

## Test Intention:

In test 4404 we will investigate the lifespan of CF270.UL.D in an E6.52.075.125.0 e-chain.

## Client:

Name: Christian Mittelstedt    Team: chainflex®    Date: 06.03.2012    Result:

## Order-Info:

Customer/ No.: igus GmbH

Series / No: CF270.UL.D

Installation type: horizontal, short way

Customer test:                      Yes  No

Development test:                Yes  No

## Technical data

## Target & Examination

E-Chain type: E6.52.075.125.0

Target [strokes]: **Lifespan**

E-Chain Radius [mm]: 125

Optical check:

Stroke [m]: 1,6

Abrasion jacket:

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

Resistance:

Cable length [m]: 6,0

Function check:

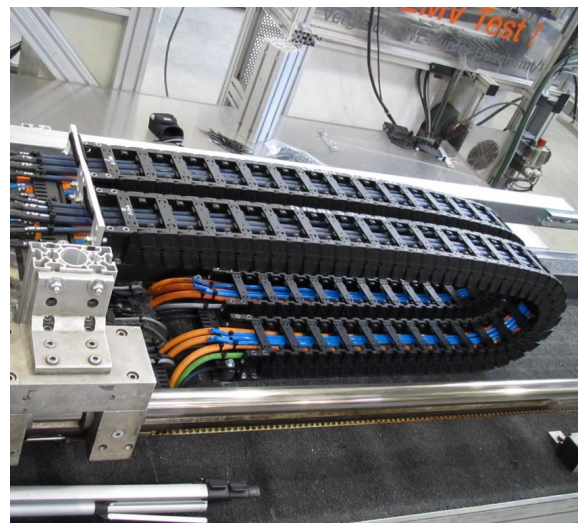
## Experimental setup (Sketch, Photo ...)

### 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 „Zollern“. The following pictures show the test structure:



## 2. Cable and hose packages:

- No. 1 **2x CF270.UL.10.07.02.02.D** with the cable marking  
 01111 igus CHAINFLEX CF270.UL.10.07.02.02.D (4G1,0+2x(2x0,75)C)C 600/1000V E310776  
 C $\mathcal{R}$ Us AWM Style 21223 VW1 AWM I/II A/B 80°C 1000V FT1 CE T O/AE DESINA RoHS  
 conform [www.igus.de](http://www.igus.de)
- No. 2 **1x CF270.UL.15.15.02.01.D** with the cable marking  
 03469 igus CHAINFLEX CF270.UL.15.15.02.01.D (4G1,5+(2x1,5)C)C 600/1000V E310776  
 C $\mathcal{R}$ Us AWM Style 21223 VW1 AWM I/II A/B 80°C 1000V FT1 CE T O/AE DESINA RoHS  
 conform [www.igus.de](http://www.igus.de)

## 3. Description of the cable construction:

Standard igus chainflex® catalogue cable

## 4. Remarks:

To detect broken conductor or shielding wires we will measure the ohmic resistance of these cable elements. The cores of the samples are connected in series and one core is connected with the shielding 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
1.1	CF270.UL.10.07.02.02.D	125	13,5	9,3	10,0
1.2	CF270.UL.10.07.02.02.D	125	13,5	9,3	10,0
2.1	CF270.UL.15.15.02.01.D	125	12,0	10,4	10,0

Cable no.	Cable type	Counter reading		Effectively tested strokes	Cable okay after ... strokes
		... mounting	... demounting		
1.1	CF270.UL.10.07.02.02.D	78.874.692	5.402.880	26.528.188	26.528.188
1.2	CF270.UL.10.07.02.02.D	78.874.692	5.402.880	26.528.188	26.528.188
2.1	CF270.UL.15.15.02.01.D	78.874.692	5.402.880	26.528.188	26.528.188

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

Date: **06.03.2012** Name: Name: **Ch. Mittelstedt**

## Result

### Start Report 19.03.2012:

At the 19.03.2012 we started the test 4404 with a counter reading 78.874.692; we will measure the ohmic resistance regularly.

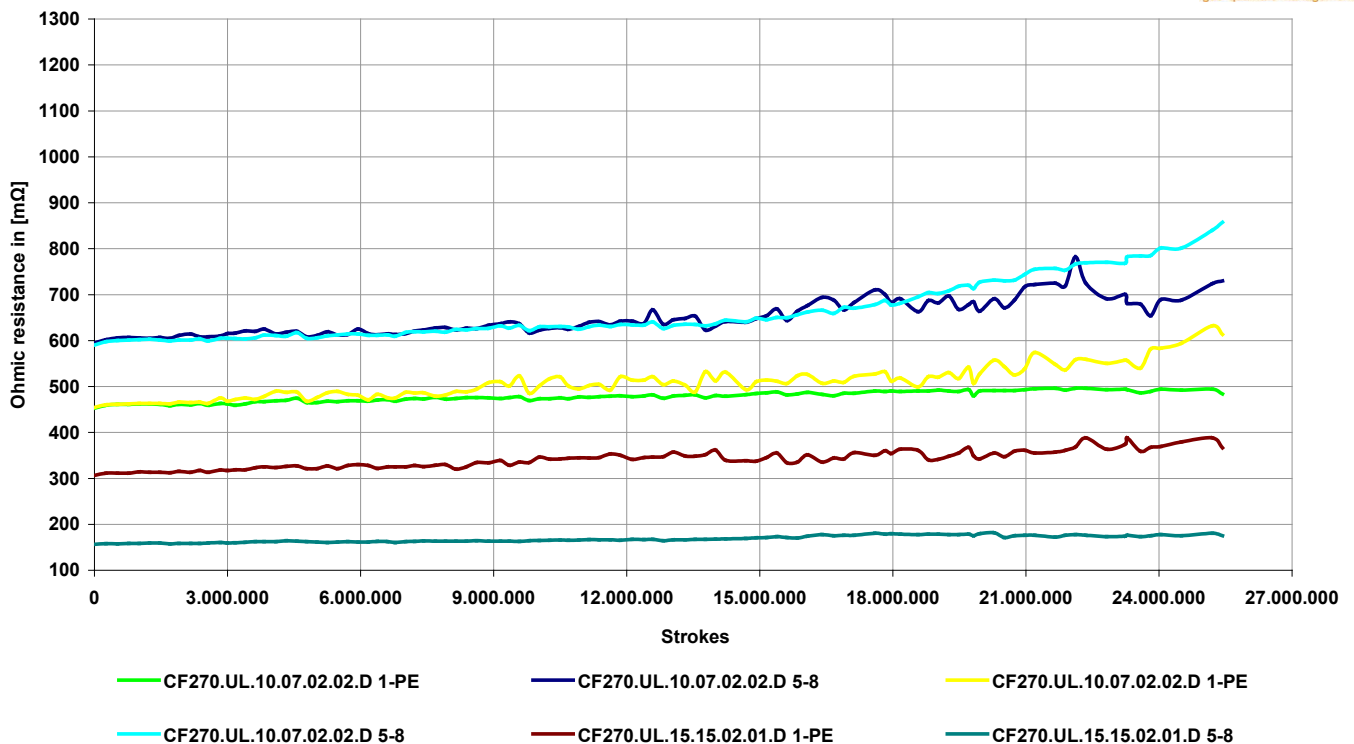
### Interim Report 05.08.2014:

At the 01.08.2014 we stopped the test after 26.528.188 strokes, because we want to finalize the test.

The following diagrams show the trend of the ohmic resistances during the test:



Trend of the ohmic resistances



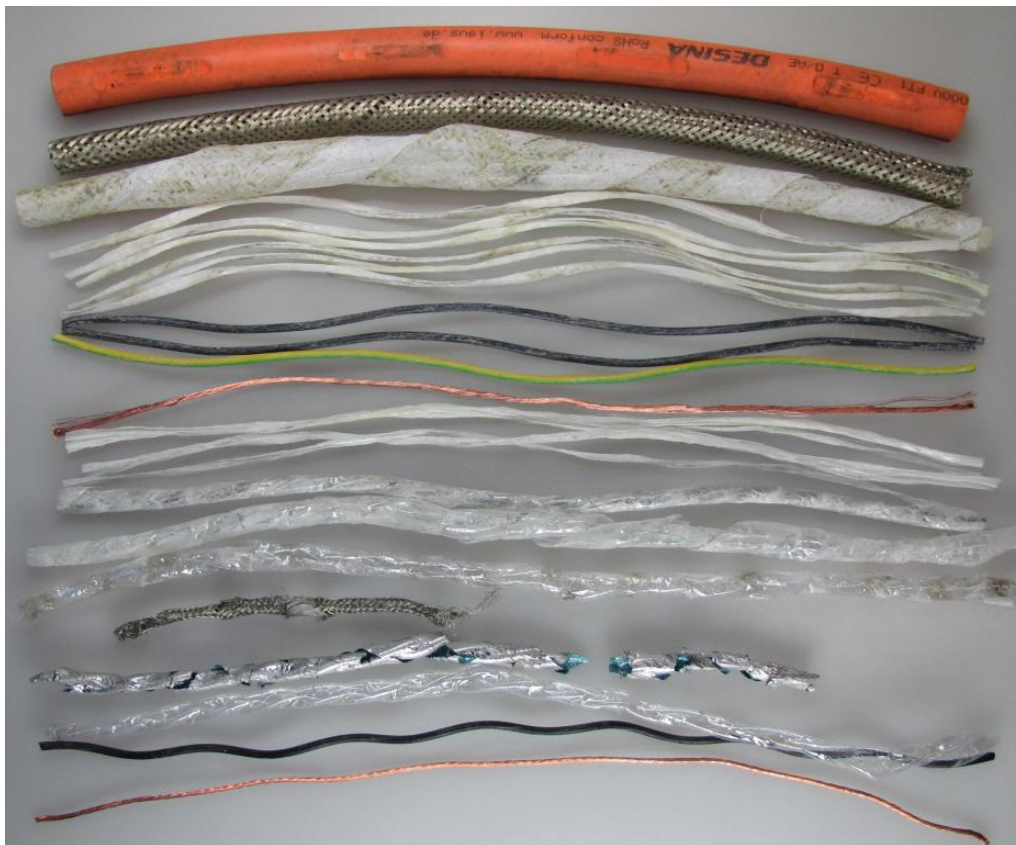
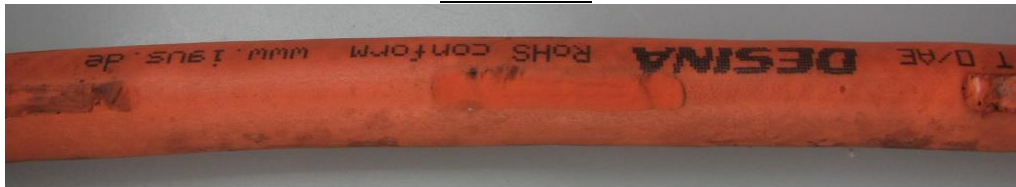
## Evaluation

### Dissection Report:

The following pictures show the dissected pieces of the cables

### The condition of the cable no.1.1 & 1.2 (CF27.15.07.02.02.D) after 26.528.188 strokes

Cable no.1.1



Cable no.1.2



Cable no.	1.1	1.2
Strokes	26.528.188	
Condition outer jacket	O.K.	O.K.
Condition overall shielding	Ruptured	O.K.
Condition fleece tape	O.K. (discoloured)	O.K. (discoloured)
Condition core insulation	O.K.	O.K.
Condition conductor	O.K.	Broken single wires
Condition centre element	O.K.	O.K.
<b>Element cores</b>		
Condition core insulation	O.K.	O.K.
Condition conductor	O.K.	Broken single wires

## The condition of the cable no.2.1 (CF27.15.10.02.01.D) after 26.528.188 strokes





Strokes	26.528.188
Condition outer jacket	O.K.
Condition overall shielding	Ruptured
Condition fleece tape	O.K. (discoloured)
Condition core insulation	O.K.
Condition conductor	O.K.
Condition centre element	O.K.
<b>Element cores</b>	
Condition core insulation	O.K.
Condition conductor	O.K.

Name: **R. Thof**

Date: **11.08.2014**