

中国汽车工业概况及汽车空调行业保护环境的举措
General Situation of Chinese Automobile
Industry and Actions Taken for Environment
Protection in MAC Sector

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1、中国汽车工业发展现状

Development Status of Chinese Automobile Industry

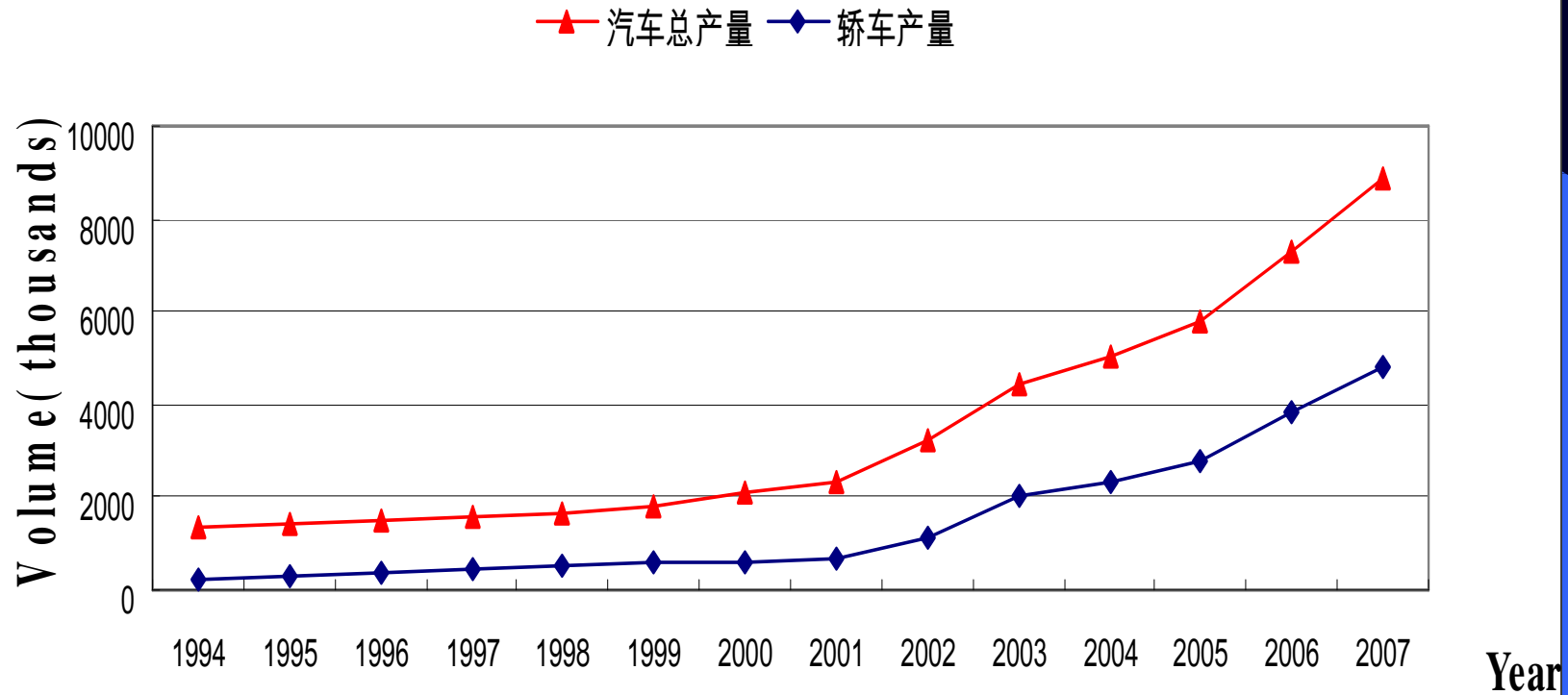
1994年中国汽车总产量134万辆，2007年达到888万辆，14年增长6.63倍，中国汽车工业自2000年以来每年以15% - 30%的速度高速发展。2007年中国汽车总产量居世界第三，销量居世界第二。

The total automobile production volume in 2007 amount to 8.88million, Contrasting 1.34 million in 1994. In 2007, the automobile production volume of China ranks the third around the world, and market volume ranks the second.

中国汽车工业发展现状

Development Status of Chinese Automobile Industry

Chinese Automobiles Annual Production Volume



空调车增长状况

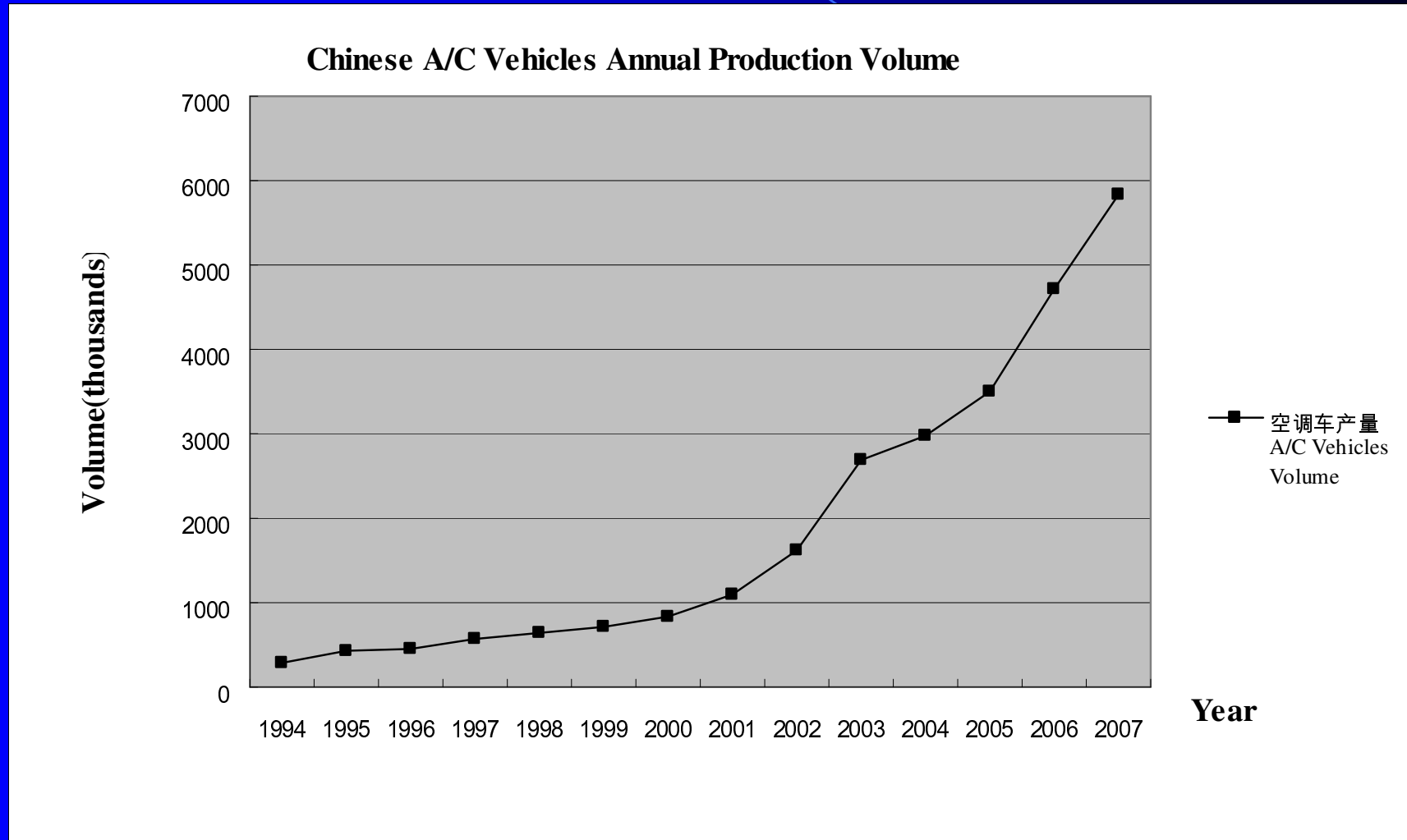
Development Status of Chinese A/C Vehicles

随着汽车产量、特别是轿车产量的迅速增加，空调车的产量增长更加迅速。14年来，中国空调车年产量从28万辆增加到583万辆，增加约20.8倍。随着空调车产量的增长，制冷剂的消耗量迅速增加。

Automobile with A/C has experienced even higher growth rate during the last 14 years. The production of Chinese A/C vehicles increased from 280,000 in 1994 to 5,830,000 in 2007. Accordingly, the consumption of refrigerant in A/C vehicle has increased rapidly.

空调车增长状况

Development Status of Chinese A/C Vehicles



2、中国汽车行业CFC-12制冷剂淘汰行动

Activities for CFC-12 Refrigerant Phase-out program for chinese automobile industry

- 1993年以前，中国汽车空调基本使用CFC-12作为制冷剂；

Before 1993, CFC-12 is the major refrigerant used in MAC

- 1995年在蒙特利尔多边基金的资助下，开始了汽车空调重点企业的淘汰项目；

From 1995, Major MAC enterprises start to phase-out CFC-12 under the financial assistance of Montreal MLF;

- 1998年中国制定了汽车空调行业整体淘汰计划并得到蒙特利尔多边基金执委会的批准；

In 1998, CFC-12 phase-out plan for the whole MAC sector came into place, and the program got supports from Montreal MLF Excom

2、中国汽车行业CFC-12制冷剂淘汰行动

Activities for CFC-12 Refrigerant Phase-out program for chinese automobile industry

- 1999年开始实施上述计划；

From 1999, the whole MAC sector start to phase-out CFC-12

- 2001年中国汽车空调行业在汽车生产高速发展的初期全部完成了替代CFC-12的改造工作；

In 2001, At the beginning phase of the rapid development of Chinese automobile industry, Chinese MAC sector completed the whole conversion work for the CFC-12 phase out in 2001

- 2002年1月1日以后中国所有新生产的汽车全部停止装配CFC-12空调器，改用HFC-134a空调器，完成了行业整体淘汰的任务。

Since Jan. 1st,2002, all automobile manufacturers in China have stopped to assemble CFC-12 based A/C on new vehicle and MAC system has totally converted to HFC-134a.This means China has successfully completed the phase-out task in the whole MAC sector.

在用汽车和报废汽车中CFC-12的回收 CFC-12 Recovery & Recycling activities for in-use vehicle and End-of-life vehicle

- 在新生产的汽车即将完成CFC - 12制冷剂淘汰时，中国开始制冷维修行业的全面调查，汽车空调是四个行业之一

China started to carry out comprehensive investigation on the refrigeration servicing sector, MAC is one of the four sectors under the program

- 2003年制定了中国制冷维修行业CFC淘汰战略；

In 2003, China worked out the CFC Phase-out Strategy for Chinese Refrigeration Service Sector

在用汽车和报废汽车中CFC-12的回收

CFC-12 Recovery & Recycling activities for in-use vehicle and End-of-life vehicle

- 2004年在行业战略的基础上，中国制定了制冷维修行业CFCs整体淘汰计划并被蒙特利尔多边基金执委会批准，该项目包括汽车空调、工商制冷、家用制冷和建筑制冷四个行业，项目以汽车空调行业为主要内容；

In 2004, China developed refrigeration servicing sector plan based on the industry whole phase-out strategy and the plan got support from Montreal MLF Excom. MAC sector undertook the major task along with other 3 sectors, namely commercial refrigeration, housing appliance, and buildings.

- 2005年至今制冷维修行业计划正在顺利实施，重点是在用汽车维修过程和报废汽车拆解过程中的CFC-12回收。

From 2005, MAC sector began to Recovery & Recycle of CFC-12 during the process of servicing and in End-of-life vehicle

3、中国汽车空调行业发展趋势

Development Trend of Chinese MAC Industry

- 2002年以来中国新生产的空调汽车全部停止了CFC-12的使用，采用了ODP=0的制冷剂HFC-134a，同时GWP值也降低了不少。

From 2002, Newly produced vehicle ceased to equipped with CFC-12 based MAC system, HFC-134a(ODP=0) has been adopted as the alternative technology in Automobile industry. This strategy has low down GWP remarkably.

- 2002年中国加入了减少温室气体排放、防止和减缓大气变暖的“京都议定书”。

China signed “Kyoto Protocol” in year 2002

3、中国汽车空调行业发展趋势

Development Trend of Chinese MAC Industry

- 根据“京都议定书”的规定，HFC - 134a是受控的温室气体之一 (GWP=1300)。尽管目前中国还没有承担减少温室气体的义务，但中国政府已采取各种政策措施减少温室气体排放，尤其是2007年，中国政府出台了有关“节能减排”的一系列政策和措施。

According to “Kyoto Protocol”, currently, China has no obligation to fulfill the task of Green house gases reduction. However, Chinese government has adopt different practical measures to control Green house gas emission. Especially, a serial Policies in terms of “Energy Conservation and Emission Reduction ” came into force in 2007.

- 中国汽车制造厂和汽车空调生产企业都在关注这方面的国际动态。我们的具体想法和做法如下。

China is now keeping an eye on the trend of green house gas reduction in MAC sector around the world. Currently, our consideration is as following:

a.减少温室气体HFC-134a的排放

Reduce HFC-134a Emission and enhance Energy Efficiency for Automobile industry

·中国空调车制冷剂目前平均泄漏量约为50~150g/年.车。我们正在改善空调系统的密封性能，减少HFC-134a的泄漏。

The average leakage rate of refrigerant range from 50g to 150g per year .We are now improving the seal performance of HFC-134a to reduce HFC-134a leakage .

·对汽车生产企业加注制冷剂的技术工人以及维修站和报废汽车拆解站的技术工人进行良好操作规程的培训，强调制冷剂的回收再利用，降低不必要的制冷剂排放。

Highlight on training for the technical workers operating charging refrigerant in automobile manufacturers and technicians in servicing stations. The purpose of the train is to recycle and recovery refrigerant and to reduce refrigerant emissions.

b.及时跟踪国际先进技术的发展动态

Follow up with the new emerging technology

- 中国政府的态度是及时跟踪国际先进技术的发展动态，将来在技术成熟的条件下，可以考虑在汽车空调上使用GWP值低的替代制冷剂，达到减少温室气体排放的目的。

Alternative refrigerants with low GWP value are also considered to be used on MAC systems in the future for the purpose of reduction of green house gas emissions on conditions that the alternative technology is mature and economical.

- 中国汽车空调行业也很关注国际汽车空调行业的新动向、新技术，联合国环境署将与中国汽车空调行业协会于2008年11月24日 - 25日在上海联合召开“汽车空调新技术国际研讨会”。

MAC sector pay attention to new technology and development trend of international MAC industry .The international seminar of “New Tech in MAC” sponsored by UNEP and Chinese MAC association will be organized in Shanghai in Nov.24-25,2008.

4、个人对两种新技术的看法

Personal viewpoint to two substitute methods

- 对于CO₂技术：尽管欧盟的许多国家做了不少试验，也生产了一定数量的汽车，中国的部分研究单位和企业也做过一些试验，但我认为该技术设备需要更换，目前在中国实施该技术很困难。

For CO₂ alternative method, it is difficult for china to adopt this technology since it need to change the whole system.

- 中国在汽车产量仅200多万辆时淘汰了CFC - 12，当时蒙特利尔多边基金一共援助中国汽车空调行业1400多万美元，而中国的汽车制造厂和空调器厂据不完全统计投入了3500多万美元用来改造。现在，在我们年生产汽车800多万辆时，要我们来改造刚刚使用了7 - 8年的汽车空调生产设备，投入将非常大，而且也不经济。所以目前中国的企业恐怕很难接受。

This substitute technology will cost a lot for Chinese MAC industry and automobile industry since it require both equipment investment and MAC system change.

个人对两种新技术的看法

Personal Viewpoint to two substitute methods

- 对于HFO-1234yf技术：我认为如果能直接替换HFC - 134a，不要更换空调系统，这是很方便和经济的。但是目前该技术还不够成熟，没有商业化，产品成本还很高。我们中国的一些研究单位和汽车制造厂愿意进行该产品的试验工作，通过试验和跟踪，待技术成熟和产品价格合适时，可能采用该技术。

It is convenient and economical For HFO-1234yf if this refrigerant can substitute HFC-134a directly and in a way not to change MAC system. But this technology is premature , costly, and commercial production has not realized. Chinese research institutes and manufactures are ready to do verified testing work. China may adopt this technology as long as it is mature.

5、结束语

Conclusion

- 在温室气体的减排和汽车空调制冷剂的改造工作中，我们刚刚起步，需要向各国专家和朋友们学习和交流经验。

We are still in the first step in energy efficiency enhancement and HFC-134a emission reduction. It is necessary for us to learn advanced technologies and to communicate with foreign experts and government of other countries.

- 地球是人类共同的家园，保护地球，改善环境是我们义不容辞的责任，我们希望同各国朋友携起手来把我们的生活环境变得更美好！

The earth is common family for all people of the world. It is our common obligation to protect the earth and improve the environment. So let's take actions hand in hand.

谢谢！

Thank you!