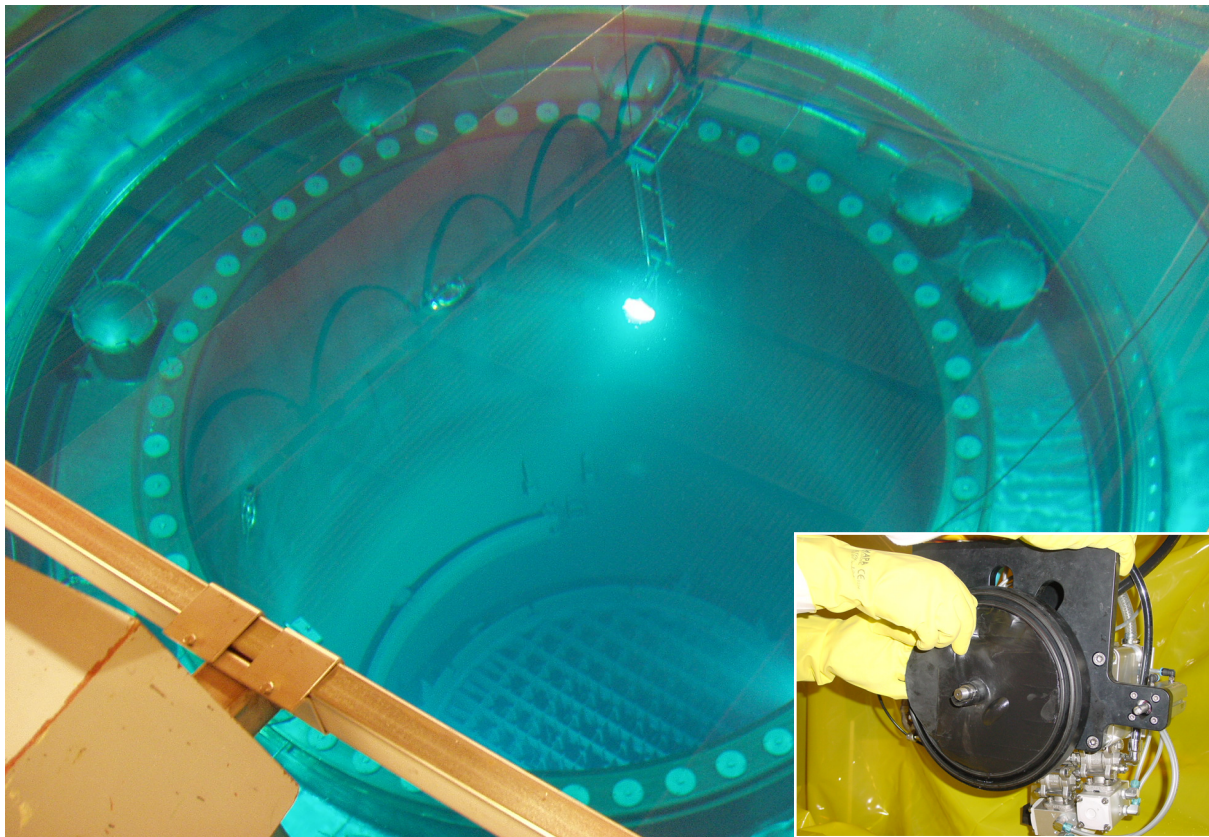


# Moulding VT or A-VT



## Introduction

When welds and materials are inspected, the results are usually a judgement of signals from ultrasonic or eddy current examinations. However, a method which can give a direct picture of a surface breaking defect can also be offered. This method is called "Moulding VT or A-VT".

Initial work with polymer moulding compounds was undertaken during the 1980's and resulted in systems being developed for underwater inspections of North Sea oil installations and nuclear submarines. The application area has since been extended to many different industries and situations. Today, the moulding method is used for examination and inspection in the following fields:

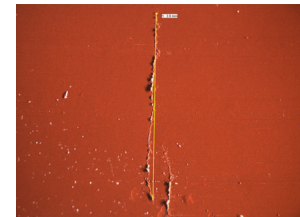
- Surface metrology
- Crack investigation
- Microstructure assessment
- Fracture surfaces
- Remote surface inspection
- Hole surfaces (threads, drill holes, corrosion pit, etc.).

But specially underwater components (e.g. in nuclear reactor vessels) can be inspected with this method. The method can furthermore be a good supplement to other inspection methods, like ultrasonic and eddy current, because it delivers a direct picture of the surface.



### Typical sensitivity, accuracy, etc.

- Ideal conditions: Cracks down to 1 µm in width and 0.5 mm in length
- Normal conditions: Cracks down to 3 µm in width and 1.5 mm in length
- Directions: Defects located in all directions can be detected
- Temperature: +15°C to +50°C.



The moulding method is based on a two part silicone compound. When the two parts are mixed together a chemical reaction is started. This chemical reaction is dependent on the temperature and the amount of hardener component. When the chemical reaction is started the mass can be applied on the component to be inspected and after a certain time (the curing time) the compound has cured and can hereafter be removed from the component. The mould has now taken a copy of the surface and with very large accuracy the surface can be mapped with a microscope, which can reveal the surface breaking defects, if any.

### Applications

Typical areas of application are as follows:

- Welds
- Surfaces
- Special geometries which are difficult for other inspection types
- Underwater components
- All components which can be directly (manually) accessed or where a special tool can be constructed for use (specially for underwater components).

### Other inspection methods

Moulding VT can detect outer surface breaking defects (defects located on the surface which is moulded). In order to obtain defects which are inner surface breaking or embedded, additional inspection methods such as automated ultrasonic inspection or eddy current inspection must be applied. Furthermore, to quickly locate areas with outer surface breaking defects methods like visual or eddy current inspection can be used.

*Automated ultrasonic inspection* can be provided with the P-scan System, which is developed by FORCE Technology. Normally, a weld will be examined for inner surface breaking or embedded defects, or the wall thickness can be mapped.

*Automated eddy current inspection* can be provided with the P-scan System Flex, which is developed by FORCE Technology. Normally, a weld will be examined for outer surface breaking defects and will therefore be a good supplement to the moulding VT technique.

*Visual inspection* can be provided with underwater cameras, which can be used in high-radiation areas as reactor vessel internals.



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