Simple Yet Convincing

The principle behind the BREATH ALCOHOL IGNITION INTERLOCK is remarkably simple. It does not release a vehicle’s starter motor until it has accepted a breath test.
Taking a breath test to start your automobile? To many this may sound strange, but in some places it is already a reality: the driver blows hard into the mouthpiece of a discreet hand-held device which analyses the alcohol content in the exhaled air. If the result is negative, then – a few seconds later – the interlock releases the starter motor. This form of immobilizer, known as an “alcohol interlock”, is not there to protect against theft, but to reduce the risk of people driving under the influence of alcohol. The latest devices feature electrochemical sensors – including Interlock XT, which measures specific amounts of alcohol.

Alcohol interlocks represent a paradigm-change in the way road safety is monitored, since the tests they perform are done preventatively – before you start your engine. Conventional roadside checks are done at random and aim to identify alcohol offenders who are driving on the highway, and punish their behavior as a petty or criminal offense.

USA: Pioneering Introduction

The USA (where there are now more than 200,000 such devices in use) and Canada pioneered the introduction of breath alcohol controlled immobilizers in the 1980s. They are also widely used in Australia, and in Europe: the first European schemes were in Sweden (regionally at first, beginning in 1999, nationwide since 2004), France (initial study in 2004), and Finland (since 2008, program established as law in 2011). Positive results obtained in field tests have encouraged lawmakers in various European countries to push forward the introduction of alcohol interlocks. By the year 2015 for example, every new school bus in France will have to be equipped with an alcohol interlock. In Sweden this is already mandatory for any transport commission put out for tender by the state.

The principle of the alcohol interlock is as simple as it is convincing: if you are drunk, then you cannot start your vehicle. Although it may seem like a good idea to equip every single vehicle with such an immobilizer right away, blanket installation would be almost impossible from a legal and economic point of view. Nevertheless there are enough examples showing that the system works well and is accepted. These include passenger transport (buses, taxis) as well as goods transport (e.g. hazardous materials). In both cases, drivers carry a heavy responsibility towards passengers, the general public, and the environment. Then there is the use of such immobilizers to encourage people who have already been found drunk-driving to learn strict separation between drinking and driving. In the Netherlands, a law having been passed to that effect at the end of 2011, states more than 1,000 automobile drivers now have such devices fitted in their vehicles (see also Dräger Review 106; pages 44–47).

But the technology can only be effective if it works reliably and can withstand manipulation. The Dräger Interlock XT incorporates various mechanisms to ensure that breath alcohol content is analyzed accurately, and tamper attempts are detected reliably. Once a breath sample has been provided and accepted, it passes through the sampling bellows onto an electrochemical sensor. If the result is negative then the device sends a signal to the vehicle’s electronics to release the starter motor.

More Safety

When these devices are installed in passenger and freight vehicles it is referred to as ‘primary prevention’. The driver is not under any actual suspicion. “Using an alcohol interlock meets the need for safety of passengers and the environment,” says Bettina Velten, Product Manager at Dräger. “This builds trust and highlights the responsibility taken by drivers and operators.”

But installing the devices in vehicles belonging to drivers with previous records is a different matter. This ‘secondary prevention’ serves to prevent any more drunken road use, and is prescribed instead of, or after a ban on driving. The direct effectiveness of alcohol interlocks has been confirmed in scientific publications such as the Meta-Study published in 2011 by the US-American Guide to Community Preventive Services, and the Cochrane Study in 2009. A study entitled “Alcolock Implementation in the European Union” presented in 2006 and sponsored by the European Commission underscores the suitability of this technology for a range of purposes. Bus and truck drivers were involved in the project as test drivers...
Alcohol interlocks are a major element in primary prevention in the
groups for primary prevention. Drivers with existing records of driving while drunk formed further test groups for the secondary prevention area.

Putting a Stop
Alcohol interlocks have proven an effective method of preventing convicted alcohol offenders from driving while drunk again – this especially when compared against taking away driver’s licenses, since people’s willingness to get behind the wheel when they shouldn’t obviously grow under the influence of alcohol, even if their driving permit has been withdrawn. A breath alcohol controlled immobilizer puts a technical stop to this kind of drunk driving. But it leads some of those involved to try to circumvent the devices. That is why reliability and protection against tampering are so important. Devices which, like the Dräger Interlock XT, comply with the European standard EN 50436, fulfill all of the conditions governing testing procedures and operating behavior.

Events – such as measured results from breath alcohol tests and journey durations – are all stored in the device together with dates and times, and can be retrieved by trained and access-authorized personnel using the appropriate hardware and software. This is usually done every few weeks. The user’s details are encrypted so that others cannot see them from the outside. When used as part of therapy, the results allow conclusions to be drawn about things like whether the user’s drinking behavior has changed. Studies have shown that some drivers who have committed multiple offenses return to the road drunk as soon as their devices have been uninstalled at the end of the program. That is why, in order to extract the full potential of an interlock program, the device should be combined with accompanying activities.

Rapid Detection Methods
The first technical interlock concepts came about in the 1960s. Dr. Robert B. Voas of the National Highway Traffic Safety Administration (NHTSA) in the USA is considered a pioneer of the idea, having anticipated the function of modern interlock technology in his essay entitled “Cars that Drunks Can’t Drive”. Voas was involved in the technical ignition interlock specifications that now apply in America and which were published for the first time in 1992 (Model Specifications for Breath Alcohol Ignition Interlock Devices). Initially, experiments were done in North America using systems that attempted to ascertain the ability to drive by means of reaction-testing.
But in the end, testing breath alcohol before the commencement of driving proved the quickest and most direct method of proof. This basic principle has not changed much since. With the proliferation of alcohol interlocks, the demands on the devices and on data management have risen. “With our experience we are ready to assist those who are working to introduce drunk driving programs,” points out Bettina Velten. The winners in these schemes are the drivers, who can submit breath samples under unambiguous and reproducible conditions. Meanwhile, everybody else benefits too from the extra safety brought about by the use of alcohol interlocks.

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