

## Test Intention:

In test 5034 we want to investigate the lifespan of our new CF29.25.15.02.01.D on the short way.

## Client:

Name: Christian Mittelstedt      Team: chainflex®      Date: 08.09.2015

## Order-Info:

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

Series / No: CF29.D

Installation type: horizontal

Customer test:                      Yes  No

Development test:                  Yes  No

## Technical data

## Target & Examination

e-chain® type: E6.29.XXX.075 / 100.0

Target [strokes]: **Lifespan**

e-chain® radius [mm]: 75 / 100

Optical check:

Stroke [m]: 2,1

Fluke DTX-ELT:

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

Standard measuring:

Cable length [m]: 4,5

AutΩMeS:

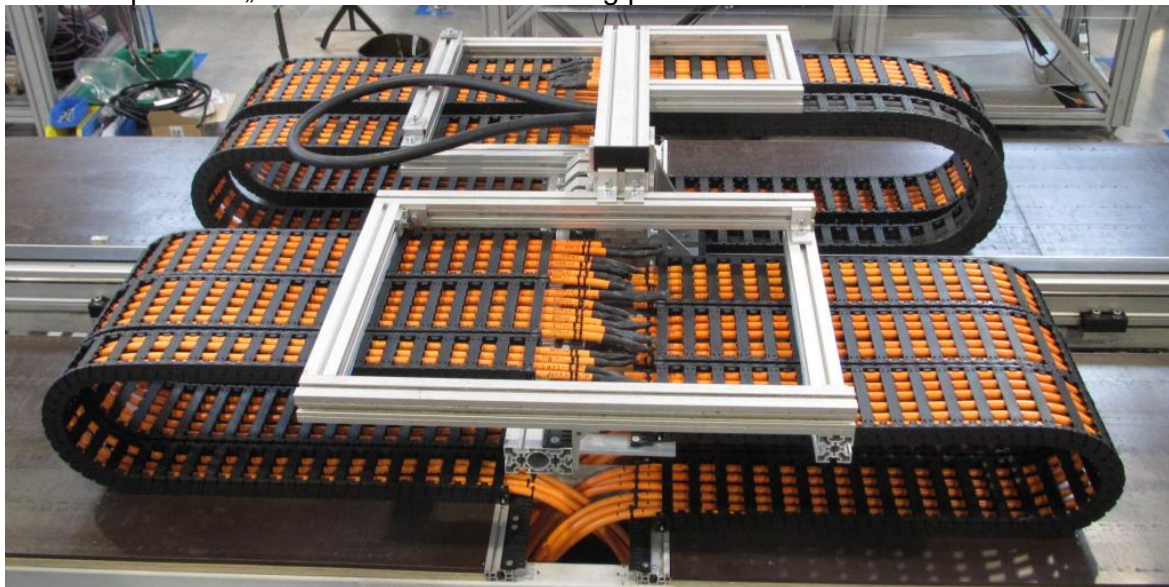
## Experimental setup

### 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 „Maschine 56“. The following picture shows the test structure:



## 2. Cable and hose packages:

No. 1&2: **3x CF29.25.15.02.01.D** with the cable marking  
*00400m igus chainflex CF900.14.323 (4G2,5+(2x1,5)C)C CE DESINA RoHS-II conform*  
*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]	External diameter [mm]	Bending factor [xd]	Bending factor catalogue [xd]
1.1	CF29.25.15.02.01.D	75	13,8	5,4	6,8
1.2	CF29.25.15.02.01.D	100	13,8	7,2	6,8
1.3	CF29.25.15.02.01.D	100	13,8	7,2	6,8

Cable no.	Cable type	Counter reading		Effectively tested strokes	Cable okay after ... strokes
		... mounting	... demounting		
1.1	CF29.25.15.02.01.D	0	15.159.234	15.159.234	15.159.234
1.2	CF29.25.15.02.01.D	0	27.723.304	27.723.304	27.723.304
1.3	CF29.25.15.02.01.D	0	45.041.950	45.041.950	45.041.950

**Test-order was checked by ... [Martin Göllner or Christian Mittelstedt and further employee]**

Date:	<b>06.10.2015</b>	Name:		Name:	<b>Christian Mittelstedt</b>
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## Result

### Start report 06.10.2015:

At the 06.10.2015 we started the test 5034 at a counter reading of 0, we will measure the ohmic resistance regularly through AutΩMeS.

### Interim report 20.09.2016:

At the 20.09.2016 we demounted the cable no. 1.1 after 15.159.234 strokes, because we wanted to investigate the condition of the cable.

### Interim report 28.06.2017:

At the 28.06.2017 we demounted the cable no. 1.2 after 27.723.304 strokes, because we wanted to investigate the condition of the cable.

### Interim report 24.10.2018:

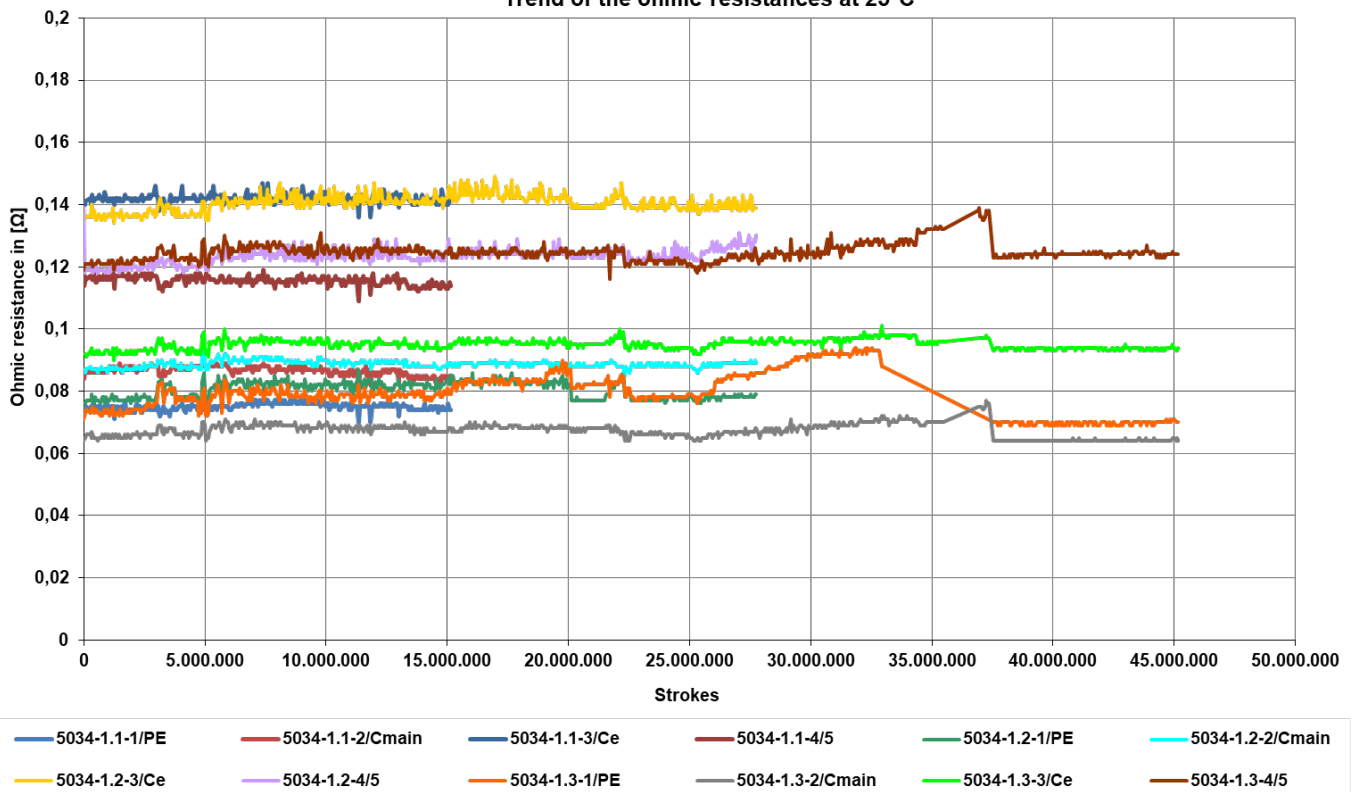
At the 24.10.2018 we demounted the cable no. 1.3 after 45.041.950 strokes, because we wanted to investigate the condition of the cable.

The following diagram shows the trend of the ohmic resistances during the test:



5034-

Trend of the ohmic resistances at 25°C



## Evaluation

### Dissection report:

The following pictures show the dissected elements of the cables

#### The condition of the cable no. 1.1 (CF29.25.15.02.01.D) after 15.159.234 strokes







Strokes	15.159.234
Condition outer jacket	O.K.
Condition overall shielding	O.K.
Condition inner jacket	O.K.
Condition banding material	O.K.
Condition centre element	O.K.
<b>Power cores 4G2,50mm<sup>2</sup></b>	
Condition core insulation	O.K.
Condition conductor	O.K.
<b>Element cores (2x1,50mm<sup>2</sup>)C</b>	
Condition element 1 <sup>st</sup> banding	O.K.
Condition element shielding	O.K.
Condition element 2 <sup>nd</sup> banding	O.K.
Condition core insulation	O.K.
Condition conductor	O.K.

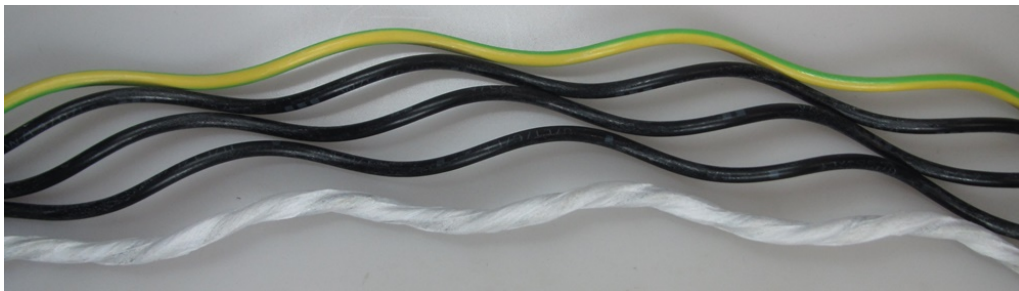
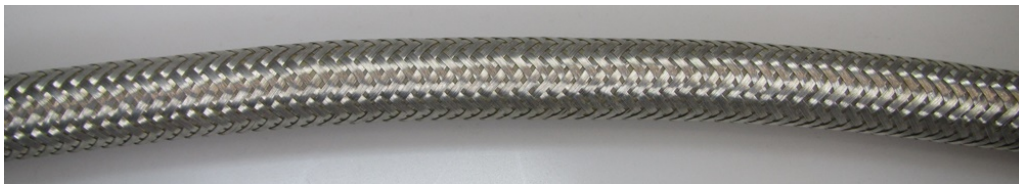
## The condition of the cable no. 1.2 (CF29.25.15.02.01.D) after 27.723.304 strokes



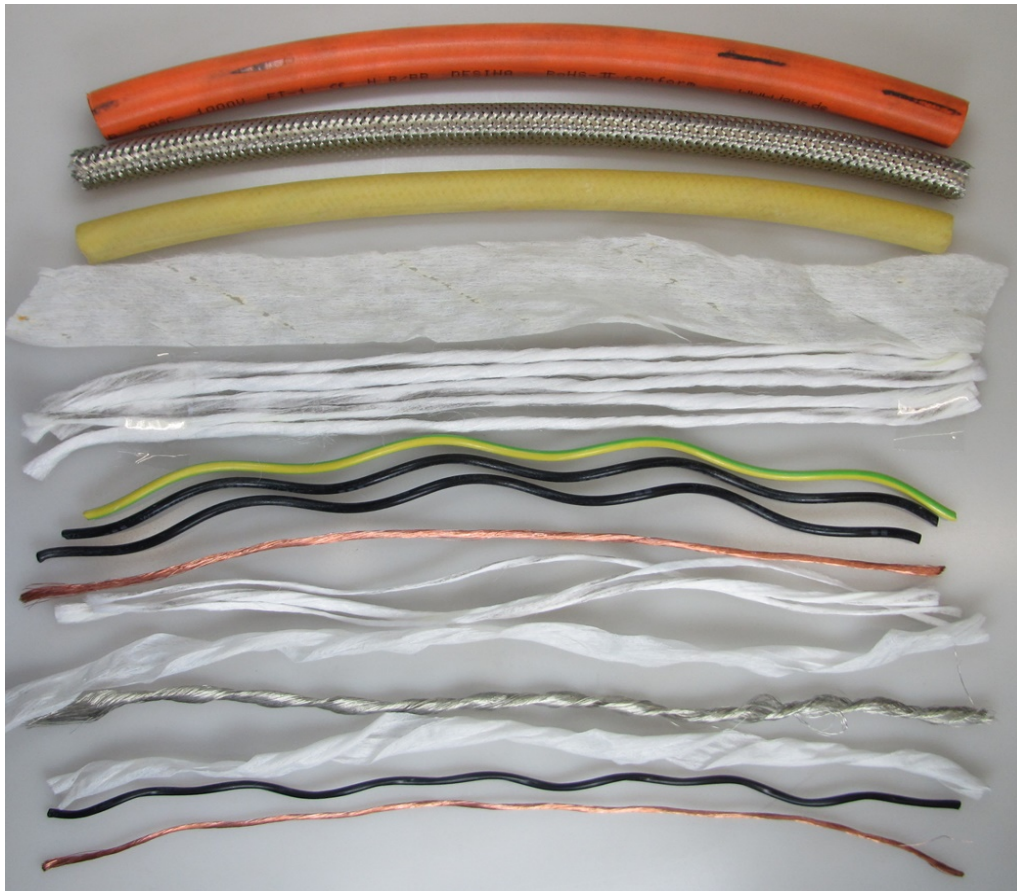
Strokes	27.723.304
Condition outer jacket	O.K.
Condition overall shielding	O.K.
Condition inner jacket	O.K.
Condition banding material	O.K.
Condition centre element	O.K.
Power cores 4G2,50mm <sup>2</sup>	
Condition core insulation	O.K.
Condition conductor	O.K.
Element cores (2x1,50mm <sup>2</sup> )C	
Condition element 1 <sup>st</sup> banding	O.K.
Condition element shielding	O.K.

Condition element 2 <sup>nd</sup> banding	O.K.
Condition core insulation	O.K.
Condition conductor	O.K.

**The condition of the cable no. 1.3 (CF29.25.15.02.01.D) after 45.041.950 strokes**







Strokes	45.041.950
Condition outer jacket	O.K.
Condition overall shielding	O.K.
Condition inner jacket	O.K.
Condition banding material	O.K.
Condition centre element	O.K.
<b>Power cores (4G2,50mm<sup>2</sup>)</b>	
Condition core insulation	O.K.
Condition conductor	O.K.
<b>Element cores (2x1,50mm<sup>2</sup>)C</b>	
Condition element 1 <sup>st</sup> banding	O.K.
Condition element shielding	O.K.
Condition element 2 <sup>nd</sup> banding	O.K.
Condition core insulation	O.K.
Condition conductor	O.K.

Name: **R. Hof**

Date: **25.10.2018**