Engineering Report
EB-16242-23

Title:	Tensile Breaking Strength Test with Conductor AAC Pansy
At the request of:	EMTA KABLO SANAYI VE TİCARET A.Ş. İstasyon Mahallesi İbişağa Caddesi No:4 34940 Tuzla – İstanbul, Turkey
Test standard:	EN 50182:2001
Place of test:	RIBE Test Laboratory Werk 2 Industriestr. 5 91126 Schwabach, Germany

Internal request for test: VA 16242 File: 1.2 Contents: 6 pages

Summary:

A Tensile Breaking Strength Test was carried out with a sample of conductor AAC Pansy received from the purchaser.

Failure load was 7,51 kN (102,9 % of the specified minimum breaking strength 7,3 kN).

Mario Dansachmüller
RIBE Engineering

Hans-Jörg Krispin
RIBE Engineering

Schwabach, 13 July 2016

Index

1. Test procedure

Characteristics of the conductor are given in Annex 1.

The conductor sample was prepared in line with the instructions given in EN 50182. Epoxy type end fittings were used. The length of the free conductor between end fittings was 10,35 m.

Measuring devices (calibration certificate see Annex 2):

Tensile load	Load cell 50 kN HBM U2, S.No. 89022

A screw-type tension device was used (constant rate of displacement per time). The rate of increase of load was such that 30 % minimum breaking strength (MBS) were reached after 41 seconds starting from a preload of 5 % MBS (0,37 kN). Temperature was 24,0 °C.

2. Result

The breaking strength of the conductor is determined by the load attained at which one or more wires of the conductor are fractured.

Total breakage of the conductor occured at a load of 7,51 kN (102,9 % MBS) in the free span at a distance of approximately 2,5 m from one of the end fittings.

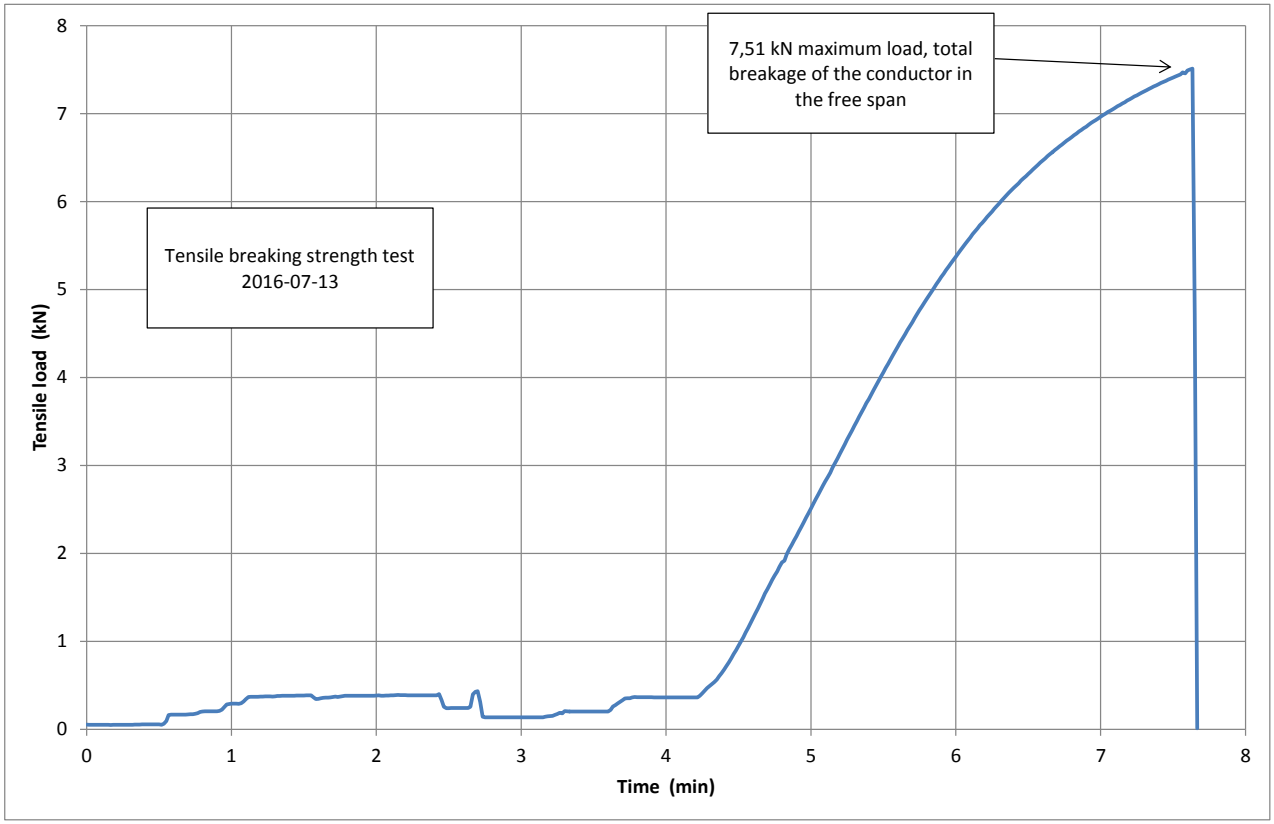

Fig. 1: Diagram load vs. time

Fig. 2: Total breakage of the conductor in the free conductor span approximately 2,5 m from one end fitting.

Annex 1: Conductor data

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CONDUCTOR & CABLE

CODE NAME			PANSY				
STANDARD			ASTM B 231/B 231M – 04				
All Aluminum Conductor	Size/nominal sectional area	AWG / MCM	1				
	Aluminum strand	Number	7		Diameter	2.78	mm
	Calculated area	mm^2	42.49				
	Minumum breaking strength	kN	7.3				
	Outside diameter	mm	8.34				
	Standard weight	kg/km	116.6				
	Calculated resistance 20°C	D.C.	0.6755	Ohm/km	A.C. 50 Hz		Ohm/km
	Modulus of elasticity	Initial		N/mm^2	Final	60,000	N/mm^2
	Coefficient of linear expansion	Per °C	$23 * 10^{-6}$				
	Length of each reel	m (+/- %2)	5,000				
	Reel type	mm*mm*mm	1000 * 500 * 660 (760)				
	Net weight per drum	kg	583				
	Gross weight per drum	kg	663				
	Grease weight	kg/km (+/-%20)					
	Grease type						
ALUMINUM WIRE	Diameter	mm	2.78				
	Ultimate tensile strength (before stranding)	N/mm^2	165				
	Conductivity at 20°C	% IACS	61				

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Annex 2: Calibration certificate load cell

RIBE Richard Bergner Elektroarmaturen GmbH + Co. KG

EEK Page 1/2 Protocol Cert_50kN_HBM_U2_89022_2016-07-12 12/07/2016

Calibration protocol according to DIN ISO 10012

Calibration protocol code **Cert_50kN_HBM_U2_89022_2016-07-12**

Devices calibrated:

Device 1:		Load Cell HBM U2
	Serial No.:	89022
Device 2:		Measurement Amplifier HBM MGCplus / ML55B
	Serial No.:	801197960/1
Device 3:		none
	Serial No.:	none

Calibration reference device

Device 1:		Load Cell Hegewald&Peschke 1210-AF20kN
	Serial No.:	545012
	Calibration certificate:	1105RB2/2015 dated 05.11.2015

Measurement data: Page 2
Date of calibration: 12/07/2016
Calibration carried out by: H. Jung

H. Jung

CERT_50kN_113-04_2016-07-12.xlsx

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Page 2/2 Protocol Cert_50kN_HBM_U2_89022_2016-07-12 12/07/2016

Devices calibrated:

Device 1: Load Cell HBM U2
Serial No.: 89022
Settings: none

Device 2: Measurement Amplifier HBM MGCplus / ML55
Serial No.: 801197960/1
Settings: Channel 2, sensitivity -2,0380 mV/V

Device 3: none
Serial No.: none
Sensitivity none

Calibration reference device:

Device 1: Load Cell Hegewald&Peschke 1210-AF20kN
Serial No.: 545012

1	2	3	4	5
Load reference	Load reading	Relative error (2-1)/1	Load reading	Relative error (4-1)/1
kN	kN	%	kN	%
0	0,000	-	0,000	-
1	1,000	0,00	0,999	-0,10
2	1,999	-0,05	1,997	-0,15
3	2,999	-0,03	2,996	-0,13
4	4,000	0,00	3,997	-0,08
5	5,000	0,00	4,997	-0,06
6	6,000	0,00	5,997	-0,05
7	7,000	0,00	6,997	-0,04
8	8,000	0,00	7,998	-0,02
9	9,000	0,00	9,001	0,01
10	10,002	0,02	10,002	0,02

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