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Electrical fire investigation

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- > Author

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Agenda

- Why do electrical fire investigation
- Investigation of the switchboard
- Find point of origin with help of electricity
- Investigation of point of origin
- Examples of fire investigations

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Why do electrical fire investigation?

- Find point of origin
- Find what caused the fire
- Exclude that electricity caused the fire


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Investigation of the switchboard

Main switchboard Group switchboard



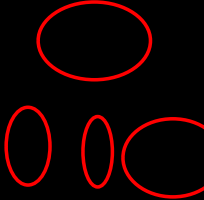
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Investigation of the switchboard

- Is the electricity on or off?
- Was the electricity turned on during the fire?
- Which fuses tripped during the fire?
- Which fuses are not in use?
- Have the residual current device tripped?



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Investigation of the switchboard

- What type of fuse? Multipolar?
- Size of the fuses?
- Fuses in the main switchboard or in the group switchboard that tripped?

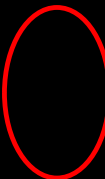
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Investigation of the switchboard

- What are the fuses that tripped connected to?
- Usually 1 fuse to one or several rooms



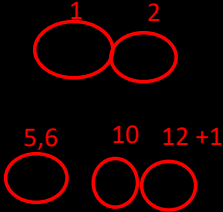
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Investigation of the switchboard

- Number of possible short circuit?



- Nr 1 Multi Pole: 1
- Nr 2 Single poole: 3
- Nr 5 Single pole: 1
- Nr 6 Single pole: 1
- Nr 10 Single pole: 1
- Nr 12 Single pole: 1
- Residual current device: 1
- Total: 9

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WIDIGRUPPEN Electrical fire investigation

- Help for the investigation
 - Electrical drawing ?
 - Electricity distributor what time did the electricity turn off?
 - Where and then has the fire alarm tripped?

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WIDIGRUPPEN Find point of origin

Sources of finding point of origin:

- **Electricity**
- Witness information
- Fire Patterns

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WIDIGRUPPEN Find point of origin

- Short circuit there the fire started:
 - If the wire was energized
 - The fire melts the isolation and short circuit occurs
 - How many fuses were there to the room? 1 fuse = 1 short circuit
 - Where should it be according to the picture of the fire?

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 **Find point of origin**

- Example 1

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 **Find point of origin**

Workbench

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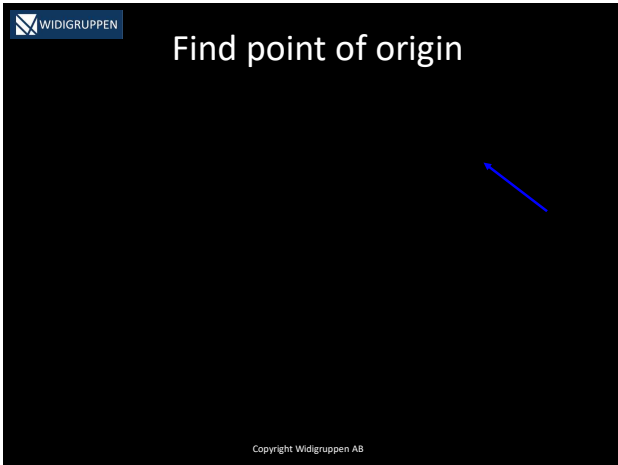
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 **Find point of origin**

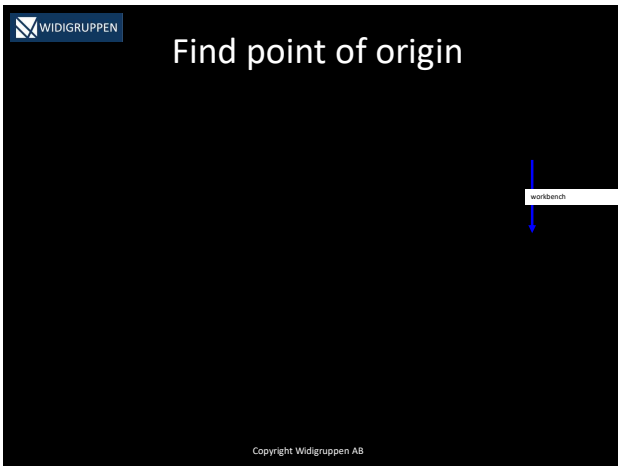


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Find point of origin

workbench

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Find point of origin

Short circuit

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Find point of origin

- EXEMPLE 2

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Find point of origin

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Find point of origin

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Find point of origin

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Find point of origin

Short circuit

Short circuit

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Investigation of point of origin

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Investigation of point of origin

- How many sockets are there and what are connected?
- How many switches and what are they connected to? Are they turned on?
- Make an electrical drawing of the area.

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Investigation of point of origin

- Investigate wires and electrical products
- Look for melting damages
- Clean with brass brush
- Electrical cause or not?

Conduction

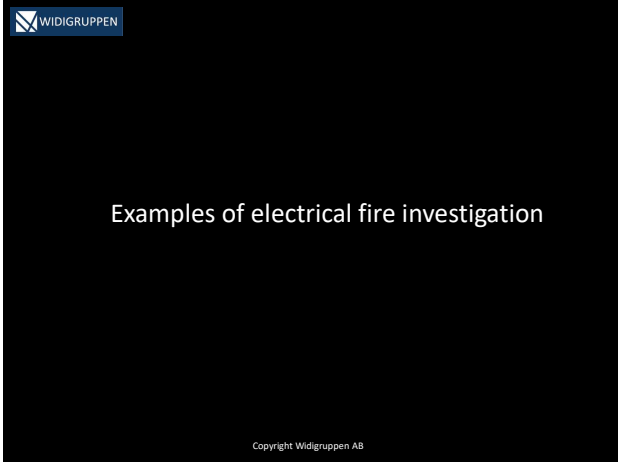


Lap/turn short circuit

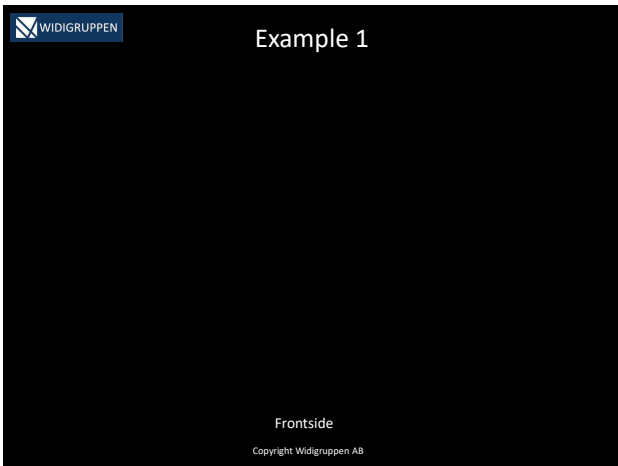
Heating damage Loose connection Alloy

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 Example 1


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 Example 1


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 Example 1


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 Example 1


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 Example 1

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 Example 2

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 Example 2

Fire gas explosion- fire room

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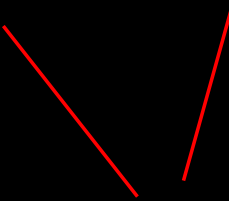
 Example 2

Fire gas explosion- The room next door

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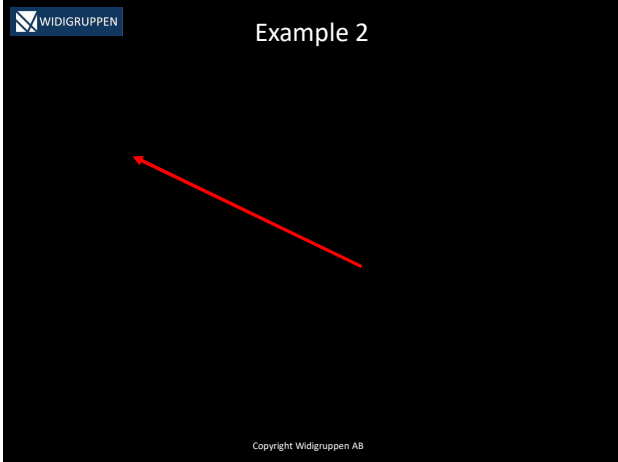
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 Example 2

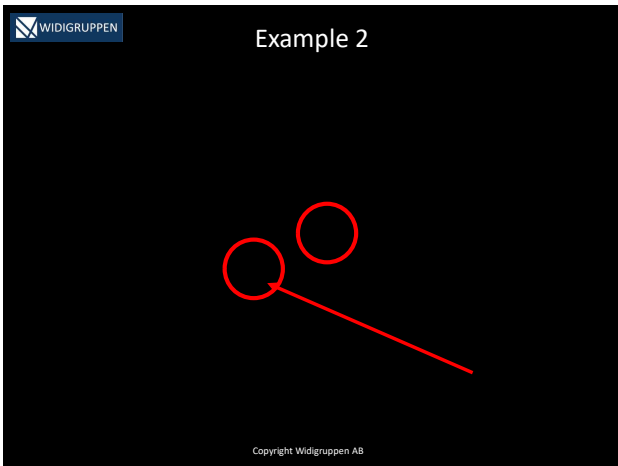


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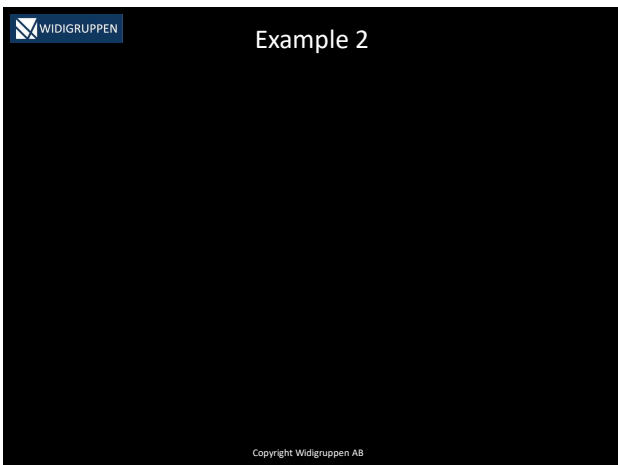
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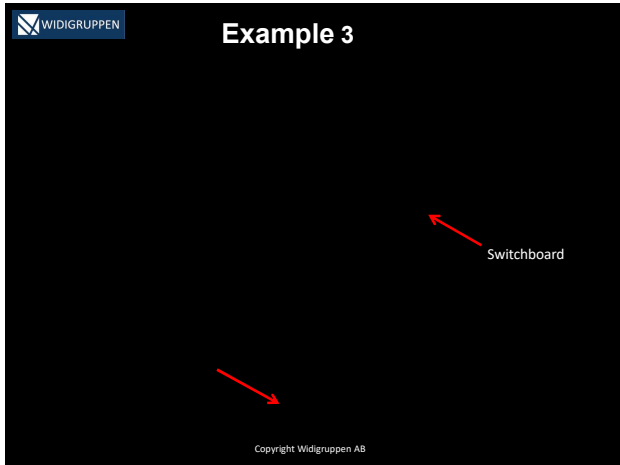
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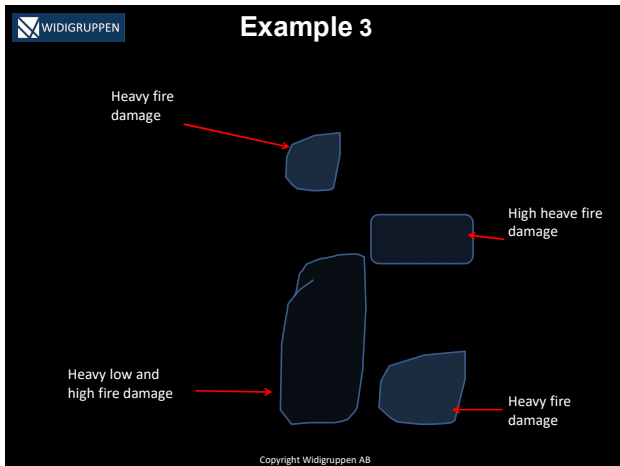
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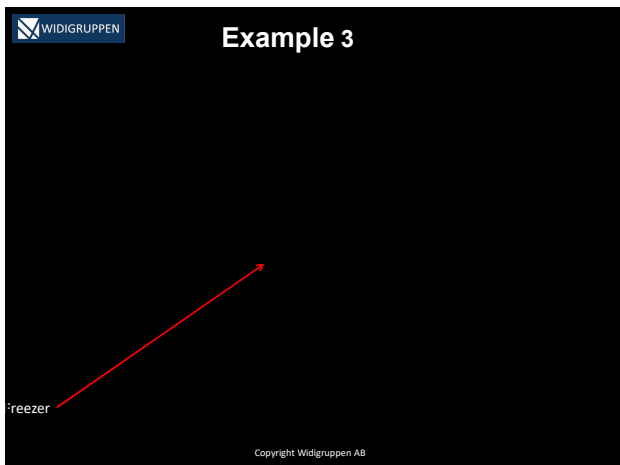
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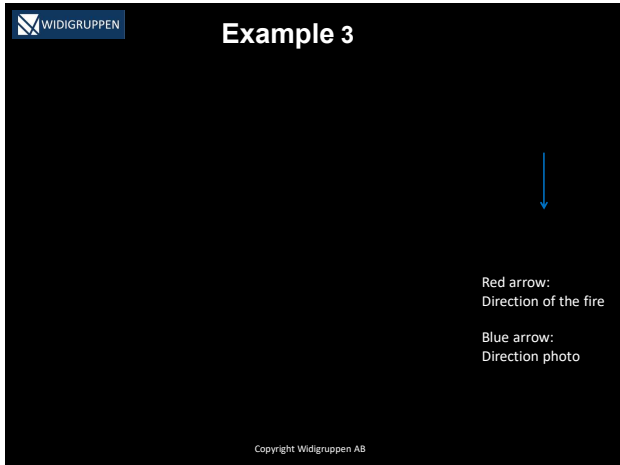
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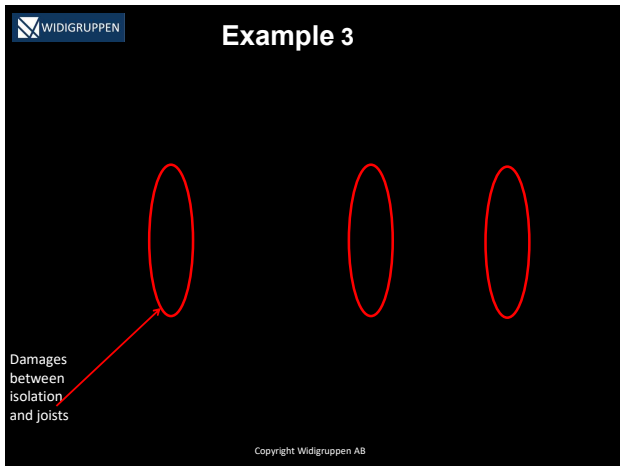
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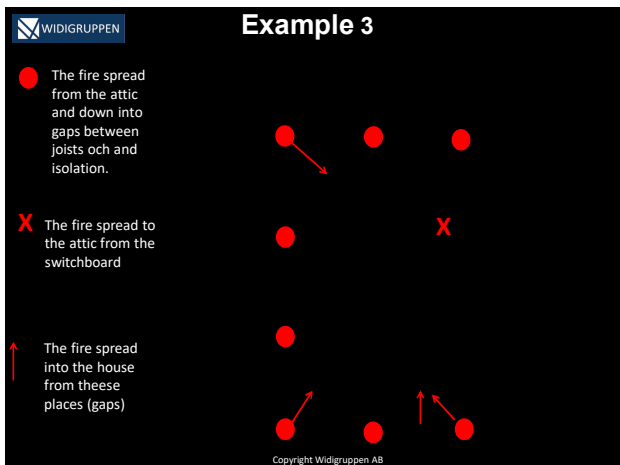
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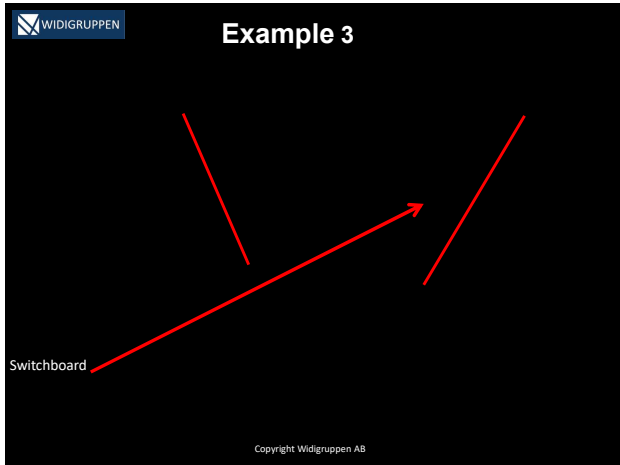
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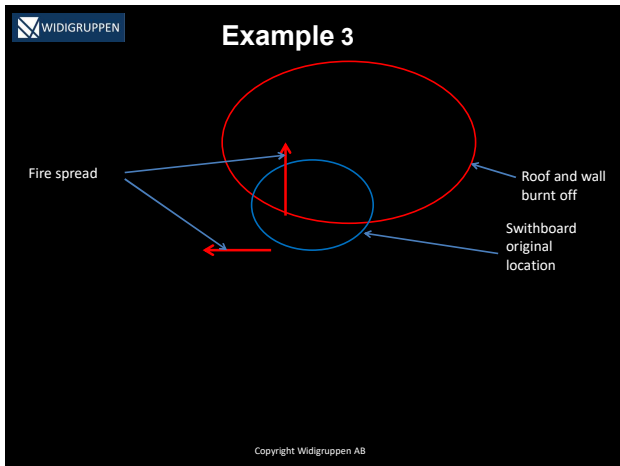
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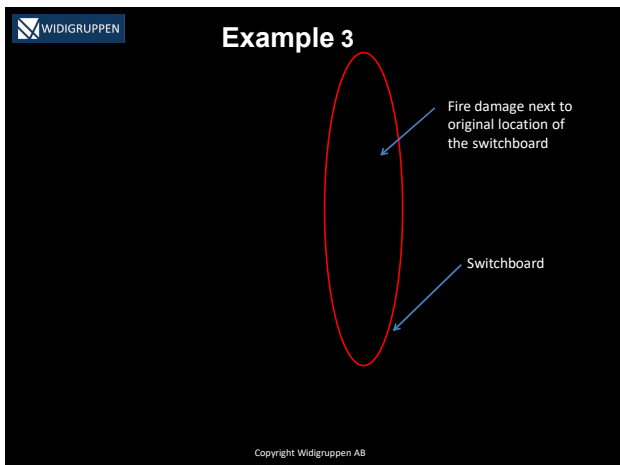
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 **Example 3**

Causes about 200 fire every year

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 **Example 3**

The isolation burns with 3-5 MW

[Link to youtube video of burning freezer](#)

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 **Example 3**

- Fridge/freezer about 50-80 fires every year

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Frys eller elcentral?

Heating damages from the fire

Damages from removing the contact

No signs of that arcing caused the fire

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The plastic is self-extinguishing

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Contact


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 Example 4

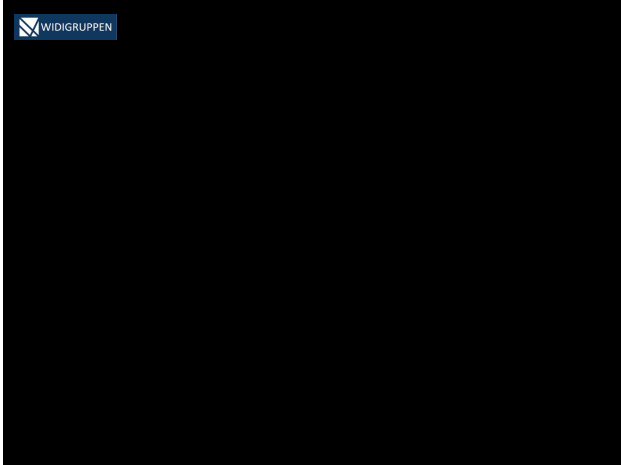
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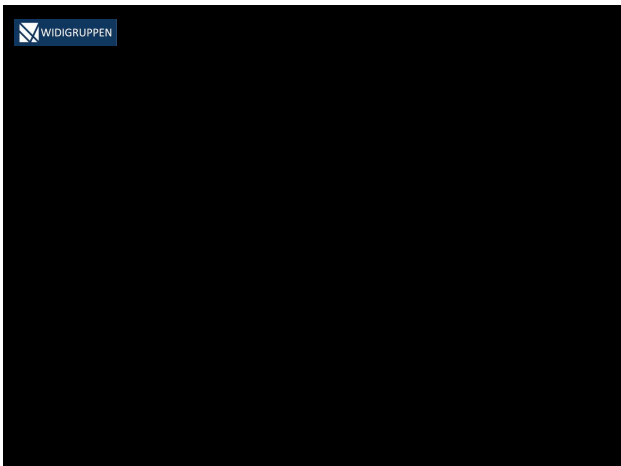
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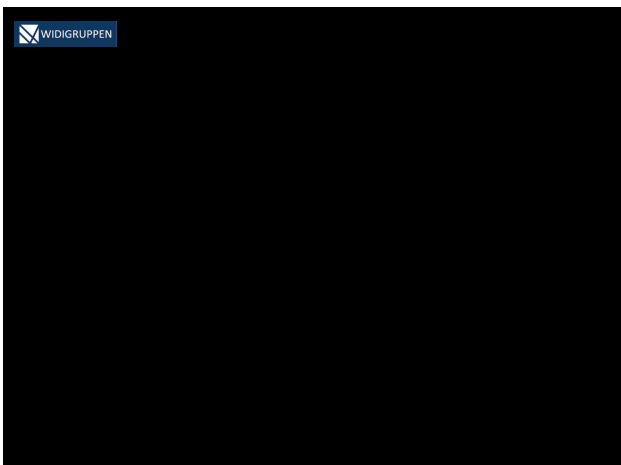
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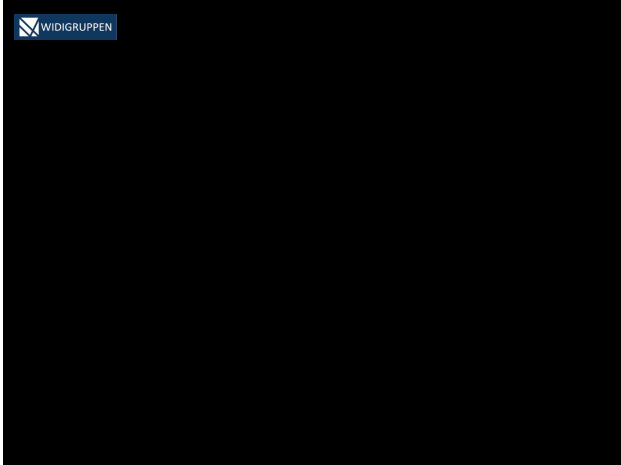
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