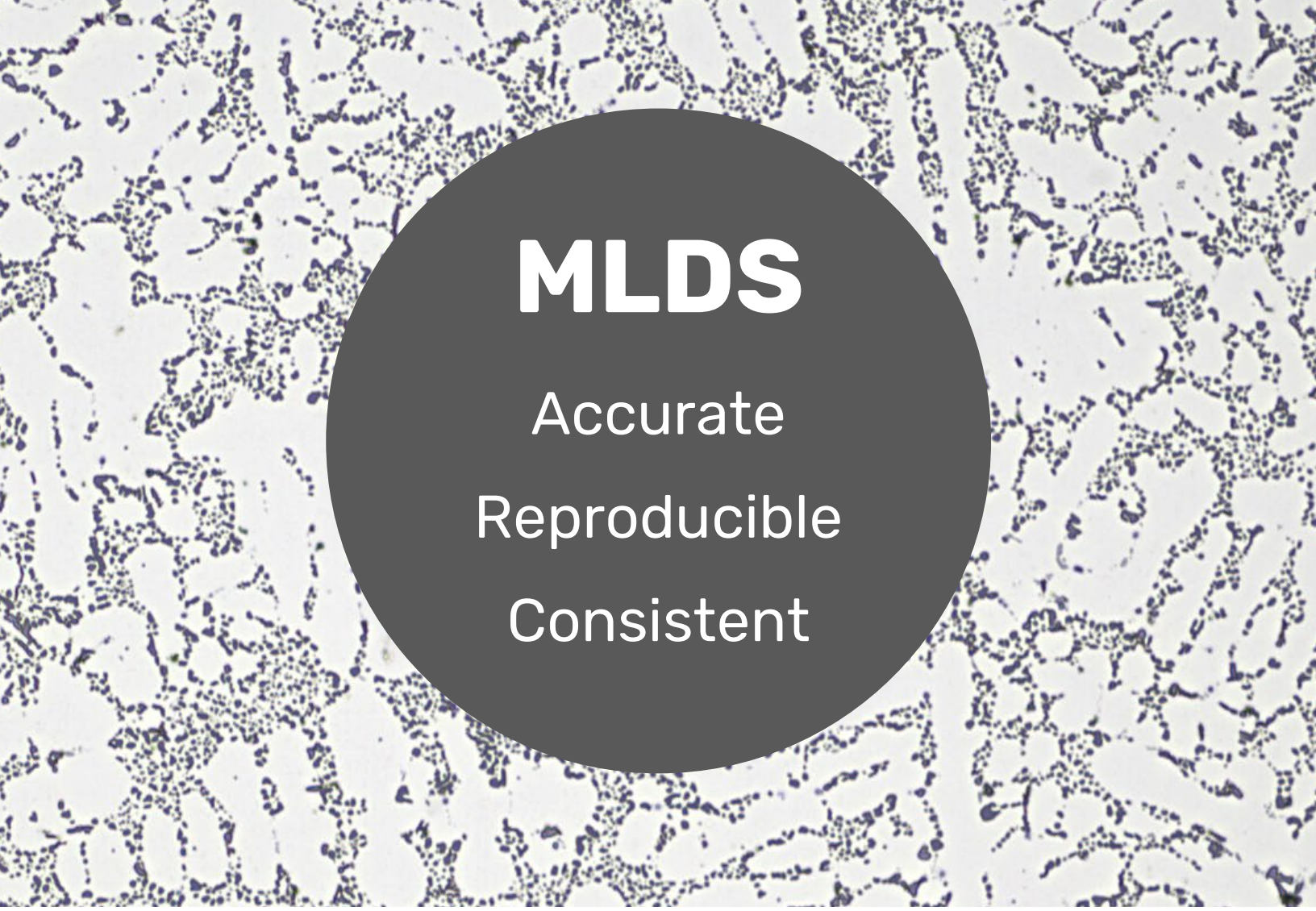


MLDS

Accurate

Reproducible

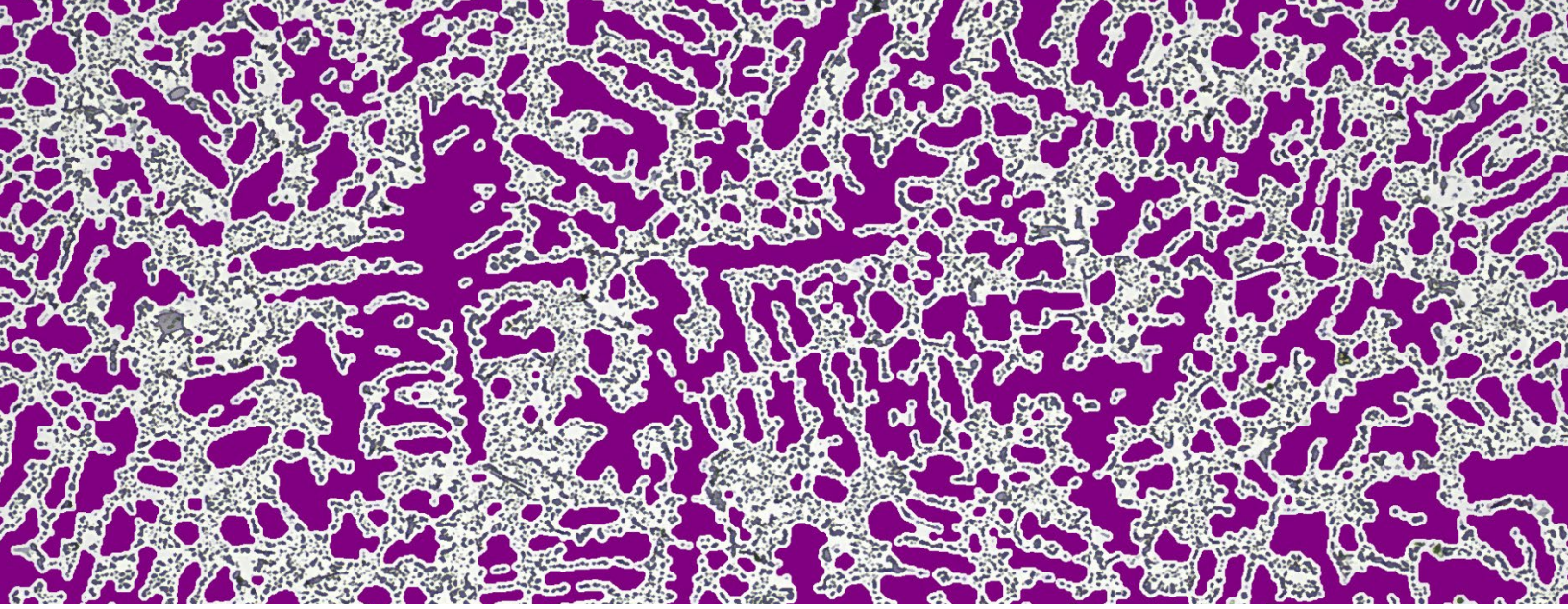
Consistent

PATENTED METHOD

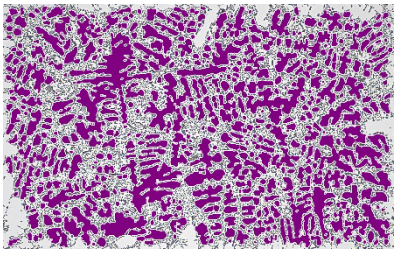
Mean Linear Dendrite Spacing for Cast Alloys

The new automated method for measuring microstructural fineness using image analysis allows increased **data collection**, better **measurement representation**, and less measurement **process time**.

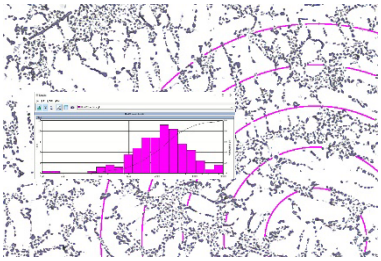
CLEMEX



New automated method



MLDS is an approach based on an image analysis routine which automatically detects dendrites, superimposes a set of concentric circles and exports measurements of overlapped features.

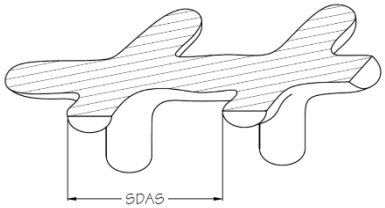


Circles are segmented and measured in a way that is universal for all microscope magnifications and camera combinations. The use of a single routine for different situations minimizes operator errors.

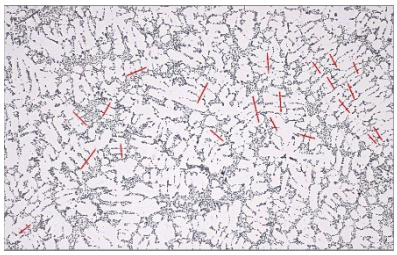
Sample ID	Example
Micro Number:	
Magnification:	100x
Number of Fields:	64
Average DCS (µm)	**38**
Standard Deviation	2.0
95% Confidence Interval	0.5
Area Percent Eutectic	**36.9**
Standard Deviation	1.1
95% Confidence Interval	0.3
Aveage Dendrite Arm Aspect Ratio	1.6
Mean Linear Dendrite Spacing (µm)	**19**
Standard Deviation	0.9
95% Confidence Interval	0.2

The automated method has been proved to be 16 times faster than the traditional manual method. Furthermore, increased data collection produces a statistically significant result.

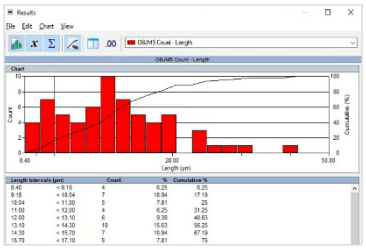
Traditional SDAS method



Fineness in hypoeutectic metallic alloys, like hypoeutectic Al-Si based casting alloys, has traditionally been quantified by measuring the spacing between secondary dendrite arms (SDAS).



The manual SDAS method using a Clemex system involves capturing images from a sample and annotating a number of secondary dendrite arms with direct measurement tools.



The length distribution of these manual measurements is updated instantaneously in the results panel of the software and can be exported for further processing using a Linear Intercept Method macro to obtain DAS.