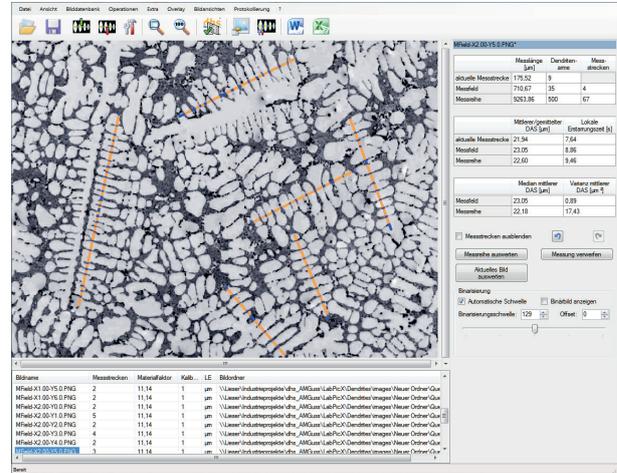


Dendrite Arm Spacing



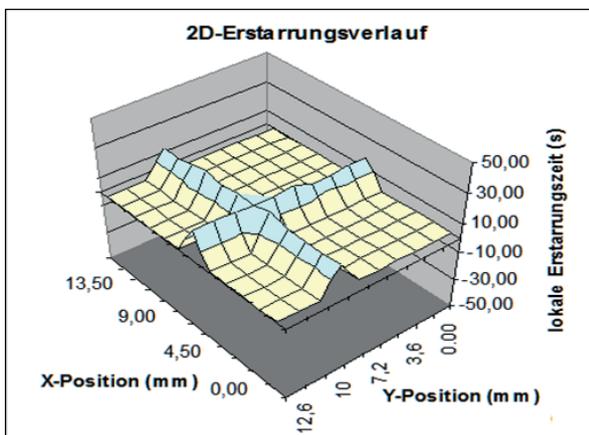
Aluminum alloy casts

Aluminum alloy casts are used in many industrial areas, such as automotive, mechanical engineering, aircraft manufacturing, construction, overhead power lines, packaging and in the household. **Alloys** are what make aluminum so **technically important** in the area of casting. The material's **very good pouring and strength characteristics** as well as the many different processing methods (anodising, welding, forming) and its corrosion resistance make it a real "all-rounder" for the casting industry.



Quality of the material / Parameter

The quality of the material depends largely on the **solidification process of the molten metal**. During solidification, structures known as **dendrites** form and they increasingly branch off and create dendrite arms. Determining the dendrite arm spacing allows **conclusions** to be drawn regarding **the strength properties** of the cast. Another parameter is **solidification time**.



Information in the overview

- Analytical measurement and determination of mean dendrite arm spacing
- Measurement according to BDG directive P220
- Measurement series and individual measurements possible
- 2D diagram of the solidification process
- Determination of local solidification time
- MS Excel/Word report at the click of a button (incl. accumulation of several samples)
- Detailed transfer of measured values to the dhs Image Data Base
- Connection of fully automatic microscopes

Image analysis / measurement DAS

The measurement (DAS = dendrite arm spacing) and the measuring procedure are defined in BDG directive P220. DAS is measured directly on a metallographic specimen in an optical microscope.

A measurement series of several images can be made for one sample, which can be saved together with the results and be loaded again at a later date. Individual measurements are also possible.

Parameters DAS

- Length of the current measuring section, accumulated for all sections in the image and all sections in the measurement series
- Number of dendrite arms in the current measuring section and accumulated in the entire measurement series
- Mean DAS of the current dendrite
- Averaged DAS
- Median and variance of the mean DAS
- Local solidification time

	Messlänge [µm]	Dendriten- arme	Mess- strecken
aktuelle Messstrecke	175,52	9	
Messfeld	710,67	35	4
Messreihe	9263,86	500	67

	Mittlerer/gemittelter DAS [µm]	Lokale Erstarungszeit [s]
aktuelle Messstrecke	21,94	7,64
Messfeld	23,05	8,86
Messreihe	22,60	9,46

	Median mittlerer DAS [µm]	Varianz mittlerer DAS [µm ²]
Messfeld	23,05	0,89
Messreihe	22,18	17,43

Software - Features

- Measurement according to **BDG directive P220: Determination of Dendrite Arm Spacing** for aluminum alloy casts
- Determination of measurement sections for at least 5 neighbouring dendrite arms
- Automatic line detection with the option of manual correction of the location and number of arms
- Generation of measurement series of several images
- Communication interface to other media
- Measurement parameters output in images, diagrams and measured data tables to create MS Word and MS Excel reports
- Calculation and preparation of a diagram showing the solidification process of a component

dhs Dietermann & Heuser Solution GmbH

Herborner Str. 50

35753 Greifenstein-Beilstein, Germany

Phone: +49 (0)27 79 91 20-0

Fax: +49 (0)27 79 91 20-99

Email: vertrieb@dhssolution.com

Web: www.dhssolution.com

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Image Data Base

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