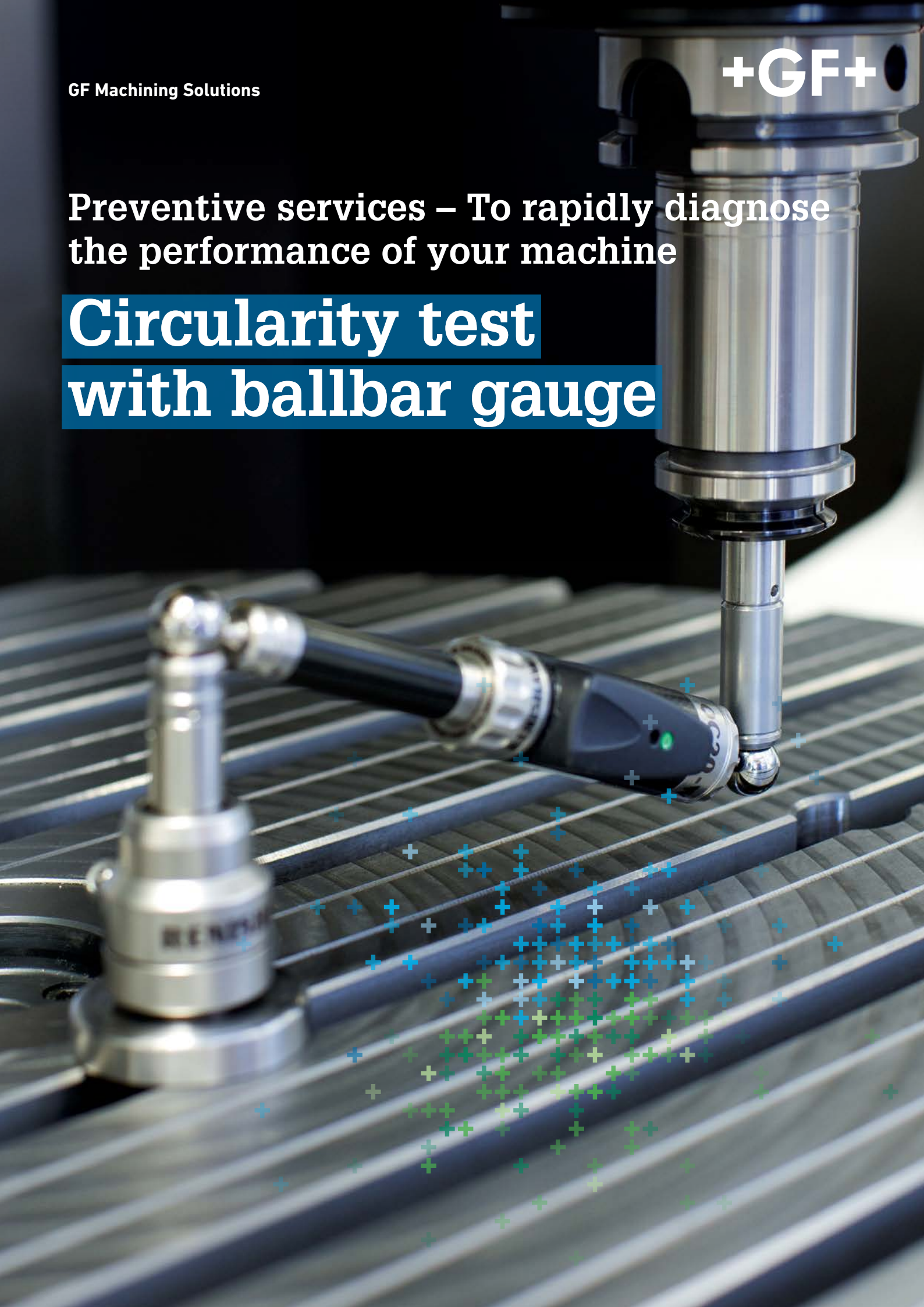GF Machining Solutions

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Preventive services – To rapidly diagnose
the performance of your machine

Circularity test
with ballbar gauge

Circularity test with ballbar gauge

The aim of ballbar testing is to compare the effective circle path performed by the machine with the programmed circle path. In theory, if the machine behaves perfectly in terms of positioning performance, both circles should exactly match. But, in practice, many factors — like the machine geometry, control system, or wear of various components — can create deviations of the radius of the test circle.

+ An easy and efficient test to assess the machine's accuracy

+ A fast method using a tool almost universally accepted as the most practical and convenient instrument

+ Reports according to ISO 230-4 and ASME B5.54 specifications

With a simple comparison of both circles, the machine accuracy is validated. If deviations are detected, recommendations will be provided for precision recovery (e.g., geometrical control, calibration by laser, components exchange).

We recommend that you use this preventive service each time you want to quickly check the positioning performance of your machine on a yearly base or in case of particular event (e.g., before a special production or after your machine has been moved).

The ballbar test includes:

• Set up: the center pivot is positioned on the machine table. The ballbar is mounted between two kinematic magnetic joints.

• Data capture: the machine performs two consecutive circles: one in a clockwise direction, the other counterclockwise in any plan of the machine (XY, YZ, ZX).
Data capture is shown live on-screen, so any errors or problems can be detected as the test progresses and then stopped without wasting additional time.

• Measurement: quantity factors such as radial deviation, contour errors, straightness and variations in the backlash of linear axes, the axis speed, the angle and the circular shape are calculated.

• Data analysis: the reports can be customized and have different formats according to international standards (e.g. ISO 230-4, ASME B5.54)

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