SAE – Interior Exhaust Gas Committee Update

SAE International
SAE Committee Updates

• SAE Interior Exhaust Gas Committee (IEGC)
  – New SAE Committee under the Internal Combustion (IC) Powertrain Steering Committee,
    https://www.sae.org/works/committeeHome.do?comtID=TEVIEG#
  – Committee members participate in the standard by collecting and sharing information about climate
    control systems: nomenclature, strategies and settings pertaining to test conditions.
  – Give feedback to UN team to develop standard method for measuring exhaust gas in the vehicle interior.
    Testing at idle, acceleration and high steady speed.
  – Potentially adopt the UN mutual resolution as a SAE Standard.
  – Mark Polster is the chair of the SAE Interior Exhaust Gas Committee.

• Key 2018 Dates
  – March 21 - SAE meeting to kicked off the discussion and get feedback
  – October 15 - First SAE Interior Exhaust Gas Committee meeting
  – November 1 – Second SAE Interior Exhaust Gas Committee meeting
  – November 7-9 - UN GRPE IWG meeting in Moscow
SAE and US Climate Control Document Review

• The Interior Climate Control Standards Committee is comprised of the following activities:
  – Interior Climate Control Steering Committee
  – Interior Climate Control Service Committee
  – Interior Climate Control MAC Supplier Committee
  – Interior Climate Control Vehicle OEM Committee
  – Interior Climate Control Fluids Committee

• Interior Climate Control Committee’s Document Summary
  – The first SAE Climate Control document was published in 1936.
  – The document list includes over 53 SAE Standards, Technical Reports and Recommended Practice
  – Documents are available from SAE International at the following Web site. [http://standards.sae.org/](http://standards.sae.org/)

• SAE Technical Papers
  – SAE has published the works of many authors, 10 papers were reviewed for relevance.

• US Government Regulations
  – CFR-2013-title40-vol20-sec86-1868-12 - AC17
<table>
<thead>
<tr>
<th>SAE Document Number</th>
<th>SAE Document Title</th>
<th>Type of Document</th>
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<tbody>
<tr>
<td>J381_200901</td>
<td>Windshield Defrosting Systems Test Procedure and Performance Requirements—Trucks, Buses, and Multipurpose Vehicles</td>
<td>Recommended Practice</td>
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<tr>
<td>J382_200009</td>
<td>Windshield Defrosting Systems Performance Requirements—Trucks, Buses, and Multipurpose Vehicles</td>
<td>Recommended Practice</td>
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<td>J638_201105</td>
<td>Motor Vehicle Heater Test Procedure</td>
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<td>J639_201112</td>
<td>Safety Standards for Motor Vehicle Refrigerant Vapor Compression Systems</td>
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<td>J902_201108</td>
<td>Passenger Car Windshield Demisting and Defrosting Systems</td>
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<td>J953_201105</td>
<td>Passenger Car Backlight Defogging System</td>
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<td>J2219_201108</td>
<td>Mobile Air Conditioning Industry Criteria and Guidelines</td>
<td>Technical Report</td>
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<td>J2683_201603</td>
<td>Refrigerant Purity and Container Requirements for Carbon Dioxide (CO2 R-744) Used in Mobile Air-Conditioning Systems</td>
<td>Standard</td>
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<td>J2765_201707</td>
<td>Procedure for Measuring System COP [Coefficient of Performance] of a Mobile Air Conditioning System on a Test Bench</td>
<td>Standard</td>
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<td>J2772_201102</td>
<td>Measurement of Passenger Compartment Refrigerant Concentrations Under System Refrigerant Leakage Conditions</td>
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<td>J2773_201702</td>
<td>Standard for Refrigerant Risk Analysis for Mobile Air Conditioning Systems</td>
<td>Standard</td>
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<td>J2777_201601</td>
<td>Recommended Best Practice for Climatic Wind Tunnel Correlation</td>
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<td>2008-01-0829</td>
<td>Field Tests to Monitor Build-up of Carbon Dioxide in Vehicle Cabin with AC System Operating in Recirculation Mode for Improving Cabin IAQ and Safety</td>
<td>Technical Paper</td>
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<td>2009-01-3080</td>
<td>Field Monitoring of Carbon Dioxide in Vehicle Cabin to Monitor Indoor Air Quality and Safety in Foot and Defrost Modes</td>
<td>Technical Paper</td>
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<td>2016-01-0221</td>
<td>Validation of a CFD Model to Predict R-1234yf Concentrations in a Vehicle Cabin Compartment</td>
<td>Technical Paper</td>
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<td>2016-01-0254</td>
<td>Experimental Investigation to Determine Influence of Build-up of Cabin Carbon Dioxide Concentrations for Occupants Fatigue</td>
<td>Technical Paper</td>
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<td>2017-01-0163</td>
<td>Development of a Model to Predict Build-Up of Cabin Carbon Dioxide Concentrations in Automobiles for Indoor Air Quality</td>
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<tr>
<td>2017-01-0169</td>
<td>The Impact of Increased Air Recirculation on Interior Cabin Air Quality</td>
<td>Technical Paper</td>
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* Solar Radiation Sensor
* Panel Vents
  - Right Side Vents
  - Left Side Vents
  - Middle Vents
* Zones
  - Single zone
  - Driver
  - Dual-zone
* Inside Sensors
  (CO2, RH, PM, Temperature)
* Coolant Lines or electric leads
* Refrigerant Lines
* Filter
* Outside Sensors
  (NOx, PM, Temp.)
Example of Inputs and Model of Climate Control Software – For Discussion Only

Vehicle HVAC System
1. Configure system inputs: Predefined or Manual
2. Plot psychrometric chart for cabin air (see code)
3. Plot condensation in evaporator (see code)
4. Explore simulation results using sscexplore
5. Open the HVAC example library
6. Learn more about this example

Source: http://www.openairpublishing.com/car-diagram-hvac-knobs.html
SAE Proposal to UN VIAQ GRPE Working Group

- 2019 SAE World Congress (WCX) – April 9-11 - [https://www.sae.org/attend/wcx/](https://www.sae.org/attend/wcx/)
- Proposal to host VIAQ meetings and VIAQ Symposium
  - Day 1 (OEM Meetings)
    - SAE VOC Committee
    - SAE Interior Exhaust Gas Committee
  - Day 2 (Symposium)
    - VIAQ Tech Exchange Symposium
      - Interest from several sponsors
      - Technical presentations from OEMs, suppliers, equipment
  - Day 3 (UN Meeting)
    - Potential to host 16th meeting at SAE Congress in the US
    - Full Day (or two) of UN VIAQ IWG Meetings
WCX World Congress Experience is the mobility industry’s most-anticipated annual event for forward-thinking engineers, executives, OEMs, suppliers, decision-makers, disruptors and the entire spectrum of the mobility-engineering field.

Experience three days of expert-led technical education, peer-to-peer networking, a technology-driven exhibit floor and global mobility solutions that are shifting the marketplace.

From IoT, Big Data and connectivity to automated and unmanned vehicles, and from safety, blockchain and powertrain to sustainability and cybersecurity, WCX covers every corner of the industry—right in the beating heart of The Motor City. - [https://www.sae.org/attend/wcx/](https://www.sae.org/attend/wcx/)