

Test Intention:

In test 3621 we want to investigate the lifespan of a CF98.05.04 in a small bending radius on the short way

Client:

Name: M. Göllner Team: chainflex® Date: 20.01.2010

Order-Info:

Customer/ No.: igus® GmbH, Spicher Str.1a , 51147 Köln

Series / No: CF98 Installation type: horizontal, short way

Customer test: Yes No Development test: Yes No

Technical data

Target & Examination

e-chain® type: E045.50.018 / 028.0

Cable length [m]: 2,0

e-chain® radius [mm]: 18 / 28

Target [Strokes]: **Lifespan**

Stroke [m]: 0,25

Optical check:

Acceleration **a** [m/sec²]: 8,0

Function check:

Velocity **v** [m/s]: 2,0

Standard measuring:

Ambient temperature [°C]: approx. 25°C

AutΩMeS:

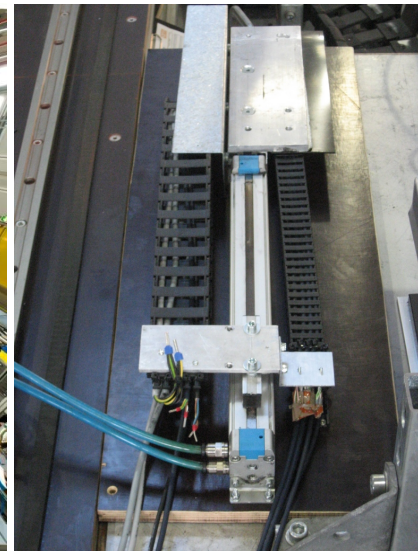
Experimental setup (Sketch, Photo ...)

Checklist for the experimental preparations

- additional inscription/label at all wires
- strain reliefs at both ends of the chain
- correct electrical connection of all wires
- radius was marked at the cables and the energy chain

1. Construction:

This test is built up on the „Zylinderhub“. The following picture shows the test structure:



2. Cable and hose packages:

No. 1: **2x CF98.05.04** with the cable marking
1743 m IGUS CHAINFLEX CF98.05.04 4x0,5 CE RoHS conform www.igus.de

3. Description of the cable construction:

Standard igus chainflex® catalogue cable.

4. Remarks:

To detect broken conductor wires we will measure the ohmic resistance of these cable elements. The cores of the samples are connected in series to measure the ohmic resistances.

The following chart gives an overview regarding the test parameters:

Cable no.	Cable type	E-chain radius [mm]	Outer diameter [mm]	Bending factor [xd]	Bending factor catalogue [xd]
1.1	CF98.05.04	28	5,6	5,0	4,0
1.2	CF98.05.04	18	5,6	3,2	4,0

Cable no.	Cable type	Counter reading		Effectively tested Strokes	Cable okay after ... Strokes
		... mounting	... demounting		
1.1	CF98.05.04	880.997	4.702.425	3.821.428	3.821.428
1.2	CF98.05.04	0	138.719.526	138.719.526	138.719.526

Test-order was checked by ... [Rainer Rössel or Martin Göllner and further employee]

Date:	25.01.2010	Name:		Name:	S. Voshaar
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Result

Start report 25.01.2010:

At the 25.01.2010 we started the test 3621 with a counter reading 880.997, we will measure the ohmic resistance regularly.

Interim report 17.2.2010:

At the 17.02.2010 we demounted the cable no. 1.1 after 3.821.428 strokes to check the inner structure.

Interim report 19.02.2010:

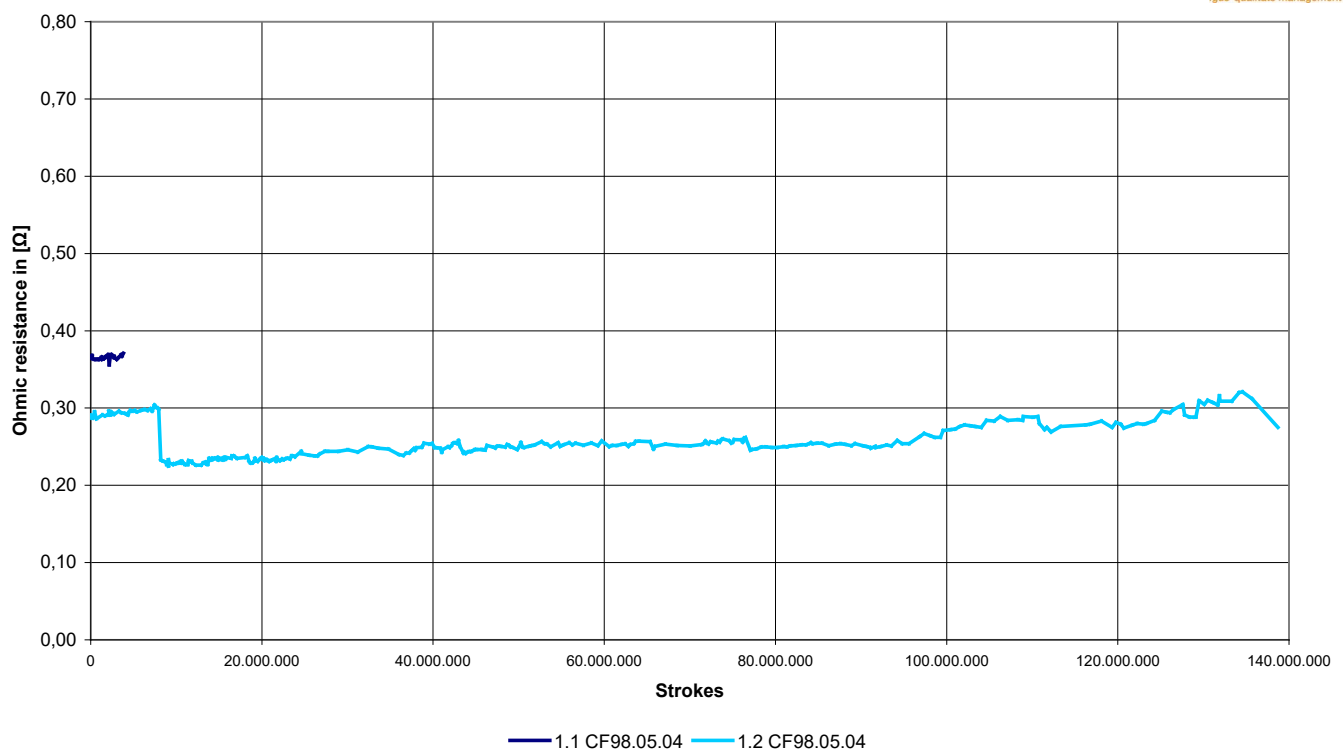
At the 19.02.2010 we mounted the cable no. 1.2 and set the counter to 0, we will measure the ohmic resistance regularly.

Interim report 09.10.2012:

At the 09.10.2012 we demounted cable no. 1.2 after 138.719.526 strokes to finalize the test.



Trend of the ohmic resistances



Evaluation

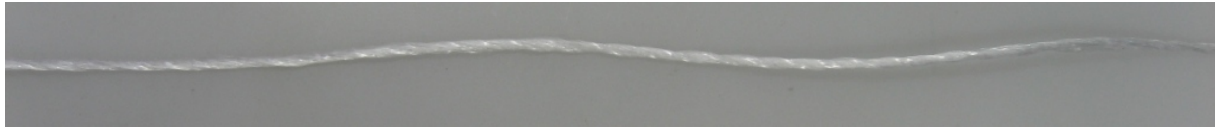
Dissection report:

The following pictures show the dissected elements of the cables

The condition of the cable no.1.1 (CF98.05.04) after 3.821.428 strokes



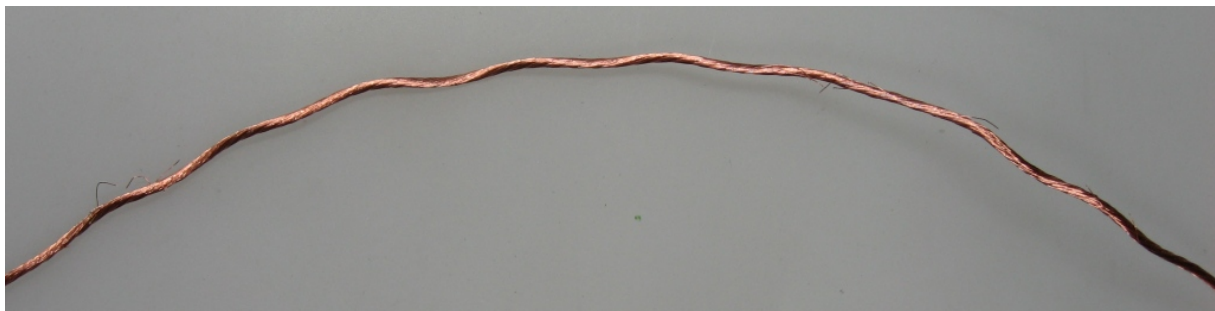
Abrasion at the outer jacket



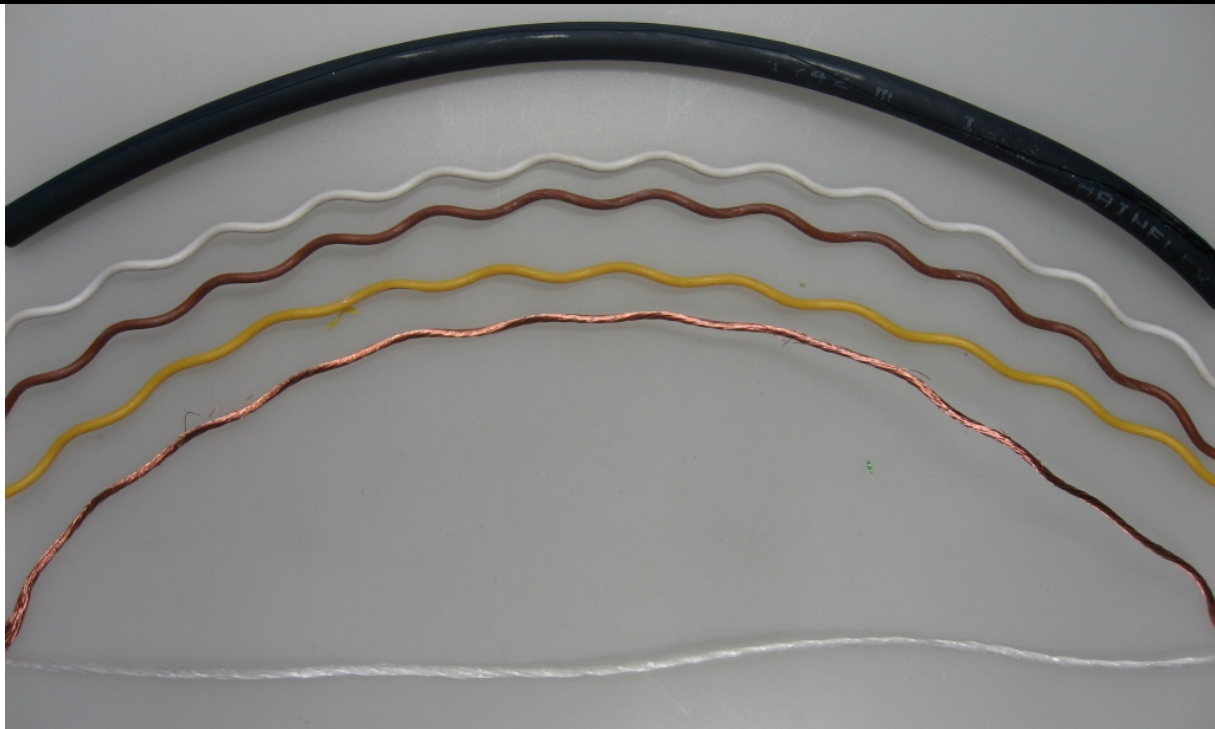
The centre element



Close-up of the conductor rope



The conductor rope with damaged single copper wires



Overview of the dissected pieces of cable no.1.1 after 3.821.428 strokes

Strokes	3.821.428
Condition outer jacket	O.K.
Condition core insulation	O.K.
Condition conductor	O.K.
Condition centre element	O.K.

The condition of the cable no.1.2 (CF98.05.04) after 138.719.526 strokes



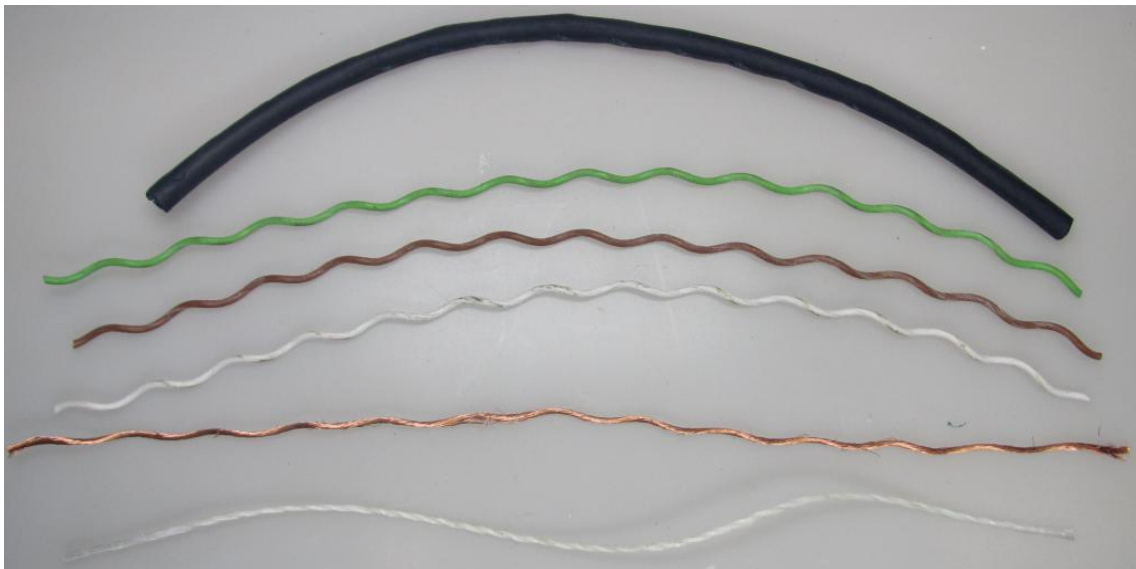
Abrasion at the outer jacket



Abrasion at the outer jacket



Close-up of the conductor rope



Overview of the dissected pieces of cable no.2.1 after 138.719.526 strokes

Strokes	138.719.526
Condition outer jacket	Abrasion
Condition core insulation	O.K.
Condition conductor	Single broken wires
Condition centre element	O.K.

Name: **Ch. Mittelstedt**

Date: **10.06.2012**