

LEAK-DETECT for vacuum-leaks (e.g. during building of bondparts)



Picture 1: bondpart at resininjection



Picture 2: LEAK-DETECT

LEAK-DETECT for vacuum-leaks

The function is similar to the detection of leaks in compressed air systems: no matter how small the leak is, it will produce an ultra sonic sound, which is detected immediately by the LEAK-DETECT device. The direction of the air flow (in or out) is not important. The detection is easy, even in loud work shops or in noisy production halls.

The most applications of LEAK-DETECT in the vacuum technology are the glass reinforced plastic (GRP) production processes whether for parts of cars, air crafts, boats, ships or windmills:

windmill rotor blade production

The production technique consists of 3 distinct stages. Firstly, most blades are manufactured from 2 halves, following which they are bonded together and finally they receive a smooth outer coat. What follows is a brief production stage where a vacuum supported infusion of a 2 component resin into fibre matting takes place.

car spoiler production

The technique is called „injection moulding“. Many layers of carbon fibre matts cover a mould and the vacuum supported infusion of the 2 component resin is gluing them together. The air is evacuated by a vacuum pump during this process.

Why vacuum?

It is most important to prevent wastage: products with blisters or air bubbles inside the material. Also unevenness of the coat has to be prevented. This is the reason for the air evacuation with vacuum pumps during the resin infusion.

This vacuum supported infusion is only working perfect as long as the carbon fibre matts are tight, - as long as they have no air leaks.

The existence of leaks is visible at the vacuum manometer when the low pressure is not steady or cannot be reached. In this case the leak must be detected quickly and closed by an adhesive tape. The LEAK-DETECT helps to detect the leak in an easy and fast way.

In many cases the LEAK-DETECT is used to check half finish products during the production process. A smart prevention of wastage.

vacuum – caps and pipes

Wherever low pressure is not steady or the set point of the pressure cannot be reached: - this is caused by leaks. The leaks can be detected easily with the LEAK-DETECT device.



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Picture 3: Ultrasonic sensor with micro-probe on top



Picture 4: Leakage detection with parabolic dish

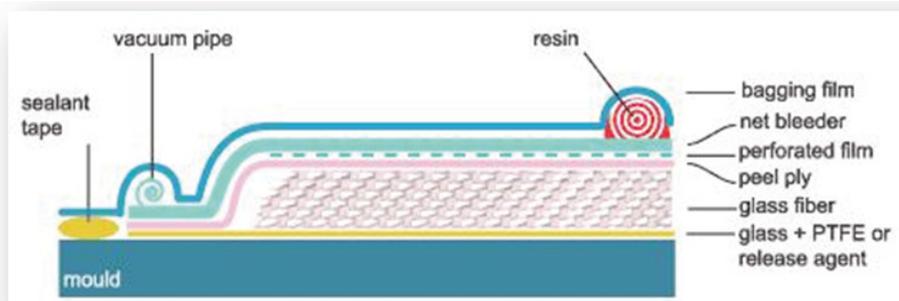
LEAK-DETECT function:

Any turbulent gas, passing by an edge, produces an ultrasonic sound. The ultrasonic sensor will even detect air as it rushes into a system under vacuum. Because the LEAK-DETECT unit is focused on the specific band of ultrasonic sound wind, noise, voices, traffic, and most operational sounds will NOT be detected.

The inside electronics convert the high frequency leak sound to a lower range where the hissing of the leak can be heard in the earphone and can be traced to its source.

The LEAK-DETECT detection procedure:

Avoid disturbances: Any consumers of compressed air should be switched off because they could discharge compressed air which produce ultrasonic sound. Mount the ultrasonic sensor (gooseneck) on top of the LEAK-DETECT electronic unit and switch ON. Hold the unit at suspected locations in a distance of about 1/2 meter. Reduce the distance if there is no hissing heard. The leak is clearly located when the hissing is confirmed by the visual indicator. If the audio signal increases and the LED signal changes into the red area the leakage is located.



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