

AGR FIELD OPERATIONS

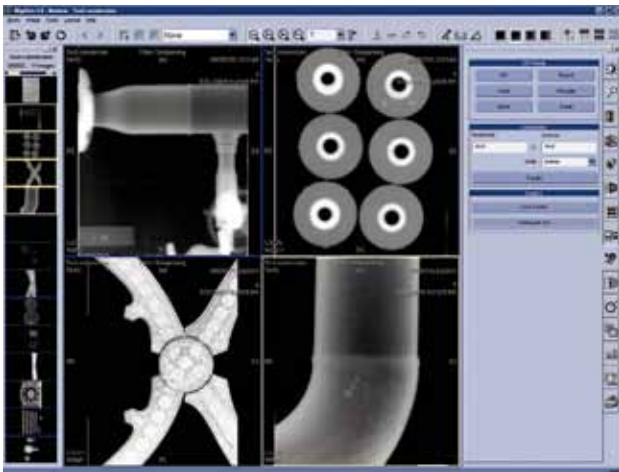
INSPECTION & INTEGRITY SERVICES
IN-SERVICE INSPECTION



IN-SERVICE INSPECTION

AGR Field Operations In-Service Inspection department provides condition assessments for process, drilling equipment, structures, lifting appliances, and mooring systems for offshore rigs, FPSO, and onshore plants.

AGR delivers a packaged Integrity solution. We establish inspection programs, execute inspection, evaluate, reports and recommendation to our clients. Risk based inspection (RBI); planning, inspection, execution, detailed reporting that provides the foundation for evaluation and corrective action.



HIGHLY QUALIFIED & SKILLED PERSONNEL:

Our employees for in-service inspection are certified in accordance with NS-415. Educational backgrounds; Colleges, Technical Schools & Universities.

AGR Field Operations provide a highly skilled and experienced work force. Civil Engineers, Engineers, inspectors, and newly qualified personnel produce a high level of experience available to our customers.

AGR Field Operations have focus on cost reduction for customers. Planning and inspection executed by personnel-teams upon customers' request. Teams can consist of personnel from different departments in AGR Field Operations;

- Rope Access (with NDT inspectors)
- NDT special methods
- Engineering

POSITIONS OF FULL TIME EMPLOYEES:

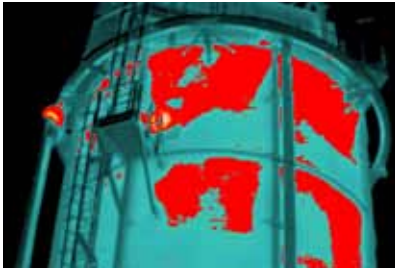
- Engineers
- Inspection planners & Inspection Managers
- Project Managers
- Senior Inspectors & inspectors
- NDT operators (multi-disciplined)
- Draftsmen
(Dax, microstation, autocard with application).

Above: Digital Radiography

Below: Digital Radiography

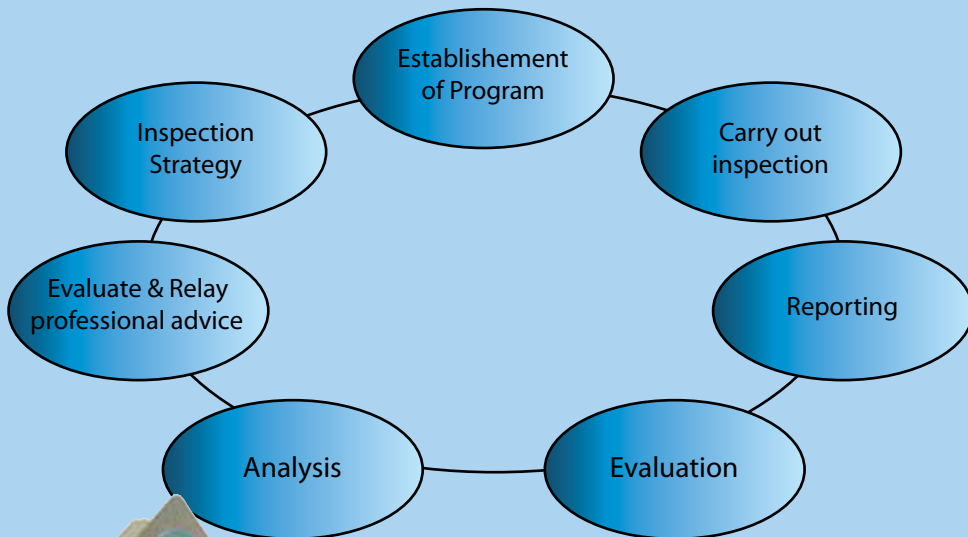


AGR Field Operations offers a wide range of conventional and advanced NDT services:



SERVICE AND TECHNOLOGY	CAPABILITY AND RESULTS	COMMENT
Eddy Current	Operator interpretation of signals on screen. Can be saved to file and printed out. Needs electrically conductive material. Can be done on magnetic and non-magnetic materials. Inspection through non conducting materials such as paint - i.e. Lift-off. Minimum surface preparation required. Can record signals. No couplant required.	Eddy current unit, probes and calibration block needed. Equipment is mostly small and lightweight and can be used for abseiling application. Mainly only surface defect detection. Signal responses can appear complex to interpret.
Hardness Testing	Assessing a metal or plastic material elasting property based on a penetration depth.	Indentation hardness is arguably the most recognised type of testing when the term hardness is used. Common application of hardness testing includes Brinell, Vickers, Knoop and Rockwell.
Infrared/Thermography	Detection of "hot spots", insulation damage, severe wall thinning can be revealed. Detects radiation and produce images, called thermo grams, in the infrared range of the electromagnetic spectrum (roughly 900–14,000 nanometres or 0.9–14 µm).	Important to note that thermal imaging displays the amount of infrared energy emitted, transmitted, and reflected by an object. The inspection does not interfere with production which lowers inspection and maintenance cost.
MPI/Dye Penetrant	Gives length of defect. Surface must be cleaned carefully to ensure that the defect is open, and not mechanically damaged by shot peening or grinding.	Technique is simple and cheap, requires little training, and makes for little disturbance around the item being tested. Easy to transport, quick inspection, large coverage, material independent (as long as not porous), Geometry independent. Gives no depth information.
PMI (Positive Material Identification)	Alloy composition and, thus, the identity of materials can be determined. Often used for high-quality metals, such as stainless steel, and high-alloy metals. Two methods, whereas we mostly use spectrography, which is based on optical emission.	Portable equipment and easy to apply. Material properties such as structure differences and heat treatments have no influence on the results.
Radiography (digital)	Corrosion under insulation, steam traces identification, real time capability. Permanent record of results that can be digitised for easier storage. Visual record of defects easily to recognise, i.e. 2D image of 3D object.	Gives good contrast. Thicker materials than 70 mm cannot be inspected using commonly used isotopes. Density of material affects the image. The greater the distances form the source the better.
Ultrasonic	Operator evaluation of A-scan. In specialist application, i.e. automated or computer based system, digital representation of defects. Various equipments needed depending on the inspection required. Generally non-intrusive. Can give good correlation with size and depth of defects.	Does require manual operation and interpretation. Rough surfaces and irregular shapes make for poor contact and reflections. Couplant required. Reference standards are needed for calibration and characterisation of defects. Temperature dependent.
Vibration Solutions	Total solution by using Finite Element Analysis, in addition to field measuring, to identify weakness in geometry and optimise the piping system by increase life time and reduce unplanned shutdowns.	Unique combination with both field measuring and the advanced analysis, gives higher safety and lower total cost of the operational system. In addition to cable monitoring, the department uses advanced telemetry monitoring on temperature, pressure and stress measuring.
Video (Countour measurement)	The Laser Profiler is a stand-alone tool for use with a closed circuit television video (CCTV) survey system to collect survey data and create pipeline reports using innovative machine vision software to obtain the measurements of faults and features inside the pipeline.	The laser video inspection is designed to provide the contractor, owner, or consulting engineer with the ability to determine internal pipeline conditions after the initial installation.
Visual Inspection	Gives additional information for other techniques. An all around view of the equipment, allowing other factors to be considered. Often all that is required to determine the method of failure.	Simple technique, cheap, effective. Capable of detecting a wide range of surface defects down to a very small size. Cannot detect subsurface defects.

Routine for scheduled Inspection & Integrity



REFERRALS

CONTRACT AGREEMENTS

We provide experienced personnel for installations within the Norwegian Continent Shelf (NCS):

- OSF, OSS, OSC, OSE, Njord A&B, Heimdal, Sleipner, Troll A, Troll B, Troll C, Veslefrikk, Kvitebjørn, Brage, and Grane.

Landbased installations:

- Sture, Kollsnes, Mongstad, Kårstø.

making tomorrow better

ABOUT AGR GROUP

AGR Group is a leading provider of essential services and technologies to the international oil and gas industry. Our services range from assisting small exploration companies with their first licence applications through to constructing and managing ambitious drilling programmes for major organisations. In addition, we provide expertise, technology and critical solutions for exploration, development, production and maintenance projects for some of the world's largest oil companies.

We have a worldwide reputation for our innovative, safe, environmentally-friendly and cost-effective solutions to key exploration and production challenges and have established a leadership position in a number of key sectors. We focus on growth and earnings performance while pursuing sound and ethical business practices.

We have three operating divisions:

- AGR Petroleum Services
- AGR Drilling Services
- AGR Field Operations : In-Service Inspection

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