

Advanced measurements of soft and hard magnetic materials used in electric motors

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- **Outline:**
- **BROCKHAUS Stators Testers for back-iron measurements**
- **BROCKHAUS Local Stator Tester BST-L**
- **Case study 1 - Detrimental effects of stamping, welding, winding and housing processes**
- **BROCKHAUS Systems for testing of permanent magnets**
- **Case study 2 – Influence of segmentation and EDM cut-outs on AC power loss of permanent magnets**
- **Summary**

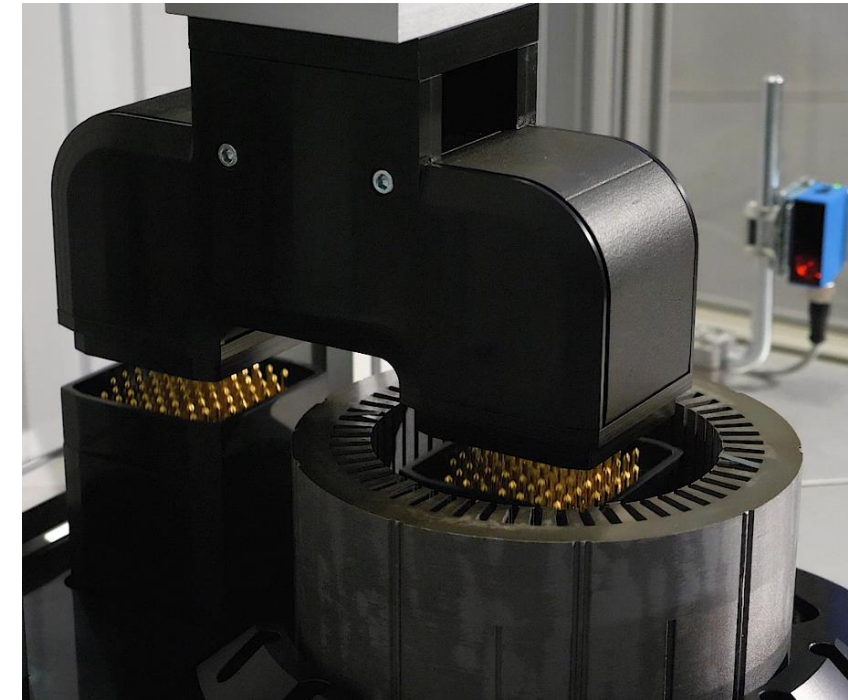
BROCKHAUS Stator Testers for back-iron measurements



BROCKHAUS MPG200 measurement system

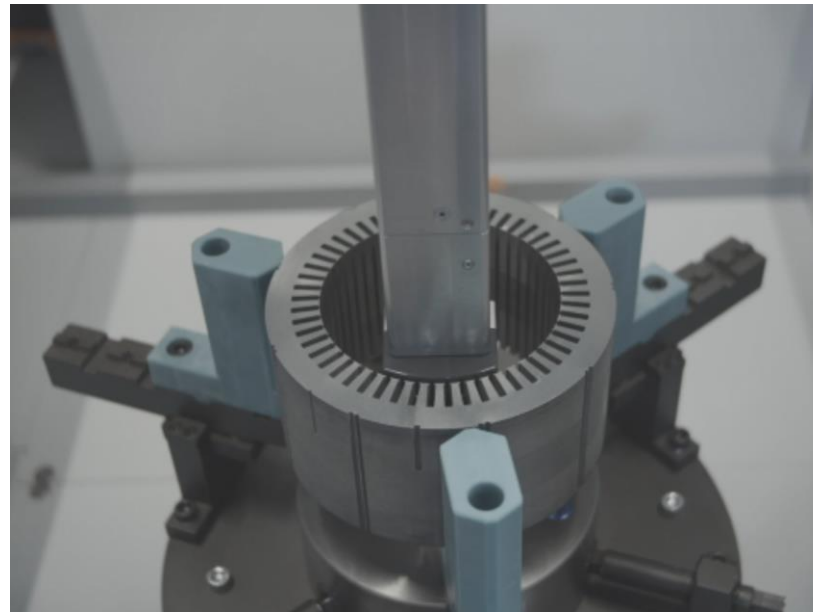


Stator with BST-M measurement coils wound on back iron

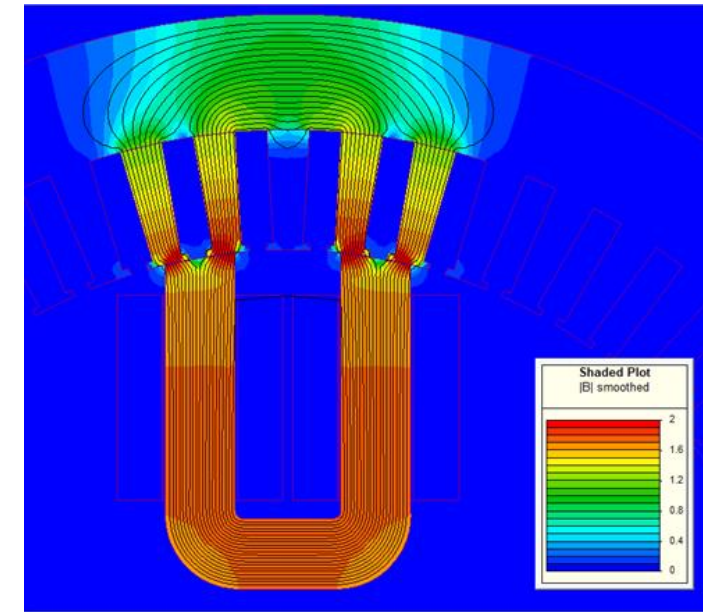


BST-FA split coil for stator testing

BROCKHAUS Local Stator Tester BST-L

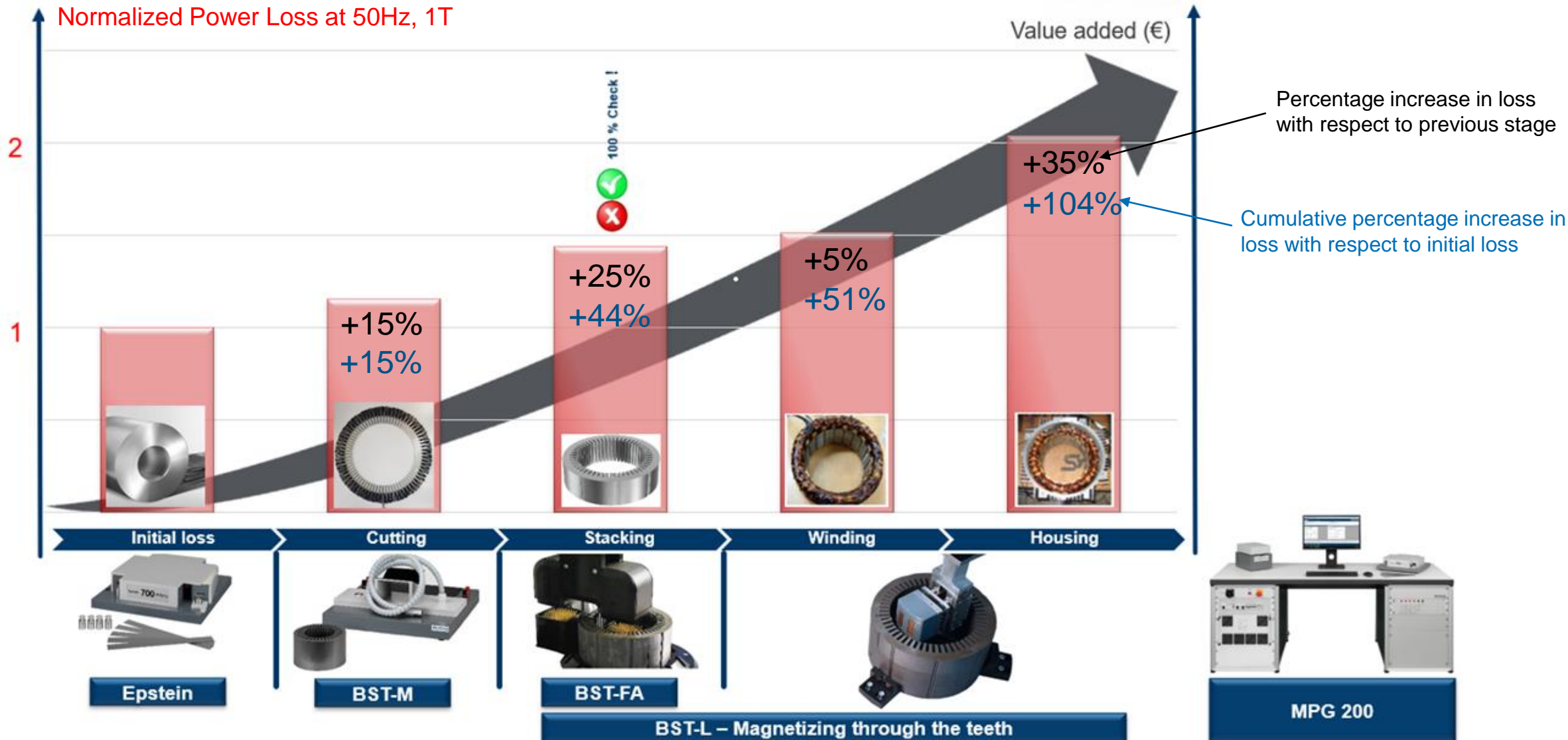


BST-L sensor head in measurement position



Distribution of flux density B in teeth and back iron at 1.7T in the yoke

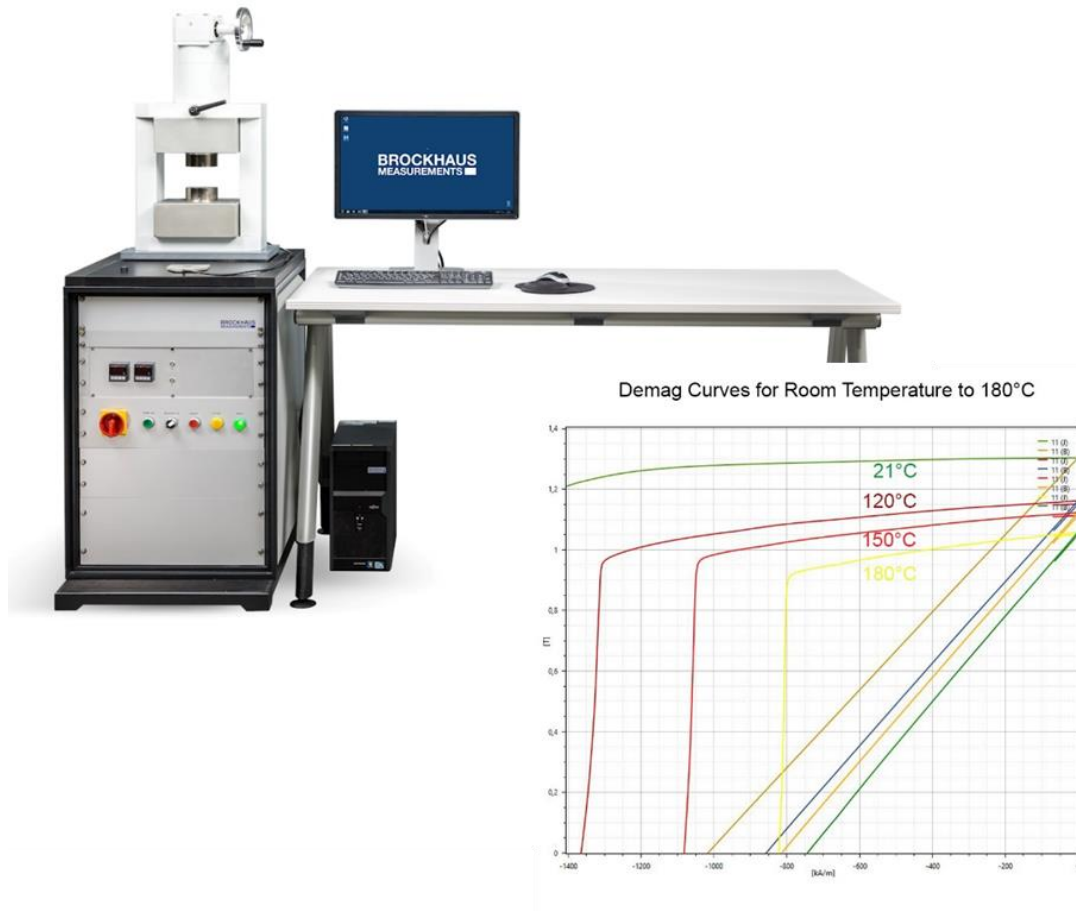
Case study 1 - detrimental effects of stamping, welding, winding and housing processes



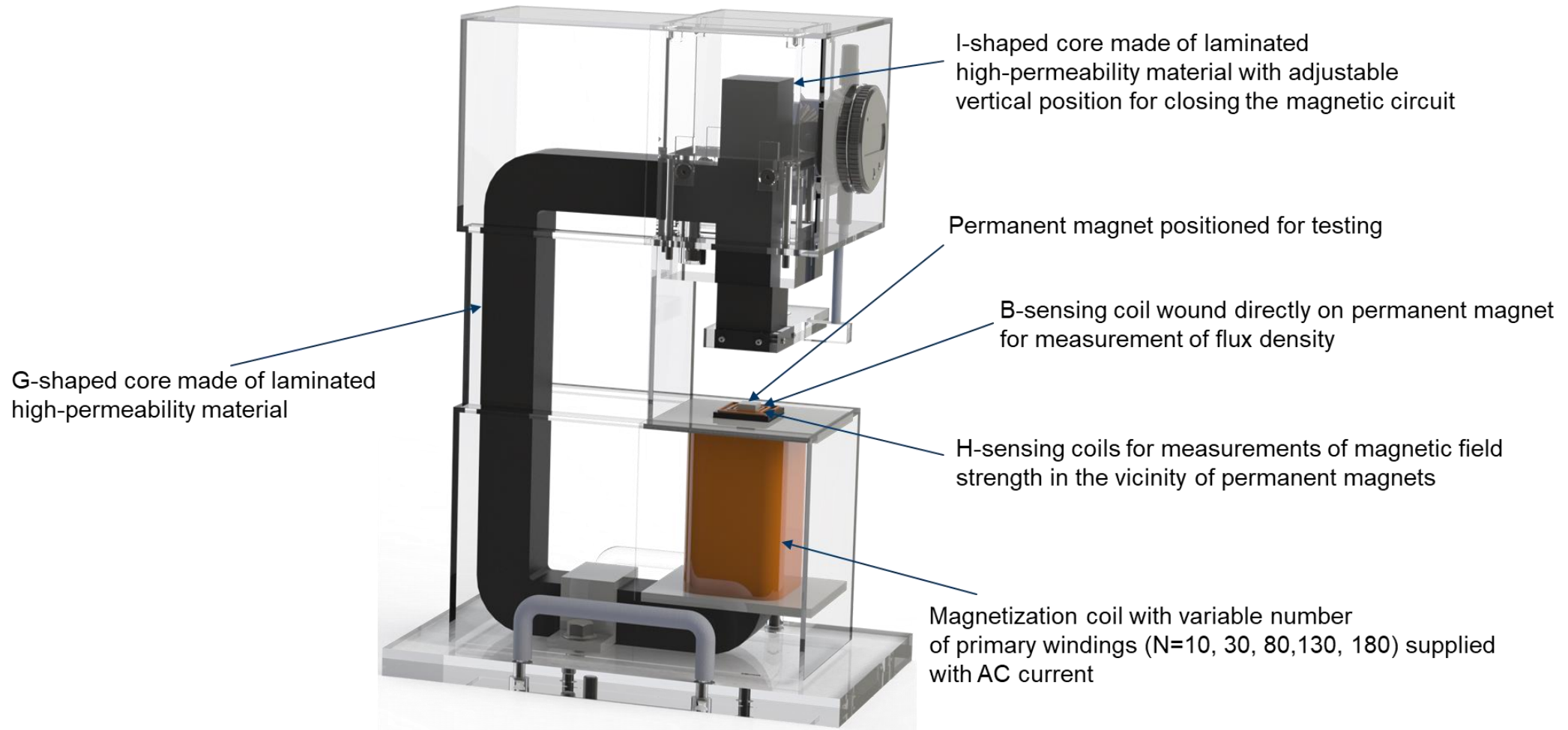
BROCKHAUS Systems for DC testing of permanent magnets - Hystograph HG 200

Measuring instrument for determination of magnetic properties of hard magnetic materials according to International standard IEC 60404-5

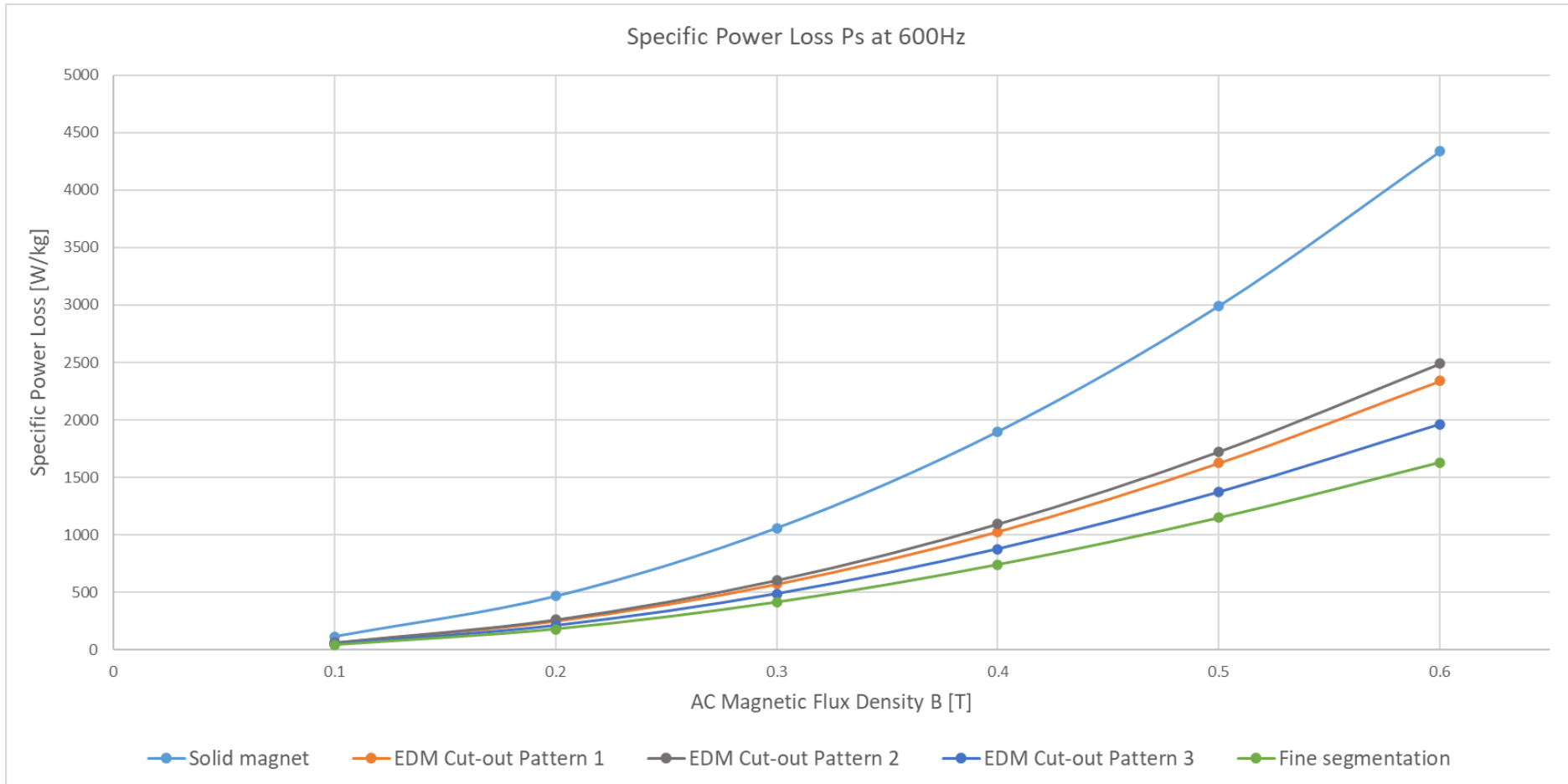
- Measurement of complete BH-Curve
- Electromagnets available up to 3200 kA/m
- Characterization under temperature from -45°C up to 200°C
- Suitable for all permanent magnetic materials, such as Ferrite, AlNiCo, SmCo, NdFeB
- Customisable pole size and shape



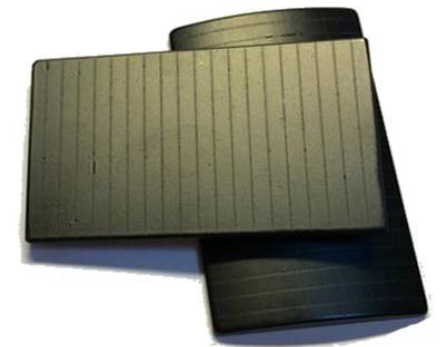
BROCKHAUS Systems for AC testing of permanent magnets



Case study 2 – influence of segmentation and EDM cut-outs on AC power loss of permanent magnets



Magnet with EDM Snake-line cut



Segmented Magnet

■ Summary:

- BROCKHAUS offers a wide range of measurement technologies for characterisation of soft and hard magnetic materials used in automotive applications
- Manufacturing processes, such as stamping, welding and housing have a detrimental impact on magnetic properties of stator cores
- BROCKHAUS can offer customised solutions for different geometries of tested components, i.e. various sizes of stator cores, electrical steel laminations, permanent magnets, etc.
- Magnetic measurements enable evaluation and optimization of manufactured electric motor components
- PLEASE REGISTER FOR OUR NEWSLETTER ON WWW.BROCKHAUS.COM

Thank you

Thank you for your attention!

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