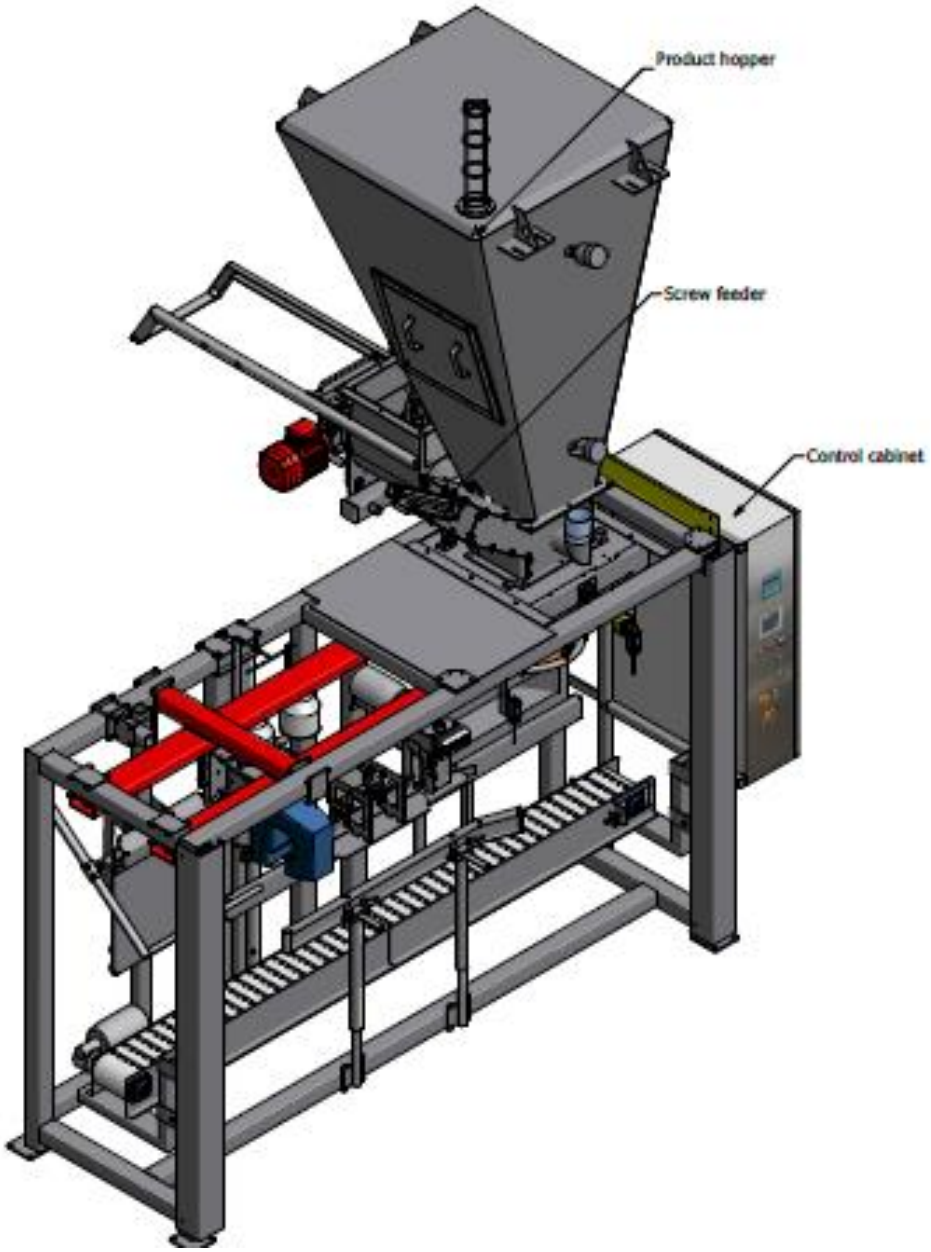

Figure 7 WB/S-50

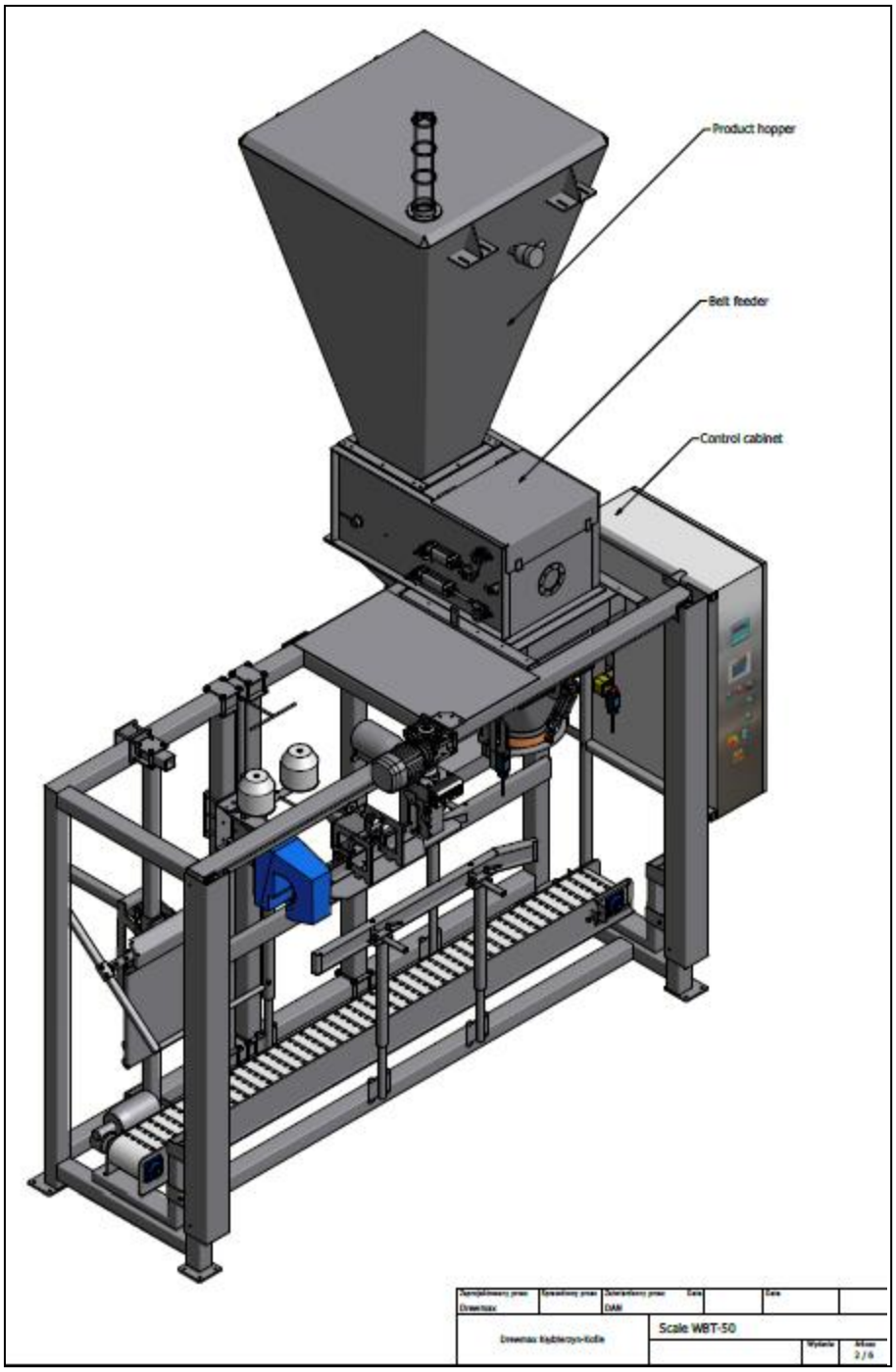

Figure 8 WB/T-50

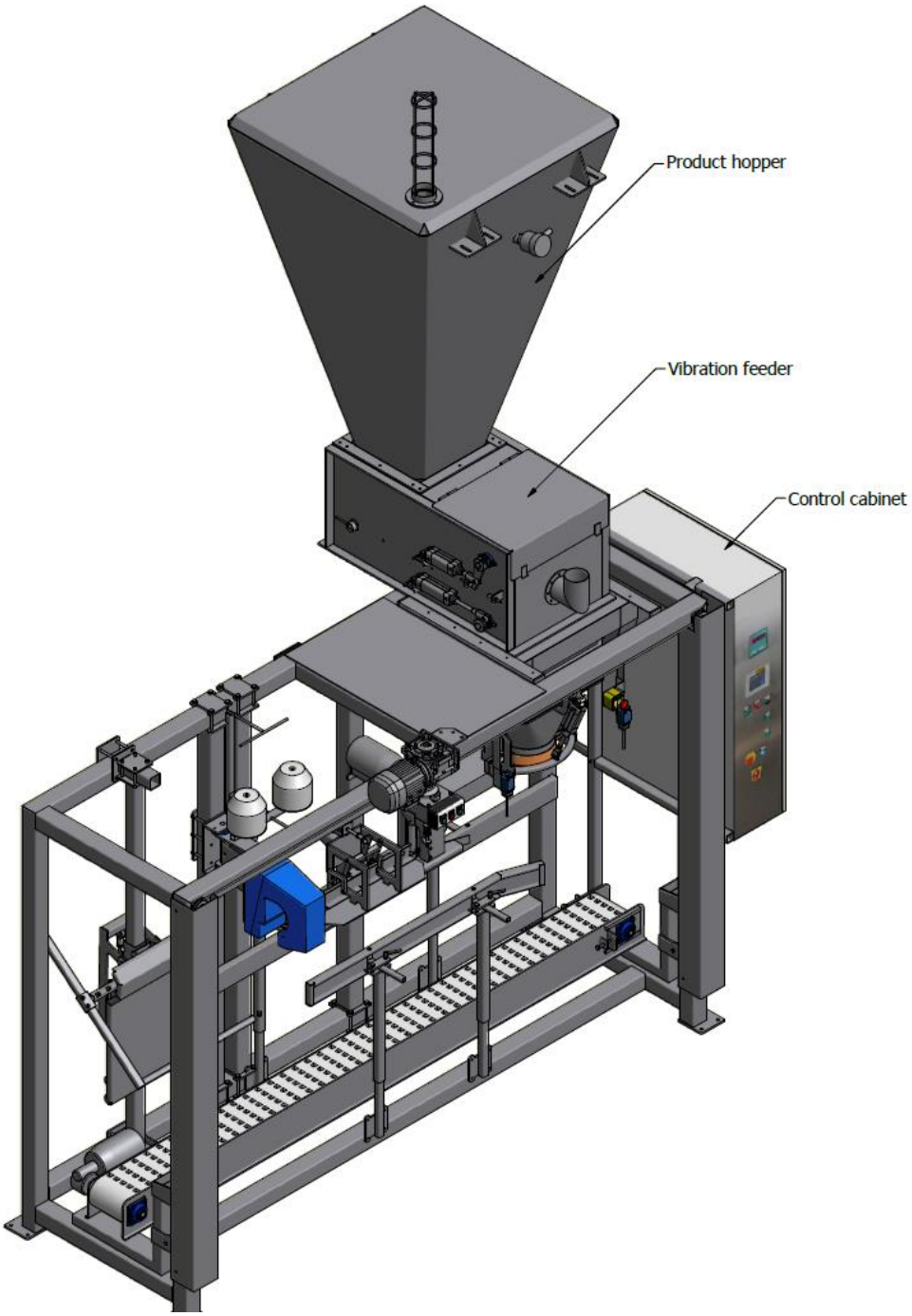

Figure 9 WB/W-50

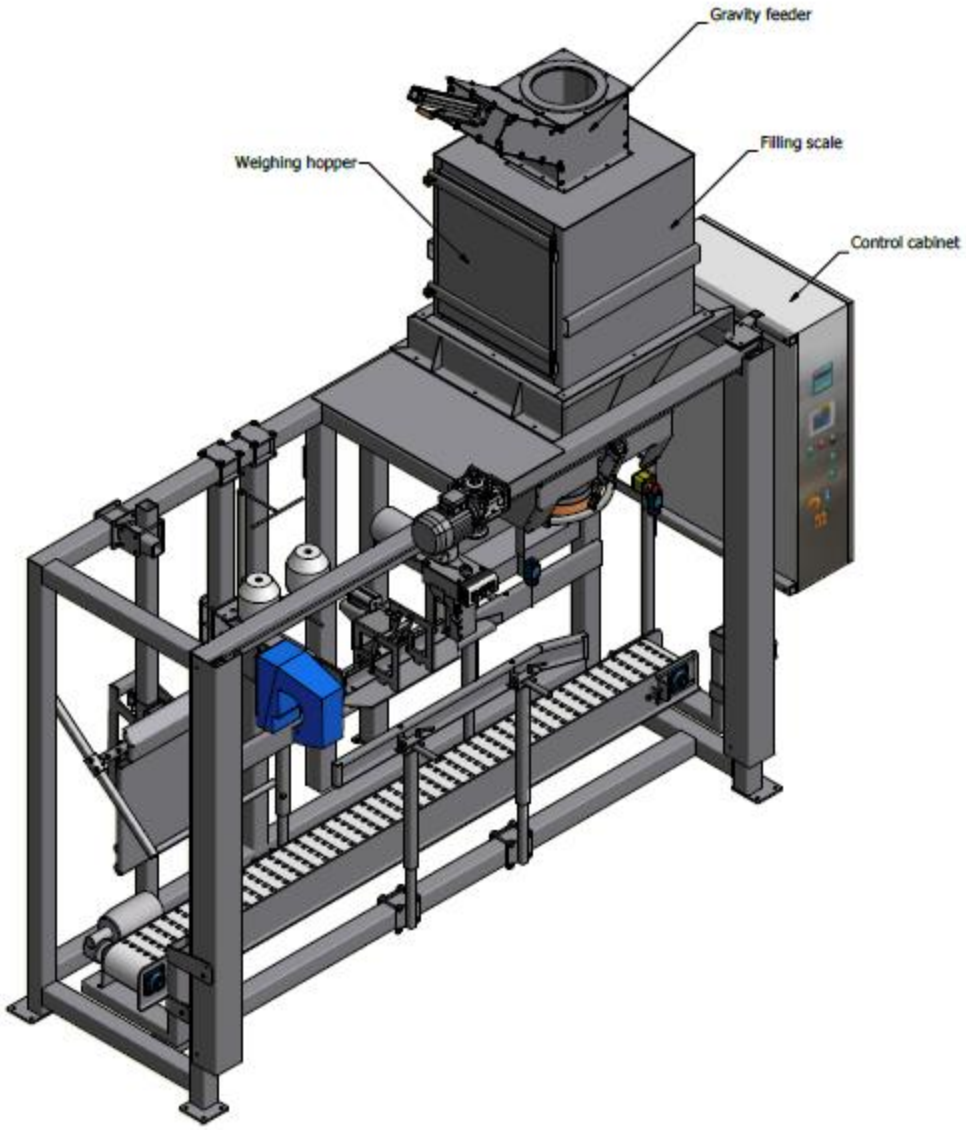

Figure 10 WN/G-50

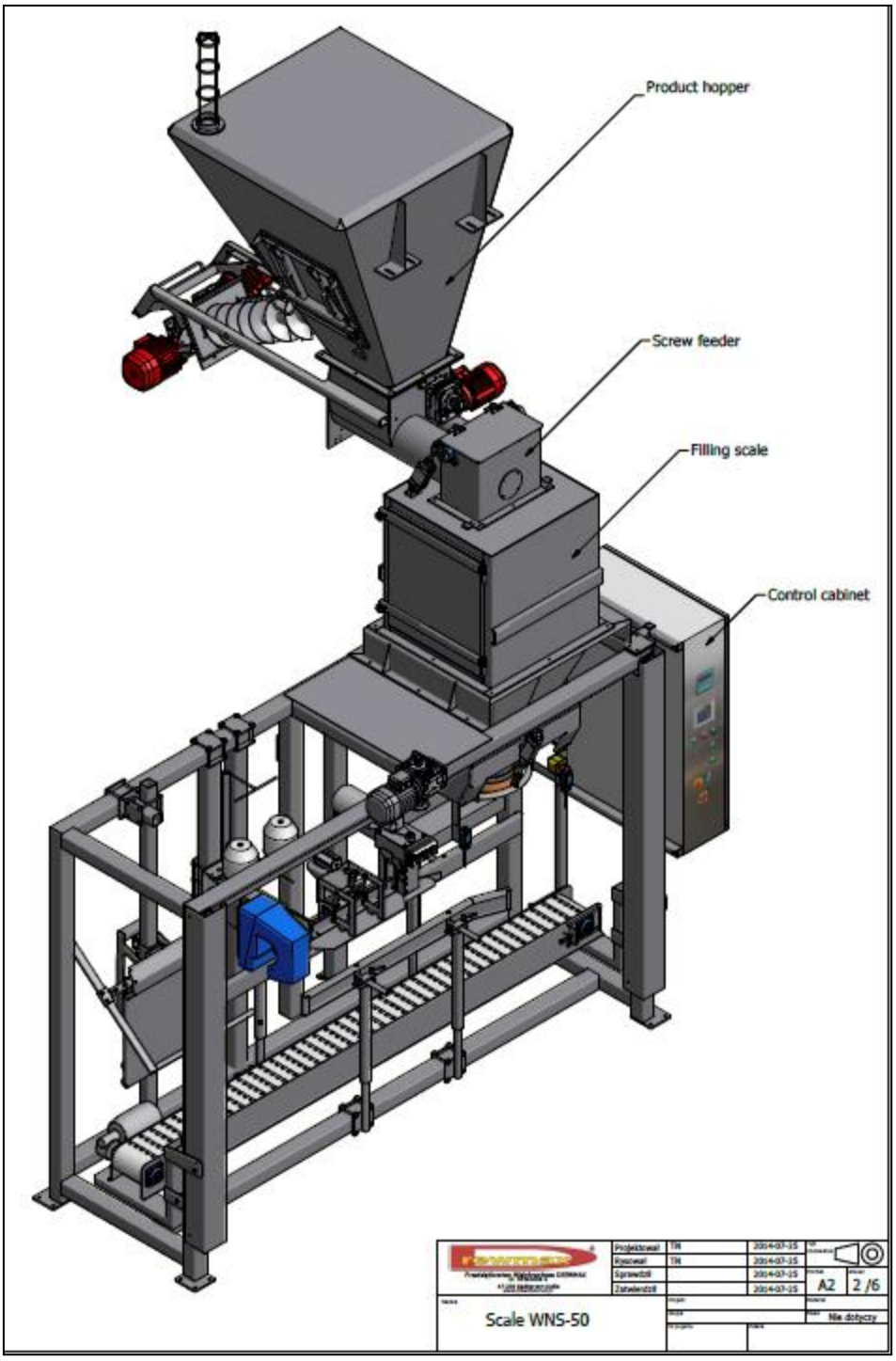

Figure 11 WN/S-50

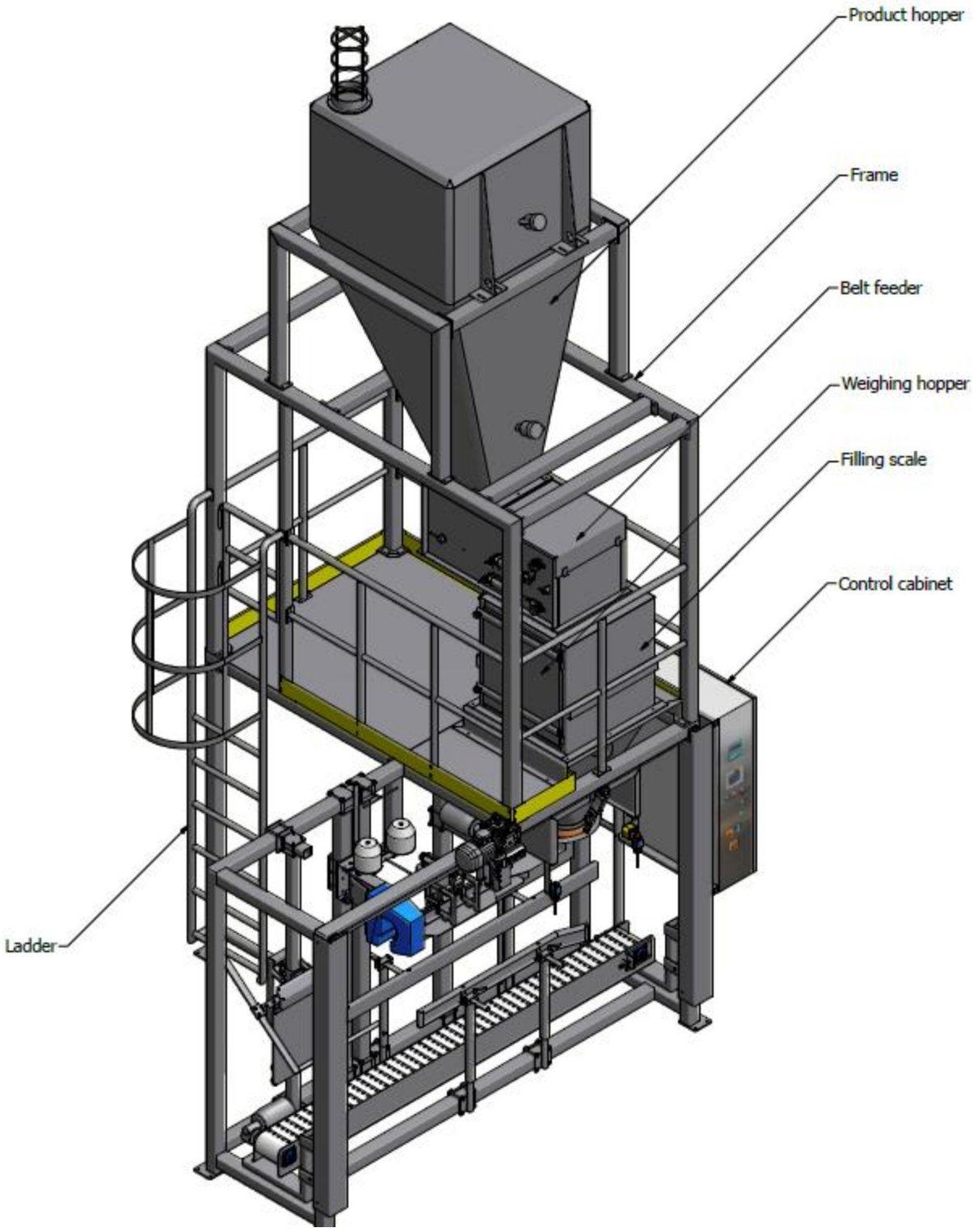

Figure 12 WN/T-50

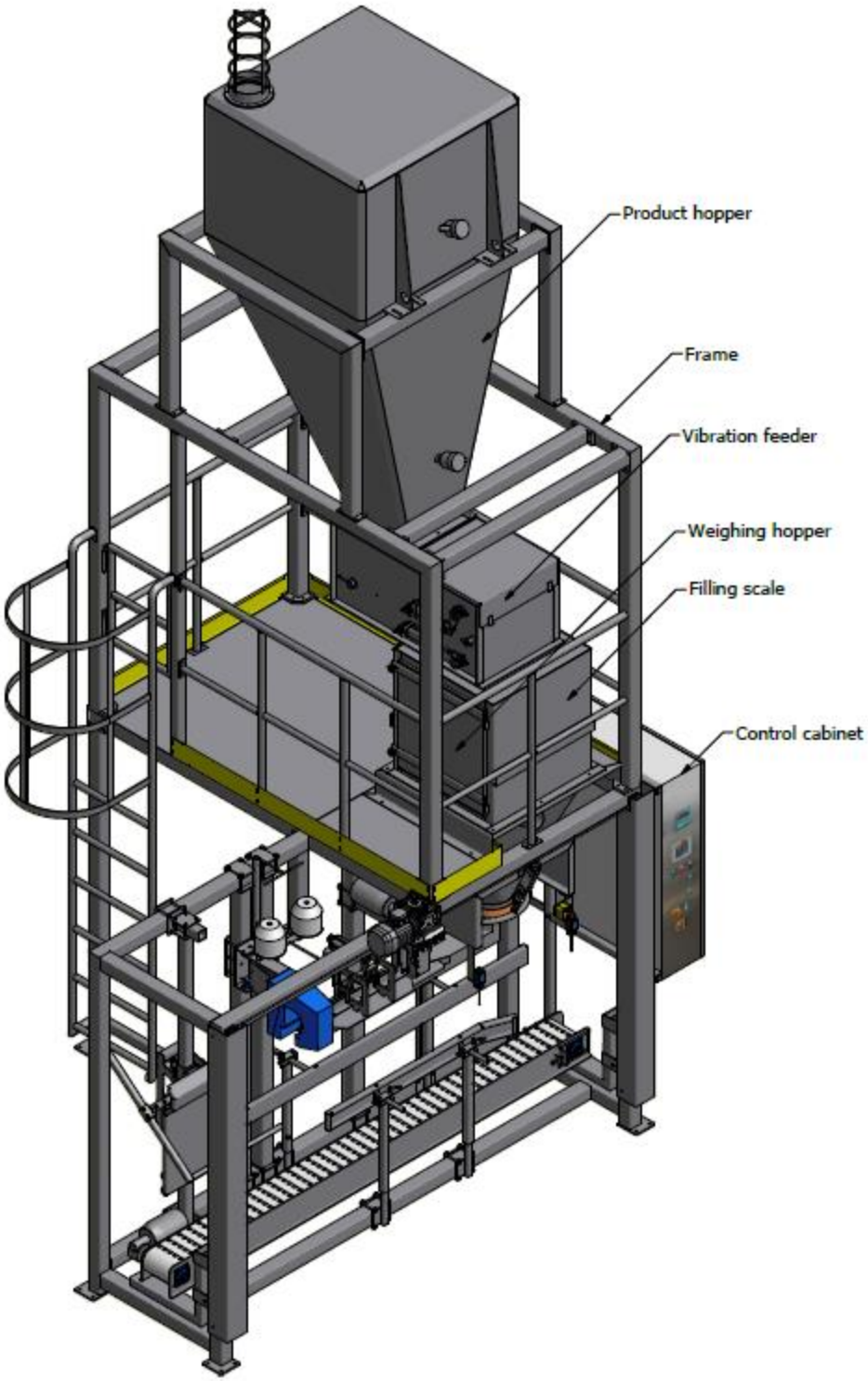

Figure 13 WN/W-50

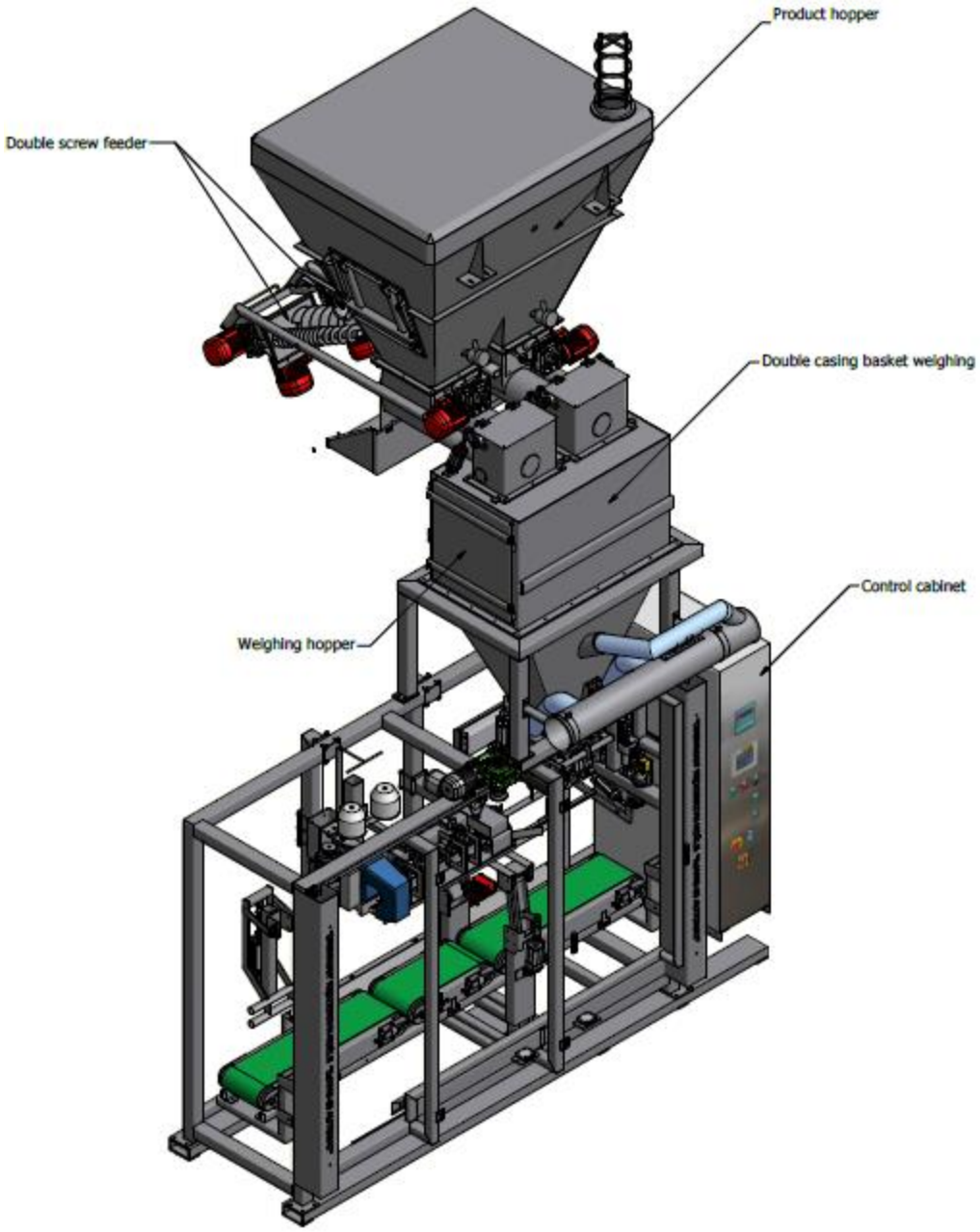

Figure 14 2aWN/S-50

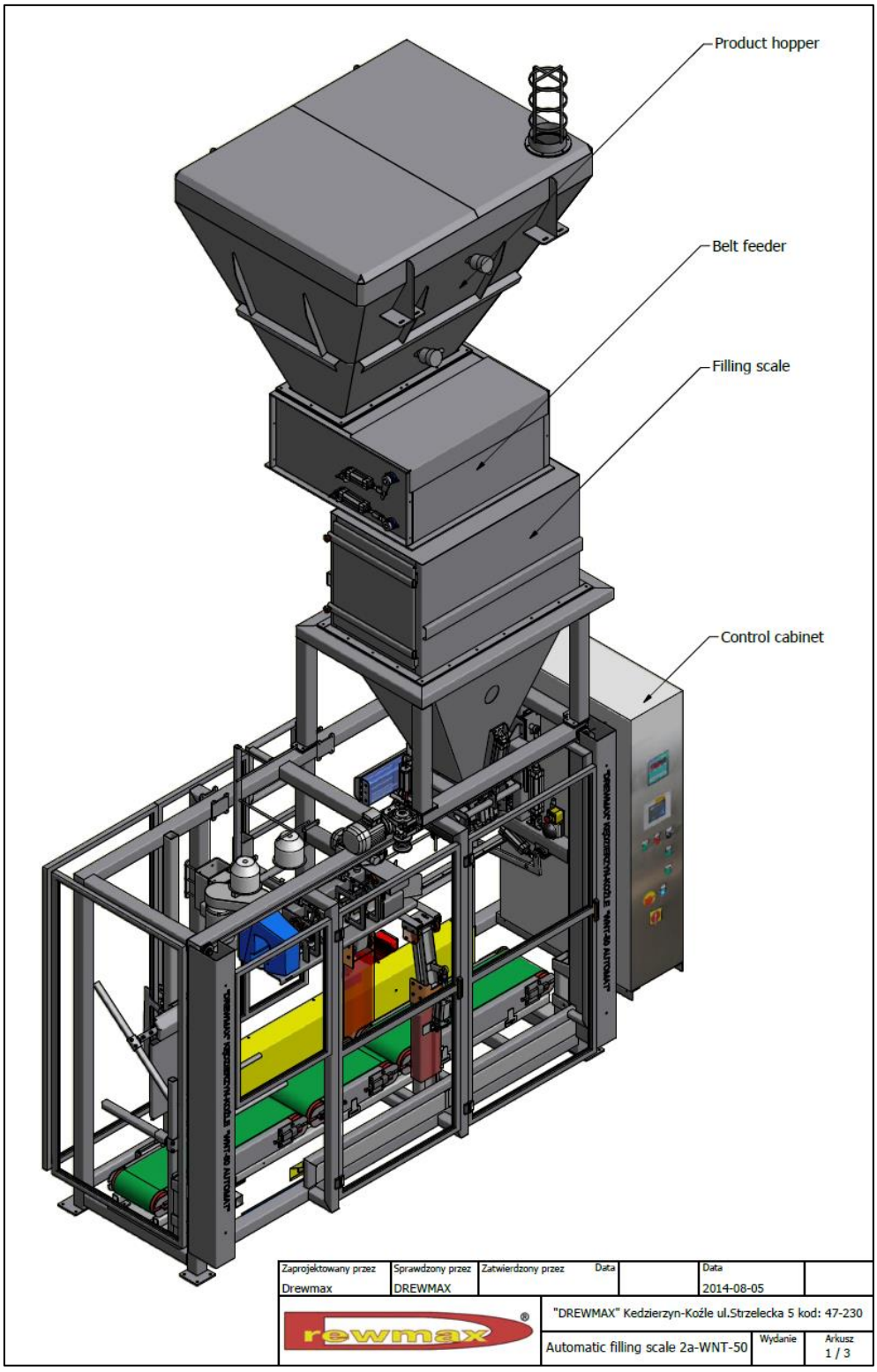

Figure 15 2aWN/T-50

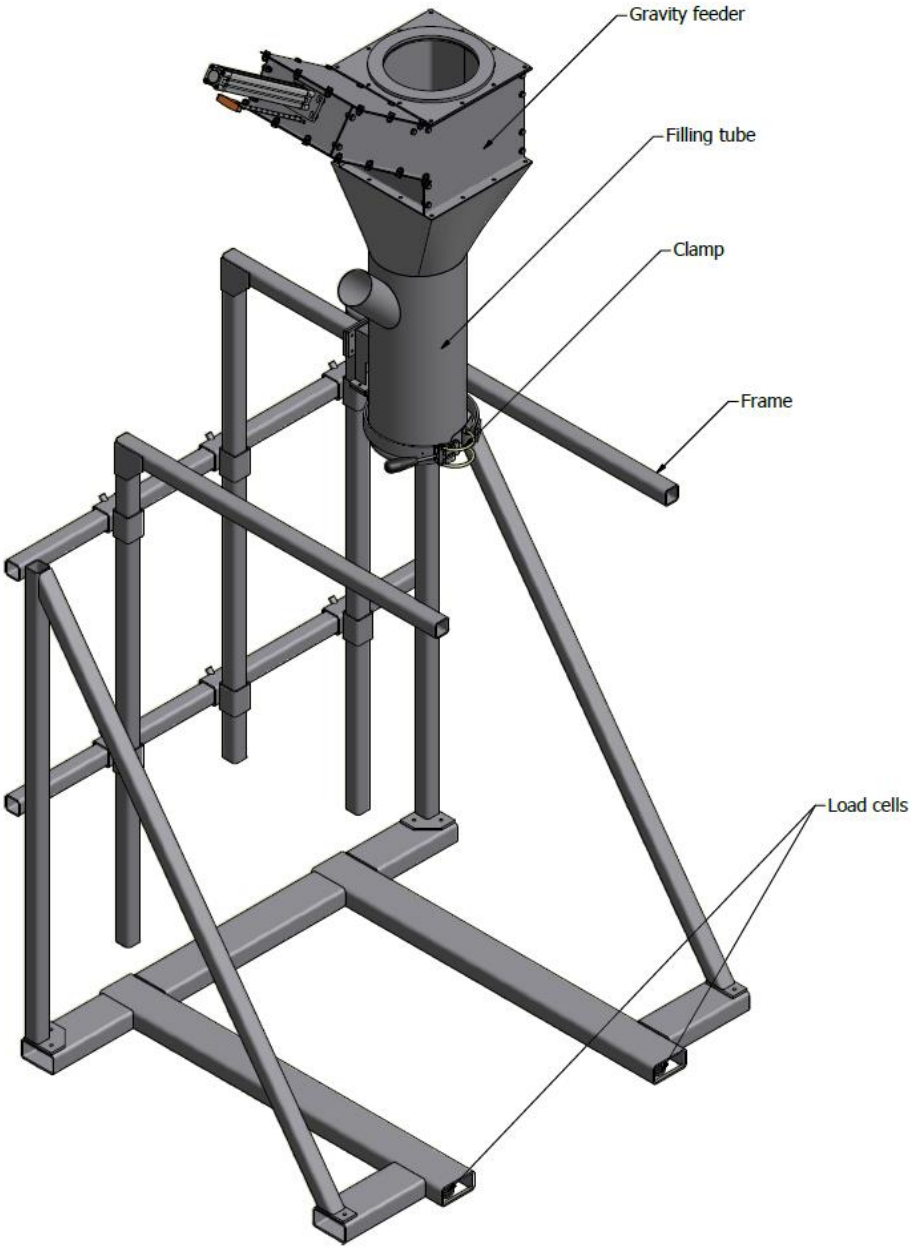

Figure 16 WBBG-1

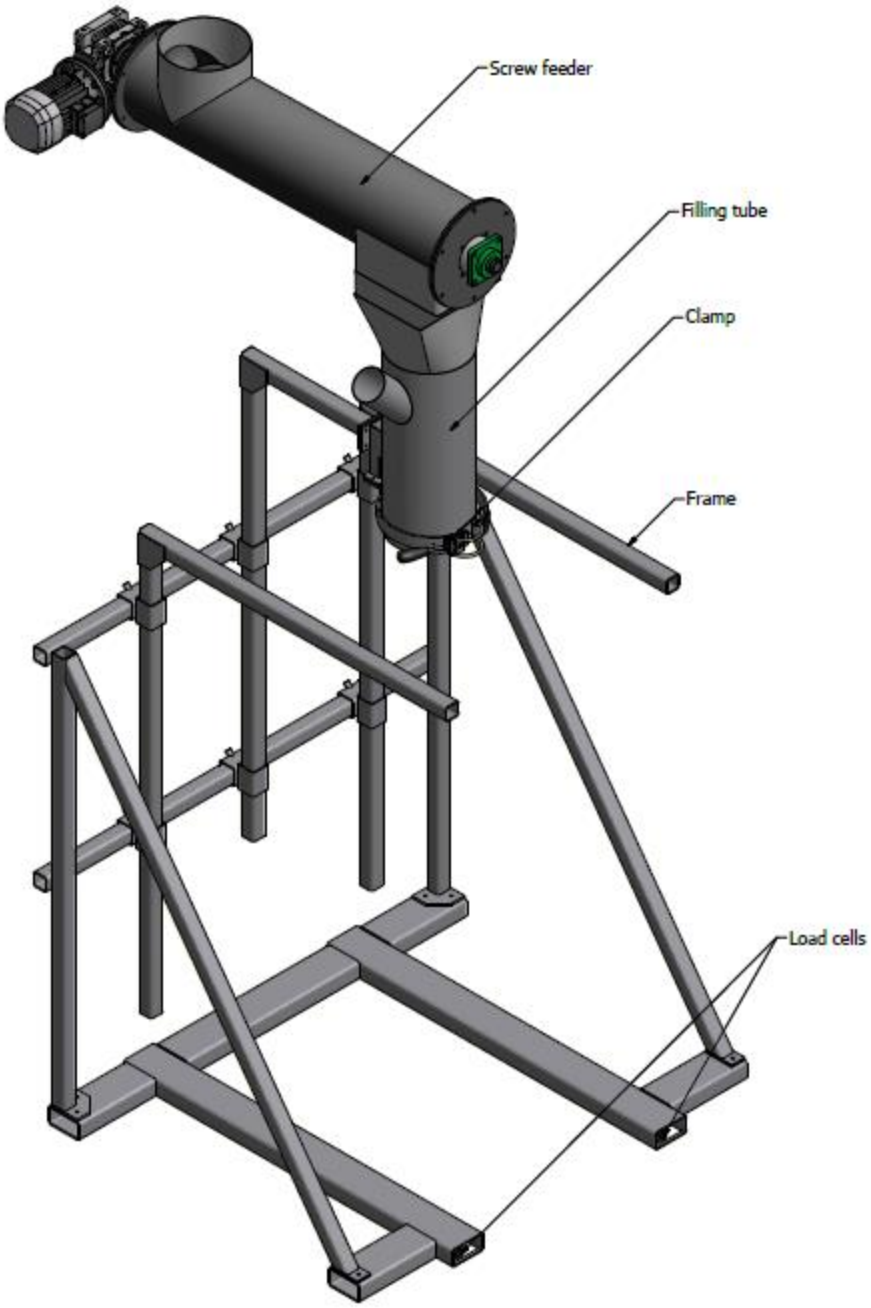

Figure 17 WBBS-1

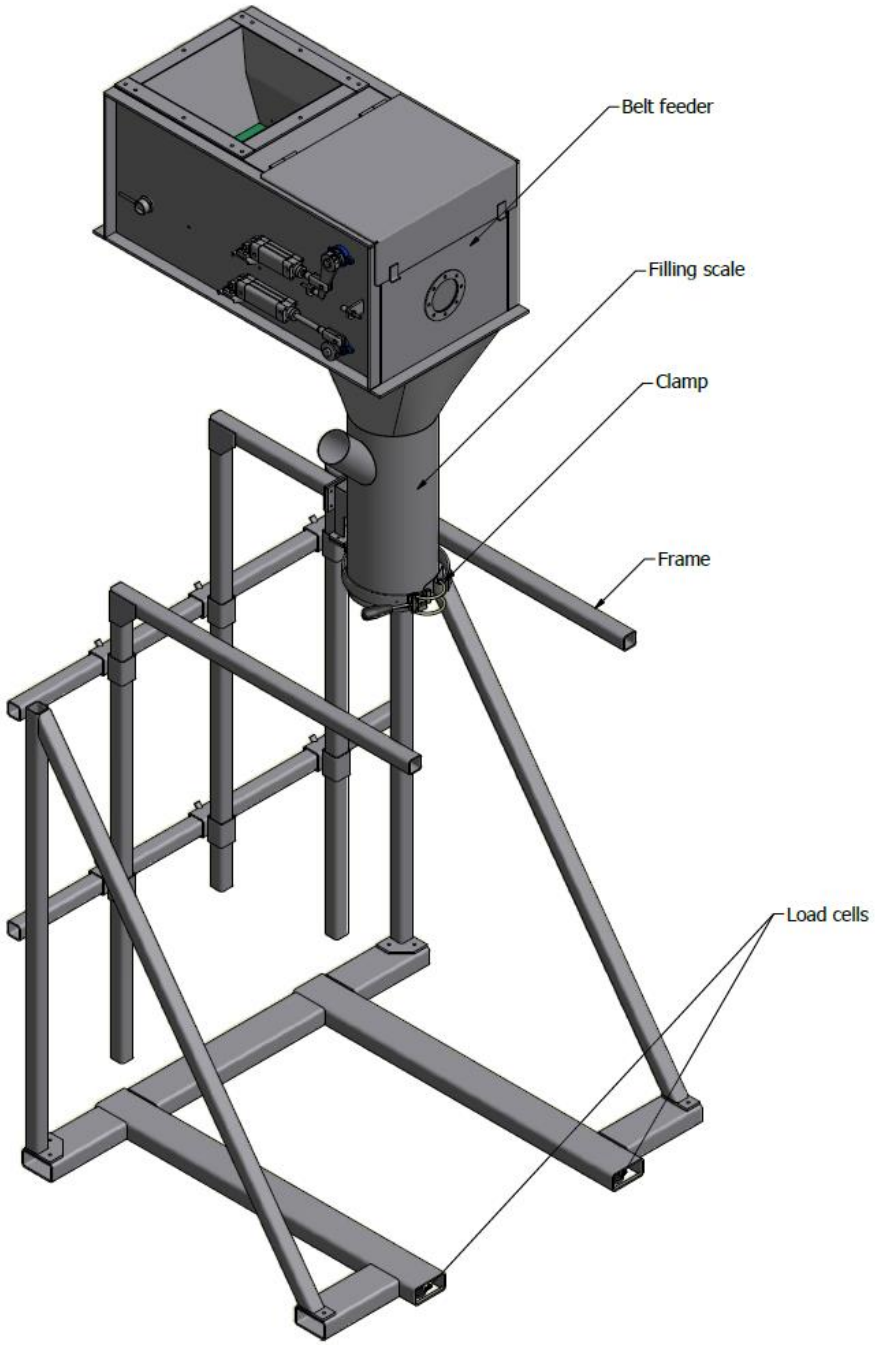

Figure 18 WBBT-1

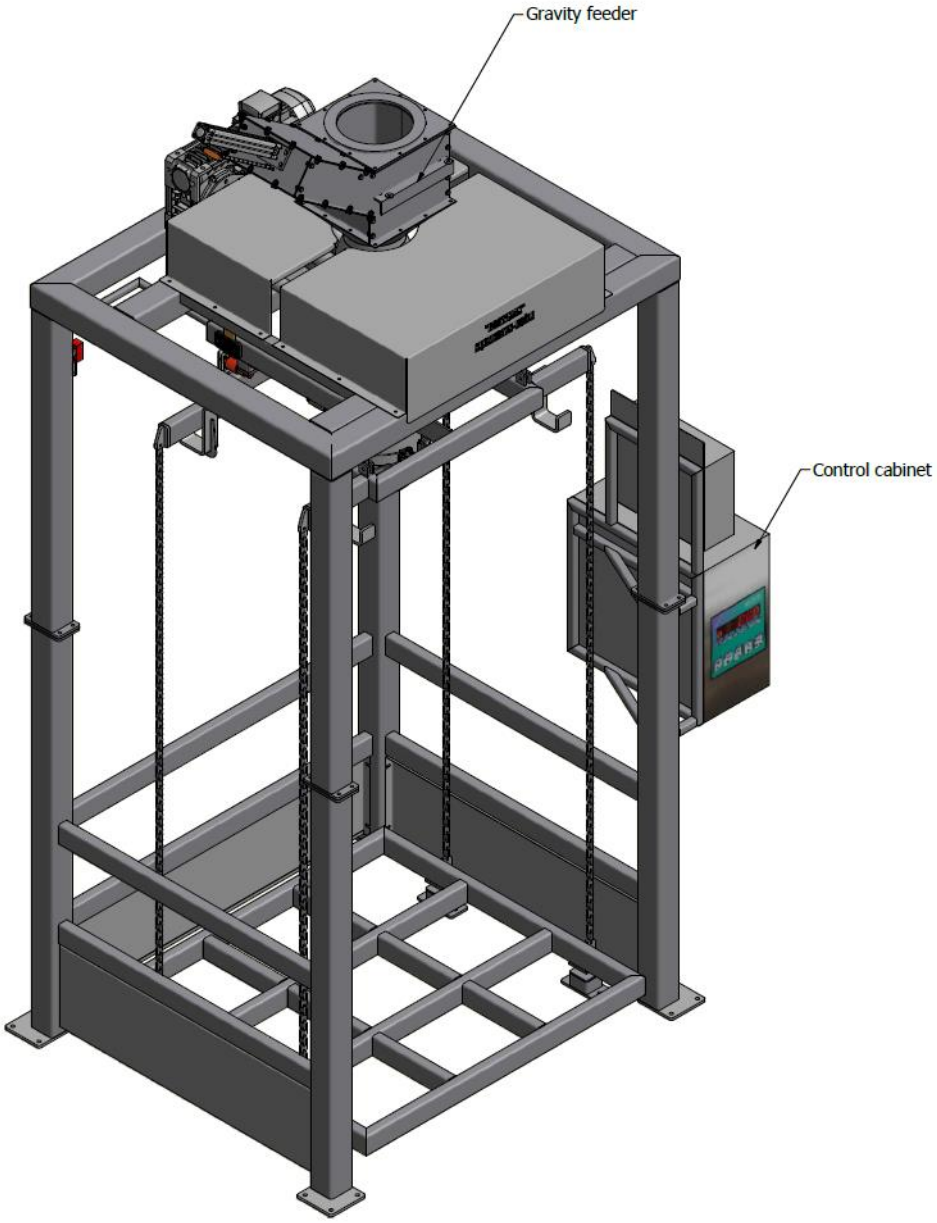

Figure 19 WBBG-2

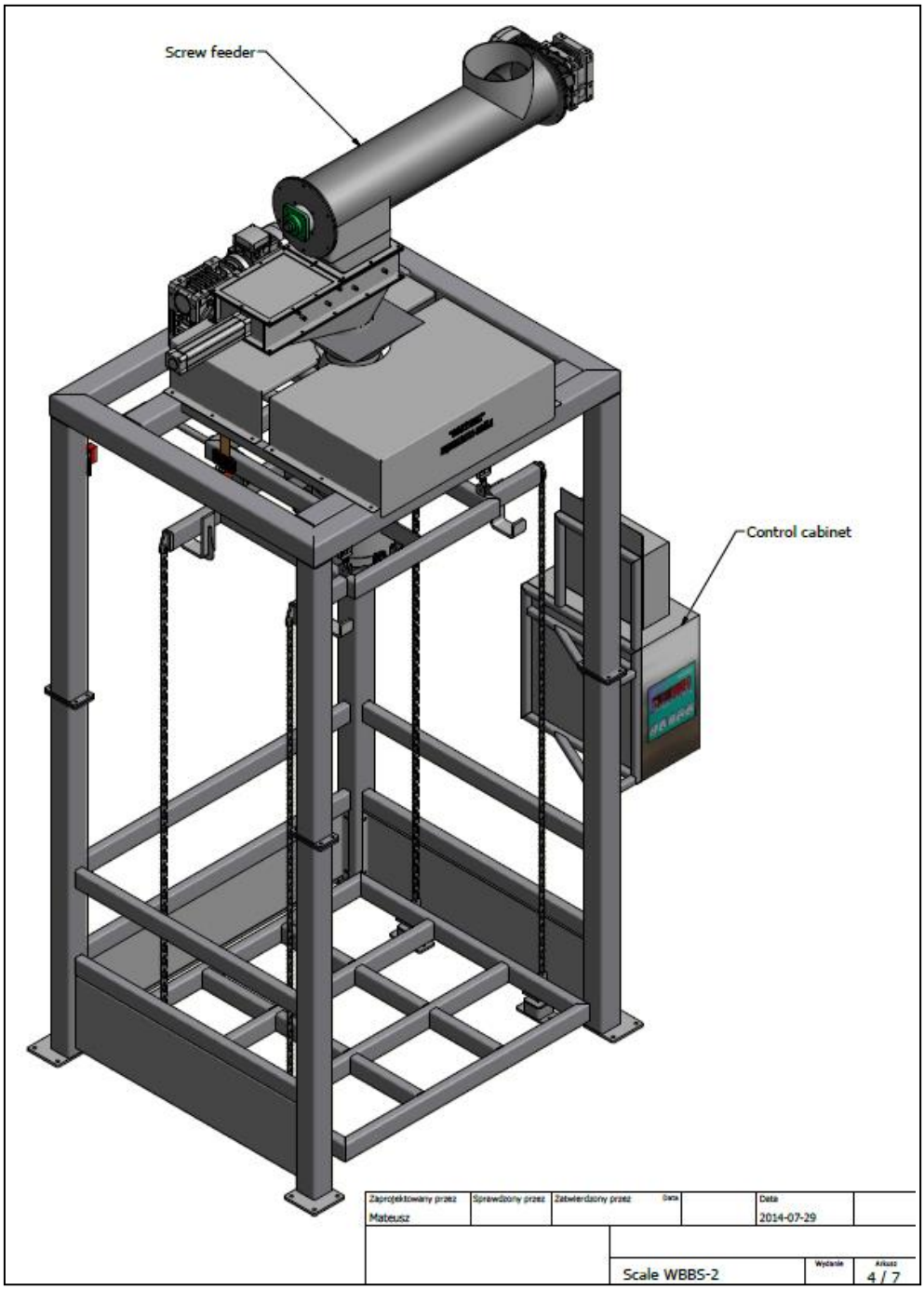

Figure 20 WBBS-2

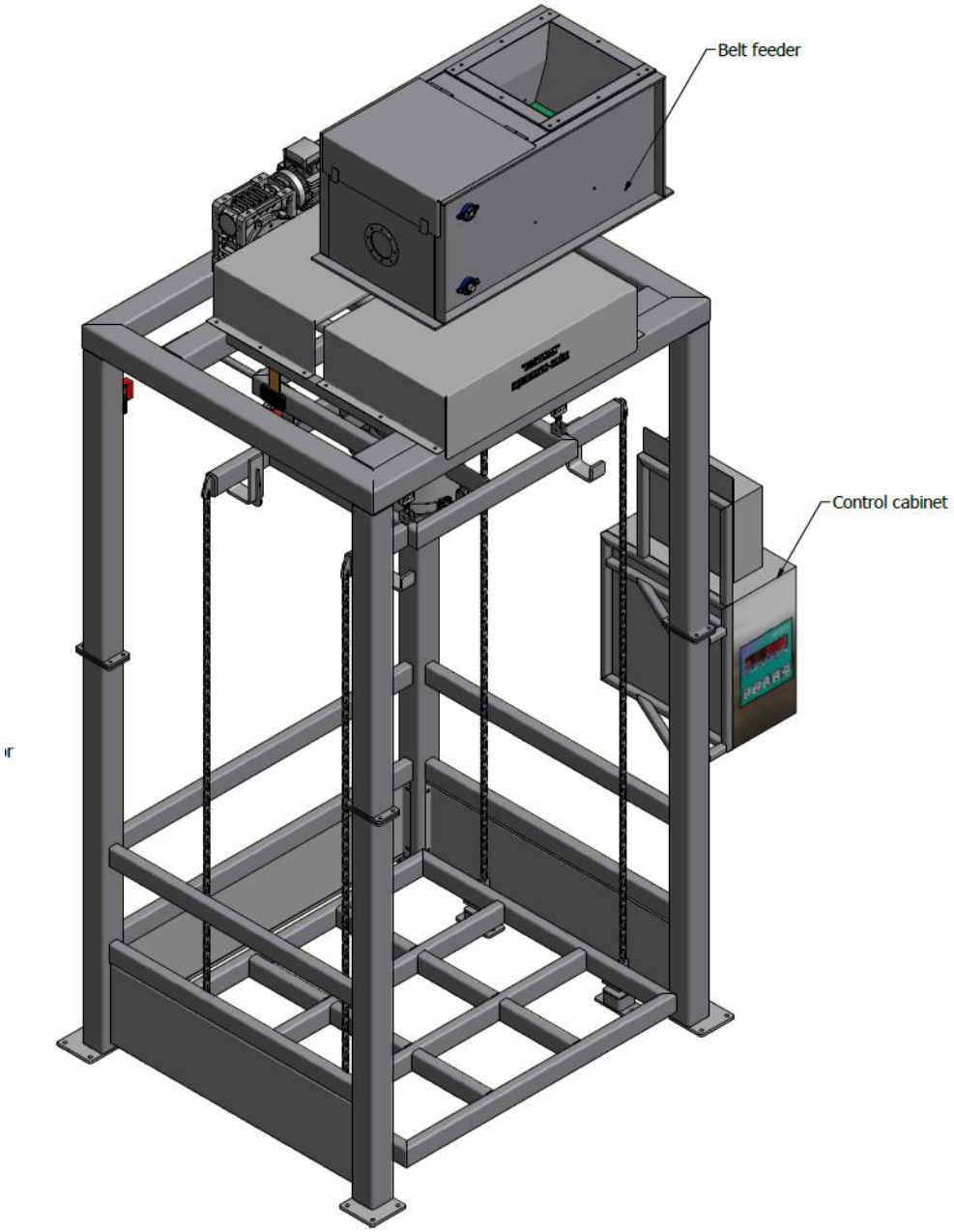

Figure 21 WBBT-2

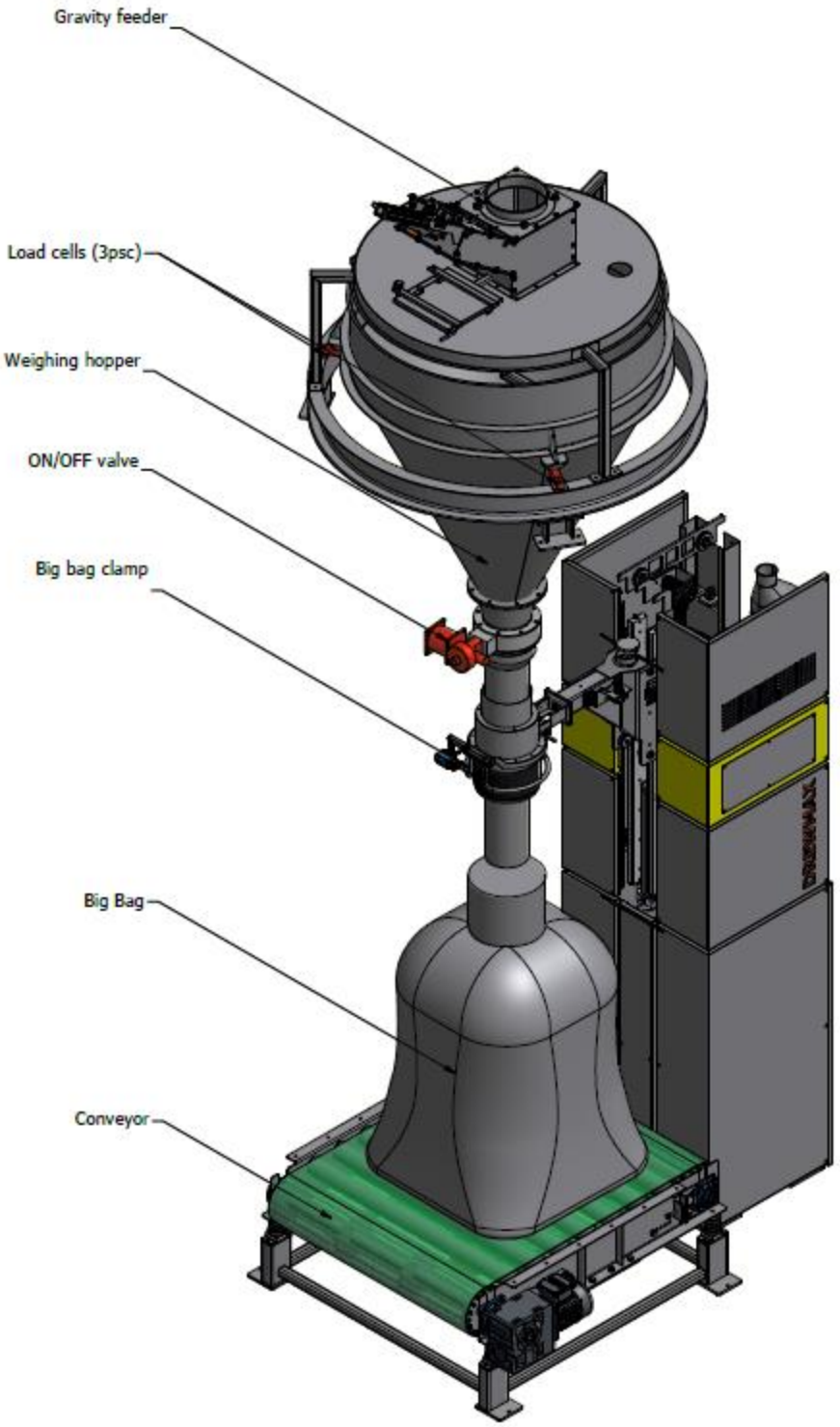

Figure 22 WBBNG

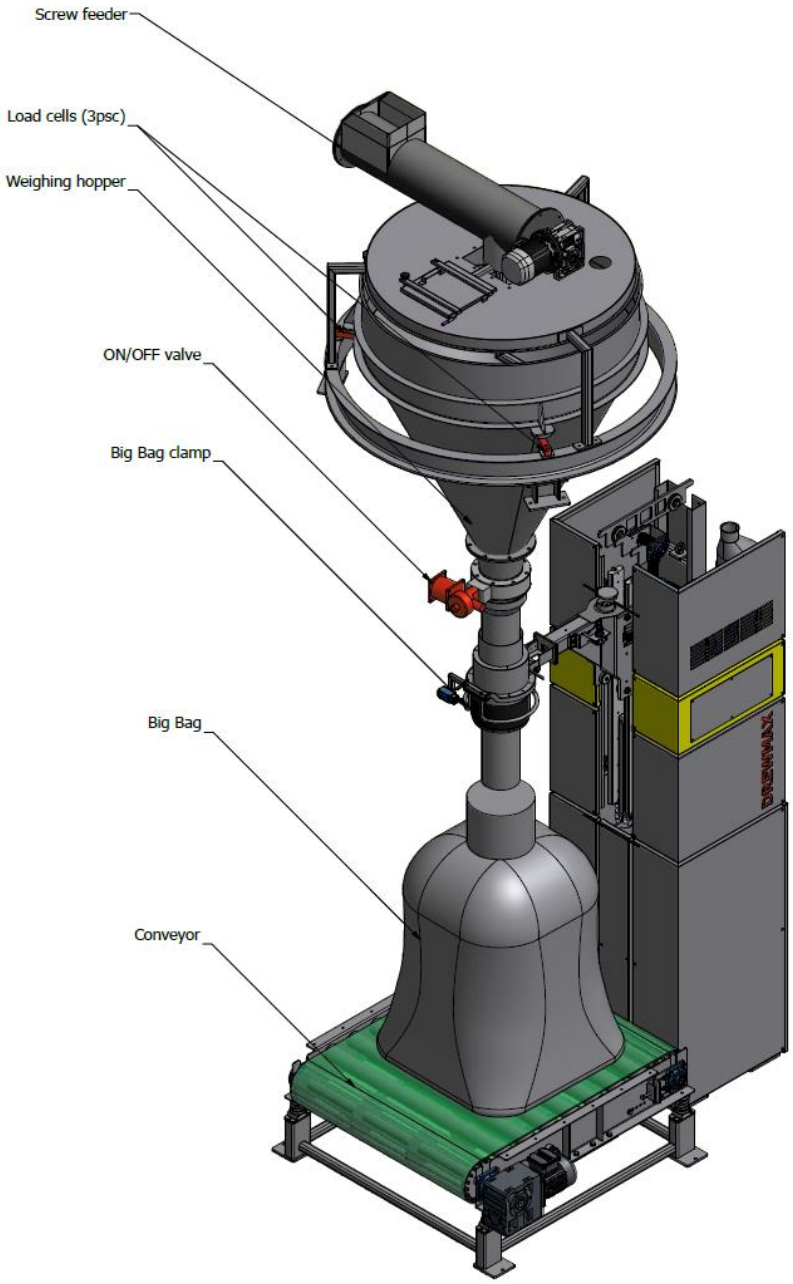

Figure 23 WBBNS

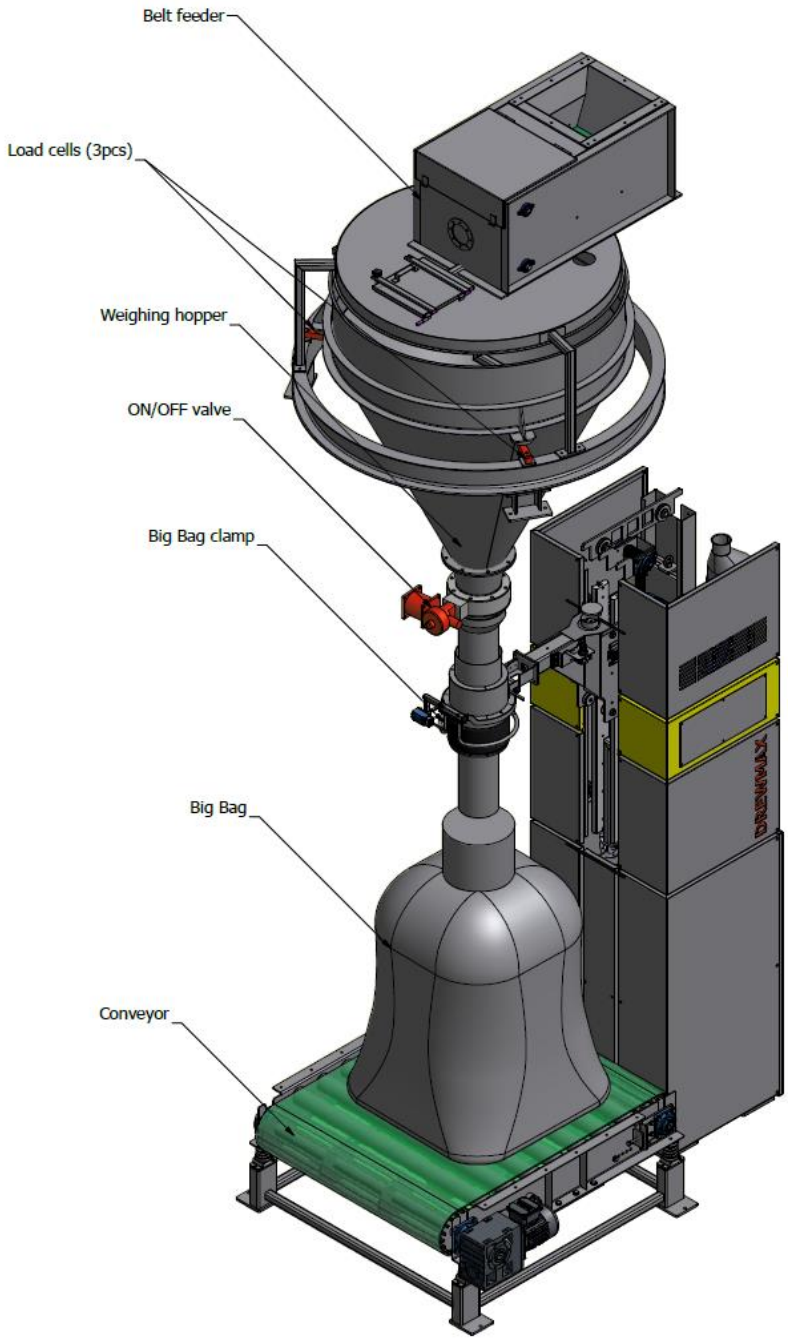

Figure 24 WBBNT

10. Composition of modules - example

COMPATIBILITY OF MODULES

Ref.: WELMEC 2

Non-Automatic Weighing Instrument, single-interval

Certificate of EU Type-Approval N°: TAC: DK0199.468

INDICATOR A/D (Module 1)		Type:	W200		
Accuracy class according to EN 45501 and OIML R76:			$Class_{ind}$ (I, II, III or IIII)		III
Maximum number of verification scale intervals (n_{max}):			n_{ind}		10000
Fraction of maximum permissible error (mpe):			p_1		0,5
Load cell excitation voltage:			U_{exc}	[Vdc]	5
Minimum input-voltage per verification scale interval:			Δu_{min}	[µV]	0,2
Minimum load cell impedance:			R_{Lmin}	[Ω]	43
Coefficient of temperature of the span error:			Es	[% / 25°C]	
Coefficient of resistance for the wires in the J-box cable:			Sx	[% / Ω]	
Specific J-box cable-Length to the junction box for load cells:			$(L/A)_{max}$	[m / mm²]	1315
Load cell interface:			6-wire (remote sense)		
Additive tare, if available:			T^+	[% of Max]	0
Initial zero setting range:			IZSR	[% of Max]	-10 / 10
Temperature range:			T_{min} / T_{max}	[°C]	-10 / 40
Test report (TR), Test Certificate (TC) or OIML Certificate of Conformity:					
LOAD RECEPTOR (Module 2)		Type:			
Construction:			Hopper		
Fraction of mpe:			p_2		0,5
Number of load cells:			N		2
Reduction ratio of the load transmitting device:			$R=F_M / F_L$		1
Dead load of load receptor:			DL	[% of Max]	180
Non uniform distribution of the load:			NUD	[% of Max]	20
Correction factor:	$Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$				3,1
LOAD CELL ANALOG (Module 3)		Type:	Flintec PC60		
Accuracy class according to OIML R60:			$Class_{LC}$ (A, B, C or D)		C
Maximum number of load cell intervals:			n_{LC}		3000
Fraction of mpe:			p_3		0,7
Rated output (sensitivity):			C	[mV / V]	2
Input resistance of single load cell:			R_{LC}	[Ω]	350
Minimum load cell verification interval:	($v_{min\%}$ = 100 / Y)		$v_{min\%}$	[% of Emax]	0,013334
Rated capacity:			E_{max}	[kg]	100
Minimum dead load, relative:			$(E_{min} / E_{max}) * 100$	[%]	0
Temperature range:			T_{min} / T_{max}	[°C]	-10 / 40
Test report (TR) or Test Certificate (TC/OIML) as appropriate:					
COMPLETE WEIGHING INSTRUMENT			Single-interval		
Manufacturer: Drewmax		Type:	WN/T-50 AGFI		
Accuracy class according to EN 45501 and OIML R76:			$Class_{WI}$ (I, II, III or IIII)		III
Fractions: $p_i = p_1^2 + p_2^2 + p_3^2$:			p_i		1,0
Maximum capacity:			Max	[kg]	50
Number of verification scale intervals:			n		2500
Verification scale interval:			e	[kg]	0,02
Utilisation ratio of the load cell:	$\alpha = (Max / E_{max}) * (R / N)$				0,25
Input voltage (from the load cells):	$\Delta_u = C * U_{exc} * \alpha * 1000 / n$			[µV/e]	1,00
Cross-section of each wire in the J-box cable:			A	[mm²]	0,22
J-box cable-Length:			L	[m]	5
Temperature range to be marked on the instrument:		Not required	T_{min} / T_{max}	[°C]	
Peripheral Equipment subject to legal control:					

Acceptance criteria for compatibility				Passed, provided no result below is < 0	
$Class_{WI}$	<=	$Class_{ind}$ & $Class_{LC}$	(WELMEC 2: 1)	$Class_{WI}$:	PASSED
pi	<=	1	(R76: 3.5.4.1)	1 - pi =	0,0
n	<=	n_{max} for the class	(R76: 3.2)	n_{max} for the class - n =	7500
n	<=	n_{ind}	(WELMEC 2: 4)	n_{ind} - n =	7500
n	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n =	500
E_{min}	<=	DL * R / N	(WELMEC 2: 6d)	(DL * R / N) - E_{min} =	45
$v_{min} \cdot \sqrt{N} / R$	<=	e	(R76: 4.12.3)	e - (v_{min} * √N / R) =	0,001
or (if v_{min} is not given)				Alternative solutions: ↑ ↓	
$(E_{max} / n_{LC}) \cdot (\sqrt{N} / R)$	<=	e	(WELMEC 2: 7)	e - ((E_{max} / n_{LC}) * (√N/ R)) =	
Δu_{min}	<=	Δu	(WELMEC 2: 8)	$\Delta u - \Delta u_{min}$ =	0,80
R_{Lmin}	<=	R_{LC} / N	(WELMEC 2: 9)	(R_{LC} / N) - R_{Lmin} =	132
L / A	<=	$(L / A)_{max}^{WI}$	(WELMEC 2: 10)	$(L / A)_{max}^{WI}$ - (L / A) =	1292
T_{range}	<=	$T_{max} - T_{min}$	(R76: 3.9.2.2)	(T_{max} - T_{min}) - T_{range} =	20
Q * Max * R / N	<=	E_{max}	(R76: 4.12.1)	E_{max} - (Q * Max * R / N) =	22,5

Signature and date:

Conclusion . . . . . PASSED

This is an authentic document made from the program:
"Compatibility of NAWI-modules version 3.2".