

HEW-KABEL //

Habia Cable

Ageing and Flame Test
of Cables

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Agenda

- 1 Short introduction
- 2 Different flame tests used within the nuclear industry
- 3 Ageing and flame testing

The merger of HEW-KABEL and Habia Cable

In October 2022 **HEW-KABEL Holding GmbH** acquires **Habia Cable** from the Swedish investment company Beijer Alma. HEW-KABEL Holding GmbH is owned by the Austrian investment company Andlinger & Company and partners.



The purpose of merging the two companies is to offer the global market one stronger, solution-oriented partner - helping the customers to solve their critical connectivity needs.

Creating a leading specialist cable & connectivity company, serving the global market



Habia Cable

Facts & figures

 **~1.000**

employees in Europe and Asia

Sales to
~2.000
customers / year

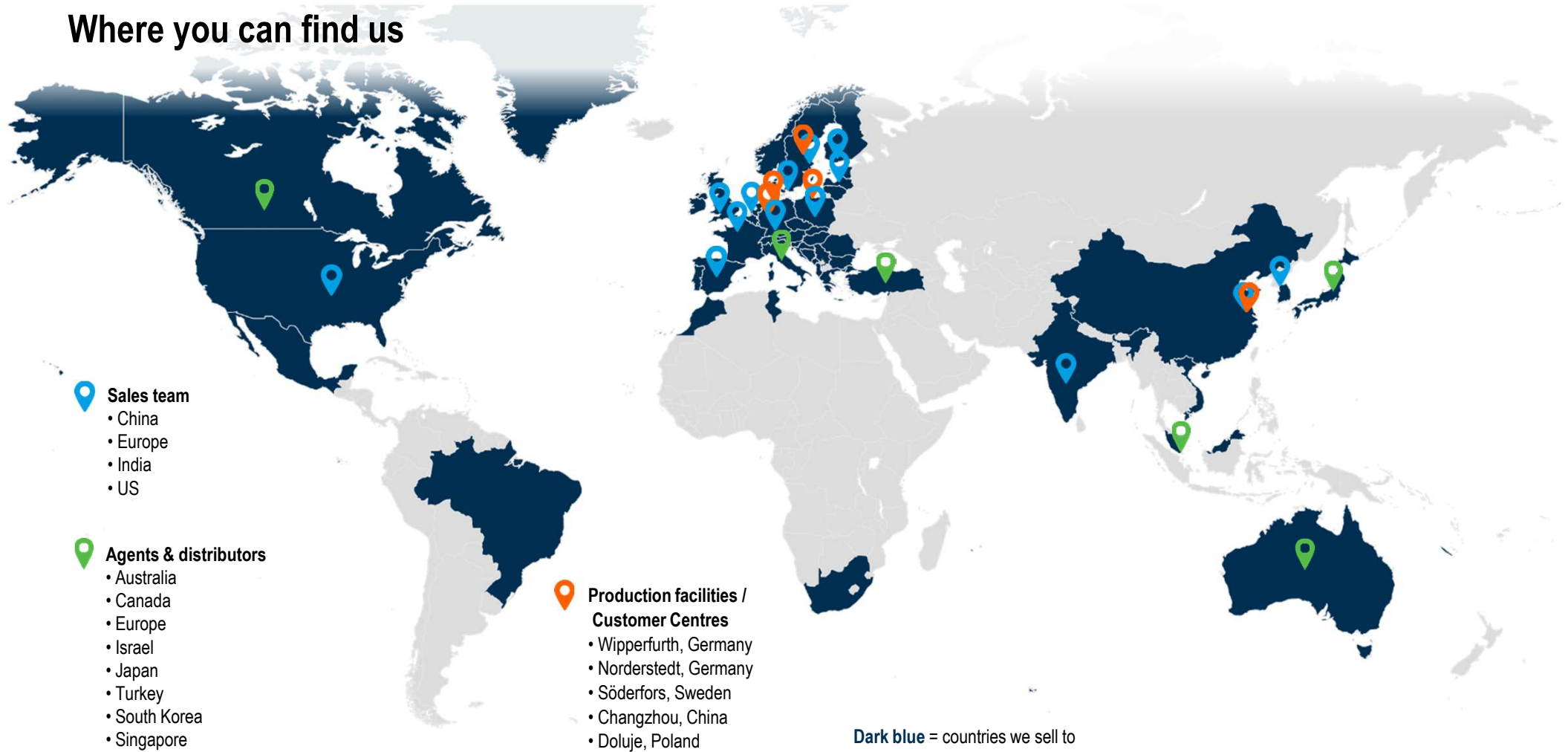
5 
production facilities

~10.000
products sold / year

Sales to
~60 
countries / year

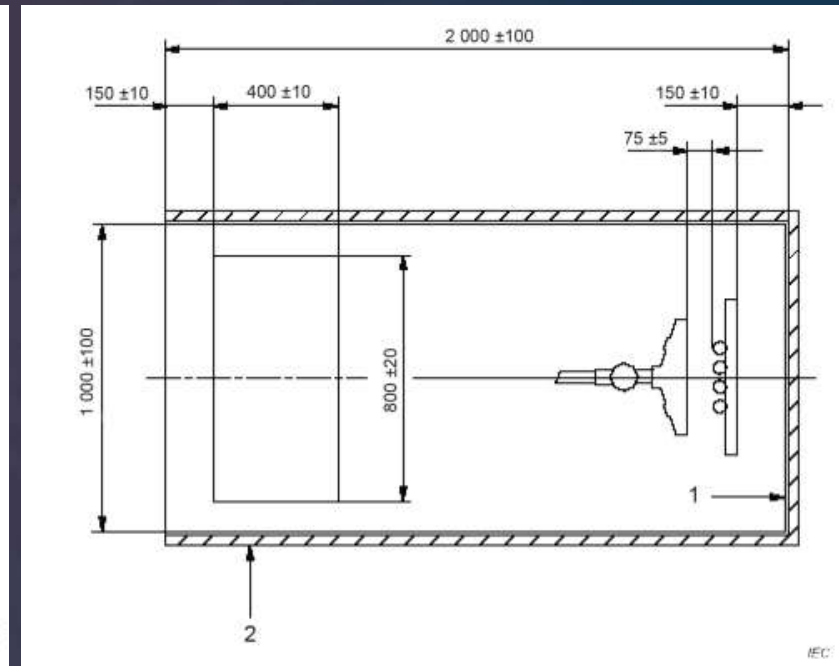
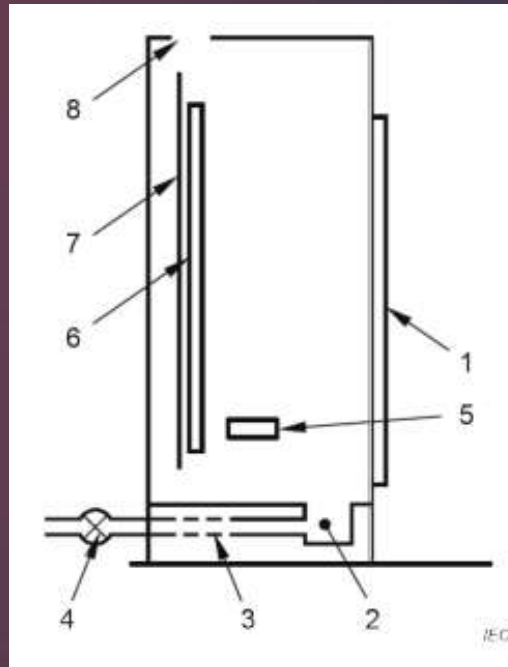
Turnover
~200 MEUR
2022

Where you can find us



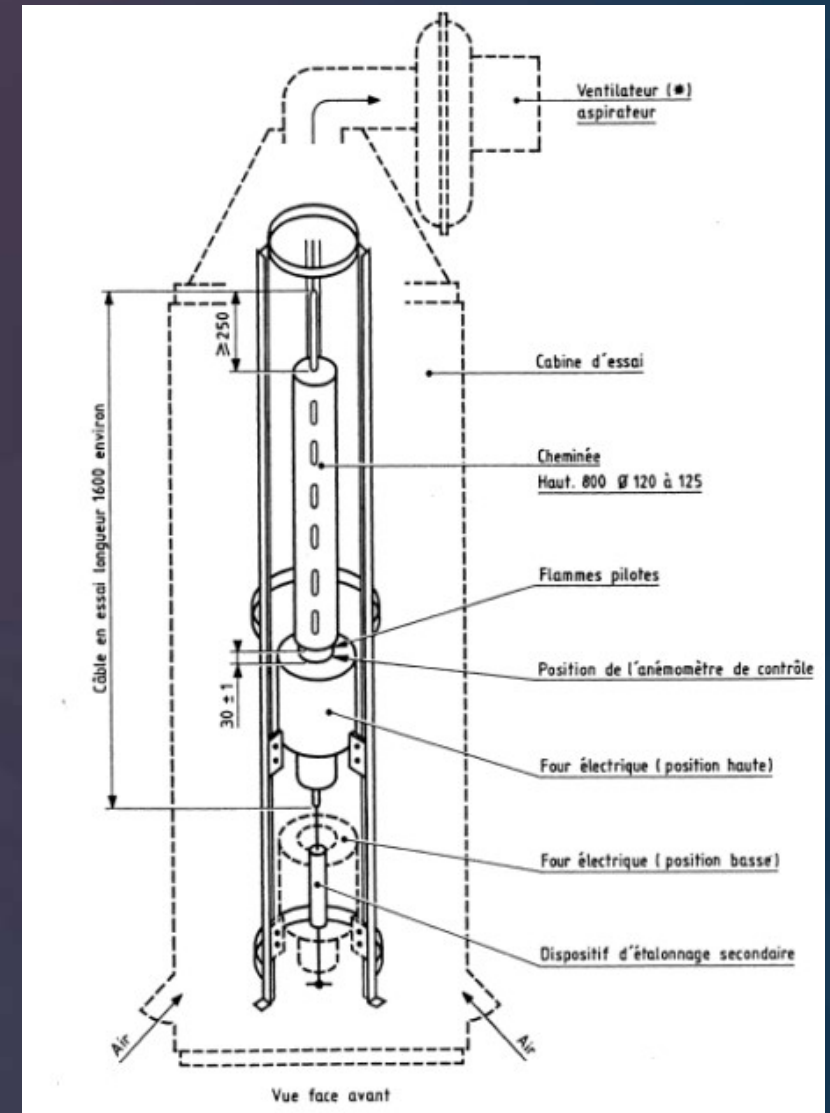
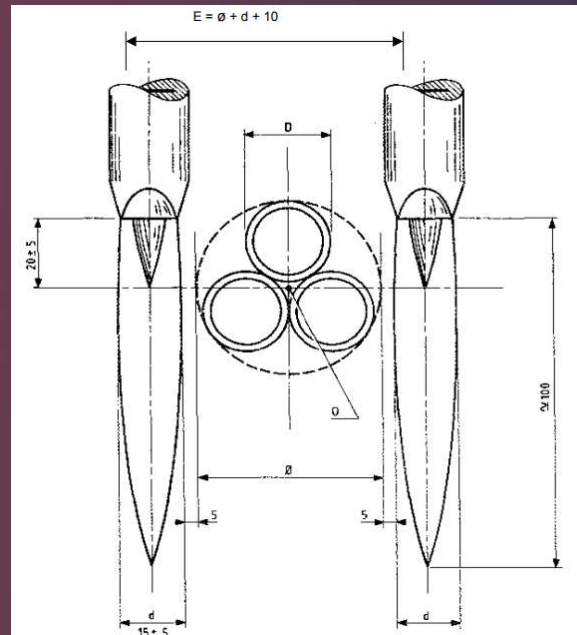
IEC 60332-3-xx

- 20 kW burner
- Max 2,5m damaged part.
- -22 (cat. A):
 - 40 minutes
 - 7,0 l mtrl / m
- -23 (cat. B):
 - 40 minutes
 - 3,5 l mtrl / m
- -24 (cat C)
 - 20 minutes
 - 1,5 l mtrl / m



NF-C 32-070 C1

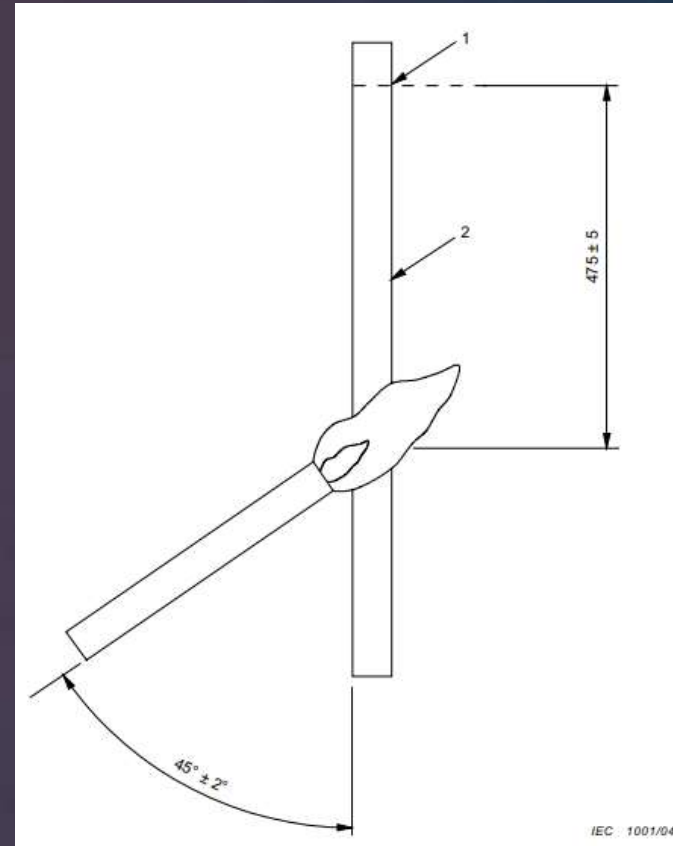
- ▮ Electric oven, 1 kW
- ▮ Samples in the middle
- ▮ Pilot flame
- ▮ 780-880°C in oven
- ▮ 30 minutes



IEC 60332-1

▮ 60s

▮ 1 kW lab burner

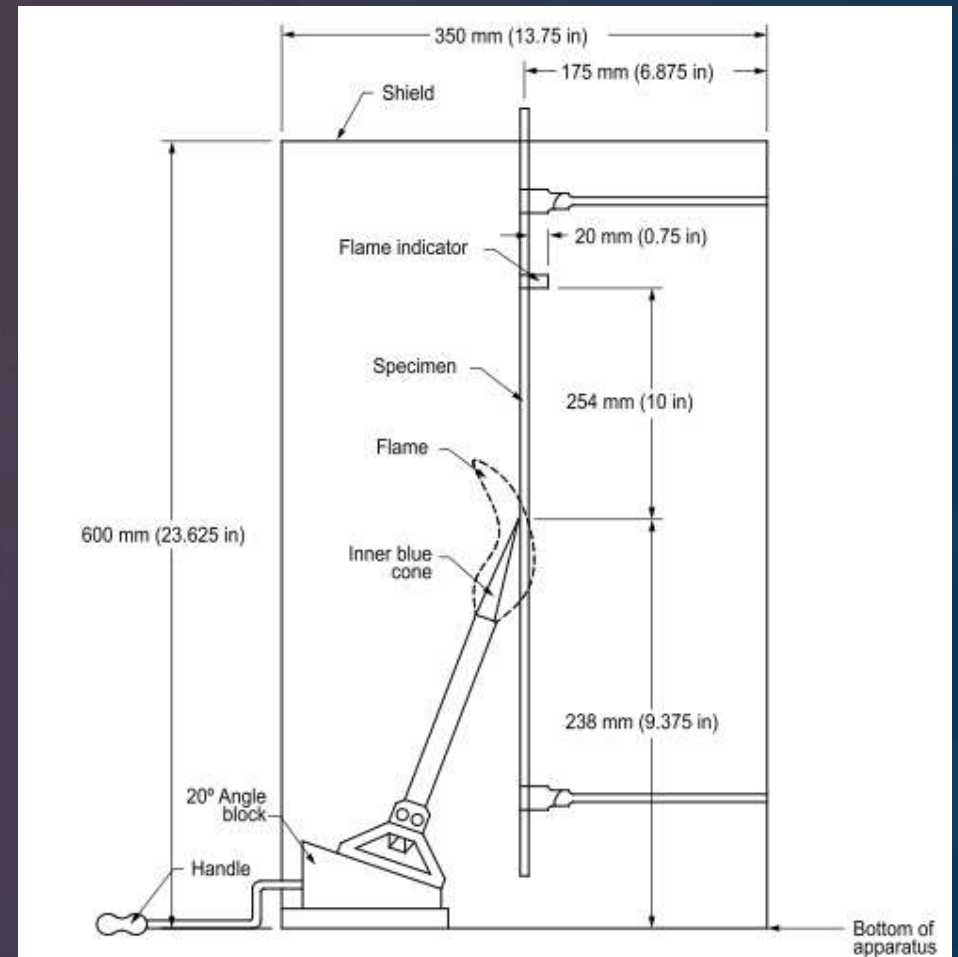




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UL 1581 VW-1 (UL 2556)

- 5 x 15s
- 1 kW lab burner
- No burning droplets





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Other flame tests

- ▮ IEC 60331
- ▮ UL 1666 Riser
- ▮ UL 910 Plenum



Ageing of cables

- Activation energies
 - Tested at minimum 3 temperatures, minimum time 5000 hours

- Flame retardant
 - ATH
 - MgOH
 - ...

- Acceleration factors
 - Depending on cable and requirements
 - Typically < 250 in Sweden, i.e. ~3 months for 60 years life time.
 - Cat 5e – 3 years ageing time.



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Flame testing of aged samples

- ▮ Cables with flame retardant insulation and jacket
 - ▮ No over ageing of jacket
 - ▮ Similar results before and after

- ▮ Cables with XLPE insulation and FR jacket
 - ▮ Required longer ageing times
 - ▮ Required extra flame protection (coaxial)



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Some results, IEEE 1202-1991

| Unaged | After ageing 60 years, 90°C, TID: 300 kGy |
|--|---|
| T/C 2x20AWG, PEEK/HFS105XL type B: 1,10m | 0,9m |
| Cat 5E, 4x2x24AWG, XLPE/HFS 105 XL type B: 1,2m | 0,9m |
| RG 58, XLPE/HFS 105 XL type B: 0,9m | To the top |
| RG 58, new design (added MICA + extra inner jacket): 1,2m | 1,2m |



Conclusion

- ▮ Choose the right flame test for your needs
- ▮ Make sure to not age the materials too much that flame retardants disappear
- ▮ Influence of different test labs





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Questions?