Enhance Information-based Material Management, and Improve the Level of Independent Development and Ecological Design

Automotive Data Center (ADC)

In November, 2015
<table>
<thead>
<tr>
<th></th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>About CATARC</td>
</tr>
<tr>
<td>2</td>
<td>Automotive materials required in automotive industry regulations</td>
</tr>
<tr>
<td>3</td>
<td>Status quo and issues in the management of automotive materials</td>
</tr>
<tr>
<td>4</td>
<td>Solutions for information-based management of materials</td>
</tr>
<tr>
<td>5</td>
<td>Services to material suppliers</td>
</tr>
</tbody>
</table>
About CATARC

- China Automotive Technology and Research Center (CATARC) is a national research institute established with the approval of the State out of the need to regulate the automotive industry. It is now part of SASAC.

- Currently, CATARC employs 3,727 employees and 1,210 technicians. There are 46 professor-level senior engineers, 71 doctors, and 328 holding senior qualifications. The total assets are 6.2bn RMB and the covered land area is 7,380 mu.
About CATARC

**CATARC**

- Auto Standard Institute
- Auto Experiment Institute
- Auto Planning & Design Institute
- Auto Tech Intelligence Institute
- Quality System Certification Center
- C-NCAP Administration
- Beijing Office (Beijing KDK S&T Center)
- Shanghai Office (Shanghai KDK Auto Tech Center)
- Hanyang Special Vehicle Institute
- Auto Engineering Institute
- ADC
- Post-Doctoral Research Station
- Judicial Expertise Center of China Vehicles
- Yancheng Auto Experiment Site
- Tianjin KDK Auto High-tech Co.
- Tianhang Company
- Tianjin Zhongqi Century Hotel
- Property Management Office

**China Vehicle Tech Service Center**
- Tianjin Qingyuan Electric Vehicle Co., Ltd.
- Tianjin Tianfeng Interior Auto Decoration Co., Ltd.
- Tianjin Suoke Auto Experiment Co., Ltd.
- Shanghai Kanai New Energy Co., Ltd.

- **Core departments**: 18
- **Third parties and industrial organizations**: 5
- Tianjin Suoke is a joint venture between CATARC and Southwest Research Institute. Shanghai Kanai is a joint venture between ENAX and IAT.
- Tianjin Tianfeng is a wholly-owned subsidiary of CATARC.
- Tianjin Qingyuan is a joint venture between CATARC, Tianjin Lishen Battery, Tianjin Bluesky Battery and Tianjin Baili Machinery.
The Automotive Data Center (ADC) was incorporated in Beijing on February 1, 2010. In February, 2014, as the main part of it was moved to Tianjin, it began to operate its offices in both Beijing and Tianjin. Now it consists of 9 departments, with businesses covering government platform construction, data service, consultation and solutions and software development. It promotes and provides the best solutions to the automotive industry and the decision-making process of automakers.
ADC Scope of activities

1. a platform for automakers and product data; 2. a platform for the factory inspection data of motor vehicles; 3. a platform for the fuel consumption data of PV vehicles; 4. Chinese auto material data system (CAMDS); 5. Green disassemble system of Chinese vehicles (CAGDS); 6. Basic database of automotive materials (AMASS); 7. Catalog of energy-saving and new-energy vehicles eligible for vehicle/vessel tax; 8. Catalog of new-energy saving vehicles eligible for tax preferences and the report system.

Governmental administrative tech support and service

1. Office work in relation to the Calculation of Average Fuel Consumption of PV Enterprises; 2. Report and organization work in relation to the Catalog of energy-saving and new-energy vehicles eligible for tax exemption; 3. work related to the ecological design and evaluation system of automotive products; 4. administration and tech support for automotive products in connection with harmful substances and recycling; 5. administration and tech support for harmful substances inside vehicles; 6. work in relation to the Regulations on the Administration of Scrapped Vehicles for Recycling and Disassembling.

Drive the automotive industry, promote the business decision-making of automakers, and provide the best solutions.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>About CATARC</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Automotive materials required by automotive industry regulations</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Status quo and issues in the management of automotive materials</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Solutions for information-based management of materials</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Services to material suppliers</td>
</tr>
</tbody>
</table>
Upon the launching of the regulations on harmful substances, more direct requirements are provided on the management of automotive materials.

- **Healthy**
  - The 3 ministries include harmful substances into mandatory management:
    1. MIIT: Requirements on the Management of Automotive Harmful Substances and Recycling
    2. CNCA: CQC Mandatory Product Certification and Detailed Implementation Rules for Automobiles
    3. MEP: Environmental Label Products and Technical Requirements for Lightweight Vehicles

- **Energy-saving**
  - Mandatory labeling and administrative regulations for volatile harmful substances are under way
  - Interior noise

- **Environment**
  - State Council issued the Development Program for Energy-saving and New-energy Vehicles (2012~2020), in which the average fuel consumption per 100 km will be reduced from 6.9L in 2015 to 5.0L by 2020.

- **Safety**
  - The fuel consumption is shifting from Phase V to Phase VI, and the Emission Limit and Measurement for Lightweight Vehicles (the national standard) has been under revision.
  - Rules for C-NCAP Administration (2015) is published, setting out more stringent rules on the crash test safety rating.

To realize the energy-saving, environmental and safety targets, the research and application of automotive materials must be enhanced, to improve the level of auto design research; Harmful substances are directly related to automotive materials. They must be administered from the source - the materials, in order to realize the ecological design of automotive products.
Management Requirements

- **Requirement on Management of Automotive Harmful Substances and Recyclability**

  - On June 1, 2015, MIIT proclaimed the Requirements on the Management of Automotive Harmful Substances and Recyclability (No. 38), to include harmful substances into the mandatory access control.

  - Since Jan 1, 2016, passenger vehicles with 9 or fewer seats (M1-segment) have been managed with respect to their harmful substances and recycling. For vehicles in-process, the rules can be deferred by 24 months.

  - Any harmful substances in new products of automakers must comply with the Requirements for Prohibited Materials in Automobiles (that is, Pb/Hg/Cr6+/PBB/PBDE≤1000ppm, Cd≤100ppm). This is included in the Automakers and Product Declaration.

  - As the responsible body, automakers should develop ecological designs by selecting non-toxic and non-harmful or low-toxic or low-harmful green materials, by building a green value chain and by controlling harmful substances across the chain to implement the material labeling requirements.

  - Suppliers of automotive components and materials should provide truthful information on the materials and harmful substances used in their products.

ADC is commissioned by MIIT to research laws and regulations and undertake the follow-up landing work.
Detailed Rules for the CQC Mandatory Product Certification – Automobiles (2014)

On August 27, 2014, CNCA proclaimed the Announcement on the Launching of the Detailed Rules for the Mandatory Product Certification for Motor Vehicles and Security Accessories, to include harmful substances into the CCC mandatory certification.

◆ 03-08 prohibited substances

- Automotive products should comply with Requirements on Prohibited Substances on Automobiles GB/T 30512-2014, that is

  \[
  \begin{align*}
  \text{Pb/Hg/Cr}^{6+}/\text{PBB/PBDE} & \leq 1000 \text{ ppm} \\
  \text{Cd} & \leq 100 \text{ ppm}
  \end{align*}
  \]

- For new vehicles, the Requirements will become effective on Jan 1, 2015;
- For certified vehicles, the Requirements will become effective on June 1, 2016.
Environmental label product certification

— The Ministry of Environmental Protection (MEP) issued the *Technical Requirements for Environmental Label Products – Light Automobiles* (HJ2532-2-13) (Announcement No.3), to include 4 heavy metals into mandatory certification.

Lightweight vehicles (Max. total weight<3.5t, M1, M2, and N1 types)

2014.3 2015.1 2016.1 2017.1 ……

- Rcyc≥80%, Rcov≥90%
- Rcyc≥85%, Rcov≥95%
- asbestos is prohibited in braking lining or clutch disk
- Except for exempted substances, Pb, Hg, Cr6+≤0.1%, Cd≤0.01%

ADC is commissioned by MEP to undertake the audit
C-ECAP ecological evaluation

In 2013, to carry out the requirements in the Notice of the State Council on the Printing and Distribution of the 12th Five-Year Plan, MIIT, SDRC and MEP jointly issued the Guiding Opinions on the Development of Ecological Design for Industrial Product, using the automotive industry as the pilot.
<table>
<thead>
<tr>
<th></th>
<th>About CATARC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Automotive materials required by automotive industry regulations</td>
</tr>
<tr>
<td>3</td>
<td>Status quo and issues in the management of automotive materials</td>
</tr>
<tr>
<td>4</td>
<td>Solutions for information-based management of materials</td>
</tr>
<tr>
<td>5</td>
<td>Services to material suppliers</td>
</tr>
</tbody>
</table>
More stringent requirements are stipulated in health, safety, environmental protection and energy saving. As an essential solution, the automotive industry enhances its management of materials. Know the complete vehicle and use environmental-friendly materials as substitute. Evaluate the materials and build a value chain of green materials. Make a material inventory on the basis of CAMDS for the supply chain. Ensure the materials supplied satisfy requirements on harmful substances. Report material data through CAMDS.

China has been a late-starter in the research and management of automotive materials. Despite the self-adjustment, it faces a few challenges:

- Management mode: The level mode has been shifting towards the direct mode. But the material evaluation system is not perfect.
- Organizational structure: The management of materials shifts from part-time to full-time offices. But the staff and services are to be improved.
- Materials-related technology: It goes from extensive to intensive and professional. But the depth and width are to be improved.
- Data system: Data on materials is dispersed and incomplete, and can hardly support the evaluation of materials.

Material management system is being improved.
AMASS provides a public inquiry database on the basic properties of automotive materials. It helps companies to realize the information-based management of local material data.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>About CATARC</td>
</tr>
<tr>
<td>2</td>
<td>Automotive materials required by automotive industry regulations</td>
</tr>
<tr>
<td>3</td>
<td>Status quo and issues in the management of automotive materials</td>
</tr>
<tr>
<td>4</td>
<td>Solutions for information-based management of materials</td>
</tr>
<tr>
<td>5</td>
<td>Services to material suppliers</td>
</tr>
</tbody>
</table>
Automotive materials & basic info database (AMASS)

For the needs to carry out performance evaluation and meet legal requirements, with the support of the working group in automotive material evaluation, a basic database is built to contain environmental and performance-related information of these materials.
Automotive materials and technology working group

—Support companies in meeting legal requirements and the research in the common properties of auto materials

—Support government regulators in the management of harmful substances and recycling
1 AMASS Database

- It comprises of three modules – material management, green card approval, material database, and regulations and standards, and covers five types of materials – metals, plastics, rubber, paints, and adhesives.

<table>
<thead>
<tr>
<th>Company types</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material tech group</td>
<td>System management, with card management and registered users at the core</td>
</tr>
<tr>
<td>Whole-vehicle manufacturer</td>
<td>Material database, legal and standard database, help</td>
</tr>
<tr>
<td>Component supplier</td>
<td>Material database, legal and standard database, help</td>
</tr>
<tr>
<td>Raw material supplier</td>
<td>Material management, legal and standard database</td>
</tr>
</tbody>
</table>

- Baosteel, Shougang Group, Maanshan Steel and others, over 50 in total, entered into the Terms and Conditions for AMASS.

- It has had 15,553 entries of 12,000 materials and 29 types of curves.
Function for material suppliers: material report

- Basic information report

1. Create
2. Import
3. Other info
Function for material suppliers 1: Material report

- Environmental information report

![Image of material report function with toxicity and harm details]
Function for material suppliers: material report

### Performance Information Report

- **Material Report Function**
- **Performance Curve**
- **Physical/Chemical Performance**
- **Processing**
- **Metallography**

![Image of Material Report Function](image-url)
Working group reviews the data reported by material suppliers, evaluate it and publish green-label materials.

### Evaluation Item

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volatility</td>
<td>formaldehyde, TVOC</td>
</tr>
<tr>
<td>Low toxicity, low harm</td>
<td>GB/T 30512 6 types of harmful substances</td>
</tr>
<tr>
<td></td>
<td>asbestos</td>
</tr>
<tr>
<td></td>
<td>polycyclic aromatic</td>
</tr>
<tr>
<td></td>
<td>REACH highlighted substances</td>
</tr>
<tr>
<td>Reusability and recyclability</td>
<td></td>
</tr>
<tr>
<td>Flame resistance</td>
<td>fire ratings under the national standard</td>
</tr>
</tbody>
</table>

#### About the Letters:
- **E**: Elv compliance
- **A**: Asbestos compliance
- **V**: VOC compliance
- **R**: Recyclability
- **F**: Flame resistance

1. About the letters: E, A, V, R, and F respectively represent Elv compliance, asbestos compliance, VOC compliance, recyclability and flame resistance compliance.
2. The green background means that the material has been tested;
3. The white background with a letter means that the company has self-declared its compliance with the item;
4. The white background without any letter means that no evaluation has been done on the item.
Function for complete vehicle and component suppliers: select green-label materials and meet legal requirements

AMASS green card label

CAMDS searched
green-card material

CAMDS green card form
can be sent to companies directly
Functions for complete vehicle or component suppliers: support environmental material selection and evaluation

- Fast material selection
- Environmental-friendly material selection
- High-performing material selection
- Material selection through comparison

Import CAE Software analysis

Overview  Material report function  Green card evaluation  Green material selection  Legal search  Solution
Search for regulations and standards

- Auto laws and standards in relation to materials
- Standards specifying compositions/performance/supply requirements.
- Standards specifying performance, parameters, testing conditions, and data processing methods
Build on the advantages of CATARC in environmental regulations and research, and build a green channel for the companies.
Provide total support in material and technology to automakers in their development of automotive products.
<table>
<thead>
<tr>
<th></th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>About CATARC</td>
</tr>
<tr>
<td>2</td>
<td>Automotive materials required by automotive industry regulations</td>
</tr>
<tr>
<td>3</td>
<td>Status quo and issues in the management of automotive materials</td>
</tr>
<tr>
<td>4</td>
<td>Solutions for information-based management of materials</td>
</tr>
<tr>
<td>5</td>
<td>Services to material suppliers</td>
</tr>
</tbody>
</table>
Services to Material Suppliers

- Build on the resources and platform of CATARC, provide a comprehensive service system for the systemic and basic research, websites, consultation, conference, periodicals, and demonstration and marketing.

  **System**
  - Materials are evaluated and the green card is given. No further examination is required. They are recommended to the related industry.
  - A page for companies to display their proprietary products.
  - Local material mgmt system.

  **Basic study by working groups**
  - Participate in the research of common tech materials and follow up with laws and regulations.

  **Demonstration and spreading**
  - Catalog of national advanced environmental materials.
  - Special website promotion.
  - Honors and rewards, and free promotion.

  **WG website**
  - Release of new materials or new technologies.
  - Links to corporate websites or ads.

  **Consultation**
  - Legal consultation.
  - Industrial consultation.

  **Conferences & periodicals**
  - International forums on automotive materials and technology, promotional meetings on new materials, and other exhibitions.
  - Contributions to Automotive Materials.
Development target and vision

— Target: to become a provider of solutions for the informationization of authoritative materials and common technologies of the automotive industry

— Vision: to develop the advantages as a platform, converge industrial talents, and promote the growth of the automotive industry
THE END
THANK YOU FOR YOUR ATTENTION

Tel: 022-84379776/010-67832375
Email: xushujie@catarc.ac.cn
Mailing address: 68, Xianfeng Road E, Dongli District, Tianjin
Post code: 300300
Website: http://www.catarc.info