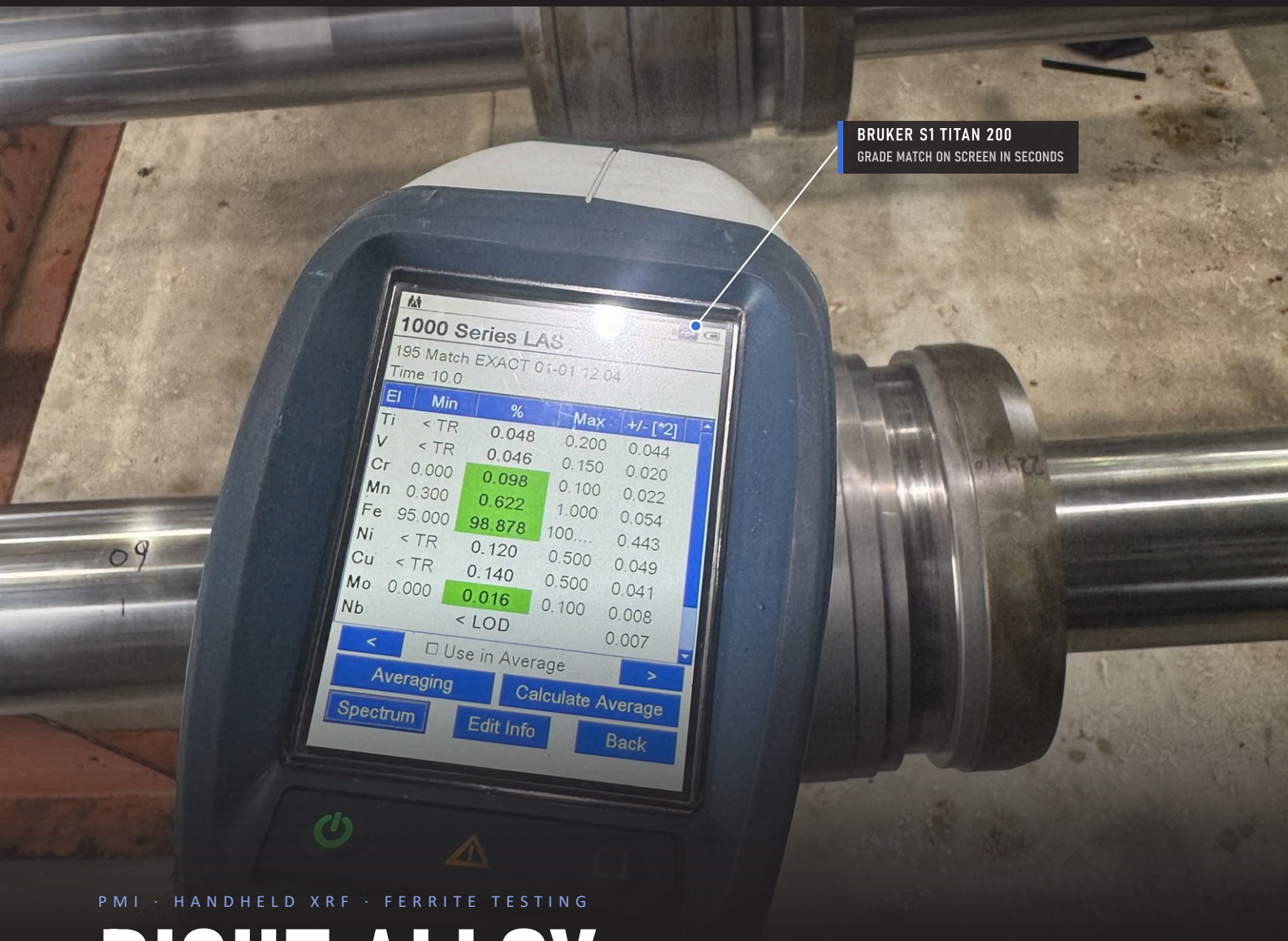
DITS
DARWIN INSPECTION & TESTING SERVICES



BRUKER S1 TITAN 200
GRADE MATCH ON SCREEN IN SECONDS

PMI · HANDHELD XRF · FERRITE TESTING

RIGHT ALLOY. RIGHT PLACE.

Positive material identification with our Bruker S1 Titan 200 handheld XRF analyser: alloy chemistry and a grade match in seconds, on pipe, fittings, flanges, welds and bar stock. Ferrite testing of stainless and duplex welds with a Fischer Feritscope FMP30 and a List-Magnetik Ferrite-Check 240. In our Darwin workshop or on site.

BRUKER S1 TITAN 200 | GRADE MATCH | FERRITE TESTING | FERITSCOPE FMP30 | FERRITE-CHECK 240 | STAINLESS & DUPLEX WELDS | ON SITE OR WORKSHOP

WHY PMI

ONE WRONG FITTING CAN FAIL A WHOLE LINE.

A 304 fitting in a 316 line, or a carbon steel bolt in a Cr-Mo flange, looks the same as the right one until it corrodes or cracks in service. PMI checks the alloy at the item, against the drawing, the mill certificate or your PMI plan.



Test points marked and recorded, so every reading is traceable.

VERIFY INCOMING MATERIAL

Pipe, fittings, flanges and plate checked against the mill certificate before they're built in.

WELDS AND WELD METAL

Weld metal checked against the WPS consumable, for dissimilar and alloy welds.

IDENTIFY UNKNOWN STOCK

Mixed-up or unmarked bar, plate and fittings sorted by grade before they're used.

IN-SERVICE PLANT

Installed piping and components checked on site, for audits, repairs and replacements.

WHAT YOU GET · EXAMPLE

ITEM	SPECIFIED	GRADE MATCH	CR %	NI %	MO %	RESULT
Flange F-01	316	316	16.9	10.2	2.1	Pass
Elbow E-03	304	304	18.3	8.4	0.2	Pass
Pipe P-02	1¼Cr-½Mo	F11 / P11	1.2	0.1	0.5	Pass
Stud S-07	316 (B8M)	304	18.1	8.2	0.2	Fail, no Mo

Example data. Each item is reported with its test point, chemistry, grade match and a photo.

HOW A PMI TEST RUNS

01
PREPARE
Clean bare metal at each test point, marked and numbered.

02
TEST
Analyser held to the surface for each shot, repeat shots averaged where needed.

03
MATCH
Chemistry compared to the grade library and the specified grade.

04
REPORT
Item, test point, chemistry, grade match and a photo for every reading.

OUR ANALYSER

BRUKER S1 TITAN 200
Handheld XRF analyser. Measures elements from titanium to uranium, and matches the result to a grade library on screen.

CHECKED EVERY DAY
Self-check at start-up and verified on a reference sample before each day's testing, as our PMI procedure requires.

KNOW THE LIMITS
XRF doesn't measure carbon. For L grades or carbon content, we'll tell you when you need OES or a lab instead.

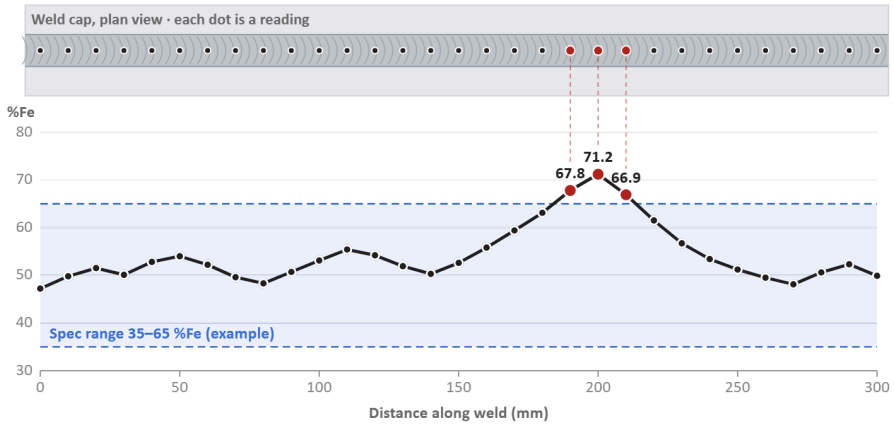
STAINLESS OR DUPLEX? CHECK THE FERRITE TOO.

PMI confirms the grade, not a weld's ferrite content. We can test both in the same visit and report them together. **Ferrite testing is over the page.**

WHY FERRITE TESTING

GET THE FERRITE WRONG AND THE WELD WON'T LAST.

Austenitic stainless weld metal needs a little delta ferrite to resist hot cracking. Duplex needs the right balance of ferrite and austenite for its strength, toughness and corrosion resistance. Neither shows by eye. A ferrite meter measures it on the weld in seconds, without cutting a sample.



Example data. Readings every 10 mm along the cap of a duplex butt weld, plotted against the specified range.

READOUT · EXAMPLE

WELD W-02

2205 duplex · cap · 10 mm spacing

READINGS	31
MIN	47.2 %FE
MAX	71.2 %FE
MEAN	54.2 %FE
SPEC RANGE	35–65 %FE

FAIL 3 readings above 65 %Fe, at 190–210 mm.

PROCEDURE TESTS

PQR and welder test coupons checked against the range in the WPS or code.

PRODUCTION WELDS

Duplex and stainless piping, vessels and tanks checked during fabrication.

CLADDING & OVERLAYS

Austenitic cladding and weld overlays in pipes, vessels and boilers.

COLD-WORKED STAINLESS

Magnetic martensite from forming or machining found and measured.

HOW A FERRITE CHECK RUNS

01
PREPARE
Clean bare metal at each test point, marked and numbered.

02
VERIFY
Meter checked on its ferrite reference standards before testing.

03
MEASURE
Spot readings, or a continuous scan along the weld.

04
REPORT
Min, max and mean for each weld, against the specified range.

OUR FERRITE METERS

FISCHER
FERITSCOPE FMP30

RANGE	0.1–80 %Fe, or 0.1–110 WRC-FN
METHOD	Magnetic induction
RECORDING	Readings stored on the meter, plus continuous capture for a ferrite profile along a weld
USED FOR	Austenitic and duplex welds, cladding and overlays

LIST-MAGNETIK
FERRITE-CHECK 240

RANGE	0.2–100 %Fe, or 0.2–140 FN
METHOD	Magnetic induction, to DIN EN ISO 8249
SMALLEST SPOT	ø 2 mm, for narrow welds
RECORDING	Scan mode along a weld. Logs 10,000 readings with min, max, mean and std dev

KNOW THE LIMITS

Thin walls, tight curvature and coatings change the reading. We note them on the report, and tell you when a lab section is the better check.

BOTH CHECKS, ONE VISIT

PMI CONFIRMS THE ALLOY. FERRITE CONFIRMS THE WELD.

On stainless and duplex work the two checks answer different questions, so it pays to run them together. We can do both in the same visit, on the same test points, and report them item by item.

	PMI HANDHELD XRF	FERRITE TESTING MAGNETIC INDUCTION
ANSWERS	**IS IT THE RIGHT ALLOY?**	**IS THE WELD'S FERRITE IN RANGE?**
MEASURES	Element chemistry from titanium to uranium, matched to a grade library	Ferrite content, in FN or %Fe
USED ON	Pipe, fittings, flanges, plate, bar stock and weld metal	Austenitic and duplex welds, cladding, overlays and cold-worked stainless
OUR KIT	Bruker S1 Titan 200	Fischer Feritscope FMP30 and List-Magnetik Ferrite-Check 240
WON'T TELL YOU	Carbon content. For L grades we'll tell you when you need OES or a lab.	The grade. A weld can read in range and still be the wrong alloy.

ONE REPORT · EXAMPLE

ITEM	SPECIFIED	GRADE MATCH	FERRITE, MIN–MAX	SPEC RANGE	RESULT
Weld W-01	2205 duplex	2205	44.8–58.3 %Fe	35–65 %Fe	Pass
Weld W-02	2205 duplex	2205	47.2–71.2 %Fe	35–65 %Fe	Fail, high ferrite
Weld W-07	316L	316	4.1–7.6 FN	3–10 FN	Pass
Flange F-03	316L	304	–	–	Fail, no Mo

Example data. Spec ranges are examples: we test to the range in your WPS, code or client spec. XRF reads 316L as 316 because it doesn't measure carbon.

01 NUMBERED TEST POINTS
Marked on the item and on a photo, so every reading traces back.

02 EVERY READING
Chemistry and grade match, ferrite spot readings or a scan profile.

03 AGAINST YOUR SPEC
Pass or fail against the drawing, mill cert, WPS or your test plan.

04 WORKSHOP OR SITE
In our Darwin workshop, or on site with portable kit.

NEED A MATERIAL OR A WELD CHECKED?

Send us the drawing, the material list or your test plan, and we'll tell you what to test and how.

NATA 12303 | ISO 9001 | LICENSED OPERATORS

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