Sociological survey of HVAC operating modes

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Sociological survey design

The aim of sociological survey was to investigate car Heating, Ventilation and Air Conditioning (HVAC) system operation modes settings among of private car owners.

Questionnaire with 33 question was prepared.

100 respondents took part in the survey (61 female and 39 mail).

The survey was carried out on the Central scientific research automobile and automotive engine institute (NAMI) in it’s Testing Centre - Dmitrov proving ground (Moscow region).

Data of survey  May 2018.
Cars age and HVAC system type

Cars by fuel type

➤ 90% gasoline
➤ 10% diesel

Cars age

<table>
<thead>
<tr>
<th>Age</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3 years</td>
<td>19</td>
</tr>
<tr>
<td>3-5 years</td>
<td>26</td>
</tr>
<tr>
<td>5-10 years</td>
<td>33</td>
</tr>
<tr>
<td>10 years and older</td>
<td>22</td>
</tr>
</tbody>
</table>

Cabin filter type

<table>
<thead>
<tr>
<th>Filter Type</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>dust filter</td>
<td>41</td>
</tr>
<tr>
<td>carbon filter</td>
<td>34</td>
</tr>
<tr>
<td>don't know</td>
<td>25</td>
</tr>
</tbody>
</table>

HVAC system type

- Climate control system 41%
- AC system 48%
- Air ventilation system w/ a AC 11%
*AC – air conditioner
The time between engine start and movement start

- **Start and go**
  - Summer time: 50%
  - Winter time: 10%

- **5-10 min**
  - Summer time: 40%
  - Winter time: 50%

- **10-15 min**
  - Summer time: 20%
  - Winter time: 20%

- **15-20 min**
  - Summer time: 10%
  - Winter time: 10%
The temperature inside cars

- +16...+18 C
- +19...+20 C
- +21...+22 C
- +23...+25 C
- over +25 C

Percent

- Summer time
- Winter time
Ventilation, air conditioning/heating modes in summer time*

*At idling, when the people are sitting in a car for more than 20 minutes

- AC/heating-ON; Recirculation-OFF; Ventilation speed-minimal 32%
- Different modes; Recirculation-OFF 68%
- Open windows/hatch 20%
- Close windows/hatch 80%
Ventilation, air conditioning/heating modes in winter time*

*At idling, when the people are sitting in a car for more than 20 minutes
Ventilation direction

Summer time

- at parking
- at movement

Winter time

- at parking
- at movement

doesn't matter
1. Analysis of HVAC operating modes was carried out among 100 private car owners.
2. Around 50% of people at summer time and around 90% at winter time are waiting for cabin air cooling down or warming up for more than 5 minutes.
3. Most people set inside temperature in the car cabin in the range from 19 till 22°C.
4. Most frequently used HVAC modes in summer time are with recirculation is OFF and different ventilation speed, in winter time with recirculation is OFF and minimal or medium ventilation speed.
Thank you for your attention!