

# How to ensure qualified materials with every supply – and other challenges

Tomas Nälsén, Habia Cable

## Our history: 1941 until today

**1985**

Habia is split up - Sweden, UK and Netherlands becomes Habia Cable



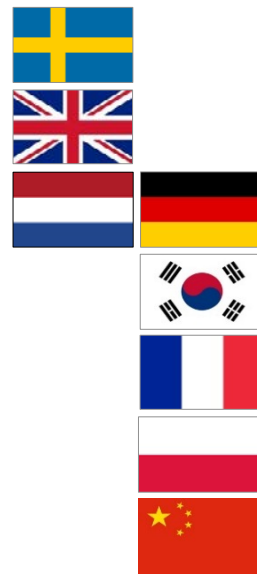
**1941**  
Carl Herbert Jacobsson founds **Hammarby Bakelit Industri AB**, to manufacture plastics components.



**1950 – 1960**  
“Habia sells Teflon and Service”: Tubes, wires, components.



**1969 – 1985**  
First international expansion.



**1985 – 1999**  
Second international expansion.



**2000**  
Acquisition of Isotec GmbH in Germany.  
Startup in China.



**2006 – 2010**  
Acquisition of CS Technology AB.  
New cable systems factory in Poland.  
China expansion.



**2014 – 2015**  
Acquisition of Irradose.  
China expansion.

# Quick facts

<b>Business</b>	Custom and special cables and harnesses
<b>Business Idea</b>	To develop, market and manufacture cable solutions for demanding applications
<b>Year of Foundation</b>	1941
<b>Number of Employees</b>	Approx 600
<b>Turnover</b>	Approx 83 M€
<b>Geographical Presence</b>	11 sales offices in Europe and Asia Sales to 50 countries
<b>Production</b>	5 Factories in Europe and Asia
<b>Head Office</b>	Stockholm, Sweden
<b>Ownership</b>	Industrial holding company Beijer Alma, listed on the Stockholm Stock Exchange

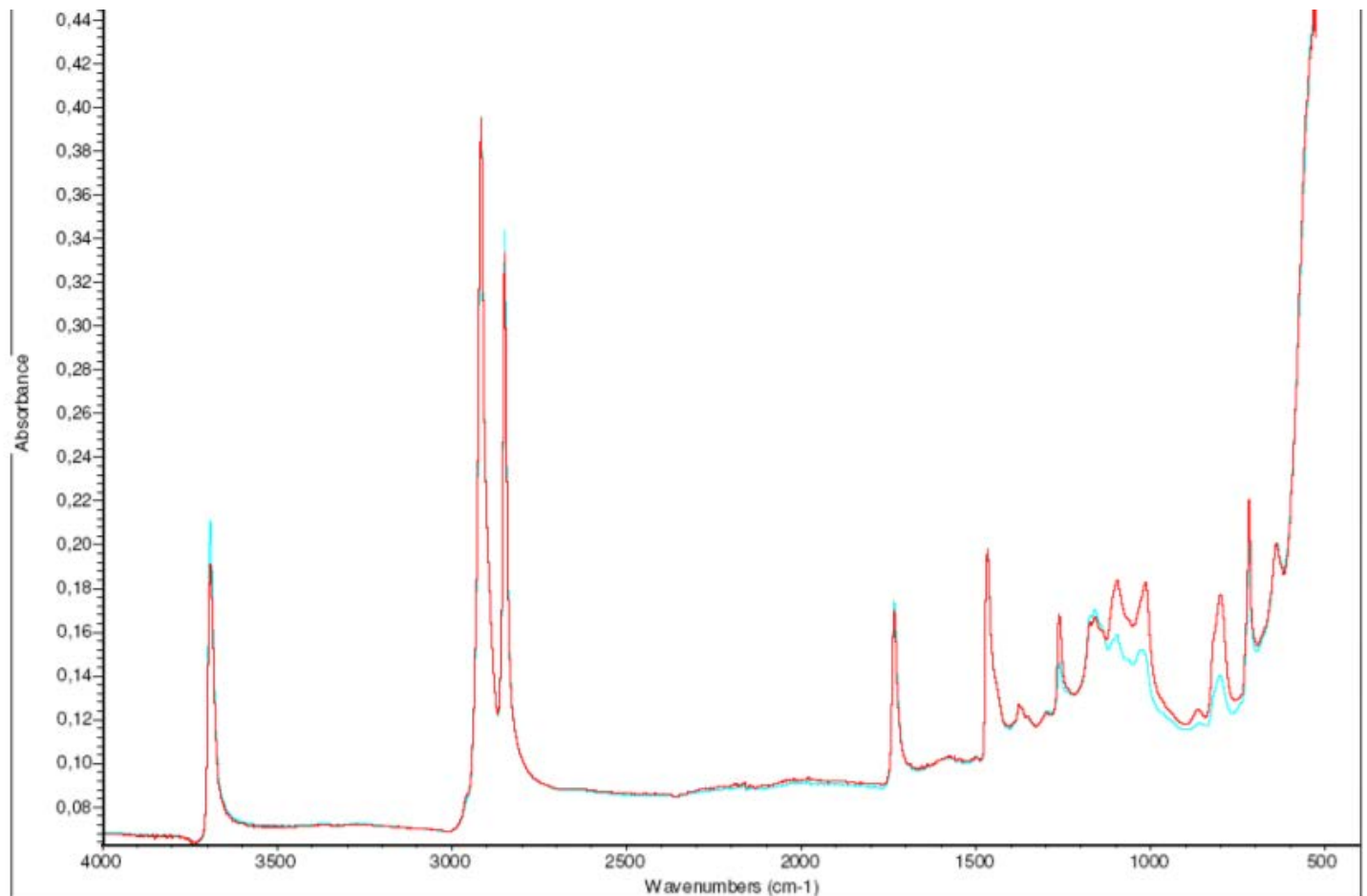


# Same material every time...

- How to ensure we use same material as was once qualified?
- Samples saved from each qualification performed
- Several methods combined

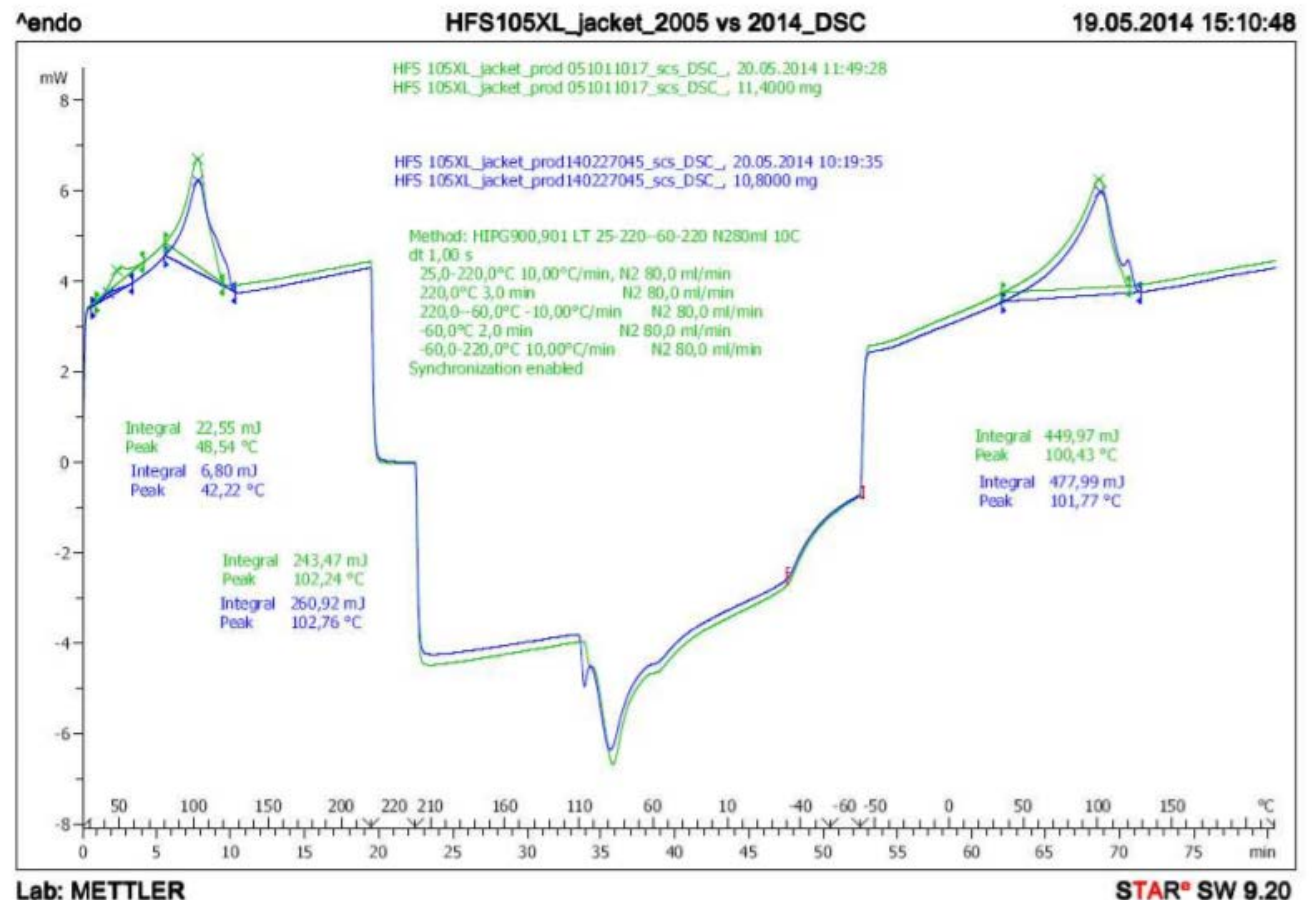
# FTIR

Comparison between qualified material and supplied material



# DSC

- Comparison between qualified material and supplied material



# Traceability certificates

## Purchase specifications

- Certificates from our suppliers, indicating values
- Purchase specifications

Habia Batch no: 000000246382

Habia Batch no: 000000246382

Besteller/ Purchaser/ Commandant:

HABIA CABLE Schweden

TIERPSVAEGEN 8  
81575 SOEDERFORS

Fax: 0046 293 30061

**Abnahmeprüfzeugnis EN 10 204/3.1**

Inspection - Certificate 3.1 / Certificat de réception 3.1

**Notice for changes of product**

If product is being changed from last order or planned to be changed we require as early notice as possible, preferably 1 years notice. This includes any change that can impact the properties of the finished product.

**Inspection and testing**

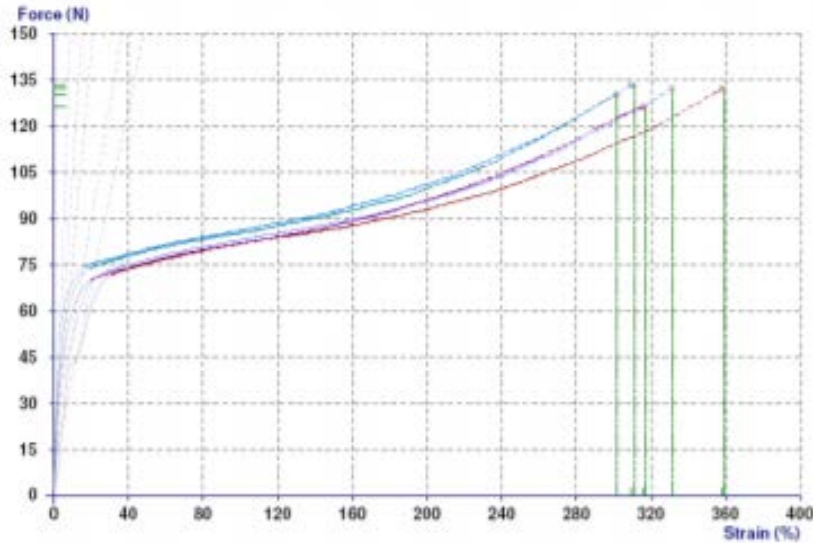
All inspection and testing shall be made at the place of, and by the manufacturer, after final processing of finished product.

**Documentation**

Test report to be delivered together with the goods.

# Tensile testing / ageing

- Tensile testing and 1 week accelerated ageing
  - All nuclear products
  
- Values to conform to internal specification





# Supplier audits

- Critical suppliers
- IFS – Important For Safety (IAEA)
- 2-5 year interval
  
- E.g. Insulation, jacket, conductors, stabilisers

**Audit criteria:** ISO9001:2015, applicable parts of ASME NQA-1-2012, Environmental policy

**Summary of results:**

The Quality Management System of xxxxxxxxxx plc is certified to ISO9001:2015 by DQS Inc. The certificate is valid until 2021-05-03. Copies of the certificates are attached to this report.

From the evidence noticed during the audit, the physical environment, the quality assurance procedures and the quality records that verify that procedures are implemented and maintained, the overall impression was very good.

The Quality Management system is well implemented, maintained and fit for the scope of providing the product.

No Non-Conformance (NC) or Observation (OBS) were noticed during the audit.

The audit notations can be found under section 2 in this report.

The Quality Management System at xxxxxxx plant, at the above location, is approved for the above product until 2021-11-02. \*

# CFSI

- Counterfeit, Fraudulent and Suspect Items
- October 2012, Korea
  - Supplier certificates
  - EQ reports
  - ~100 people imprisoned
  
- Affecting other parts of the world as well



I. Overview

History of Investigation

- **Oct. 2012**, CFSI cases were identified in Korean NPP
- **End of 2012**, Full-scope investigation of CGD quality doc. was completed
- **From Jan. 2013**, Full-scope investigation of test reports was started
  - ☞ Forged test reports were identified during the investigation of CGD quality document on Dec. 5, 2012
- **May 2013**, Forged EQ report cases were identified in SKN/SWN Unit 1,2
  - ☞ SKN Unit 2 & SWN Unit 1 were forced to shutdown on May 28, 2013
  - ☞ Investigation of domestic EQ reports was started
- **Dec. 2013**, The Board of Audit & Inspection announced the investigation result of overseas test reports
- **Feb. 2014**, Basic plan of overseas quality doc. investigation was established
  - ☞ Scope : Safety related items procured during 2008~2013 for 23 operating units

# The disadvantage of computers...

■ 1976

TEST REPORT

Qualifying shielded electrical cable for nuclear reactor conditions. Including heat aging, irradiation and LOCA-test.

Performed on account of ASEA-ATOM, Sweden  
February 1977.

10 pages

2013

ÚJV DITI 2305/80-R1

May 2013

**Qualification Test Report  
for Habia Cable, Sweden —  
Thermocouple Cable**

Report

Vladimír Hnát  
Vít Plaček  
Jan Kábrt



160 pages

# Activation energies

- Example
  - Value based on testing by supplier: 1,60 eV
  - LOCA testing start, completed.
  - Parallell Arrhenius ageing
  - New result: 1,20 eV
  - New LOCA testing start, completed
  
- Modern materials with stabilisers