Safe and Sober

Alcohol Interlocks in Europe

May 26, 2014
Cenelec Committee BTTF 116-2 “Alcohol Interlocks”

Started in 2003

Convenor: Johannes Lagois

Actually participating countries:
- Belgium
- Finland
- France
- Germany
- Netherlands
- Norway
- Spain
- Sweden
- United Kingdom

Observers:
- Canada (ACS)
- South Africa (PFK)
- USA (Smart Start)
Agenda

- Cenelec standards
- Data use
- Technical issues
CENELEC Standards

- EN 50436-1: Instruments for drink-driving-offender programs
- EN 50436-2: Instruments having a mouthpiece and measuring breath alcohol for general preventive use
- TR 50436-3: Guidance for decision makers, purchasers and users
- EN 50436-4: Connectors for the electrical connection between the alcohol interlock and the vehicle
- EN 50436-5: Instruments not having a mouthpiece and measuring breath alcohol for general preventive use
- EN 50436-6: Data security
EN 50436-1: Instruments for drink-driving-offender programs

- Initial release in November 2005
- Technical standard focusing on performance requirements
  - Environmental conditions: Temperature: -40°C - +85°C
  - EMC (Electromagnetic Compatibility): ISO 7637
  - Electrical tests: ISO 16750
  - Vibration: ISO 16750
  - Drop Test
  - IP (Ingress protection): IEC 60529
  - Accuracy: ± 0.02 mg/l or ± 15% (whichever is greater)
  - Analytical specificity
  - Breath Volume: 1.0 l nominal (0.7 l – 1.2 l)
  - Manipulation and Circumvention
  - Data memory
  - Long term behavior
EN 50436-1 : Instruments for drink-driving-offender programs

• Currently under revision with final reading scheduled for the Autumn of 2013.
• Main difference with 2005 and 2013 are:
  – Referenced ISO standards where possible
  – Sleep current reduced from 20 ma to 5 ma
  – Addition of Electro Static discharge ISO 10605: 2008
  – Added requirements for accessories (Camera’s etc.)
  – Clarified test methods for laboratories
  – Additional anti-circumvention tests
  – Standardization of event descriptions of the data log
EN 50436-2 : General preventive use

- Initial release in November 2005
- Currently under revision with final reading scheduled for the Autumn of 2013.
- Part 2 will now reference part 1 for applicable items

Key differences between Part 1 and Part 2

- Data memory is optional
- Retests are optional
- Recalls are optional
- Accuracy of the alcohol concentration for 0.75 mg/l is removed
- Temperature: New criteria for removable components (-20°C - +65°C)
- Temperature and supply voltage: -20°C - +70°C
TR 50436-3, EN 50436-4, EN 50436-5

- **TR 50436-3** : Guidance for decision makers, purchasers and users
  Reference document and still under revision by committee

- **EN 50436-4** : Connectors for the electrical connection between the alcohol interlock and the vehicle
  European commission discussion

- **EN 50436-5** : Instruments not having a mouthpiece and measuring breath alcohol for general preventive use
  Work has been suspended
EN 50436-6 : Data security
Mid of 2014: official publication foreseen
Intention:EN 50436-6 to be listed as Protection Profile“ under CCRA(worldwide)

• This European Standard applies to:
  – The alcohol interlock
  – The service application

• This European Standard does not apply to:
  – data security of the broker
  – data security of the register
  – storage of downloaded data
  – requirements for organizational processes, for example defining rights of access to the data.
EN 50436-6 : Data security

Within scope of the standard

- Handset
- Accessory device
- Control unit
- Alcohol interlock
- Service application

Outside scope of the standard

- Broker
  - Upload application
  - Format conversion
- Upload application
- Database
- Register
EN 50436-6 : Data security

Major security features

- The alcohol interlock is able to detect events (for example starting the vehicle engine or failed breath and store these events
- Authenticated service personnel can use the service application to read out these event records and send them onwards. The service personnel can also use the service application to delete the event records and erase the data memory
- All parts of the alcohol interlock protect the event records against unauthorized modification, deletion, insertion and disclosure
Why is the data security important?

When a hacker looks at an alcohol interlock, he sees many ways to tamper / interfere / bypass.

When done right, this will not leave any trace.

These threats could influence:
- integrity of the alcohol interlock
- privacy of the driver
- the importance of the data log for the supervisors
- reputation of the alcohol interlock programme.
EN 50436-6 Protection Profile

• **Advantages:**
  – High level of security

• **Disadvantages:**
  – Costly to develop
  – Costly to certify
EN 50436-6 : Data security

- **Sweden:**
  - Data encryption method left to the supplier
  - Event log information sent to the government agency by secure file transfer

- **Finland:**
  - Data encryption method left to the supplier
  - Government agency uses supplier online reporting system

- **Netherlands:**
  - Uses CENELEC protection profile
  - Event log information sent to the government agency by secure file transfer
Online reporting system

![Image of an online reporting system interface]

### Violation

**2001/11/01 To 2001/11/13**

The search returned 3 records.

**Violation Parameters**: Missed Retest(2), Failed Retest(2), Start Violation(2), Emergency Override(2)

<table>
<thead>
<tr>
<th>Name</th>
<th>Program ID</th>
<th>Drivers Licence</th>
<th>Plate</th>
<th>Device</th>
<th>Install Date</th>
<th>Transaction Date</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. NARDINO, NATHAN</td>
<td>00100102000001</td>
<td>A3012345678901</td>
<td>111AAA</td>
<td>WR2</td>
<td>2001/04/10</td>
<td>2001/11/01</td>
<td>Violation Reset</td>
</tr>
<tr>
<td>2. NEWSOME, LARRY</td>
<td>00100102000002</td>
<td>N312345678901</td>
<td>222BBB</td>
<td>WR2</td>
<td>2001/02/02</td>
<td>2001/11/12</td>
<td>Interlock Maintenance</td>
</tr>
</tbody>
</table>

### Event Log

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Type</th>
<th>Severity</th>
<th>Type</th>
<th>Time (HH:MM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000/12/07</td>
<td>Exchange Monitor</td>
<td>64</td>
<td>0</td>
<td>00:00:00</td>
</tr>
<tr>
<td>2000/12/13</td>
<td>Violation Reset</td>
<td>78</td>
<td>0</td>
<td>02:00:05</td>
</tr>
<tr>
<td>2001/01/05</td>
<td>Monitor</td>
<td>273</td>
<td>2</td>
<td>00:00:00</td>
</tr>
</tbody>
</table>
Technical issues of existing technologies

• **Driver:**
  – Warm up times: up to several minutes
  – Requires the driver to blow into the device

• **Fleet owner:**
  – Yearly calibration
  – Remains relatively expensive
  – Possibility of another person blowing into the device for the driver
Add on features

- **Camera:**
  - Takes a picture of the driver blowing into the device at the time of the test
  - Stores the image for future reference

- **Telematics:**
  - Transmits in real time alcohol results and vehicle location
  - Many suppliers of telematics are able to integrate with alcohol interlock manufacturers

- **Wi-Fi:**
  - Transmits data to fleet reporting systems upon returning to vehicle depot
  - Email or SMS alerts can be sent to fleet managers
Alcohol interlocks in Europe

European Commission

Study on the prevention of drink-driving by the use of alcohol interlock devices

Final Report

Client: European Commission, DG for Mobility and Transport
Rotterdam, 18 February 2014
Policy option 2: Addressing the common technical and operational barriers

... in this policy option 2 the EU would take an active attitude in overcoming common technical and operational barriers to effective and widespread implementation of alcohol interlock programmes. This could for instance involve taking action for ensuring that retrofitting of vehicles with alcohol interlocks will continue to be possible in the future, also in new car models, ...
“Conclusions and Recommendations

“Four of these policy options show quite favourable benefit cost ratio’s against the status quo policy option, namely:
- ...
- Harmonisation of technical (standards, retrofitting) … that are present barriers to introduction of alcohol interlock programmes within the European Union.

This option shows the highest BC ratio, at 1.8 to 3.3 (sensitivity: 1.2 to 3.9).”
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