LINK SOLUTIONS ApS

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**Test Report** **05.08.2019**

| | |
|---|---|
| Customer: | Link Solutions ApS |
| Order: | 26.06.2019 |
| Test samples: | foil detectable |
| Content of the order: | Metrological examination of the present samples for detectability by metal detectors and X-ray detectors |

1. Metrological examination of the present film was checked for detectability.

1.1 Test parameters

1.1.1 Investigation of metal detection

- Amplitude signal metal detector system
- Phase signal metal detector system
- vector signal (amount and angle)

1.1.2 Investigation of X-ray detection

- Determination of gray values in an X-ray system
- X-ray voltage 60 KV

1.2 methodology

1.2.1 Investigation of metal detection

- Production of samples 4x4mm, 6x6mm and 10x10mm
- Metrological detection of the amplitude and phase change of the receiver signal in a metal detector
- Determination of the equivalent metal spheres whose signals in the metal detector correspond to the measured signals of the reference samples
- The signals are measured at a search frequency of approx. 300 kHz

1.2.2 Investigation of X-ray detection

- Measurement of the gray values of the test specimens in an X-ray system at 60 KV

2. Investigation results

Study results by means of a metal detector system, the amplitude and phase signals of the present samples were measured. The following figure shows an example of the amplitude and phase signals of a metal ball made of non-ferrous metal (brass) with a diameter of 4mm.

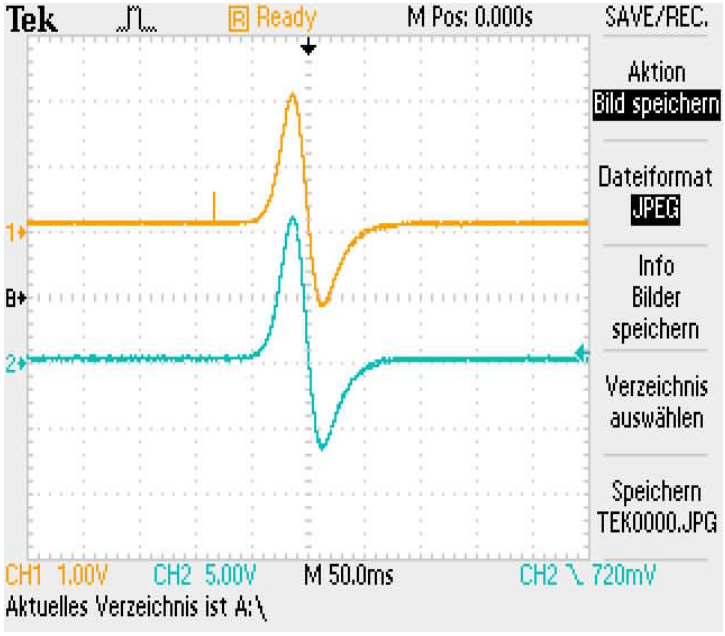


Figure 1 amplitude and phase signal of a metal ball 4mm Non-Ferrous

The following table lists the results of the measurements. Each sample was assigned an equivalent metal ball, i.e. this sphere roughly corresponds to the behavior that the respective parts produce in a metal detector (300Khz) without product compensation. A high product effect by e.g. a high intrinsic conductivity of the food can change the situation greatly. The determined aluminum spheres correspond to the behavior of the test specimens in the X-ray beam at 60 KV.

| Sample description | | Equivalent Non-FE sphere metal detector for the tested sample | Equivalent aluminium sphere X-ray detector for the tested sample | |
|---|---|---|---|---|
| Foil grey d=0,7mm 4x4x4 mm movement across | | - | | |
| Foil grey d=0,7mm 6x6x6 mm movement across | | Ca. 1,7 mm | | |
| Foil grey d=0,7mm 10x10x10 mm movement across | | Ca. 2,2 mm | Ca. 0,5-0,7mm | |
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Deggendorf, 05.08.2019

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Managing Director