# Detection of different blowing agents contained in polyurethane foam

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### Technical data of the portable design

- Main dimensions of the transport case: W x D x H: **approx. 850 x 550 x 350 mm**
- Power supply: **230 V 50 Hz** – different power supply possible
- Total weight: **approx. 45 kg**
- Compressed air supply: **6 bar**
- Dimensions of the hand tool: **approx. 350 x 260 x 700 mm**
- Weight of the hand tool: **2.5 kg**

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### Applications

Detection of blowing agents can also be used for other polyurethane-foamed components and electrical appliances.

# DETECTION OF DIFFERENT BLOWING AGENTS CONTAINED IN POLYURETHANE FOAM

### Assumptions

When recycling end-of-life cooling devices, a lot of different types of cooling devices can be recovered. There are not only different cooling agents contained in cooling machines but also different insulations inside the insulation bodies. Old types, for example, are insulated with mineral wool or polystyrene in foamed form. Great part, however, is insulated with polyurethane foams (PUR-foams). CFC (VFC) R11 was often used as blowing agent in the past. Since using CFCs in such devices is prohibited now, alternative blowing agents, having physically similar characteristics, are rather used nowadays. Today, hydrocarbons (VHC) cyclopentane (also called c-pentane, pentane or CP) are mostly used. To distinguish end-of-life cooling devices clearly with regard to its insulation material, URT Umwelt- und Recyclingtechnik GmbH has developed a technology that differentiates cooling devices explicitly in three categories with regard to the new directive EN 50625.

### These are

- VFC (detection of R11 and/or R141b and/or R245fa)
- VHC (detection of cyclopentane)
- Other insulation materials

### System design

The portable version of the analysis device consists of a hand tool and a controlling unit with integrated gas measuring technology. By using the hand tool, the housing of the cooling device to be analyzed will be opened up and the escaped gas sample will be sucked into the measuring unit. There is a user interface at the hand tool to start the analyzing process.

Detailed information from the gas photometer and meter values can be read off the controlling unit. It is possible to integrate a stationary, automatic measuring system into a URT recycling plant.

### System details

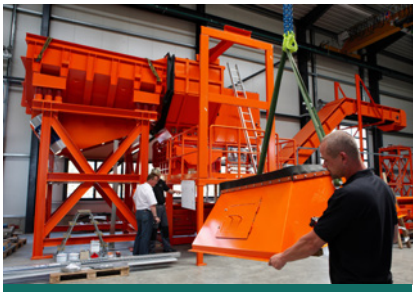
The hand tool for automatic inserting of the bolt is pressed against the cooling device body. Once this action is completed, the pneumatically driven bolt can be hit through the metal wall of the cooling device. After successful measuring gas sampling process, the hand tool can be taken off the cooling device. The next measuring action can be started as soon as the measuring result is shown on the display. The hand tool can be released from the insulation body after successful measuring, whereas the measuring action is classified as failed if released too early.

After opening and sampling of the gas by a measuring gas hose into the measuring unit, a gas photometric analysis takes place here. The result is shown on the controlling unit. It is possible to request daily or total values of the three categories, too.

The accurate gas measuring technology can achieve measuring cycle times <10s.

# One-stop planning, production, delivery and service

Factory Karlstadt



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