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  Increasing NGV population in Beijing

- **Thai**
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Let’s talk about money and our people. Let’s talk about NGVs now!

"Have you heard that oil price reached US$72 per barrel?" asked Mr Narong from PTT Pcl, on our ride to the opening of a CNG station in Bangcha district in Bangkok city. "I think our people will love NGVs even more. The future is bright for NGVs," he smiled.

In India, taxi fare remains the same since October 2000 despite of (petroleum) fuel price increased from Rs. 21/litre to Rs. 54/litre (from Euro 0.36 to Euro 0.92 per litre). In this year alone, gasoline price hiked up from Rs. 49.50 to Rs. 53.50 (Euro 0.84 to Euro 0.91). City commuters are reported as "do not look happy".

Conversely, CNG price remained stable through those years. Thus, the Mumbai public who commutes with 52,000 CNG taxis will not see a rise in its daily travel expenses. Ajit Kamlani, Chairman of the Petrol Dealers’ Association in Mumbai concerns that people will buy less gasoline as the price keeps going up. "So we will be losing some business too" he explained. With that, it has been a wise decision of many governments in Asia to give a good attention and act on it with various natural gas projects.

Current projects
China
With thousands of alternative fuel vehicles (AFVs) in service and six of the world’s most polluted cities, China has become one of the largest markets for AFVs. Due to China’s booming economy, the national Development Research Center estimated that personal car population in China will double up to 60 M units by 2010. The annual alternative fuels market in China is expected to grow by 2.272% from Euro 59 M in 2002 to Euro 1.4 B by 2008. In the NGV business, the main activities will be: retrofitting old diesel vehicles, building and supplying more efficient new engines and equipments, and constructing refuelling facilities. If China follows the ANGVA proposal to APEC which is in line with the EU energy policy to replace 20% of its traditional fuels to natural gas by 2020, and thus, to switch 2% of diesel and gasoline use to natural gas by 2010, then China can expect to operate 1.2M NGVs in the personal car market alone in about four years from now.

Korea
The Korean Ministries are unstoppable in increasing NGV population. Their targets for 2010 are very realistic. Their number is one tool and has become one of key success in implementing their alternative fuel plans. Recently, the new Seoul city mayor revealed his plan to switch all public transport and government fleets to AFVs, being NGV number one choice. Besides these national activities, the government and NGV companies are conducting road shows to many South East Asian countries to introduce NGV and related products. Those products consist of conversion kits, engines, OEM vehicles, and compressors. Chunchon city is working on a Clean City International project with mostly medium to heavy-duty NGVs using either natural gas or bio-methane. The national government issues exemptions of value-added tax and acquisition tax on purchase of NG bus that will be worth Euro 183 million by 2007. By mid 2006-2007, LNG vehicle introduction programme will be executed. Further target for “after 2010” is planned to be set after 2007.

Thailand
The King Bhumibol Adulyadej of Thailand himself gave a special attention to alternative fuel. During his speech in his last birthday the King said," Let me talk about power for NGVs before being re-registered. CNG LGVs would be registered in New Delhi public transport fleet, the local government has released a decree to ban re-registration of diesel light goods vehicles (LGVs) in the city from 1 July 2006. Only CNG LGVs would be registered in New Delhi. Thus, diesel LGVs must be retrofitted to NGVs before being re-registered.

Pakistan
Sales tax of CNG dispenser is being reduced from its previous rate. With 1M NGVs on the road, this country is adding 200 more fuelling facilities to the existing 930 CNG stations. A waiver on import tax of all CNG vehicle parts was announced in last June. Free import duty is also applicable to CNG fuelling station equipment. Local companies are encouraged to manufacture CNG kits, CNG Dispensers and CNG Cylinders. More OEMs such as Suzuki LIANA enters the NG car market as natural gas LDV market is big in this country.

United Emirates Arab
About 16 CNG stations will be added to the existing stations. A big scale vehicles conversion to NGVs will be started in 2007 targeting 10,000 units up to 2010. OEM NGVs are expected to enter the market too.

Malaysia
The state oil and gas company Petronas is going to open 200 more natural gas refuelling stations in the next two years, responding to Deputy Prime Minister Datuk Seri Najib Tun Razak’s decision to increase alternative fuels use. The current 19,847 NGV population is expected to increase up to 60,000 vehicles in the next five years, said Natural Resources and Environment Minister Datuk Seri Azmi Khalid. On the OEM side, Kosmo Motor Company Sdn Bhd introduced Kosmo CNG bus, the first CNG bus chassis made-in-Malaysia which was designed together with Yangzhou Yaxing Motor Coach Co Ltd of China. This new NGV model is due for domestic sales this year and for exports next 2007. Thailand and Singapore are within their export sales target.
To develop and to improve are attitudes that define our company. Each one of the new solutions that we start up in more than the 20% of the CNG refuelling stations all over the world make up the engine that allows us to grow. By imagining, designing and manufacturing excellent products, today we are able to face the challenges and demands of a new world. Aspro world, a possible future.
让我们谈谈钱和人
让我们现在谈谈天然气汽车

‘你是不是已经听说了每桶油的价格已涨到 27 美元？’ 在从 PTTC 开往 Bangkok 市区 Bongkra 特区的一个压缩天然气站的剪彩的路上 Namng 先生说。‘我想我们大家会更加喜欢天然气汽车。天然气汽车的将来是光明的。’ 他笑着说。

在印度，出租车的价格从 2000 年 12 月起保持不变，尽管石油的价格从 2002 年 1 月起一直上涨到 2004 年。从 0.8 美元到 0.91 美元。据统计，出租车的价格将从 2002 年的 1.1 美元到 2004 年的 1.4 美元。

然而，压缩天然气的价格这些年来保持不变。据在 Mumbai 的一位出租车司机说，在那里有 50,000 辆天然气出租汽车。Ajit Kamani, Mumbai 的柴油销售公司的主席，他担心人们会消费越来越少的汽油，因为油的价格在不断的上涨。‘所以，我们也将失去一些业务’ 他解释道。鉴于此，许多亚洲政府对天然气项目的重视和开发就变成了一项明智的决定。

目前的项目

在中国

随着成千上万的车辆和公共汽车的生产和使用对空气污染严重的城市，中国已成为最大的样化的市场。由于中国的经济的迅速发展，政府发展的研究中心将会创新各种车辆和到 2010 年将翻倍并上升到 6 千万。从 2002 年到 2008 年，中国的多样燃料市场预计将以每年 2.27% 的速度上涨，绝对额将从 2002 年的 3 千 9 百万上升到 2008 年的 14 亿欧元。在天然气汽车业务里，主要的举动是：改建的柴油车、修建和更新，更新的发动机和配件以及有新建更换燃料设备。

如果中国听从 ANFIA 的建议而跟随 OPEC 的欧盟的能源政策的话，那就是去 2010 年用天然气取代 20% 的传统的燃料。这样，到 2010 年中国的柴油和汽油的用量的 2% 将被天然气所取代。这也就意味着从现在在将来的仅仅四年里中国将拥有 1 亿 2 十万辆天然气汽车。

在韩国

韩国的天然气汽车的消费人口的上升趋势是不可阻止的。他们的 2010 年的目标是非常客观的。他们的数据是一个工具，而且它也变为实施他们的样的计划的一个成功的目的。最近，新的 Seoul 市长公开的他的更换全部的公交车和政府用车为双份燃料汽车的计划，并强调天然气为第一选择。除此之外，政府和天然气公司组织路边秀给许多东南亚国家，同时也是向他们介绍天然气汽车和相关的产业。那些产品包括转换设备、发动机和配件。Hanho Kook 在正在制造一个零污染的国际项目。项目主要是对有税收天然气的汽车的：那就是使用或者天然气或者页岩气。国家的政府也免掉对购买天然气公共汽车的增值税和占有率。这部分税值到 2007 年将达到 C$8 千 1 百万，到 2006-2007 年中，当地天然气汽车的推广项目将开始实施。更进一步的 2010 年的目标预计将在 2007 年后制订。

在泰国

泰国皇帝, Bhumibol Adulyadej, 他自己对可选择性燃料特别重视，他说：‘让我们谈谈能源的提供和能源。如果当前的燃料在 40 年里用完的话，到那时我们将是 118 岁。我已经创造了另一种替代燃料，因为我可能的用燃料当我 11 岁的时候，’ 泰国选择天然气和绿色燃料作为油的替代品。通过推广有利于天然气汽车的政策，比如，政府规定低的和重税税车必须使用天然气，对天然气发动机，进口和新制造的天然气汽车进行免税。泰国政府也已迈出了重要的第一步。除此之外，Mercedes-Benz, Toyota 以及和一艘船都将参与进入天然气市场。Volvo 在 2006 年 3 月份的 Bongkra 国际发动机展上也展示了他们的 S-90 的双向内燃机的个人用汽车。泰国已经制定从 2005-2020 年拥有 500,000 辆天然气汽车和 740 个燃料站的加站的目标。沿着这个方向，国家的石油和天然气公司，PTTC 等和泰国天然气汽车联合组织正通过研究讨论会，展览和经济项目大量的宣传天然天然气汽车。泰国当前的 2006-2007 年的项目包括了重组的 1,500 辆公共汽车或压缩天然气汽车和购买 3,600 辆阿帕的天然气公共汽车。

在印度

通过成功的市场策略压缩天然气的 Three-wheeler, 一个在印度的原配件厂商，BAIL, 正计划到 2007 推出压缩天然气汽车两辆车。Tata Motors 也正在生产三辆的四辆的高级货车。这种货车将配上 400-700 cc 压缩天然气发动机。政府方面，一个命令正在发出：在通过五年的在 New Delhi 引入天然气汽车为公共交通工具之后，当地政府已发布指令自 2006 年 7 月 1 号起在城市里严厉所有的零注册的柴油轻货。仅压缩天然气的轻货车可以在 New Delhi 注册。这样，柴油的轻货车必须在注册之后被改装成天然气汽车。

在巴基斯坦

压缩天然气的支出的销售税正在从它的原来的比率的不断的降低。伴随着 1 百万辆天然气汽车，这个国家正在提供 200 以上的燃料添加设备给业已存在的 900 座压缩天然气场，去年六已经公开通知，所有的进口压缩天然气汽车及其配件的税收都被免除。这个免进口税的政策也适用于压缩天然气燃料添加站的设备进口。鼓励当地公司生产压缩天然气的全套配件，压缩天然气的分配器和压缩天然气回筒。更多的原配件生产商，比如 Suzuki 社会正进入天然气个人用车市场，因为天然气的低税税车在这个国家的市场是相当大的。

在阿拉伯联合坦国

在现有的添加站上另外 18 个压缩天然气添加站将被增加。从 2007 年至 2010 年的预定的 10,000 改装车将在大范围里开始实施。原配件生产的天然气汽车也将期待着进入市场。

在马来西亚

应对总理 Dangk Seri Najib Tun Razak 的增加使用可替换燃料的决定，国有的石油和煤气公司, Petronas,正准备在将来的两年里修建 200 个以上的天然气燃料添加站。目前的 19, 847 个天然气用户将来的五年里将期待着增加到 60,000, 天然气和环境部长, Dangk SeriAzmi Khalid 说。在原配件生产商方面，Kosmo Motor 公司, Sdn Bhd 推出了 Kosmo 天然气公共汽车，第一个在马来西亚生产的压缩天然气公共汽车的底盘是马来西亚和中国的 Yangzhou Yangteng Motor Coach Co Ltd 一起设计的。这款新的天然气汽车今年将在国内销售，2007 年将准备出口。泰国和新加坡将是他们的销售对象。
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천연가스차량에 관하여 지금 이야기 하자!

"세부 가격이 끝나엽_dup72 달러까지 오른 것을 원으셨겠지?" 태국 방콕시의 Bangcha 지역에서 CNG 충전소 개업식에 우 리를 안내해준 PTT의 Mr. Narong은 물었다. "재생 에너지 제외 균등 균등은 PNG를 접히가 좋겠다는 것입니다. PNG 기관은 빥지람' 말하길 미소를 지었다.

인도의 압사 헬로는 2000년 10월 이래로 석유가격이 리전 21 푸로에서 54 푸로 상승하였음에도 불구하고 이러한 같은 수년에 머물러 있다. 물론 선례적 유가는 49.50 푸로에서 53.50 푸로 올랐으므로 동료들은 이에 대비 준비하지 않았다.

반면에, CNG 가격이 계속적으로 안정상태를 유지하고 있다. 따라서 52,000대의 CNG 택시가 운행하고 있는 Mumbai 일일 교통비용 상승은 없다. Mumbai 시의 압사 헬로협동조합 Aji Kamilani은 사용자는 석유가격이 상승하는 저렴한 가격구입법은 줄어들 것이라 전망하여 이러한 현상으로 우리는 사람들을 고려하고 있다(라)라고 설명했다. 이와 같이, 아시아의 많은 경제들은 유가상승에 따른 위기를 대비하기 위해 다양한 정책들을 고려 중이며 이 중 천연가스 보급 프로젝트에 주목하고 있다.

가격의 현재 프로젝트
중국
수 천대의 대차량 차량을 운행하고 있는 세계의 가장 공행이 싸한 도시 중 2개의 하나인 중국은 요금 가장 큰 대차량차량 시장으로 변화되고 있다. 중국의 폭풍 경제성장으로 인해 National Development 리서치 센터는 개인소유 차량의 수는 2010년까지 60만대에 2배 성장할 것으로 추정된다. 또한 103대 대차량 시장은 2008년까지 2,272%가량 증가할 것으로 예상된다.

천연가스 사업에 주요한 사업들은 오랫동안 운행한 디젤 비료를 리트로소트와 효율적인 사 엔진과 장비들 절감, 충전시설을 건설하는 등이다.

만약 중국이 EURO에 합류하고 ANG가 제안한 "2020년까지 기존의 연료 중 20%를 대차량차로 바꾸겠다는 에너지 정책" 따르게 된다면 중국은 앞으로 4년 동안 운용차량에 착 2백만대의 천연가스 차량 운행을 할 것으로 예상된다.

한국

태국

인도
인도에서는 LNG 삼차차량의 보급의 성공 후에 BAL과 같은 OEM들은 2007년까지 CNG와 가솔린을 결합할 수 있는 협력안을 선보일 예정이다. Tata Motors는 높은 600-700cc의 1인 트럭 "Ace"를 출시할 예정이다. 정부적인 자산들로서는女装과 같은 면장을 발표하였다.

지방 정부에서는 New Delhi 공공 운수업체의 5년 이상 운행차량을 얻고 2006년 7월 1일부터는 디젤 LPGVs (light goods vehicles)를 재충전할 수 있는 재충전을 하는 법안을 발표하였다. 현재의 LNG LVs만이 재충전이 가능하며 디젤 LVs는 천연가스차량으로 리트로소트에 할 경우 재충전을 가능해질 만한 법안이 다. 외국 차종

파키스탄
CNG 디스펜서의 설치는 1000만 보다 낫지 않길 계획이다. 내년말까지의 NVG가 운행중인 파키스탄은 기존의 930개의 충전소에서 약 200개를 더 설치할 계획이다. 모든 CNG차량 부품의 수입관세의 면제는 지난 6월에 공포되고 이 수입관세의 면제는 CNG 충전시설에 도달한다. 파키스탄 회사는 CNG키트, 디스펜서, 실내등을 제조하도록 장려한다. Suzuki LIANA와 같은 OEM들은 현재 소재 천연가스차량 시장에 따라 천연가스차량 시장에 진출할 예정이다.

유나이티드 아라 에미리에어

-Changani가 16개의 층당 차량을 운영할 계획이다. 천연가스차량 개조의 끝을 달성한 류만 2007년에 시작될 것이며 2010년까지 10,000개의 차량을 계획한다. OEM의 차량을 1년에 진출할 계획이다.

말레이시아

말레이시아의 국영 기자 공사 Petronas는 5년 간 동안 200개 이상의 천연가스 충전소 건립할 계획이며 이는 부수로 Datuk Seri Najib Tun Razak의 대차량차량을 동기로 결정을 내렸다. 현재, 19847대의 천연가스 차량을 운용중인 말레이시아는 현재 5년 동안 차량이 60,000대까지 능력 계획이다. OEM중의 하나인 Kosmo Motor Company Sdn Bhd가 Kosmo CNG 버스를 선보였다. 이는 중국의 Yangzhou Xiaoqian Motor Coach Co Ltd와 공동으로 제작된 최초의 알려지지 않은 차량을 통해 만들어낸 시장을 사용한다. 이와 같은 NEG 모델은 올해 말레이시아에서 판매될 예정이며 2007년부터는 수출할 계획이다. 태국과 싱가포르에 이 회사의 수출 목표국가이다.
天然圧縮ガス（GNC）の時代の到来
その企業の経費と同業者

原価の価格が1パサルU$S
2ドル以上である事を知っていませんか？というPTTPlcのナショングがバンコク市バンプラケ区のGNC（天然圧縮ガス）補給スタンドの開業式に出席した後微笑みつつも、将来ガス燃料の将来は輝くと風吹きつぶすと力強く発言。インドネシアの6つのガス燃料の価格は、ソリューションの価段が100ドルから500ドルを越えたものに加え、タイのガス燃料の価格は2000年10月以降維持されている。タクシーの使用者等は、今年だけでもガソリンの価値が49, 50R s から53, 50R s に（084-6264）39R s に隆起しており、ガソリン価格上昇のため売上が下がるとの予測は、日本の出荷を節約しつつありますので、ムンバイ石油業界協会会長AjitKarnani氏は、ガソリン価格上昇のため売上が下がるとの予測は、日本の出荷を節約してきました。この状況でのアジアの多数の政府が天然ガスにに関する多くのプロジェクトを進め、動き出したということは、賛美なことです。

現時点のプロジェクト
中国
代替燃料で可能である自動車数を多数を有し、20%を有する中国、はこのタイプのガス燃料で可能である自動車の市場を拡大させる。経済成長の力点にあるこの国、シェア、調査機関は2010年度までには民間使用の自動車数が現在の242万722万の6万台に達するだろうと予測した。代替燃料の年間市場の成長率は、3%で2020年度の5千90万万円から2010年度までの14年間で増加すると言われています。GNC（天然圧縮ガス）の主な事業としてこの事業に
 Gaussのガス燃料のコストが元来の切換え、最新で高品質なガスを製造した、ガススタンドの設置。もし中国が、ヨーロッパに次いで数の発電料の20%を2010年度までにガス燃料で補うとするAPECのメンバーに属せようとするANGVAのエネルギー計画の提案を受け入れるならば、2008年以前のガス燃料で自動車が1,200万台が行走在ることになるでしょう。

韓国
彼らの2010年度の指標、現実性があります、この示数、代替燃料促進プランの手段として大いに役立つ、韩国政府の、ガス自動車で使用するペルからも、複数の。最近、新設されたソウル市市場の報告、大衆バスと政府専用の乗用車を装備したGNC（天然圧縮ガス）として200万台に達する。自動車スタンドによるガススタンドに設置されているGNCに関する商品は国内需要の半分を占める政府と企業は東南アジア
GNC（天然圧縮ガス）普及の為展示会を催しています。政府は2007年には天然ガスをスタンドで行う183,000,000ユーロに達すると予測するが、購入者はガス燃料の免税を期待も発行します。チェンジラインは主にGNC（天然圧縮ガス）自動車がイタリアンガス自動車中型から大衆自動車を多数を導入して国際クライム市場の株式を進化しています。2006年度から2007年度の期間にGNC（天然圧縮ガス）自動車の所有者とプロセスが実行されるでしょう。

タイ
タイのRhmibolOdovayodhは代替燃料として特別な関心を見せた彼の最近の誕生日で次の記事を声明しましたエネルギーの補給
触れられてきたのですも、現在のエネルギー資源が50年後までとすれば、それは、11億歳になる、11億歳後の燃料補給
可能のために代替燃料を考察したタイは石油の代替燃料として天然ガスをガススタンドとバイオメタンガス燃料を選択し、政府はGNC（天然圧縮ガス）可能で、車両運行コストを大幅に削減することができる。スタンドは、2005年から2020年で間500万円のGNC（天然圧縮ガス）自動車200,000台のガススタンドの設置を進める。スタンドの予算は、2006年度2007年度のガススタンド200,000台の予定です。

インド
天然圧縮ガス自動車の市場の進出の成功を示すためにインド自動車会社Birlaは、2007年度には天然ガスをスタンドと自動車の2
自動車運行を計画しております。タイマーは、近未来を発動機とガソリン600-700CACCを投入するので
未来、政府はニューデルタで大衆乗客車の天然ガス自動車交通の300年間の経験の後、2006年7月1日がディーゼル自動車の再登録を禁止するための法律を発行します。ガソリン自動車の再登録を禁止する際天然ガス自動車ガス自動車を切換えられニューデルタは天然ガス自動車の移行が登録されるでしょう。

パキスタン
GNC（天然圧縮ガス）スタンドの補給料の選択が市場における代替燃料の選択を増加させるでしょう。国際で約100万の天然ガス自動車、自動車を有する国の数を現在のある80万ガススタンドに200万スタンドを追加するでしょう。先月6天然ガススタンドの自動車運行を補助する商品の免税を発行することです。この税は天然ガス燃料スタンドにも実施されています。当国の企業、GNC（天然圧縮ガス）のスタンドの製造は、ガススタンドシステムについても同様に。この巨大な国はSuzukini
aシステムのような天然ガス自動車とガススタンド自動車の市場に多数の会社が進出しています。エミリア・アブラード連合約
200万スタンドが現存するスタンドに追加されます。2007年度の100,000台を指し、2007年度に天然ガススタンドへの切換え
ステップを打つが大きなステップで開始されています。製造元天然ガススタンド自動車の市場進出が期待されています。

マレーシア
DatsunSeriNagibTunRazak臨時首相の代替燃料の削減の計画に答える為国家石油
ガス会社Petronasとの2年間ガススタンド200件を策定する案を発表しました。DatsunSeriAzumiaKhalid自然資源環境
保護局の前年12月24日発売自動車スタンド使用者の数が200万60,000台に達する予定がある。代替計画のため期待したKosmosMotorCompanySDNBhdは、マレーシアの中国のFangzhouYaxingMotorCo Ltdと共同で設立した新しいガススタンドはKosmosを導入した。この天然ガス補助モデルは今年国内向け行われ新しい技術、タイとシンガプールのターゲットとなっている。
Mari berbicara tantang NGV sekarang!


Di India, harga karics taxi stabil sejak Oktober 2000 walaupun harga minyak meningkat dari Rs. 21/litre ke Rs. 54/liter (dari Euro 0,36 ke Euro 0,92 per liter). Di tahun 2006, harga bensin naik dari Rs. 49,50 hingga Rs. 53,50 (Euro 0,84 - Euro 0,91). Pen-duduk kota yang sering menggunakan-kandaraan dengan bensin dan diesel di-laporkan "tidak terlihat senang" dengan kondisi ini.

Harga CNG tetap stabil beberapa tahun ini. Penduduk Mumbai yang memakai jasa 52,000 CNG taxi tidak melihat ada-nya tanda kenaikan harga karics.

"Bisnis kita bisa berkurang" kata bapak Kamlani. Dengan alasan-alasan tersebut di atas, banyak pemerintah Asia memberi perha-tian khusus terha-dap gas alam (NG) untuk digunakan pada kendaraan bermotor.

Proyek saat ini

Cina


Korea

Menteri-menteri Korea mempromosikan peningkatan penggunaan NGVs di Asia. Peraturan pemerintah adalah kunci utama dalam menerapkan rencana AFV mereka. Mayor Seoul baru menyatakan rencananya untuk menggantikan seluruh armada pemerintahan dan kendaraan umum dengan AFVs; NGV menjadi pilihan utama.

Pemerintah Korea dan perusahaan-perusahaan auto di se-kaun gas alam (NG) untuk digunakan pada kendaraan bermotor. NGVs telah dibangun. Modifikasi kendaraan diharapkan untuk tidak meregistrasi ulang diesel light vehicles untuk pengangkutan barang (LGVs) di dalam kota sejak 1 July 2006. Cina LGVs akan diregistrasi ulang.

Indonesia

Setelah sukses memasarkan CNG 3-roda, sebuah OEM di Indonesia, BAL, merencanakan untuk memasarkan CNG/bensin 2-roda untuk 2010. Tata Motors juga akan memasarkan 1-ton 4-roda truk "Ace" dengan daya 600-700 cc CNG mesin. Setelah 5 tahun mengoperasikan NGV di armada angkutan umum di New Delhi, pemerintah lokal mengeluarkan peraturan untuk tidak meregistrasi ulang diesel light vehicles untuk pengangkutan barang (LGVs) di dalam kota sejak 1 July 2006. Hanya CNG LGVs akan diregistrasi ulang.

Pakistan

Pajak penjualan CNG dispenser telah diderukti. Pakistan mempunyai 1M NGVs dan sedang menambah 200 unit tank stasiun di samping 930 unit yang sudah beroperasi. Sejak Juni lalu, 0% pajak import parts dari kendaraan CNG dan tank stasiun telah dikeluarkan. Perusahaan domestik dianggap ada untuk memproduksi CNG kit, CNG Dispenser dan CNG Gilinder. Jumlah OEGV di Pakistan telah bertambah dengan masuknya Suzuki LIANA di pasar LDV NGV.

United Emirates Arab

Sekitar 16 stasiun baru akan segera dibangun. Modifikasi kendaraan menjadi NGVs akan dimulai di tahun 2007 dengan target 10,000 unit pada tahun 2010. OEM NGVs juga diharapkan untuk memasuki pasar UAE.

Malaysia

ที่มาของ NGV แล้วหรือยัง?

"หากรัฐบาล จะมีนโยบายที่ยั่งยืน” 72 ศาสตราจารย์ ศรีชัย ชุณหะวิโรจน์ พิจารณาว่ารัฐบาลจะไม่สามารถใช้เป็นเป้าหมายในการจัดการเรื่องการขนส่งมวลชนได้ รัฐบาลต้อง พิจารณาที่จะมีนโยบายในการจัดการเรื่องการขนส่งมวลชนให้เป็นไปตามเป้าหมายที่ระบุไว้ใน แผนพัฒนาเศรษฐกิจและสังคมแห่งชาติฉบับที่ 9 และแผนพัฒนาเศรษฐกิจและสังคมแห่งชาติฉบับที่ 10 ที่มุ่งเน้นไปที่การพัฒนาที่ยั่งยืน รวมถึงการจัดการเรื่องการขนส่งมวลชน

การพัฒนาโครงสร้างพื้นฐาน 72 ศาสตราจารย์ ศรีชัย ชุณหะวิโรจน์ ผู้วิจัยที่มี الخبرการที่มีความขัดแย้งกับรัฐบาล ข้อจำกัดในการพัฒนาโครงสร้างพื้นฐาน ที่มีความในเรื่องการจัดการเรื่องการขนส่งมวลชนให้เป็นไปตามเป้าหมายที่ระบุไว้ใน แผนพัฒนาเศรษฐกิจและสังคมแห่งชาติฉบับที่ 9 และแผนพัฒนาเศรษฐกิจและสังคมแห่งชาติฉบับที่ 10 ที่มุ่งเน้นไปที่การพัฒนาที่ยั่งยืน รวมถึงการจัดการเรื่องการขนส่งมวลชน รวมถึงการจัดการเรื่องการขนส่งมวลชน ที่มุ่งเน้นไปที่การพัฒนาที่ยั่งยืน รวมถึงการจัดการเรื่องการขนส่งมวลชน
You might already know that Beijing city in China has the world’s biggest bus fleet running on natural gas after Wurumuqi city*. In fact, this city and its suburb were reported as “the world’s highest levels of smog-causing nitrogen dioxide” by the European Satellite Agency some years ago. Vehicle emission is one of the leading environmental problems in the capital according to Beijing Vice-Mayor Liu Zhihua. Thus, the local government has been following an environmental protection plan for the 2003-07 period, to ensure a better air quality for the XXIX Olympic Games in 2008. Vehicles with high pollution level get a yellow labeling (environmental protection labeling) and are banned from some roads. More than 300,000 old or dilapidated motor vehicles were scrapped and 2,800 public natural gas buses were introduced. Stringent measures, such as the adoption of emission standards, have been implemented since more than three years ago.

<table>
<thead>
<tr>
<th>Emission standards</th>
<th>Time of application</th>
<th>Beijing</th>
<th>The rest of China</th>
</tr>
</thead>
<tbody>
<tr>
<td>EURO 2</td>
<td>1 January 2003</td>
<td>1</td>
<td>1 January 2005</td>
</tr>
<tr>
<td>EURO 3</td>
<td>1 January 2005</td>
<td>1</td>
<td>1 January 2010</td>
</tr>
</tbody>
</table>

Due to some air pollution measures taken by the government, air quality in Beijing has improved. “Good air quality” days rose from 100 in 1998 to 234 last year.

In 2005 alone, about 4,000 diesel buses in Beijing have been replaced by alternative fuel vehicles. Most of those now run on CNG. In that year, natural gas consumption for all sectors in Beijing was 3.2 B m³. Liu Xiaoming, Deputy Director of the Beijing Transportation Committee, underlined that the city will upgrade all its diesel buses and all buses with the Euro 3 emission standard by 2008. Beijing officials aim at converting the entire bus fleet which consist of 120,000 units to CNG buses to serve the 2008 games. About 90% of those buses will be retrofitted and 10% will be re-powered with new CNG engines. The Olympic Village is planning a hydrogen park where five HCNG-fuelled buses’ operation will be demonstrated.

To support its “clean air” activities in 2006, the local government offers 2.8 B Yuan (Euro 275,3M) in 2006 to buy 3,485 “clean buses” of which 1,000 are NGVs according to Beijing Public Transport Holdings Ltd (BPT) Deputy General Manager. It is expected that by the end of 2006, the total fleet will increase to 20,427 units whereas about 13,252 buses or 64.9% will operate on alternative fuels. By the end of 2010, Beijing will add 5,000 buses which will increase the total bus fleet of various kinds to 24,000 units, stated Zhang Guifang, a BPT official. Consequently, the Rate of Investment on Beijing’s transport infrastructure will be augmented to 50% from the current 35%, she said.

Notes: * Wurumuqi is a city with the largest NG bus population in the world and Beijing the second. Wurumuqi has 2,813 dedicated and dual fuel NG buses which are mainly conversion vehicles. According to CVPC, if we only focus on the dedicated NG bus population, then Beijing tops in the world with its 2,703 dedicated CNG buses, all OEM made.
Thai government has adopted the EU 2020-20% fuel replacement strategy to substitute gasoline and diesel vehicles with alternative fuels vehicles (AFVs). Thailand main NGV actors, TANGV and PTT predicted that most of those vehicles will be replaced by NGVs. Its national 2010 target is quantified to 500,000 NGVs with 740 fuelling facilities. The five-year investment (with calculation from 2005-2010) is worth 89,3B baht. On the other hand, it will reduce oil import as much as 10M litre/day. “With a reference of 2005 oil price at US$50/litre in Dubai, we can save up to 62,2B baht/year in the energy budget. Nowadays, Dubai oil price increased to about US$60/litre, and it does not stop there! So, the saving is even higher and the Return on Investment (ROI) is even better,” said Mr Nuttachat Charuchinda, the Executive Vice President of NGV Department and TANGV. With the above mentioned calculation, the ROI for this 2010 target takes about 1-1,5 years. TANGV and PTT also quantify the ROI of conversion and re-powering projects from the vehicle owners. The conversion cost of gasoline light-duty vehicles (LDVs) to NGVs is about 50,000-100,000 baht/vehicle. This conversion cost will be recovered within 0.3-2.7 years. For diesel van/pickup, the conversion cost is 45,000-60,000 baht/vehicle. The payback period is estimated around 0.6-1.4 years.

For truck and trailer retrofit, the cost is 200,000-600,000 baht/vehicle. The re-powering cost is up to 1.5M baht. The ROI will be achieved in 0.6-1.7 years for both conversion and re-powering. Bus conversion costs is equal to 180,000-500,000 and 1.2M for re-powering with payback period around 1.1-2.4 years. See also more detail cost calculation in this magazine. A very promising investment indeed!
Thailand ROI 2006

Mapping targeted customers and areas year 2006

NGV helps Thailand for decreasing fuel cost

1. Investment Cost for country

- NG refuelling station: 43,600 Million Baht
- NGV: 45,700 Million Baht
- Decrease in import crude oil: ~10 million litre/day
- Increase usage of NGV: ~365 mmcf/day

Crude Oil Price Level in Dubai

| Unit (S/Barrel) | 50
|----------------|---
| 1 Million Baht | 30

IRR (Internal Rate of Return): 32%

NPV (Net Present Value): 12%

Decrease in Import Amount per day: 62,200

Decrease in cost of energy or fuel per year: 39,500

NGV economic model

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Consumption cost (thousand Baht)</th>
<th>Distance (km/day)</th>
<th>Subtract amount (litre/year)</th>
<th>Subsidy to fuel cost (thousand Baht/year)</th>
<th>NPV (thousand Baht)</th>
<th>Payback period (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>50</td>
<td>100</td>
<td>2,000</td>
<td>37</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Diesel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel</td>
<td>50</td>
<td>100</td>
<td>2,000</td>
<td>37</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Diesel</td>
<td>100</td>
<td>100</td>
<td>20,000</td>
<td>1.25</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>Diesel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Price incentive to NGV users

NGV Price: not more than 10.34 Baht / kg (US$0.36/kg)

2005: 71.1% in LPG
2006: 70.4% in LPG
2007: 70.4% in LPG

Bamboo and other alternative fuels
Praxair, through its subsidiary White Martins, synonymous of excellence and leadership for the Natural Gas Business in Brazil, is currently applying its expertise in producing the best quality cylinders for NGV. The manufacturing flexibility we have in our 2 plants (Barra Mansa-Rio de Janeiro and Manaus-Amazonas) allows for huge product diversification permitting thousands of possible combinations of diameters, lengths and weight. Cilbrás Cylinders are manufactured through different production processes using seamless steel tubes or steel plates in compliance with the most important international standards, under ISO 9001-2000 Certified Quality System. Cilbrás Cylinders are the best solution for your NGV business.

www.cilbrascylinders.com
Phones: (+55 21) 3431-2140 • (+55 21) 3325-1400/1468
The UAE is one of the world’s leading countries in high technology and has made remarkable achievements in moving towards a diversified economy. The UAE has the 4th largest reserve of Natural gas in the world!

Adnoc Distribution is a leading Marketing and Distribution Company of refined petroleum products including Natural Gas and associated services in the UAE. Company’s business line includes the marketing and distribution of diesel, bunkering fuels, gasoline, and aviation fuels, LPG, Natural Gas and Lubricants. Additionally, the Company services the UAE retail market through a network of state-of-art service filling stations with various facilities including convenience stores.

Adnoc Distribution has embarked on a major Project to build a Natural Gas Distribution Network Infrastructure in the UAE. Part of the Project is to introduce and expand the use of Natural Gas in the Transportation sector. This will bring economic and environmental benefits to the fast growing transportation sector in the UAE. For this reason, the UAE authorities gave their support to the Adnoc Distribution initiative to implement their Natural Gas for Vehicles expansion program.

With a commitment to protect the environment by reducing harmful exhaust emissions from vehicles, Adnoc Distribution initiated a Pilot Project for alternative fuel for vehicles. The project was completed in May 2005 and became the First Public Natural Gas Filling Station for vehicles in the Emirate of Abu Dhabi and the UAE. As part of the pilot project, Adnoc Distribution appointed a qualified contractor to carry out conversions of a limited number of gasoline driven vehicles to run on both Natural Gas & petrol (bi-fuel). At this stage, over 40 Cars have been converted for the use of Natural Gas as part of the pilot project.

More conversion on a big scale will start early 2007; more than 10,000 are planned till 2010. Up to 10 locations are identified for conversion workshops, in which four workshops will be installed by the end of this year.

In addition, OEM cars will enter the market. In phase one, the focus is on LDV like taxis and parcel service cars. HDVs such as buses will be included in phase two. The main focus will be on fleets and public transport but private use is not excluded.

Following the positive results and feedback from the NGV Pilot Project, Adnoc Distribution has committed to expand its future NGV programme to improve both, the Environment and choice of alternative fuels to its customers in the Emirate of Abu Dhabi and other Emirates.

To ensure smooth and successful NGV expansion program, Adnoc Distribution engaged TUV Saarland from Germany to carry out comprehensive analysis and review of international NGV standards thus recommending codes and standards for Adnoc Distribution to adopt them for its NGV Business. At the same time coordination continues to take place between Adnoc Distribution and the Emirate Standardization & Metrology Authority for recommended standards and codes to be adopted for the United Arab Emirates (UAE).

Commencing in 2006, Adnoc Distribution is planning to open 16 additional Natural Gas Filling Stations and vehicles conversion centres in strategically selected locations across its existing network of filling stations in the UAE. Their plans also include the setting-up of a training center for all aspects of the NGV business including ensuring the highest competency level is achieved.

This will be further assessed by a notified body, and certification will be issued for competent companies and personnel in each respective area to ensure that the highest level of safety and quality control is applied throughout the project.

Adnoc Distribution is leading the way to introduce Natural Gas for Vehicles and believes that the use of Natural Gas as a fuel for vehicles presents an exciting opportunity for the United Arab Emirates.
During last April ANGVA Board of Members meeting in Bangkok, Mr Nuttachat Charuchinda of TANGV (Thailand Association for Natural Gas Vehicles) presented Thai NGV programme including its target to operate 500,000 natural gas vehicles and 740 refuelling stations by 2010. This compares with 12,130 NGVs which are on the road today and 62 fuelling amenities. The association is at present proposing to all APEC countries to have a target of 20% replacement of conventional transport fuels gasoline and diesel by alternative fuels including compressed natural gas by the year 2020. The Thai target should easily exceed the proposed APEC target.

President of the association Datuk Abdul Rahim Hj Hashim congratulated Thailand for its remarkable plan.

As one of the most active NGV country in the region, Thailand has been chosen as the venue for the 2nd ANGVA conference and exhibition, ANGVA2007. PTT and TANGV will act as the host of these events.

The ANGVA2007 will be held in Bangkok around 24-27 October, 2007. Over 400 delegates will be targeted to participate in the forum with more than 3,500 trade visitors under approximate 4,000 square meter of exhibition space.
A new CNG station was opened in July 6th, 2006. Unlike other natural gas stations owned by PTT Plc, this station is collaborated between PTT and Bangchak Petroleum Plc where PTT has funded the entire investment for the station, which have been built on Bangchak’s gas station. The opening ceremony was presided over by the Minister of Energy, Mr Viset Choopiban. Attending in this opening were the CEO of Bangchak Petroleum Plc., Dr. Anusorn Saengnimnuan, the President of PTT Plc, Mr Prasert Boonsampan and some other high officials from PTT such as Mr Nuttachat Charuchinda, Mr Manop Ratanasupanusorn and Mrs Weena T. Chaianun.

Bangchak’s first CNG refuelling station is located in Bangchak-Nual Jan Road branch. It is open for 24 hours, whereas 4 dispensers with 8 hoses are ready for service, being facilitated by 1,000 Nm3/hour of 3-stage reciprocating compressor. Even though it is non-PTT station, the fuel price is set at the same level as those of PTT’s: 8.50 baht/kg. Two more Bangchak CNG refuelling stations, Kingkaew and Rad Burana branch will be opened this month, with seven more are planned to be ready for serving by the end of this year.

The existing stations owned by PTT
So far, PTT has 65 CNG stations mainly located in the Great Bangkok and provinces nearby which comprise of 6 mother stations, 12 conventional stations and 47 daughter stations. The mother stations are located in Nimitmai, Rangsit Future Park shopping center, Lad Lumkaew, Rangsit BMTA (Bangkok Mass Transit Authority)’s bus depot, Sam Rong and PTT’s GSP Rayong. Rangsit BMTA’s bus depot is the first CNG station in Thailand built by PTT in 1993 to mainly serve BMTA’s buses. The first three stations are equipped with 4-8 compressors each. The other three stations have a small capacity with 1-3 units of compressors. Nimitmai has 4 compressors of 1,600Nm3/hour plus 4 other compressors of 750Nm3/hour. The new station Rangsit Future Park was opened last December 2005. It was designed to be the CNG distribution operation centre for all daughter stations. There are 4 compressors of 3,200 Nm3/hour each and 6 double hose dispensers which supply CNG to 20 daughter stations, presently. Lad Lumkaew has 4 compressors of 3,200Nm3/hour capacity each. All mother stations also service CNG to all types of NGVs besides supplying CNG to daughter stations.

In the government level, tax waivers and reductions were offered to companies importing NGVs and NGV/fuelling station equipment as well as companies manufacturing OEM NGVs locally. The first three main car manufacturers, DaimlerChrysler (Thailand), Toyota and General Motor, are preparing to manufacture OEM NG cars in Thailand and may expand to 1 ton NG pickup trucks. At present, the Thai government has approved to increase the number of license for 2,500 CNG powered tuk-tuks operating in Bangkok. They are being manufactured by Monika and other Thai local tuk-tuk manufacturing companies. BMTA has also got approval from government for purchasing 2,000 CNG powered buses next year. This is accelerating joint venture between local Thai companies and foreign CNG engine manufacturers to set up CNG bus and truck production plants in Thailand. In addition, it was reported that Thailand will export NGVs to Asian and European countries in the future.

In its efforts to engage other gas companies to invest in the CNG fuelling station business, PTT is prepared to increase the current margin from approximate 0.40 baht/kg (Euro 0.008/kg) to not less than 2 baht/kg (Euro 0.04/kg) to make the business commercially feasible. Among the targeted companies are Caltex, Esso, Petronas, and Shell. Shell’s GM for retail sales and operations mentioned that this company is expecting to open two to three CNG refuelling stations in Bangkok as a start. Each CNG refuelling station is anticipated to offer 200,000 to 300,000 kgs CNG per day. Currently, CNG price is at 8.50 Baht/kg (Euro 0.18/kg), while other fuel prices are 9.40 baht/litre (Euro 0.20/litre) for LPG, 27.94 baht/litre (Euro 0.59/litre) for diesel,
29.39 baht per litre for gasoline octane 91 (Euro 0.62/litre) and 30.19 baht/litre (Euro 0.64/litre) for gasoline octane 95. PTT is still stabilising CNG price of 8.50 Baht/kg until the end of 2007 and then confirms to price CNG not more than 50% lower than of diesel for the following years.

PTT would also open a CNG station in Bang Sue area to facilitate 55 vehicles belongs to the Royal Thai Army, which were converted recently. Eighty more units is due to conversion this July, stated Deputy Army Spokesman Colonel Thanathip Sawangsang. One more refuelling unit is expected to be constructed in the future.

Currently, there are 15,370 NGVs, including 6,749 taxis, 8,174 passenger cars and pickup, 447 buses and trucks.

PTT and Thailand Association Natural Gas Vehicles (TANGV) have targeted to have 51,200 NGVs and 200 fuelling facilities by end 2006. The CNG refuelling stations are focused to construct in the Great Bangkok and provinces which have existing natural gas pipelines. In addition, many stations will be constructed along main highways to facilitate truck service companies for using CNG, in stead of diesel.
The next Clean City International

Following the success stories of Clean City International (CCI) founded by US-DOE, Chuncheon, the city where Asian NGV Communications is located, is expected to set example as the "cleanest" city in Korea. The participants of this long-term Clean Chuncheon City 21 project consist of the followings:

1. Private sectors:
   - NGVI Inc., an NGV company which provides "NGV System" and owns a re-powering workshop;
   - Kangwon City Gas;

2. R&D institution:
   - Kangwon University;

3. Funding institution:
   - Korean Industrial Bank (KIUP);

4. Government:
   - Chuncheon city;
   - Kangwon province;

5. Military:
   - Second army corps which is to become one of main consumers.

So far, Korean NGV industry's leadership style uses a top-down strategy led by government. CCI Chuncheon is the first bottom-up NGV coalition in this country. The target of this programme is to replace 20% of vehicles with alternative fuel vehicles by 2020.

Chuncheon will become a "Model City" which uses bio-methane (biogas) as fuel for vehicles. The city has a large pig farm which produces tones of pig dung everyday. This is also a good reason why the target is focused on bio-methane production. It will contribute in lowering national energy budget, creating job opportunity and revenues for the city. It also aims at making use of organic waste and cleaning it. It is like cleaning the waste and cleaning the air at the same time. Nowadays, there are about 100,000 vehicles operating in the city. Before 2012, Chuncheon is expected to have 10,000 NGVs and 10 fuelling facility. By June 2006, there are already 39 CNG public buses and about 15 private CNG vehicles with one fuelling facility.

The potential NGV adopter to support this project is the second army vehicle fleet with its 20,000 vehicles. Also, commercial goods vehicles such as trucks and cargo are expected to be converted to NGVs. Just recently, the government provided funding for churches to buy buses and mini-buses, as well as to convert those vehicles to NGVs. Should Chuncheon have enough fuelling facilities, taxis and private cars might also join this "clean fuel vehicle" programme.

It is indeed an ambitious plan to operate 10,000 NGVs in this city before 2012. However, looking at the Korean history, with a strong financing programme and a firm regulation, it is possible to increase NGV population very rapidly. NGVs were actively adopted since year 2000 in Korea. Less than six years later, the country owns 10,000 natural gas vehicles. Positive responses come from many parties especially from citizens in big cities such as Seoul. Many people point out that the pollution is indeed diminishing. "Since Seoul uses a lot of natural gas buses, we can use our white shirts more than two days instead of one day. The collars are not black from (vehicles) smoke anymore. Thanks to NGVs," said a government official in Seoul city.
Clean Chuncheon City 21

Clean Chuncheon City 21 is a coalition of stockholders in Chuncheon city's drive to be designated a "Clean City" under the US Department of Energy's Clean Cities International program. The program is designed to encourage public-private sector partnerships in building safe and effective alternative fuel vehicle markets.

On Thursday June 15, 2006 the "Clean Chuncheon City 21" coalition met for the second time at SK Kangwon City Gas Chuncheon headquarters. Professor Changi Lee of Kangwon University was appointed as the coalition's chairman, Mr. Kevin Park of NGVI and Mr. Kang Sangwon of SK Kangwon City Gas as vice presidents. Mr. Harry Lee of NGVI is the secretary general.

Chuncheon's coalition comprises members from diverse cross sections of stakeholders with transportation, energy and environmental interest. Kangwon Provincial Government, Chuncheon City Council, Industrial Bank of Korea, NGVI, Chuncheon City Gas, SK Kangwon City Gas, Korea Express Transport, Chuncheon Automobile Assoc. and Daedong Bus Company have been actively involved at this point.

During Thursday meeting objectives, obligations and commitments were discussed alongside the development of an implementation plan. The coalition's next meeting is scheduled for June 29.

Chuncheon has been chosen to host the 2012 IANGV Exhibition and Conference and the public and private sector has been actively involved in the popularization of NGVs in Korea. Chuncheon's Kangwon National University has hosted four NGV schools. The last school was held on May 26th of this year and was a resounding success. Seventy-six participants attended along with speakers from OEMs Hyundai and Daewoo as well as a speaker from the Ministry of Environment.

By: Ryan Freer, NGVI

Target K2010

<table>
<thead>
<tr>
<th>Type of NGV</th>
<th>Total 2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
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</thead>
<tbody>
<tr>
<td>Total NGVs</td>
<td>23,020</td>
<td>6,162</td>
<td>2,513</td>
<td>2,750</td>
<td>2,800</td>
<td>2,910</td>
<td>2,970</td>
</tr>
<tr>
<td>CNG city buses</td>
<td>21,000</td>
<td>6,121</td>
<td>2,500</td>
<td>2,500</td>
<td>2,500</td>
<td>2,500</td>
<td>2,500</td>
</tr>
<tr>
<td>CNG shuttle, school and company buses</td>
<td>645</td>
<td>-</td>
<td>85</td>
<td>85</td>
<td>135</td>
<td>170</td>
<td>170</td>
</tr>
<tr>
<td>LNG cargo trucks, airport (limousine) and intercity buses</td>
<td>345</td>
<td>-</td>
<td>45</td>
<td>45</td>
<td>80</td>
<td>80</td>
<td>95</td>
</tr>
<tr>
<td>CNG garbage truck (5 and 11 tonnes)</td>
<td>1,030</td>
<td>41</td>
<td>13</td>
<td>120</td>
<td>170</td>
<td>195</td>
<td>220</td>
</tr>
<tr>
<td>Fuelling station2</td>
<td>410</td>
<td>170</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1 Target for government fleet for public use only, which will be financed by Korean government. Target for private vehicles is not included in the target calculation.

KANGV (Korean Association for NGV) helps the government to promote NGV use by distributing pamphlets and creating documents/reports for citizens, conversion workshops, etc. KANGV also conducts a research to develop and to test NG city buses, garbage trucks, airport and school buses, as well as conversion technology for diesel vehicles to NGVs. 2 Main actors involved in the fuelling station planning include city gas companies and KANGV. They also create an ‘Eco-Station’ or dual-fuelling station concept with a gasoline and CNG refilling facility in one station. The regulations for fuelling station construction and operation are very strict. KANGV strives to ease those regulations.

Target for after 2010 would be determined after 2007.
Korean NGV "road show" in Indonesia

To promote Korean NGV products, Korean government and NGV companies join forces to conduct several ‘road shows’ in Indonesia, Malaysia, Thailand and Vietnam. Asian NGV Communications has joined the Korean Ministry of Environment (MOE) and some Korean NGV companies to visit the Indonesian government.

Both countries have discussed on a possibility to cooperate to increase NGV population. Besides meeting the Director of Urban Transport and the Director of Urban Development of Jakarta, the Korean delegates has also talked to the Governor of Jakarta on a separate occasion.

The delegates also gave several presentations on their NGV experiences and their products, which consist of HDV-OEMs, engines for passenger cars, compressors, etc. Beside the MOE, participating companies from Korea include Engine Tech., Daewoo, KANGV (Korean NGV Association), Kogas (Korean Gas Association), Samsung and Shinjeong.

Indonesian companies and institution which attended the presentation include Department of Communications, public transportation companies, PERTAMINA (oil & gas company), and several potential investors.

Jakarta has actually bought 63 CNG buses and one compressor from Korea. More buses and compressors are ordered for 2006 supply. Those buses are operated in busway 2 and 3 which are built especially for
alternative fuelled buses.
The governor also informed that 12
more busways will be constructed in
the future. The municipality of Jakarta
sets a target to have a total of 126
buses and 2,500 bajaj (three-wheeler) in
addition to the 730 taxis. This city has 7
operating CNG stations, in which one of
those has been opened last May 2006.

Additionally, about 5,000 CNG
conversion kits for HDVs and HDVs are
planned to be ordered this year.
The execution of this plan is very likely
depending on the sufficient supply of
fuelling facility. With CNG price set at
Rp 3,000 (Euro 0,27) which is 30%
cheaper than diesel and 40%- 55%
cheaper than gasoline, several
companies are very eager to invest in
the fuelling sector.

For the same reason, CNG is very
attractive to the Indonesian government
and citizens. In line with the Indonesian
President to switch to “clean” fuels, this
country is planning on “Blue Sky”
project. To celebrate Jakarta’s 470th
birthday, a TV channel, ANTV, is even
broadcasting several commercials to
promote “cleaning-up Jakarta”, i.e. to
reduce air pollution caused by vehicles.
India: a low cost travelling supported by public and private sectors

The Indian government was pleaded to create a strategy on energy supply with a "sense of urgency for meeting short term supply disruptions". Besides setting up a transmission gas grid, Indian government also considers to select a good location to establish LNG terminals. The urgency to switch to alternative fuels is mainly triggered by the ever (and still keep) increasing petroleum prices. That is why CNG comes to the picture even more. From public to private sectors, supports flow to assure a healthier air for Indian citizens.

NGV drivers can save up to 68%-38% on operating cost comparing to driving gasoline or diesel vehicles respectively. In Mumbai, it was reported that 7% of the total population including NGV drivers and family members in this city are benefiting from this saving. Also, it has helped to increase the families’ standard of living and education. Using NGV means reducing about 310 tonnes vehicle emission per year, in Mumbai alone. It reduces gasoline consumption by 300,000 litre and 65,000 litre of diesel per day according to Prime Minister Manmohan Singh last March 2006. According to a study, CNG fuel economy at Rs. 80/10km is higher than gasoline at Rs. 29/10km and diesel at Rs 19/10km.

Examples of adoptions of NGVs in several cities/districts

**Tripura**

This state will be the first Northeastern state to introduce CNG for vehicles to cut transport fuel cost as CNG price at Rs. 16 (around Euro 0.27) is about one-third gasoline price. It is estimated that 20,000 NGVs, mostly auto-rickshaws, will ply in Tripura during a mega project organized by GAIL (India) Ltd. Several workshops will be opened for converting engines to CNG ones. Three refueling stations will facilitate these vehicles. The government is prepared to issue permit and bank loan to "future" NGV owners. Taxis and private cars are expected to be converted to NGVs as well in a later stage. Meanwhile, the Haryana district government planned to introduce CNG buses in the National Capital Region (150 units) and in rural areas of Delhi.

**New Delhi**

All light commercial vehicles (LCV) registered in Delhi from July 1, 2006 must be powered by CNG. More than 50,000 LCVs are estimated to operate in Delhi road nowadays. Following the good work in the clean air business, Bhure Lal and Surita Narain have been acknowledged as one of the "Pollution Fighter" by Times magazine in its 2006 article on "Climate Crusader". Both were honoured for their effort to replace diesel buses with NGVs in Delhi’s road. Narain filed a lawsuit in Supreme Court in 1998 “affirming the right of citizen to breathe clean air”. As a result, a mandate on public transport vehicles conversion to NGVs was issued, which was later objected by bus and oil companies and some ministries. Lal and Narain fought back, still aiming at creating cleaner air in Delhi. Narain was even awarded with Stockholm Water Prize and Padma Shri by the Indian government in 2005. NGV statistics in Delhi rose from 26,350 CNG vehicles in 2001 to 94,039 in 2006 which include 78% rickshaws, 10% taxis, and 12% buses.

**Faridabad**

The government has banned all commercial vehicles without proper papers and valid pollution check from roads as from May 1st, 2006. Commercial vehicles older than 15 years have been banned since 2005. It is a good sign for "clean" vehicles such as NGVs. However, a thorough implementation plan is needed as in April 2006 there were about 20,000 auto rickshaws in Faridabad and it was very difficult for those rickshaws to get the paper let alone pass through the pollution check, especially those which run on "traditional" fuels. A local auto rickshaw union has gone on a strike following this regulation which applies in such a short deadline. Same issue occurred in Kolkata city.

**Insurance coverage, a benefit for NGV drivers**

Mahasaraksha Yojna, a social initiative to provide Group Personal Accident, offers up to Rs. 100,000 (Euro 1,700) insurance coverage for all CNG taxi and rickshaw drivers since March 2006. This amount is provided for a permanent total or partial disability or a loss of life caused by an accident while driving an NGV. This initiative was taken by Mahanangar Gas Limited (MGL) which has supplied CNG to more than 170,000 vehicles; including 115,000 rickshaws and 52,000 taxis in Mumbai, Mira-Bhayander and Thane. Nowadays,
almost all taxis and rickshaws are operating on CNG. Other types of vehicles also run on CNG, these include public transport buses, school buses, postal and courier vans, light and heavy commercial vehicles.

The OEMs
In the OEM sector, CNG kits and vehicle manufacturers increase CNG vehicle sales.

After the success of introducing 1,600 units of CNG Tempo in New Delhi and another 500 units in Gujarat, Mahindra and Mahindra, a leading player in the India three-wheeler market introduced 50 Champion CNG out of its Tempo brand in a highly polluted Kanpur city.

To enhance the safety of this vehicle, CNG cylinder is placed in the middle of the body. The price of a Champion CNG is set at RS. 215,000 (Euro 3,690) with a fuel economy of 21 to 24 km per kg CNG. The company expects to sell 25 to 30 units of this vehicle per month in this city.

More Champion CNG will be marketed in Lucknow and Agra cities as well. Still, the government is facing challenges in supplying this "clean" vehicle as OEM NGVs are very few (in the three-wheeler sector). In fact, only China and India produce three-wheeler auto rickshaws powered by CNG.

Bajaj Auto, a two-wheeler leading manufacturer, will bring into the market a new bi-fuel vehicle powered by gasoline/CNG in 2007.

This two-wheeler will have a small gasoline engine and CNG/LPG kits.

The Head Marketing Hero Honda, P.S. Sunder, also stated their intention to join the CNG two-wheeler market and, in fact, their joint venture partner Honda has seen this segment from a global perspective.

General Motors joins the NGV market by launching Chevrolet Optra CNG recently. Micro Technologies (India) Ltd. plans to develop electronic control units (ECU) for CNG vehicles.

IGL is designing a model for running DEMU trains on dual fuel CNG and diesel. In its efforts to encourage more vehicle conversion to NGVs, IGL has been working together with CNG kit suppliers, transport department, Automotive Research Association of India (ARAI) and Vehicle Research and Development Establishment (VRDE) to ease the process for approval registration certificate of the vehicle.
The 5th ANGVA NGV School 2006

By Sung Joon Kim and Ryan Freer

The 5th ANGVA NGV School 2006 was held in the College of Engineering at Kangwon National University in Chuncheon, Korea, on the 26th of May (Friday). It was a joint program between ANGVA and KANGV (Korean Association of Natural Gas Vehicle).

The one day program ran from 9:00 am until 6:00 pm and included speakers and lecturers from the Ministry of Environment, Hyundai Motor Company and Daewoo Bus Company as well as NGV systems and technology provider, NGVI.

A total of 67 participants attended the school. The attendees were mainly comprised of public officers, employees of Natural Gas company, employees of city transit companies and others involved in the NGV Industries.

Opening remarks were made by Dean of the ANGVA NGV School, Professor Sung Joon Kim, Ph.D. and were followed by a congratulatory address by ANGVA Vice President, Mr. Kevin Park. Mr. Hyoung Kyu Na, General Secretary of KANGV, made additional remarks on the vision of NGVs in Korea.

Ministry of Environment’s, Mr. Gwangchil Park, spoke on promotion tactics for the spread of NGVs in Korea. NGVI’s Mr. Giljae Lee spoke on Natural Gas bus retrofitting technology and trends.

Hyundai Motor Company’s Mr. Byeongseok Lee and Daewoo Bus’s Mr. Inyoung Roh lectured on maintenance theory and provided training on maintenance for Natural Gas buses. Korea has almost 10,000 NGVs, of which more than 9,500 are buses and HD vehicles.

“This is the 5th time we’ve run the NGV school and it has been our most successful one”, Mr. Kevin Park said.

“The spread of NGVs in Korea has allowed this school to be our most successful to date. We hope to run ANGVA NGV Schools of similar success in Korea and all over the Asia Pacific Region.”
The Government of Armenia has adopted the Program on the measures to reduce hazardous pollution from Transport Sector.

NGVA-Armenia now is working with the Ministry of Environmental Protection on evaluation of energy efficiency and greenhouse gas (GHG) emissions reduction potential from transport sector, for drafting proposal for the Global Environment Facility (GEF), and they work with the Ministry of Urban Development on planning of future development of refuelling stations in Armenia.

Earlier at the end of 2004, the European NGV Association (ENGVA) provided services to Armenia for their application to the United Nations Development Program, working with Anahit Simonian for funding of the fuelling station infrastructure.
ExpoGNV Peru: a market full of potential has been mobilised

In Lima, from the 6th to the 8th of July, the world actors of the NGV industry, such as exhibitors, conference delegates, and a huge number of visitors and authorities, gather together in this event. The positive outcome of the exhibition reflects the vitality of this young marketplace in Latin America.

The political support of the public administration, the strong financial programme, the safety guarantee, and the accommodation provision explain the success of NGV launch and the natural attraction that the exhibition holds.

The three-days experience of the ExpoGNV Perú 2006 and its great conferences has turned into a drive for growth in this promising market. Strong political support and dynamic programmes in this market region were reflected by the fact that more than 3,300 visitors came to the exhibition as well as the participation of many press and media.

Also participating, the authorities of the Peruvian government such as the Minister of Communications and Transports of Peru, José Ortiz Rivera and the Minister of Production, David Lemor Bezdin. Both ministers were pleased with the events, which promotes the use of clean energy and a 60% cheaper fuel than gasoline.

Lemor noted that taking an internal advantage of a gas resource in Camisea will allow Peru to change the dynamic attribute of Peru and mark the success of a financial programme to convert vehicles that help people to acquire NGVs.

Other important person who visited the ExpoGNV Perú 2006...

PVP, a tool for the conquest of NGV

Prensa Vehicular Peru - PVP, prepares three editions of launching. During August, October and December, PVP will circulate on the streets of Peru and Latin America.

PVP is an extraordinary edition that follows, as supplement, the traditional release (9,000 units) of Prensa Vehicular from Argentina. It is printed independently (3,000 units) for Peru.

PVP expresses the potentiality of this market in accordance with the success of ExpoGNV Peru 2006, recently carried out in the Conventions Center Jockey Plaza in Lima. The distribution of the new magazine includes all the visitors of the exhibition.

PVP is an initiative supported by the guarantee of NGV Communications Group, world-wide leader in the spreading of NGV benefits through hard copies and electronic, as well as the organization of events.

PVP established promotional tariffs to stimulate the presence of the companies interested in advertising its products and services, with attractive discounts, for quantity and form of payment.

When conquest is in our hands and our territory...

Contact: Javier Niccolo, jniccolo@ngvgroup.com
Conference and Brief Seminar

Conference and Brief Seminar of ExpoGNV Peru 2006. A CD with didactic and ample summaries of the presentations offered by the speakers was distributed during the meeting. All the technological present and the last experiences of market are at disposal to the interested by U$S 18 more expenses of sending. To request access: info@ngvgroup.com

was the General Director of Hydrocarbons of the Ministry of Mining and Energy, Gustavo Navarro Valdivia. “I expect there will be 50,000 taxis converted to NGV and eight natural gas refuelling stations will facilitate those vehicles in Lima before the end of 2006,” said Gustavo Navarro Valdivia to Prensa Vehicular.

On the other hand, the Director of the Supervisor Organism of the Investments on Energy (OSINERG) remarked that it is important to start using NGVs as “the ideal framework that guarantees the security and the integration on the system”. According to the Director of OSINERG, this was possible thanks to the technologies and experiences in leading countries such as Argentina.

Balance and results

The event was visited by a huge flow of visitors as well as local and international representatives from 28 nations. On the first day, 750 people came to the Jockey Plaza Center plus 980 visitors during the second day. During the last day on Saturday, 8th of July, there were 1,505 the people that came to visit the event. It also attracted many media such as television, radio and specialised magazines.

Other remarkable programme was the First Brief Seminar on NGV with its enormous information. The public was invited to actively participate during Q&A and a debate. They were also equipped with highly valuable information and tools. Certificates were given to the conference delegates and a very didactic CD with the summary of the conference presentations was distributed as well.

Also, the update story of the industry was discussed and analysed during the National Plenary "The actors of the NGV industry in Peru" and in the round tables. Also discussed, the thematic of the potential of this country and the stories of different NGV markets.

ExpoGNV Perú 2006 was an opportunity to get into a market in which everything is to be done. The most important NGV encounter of the year has captured international attention and considered as a new promising business.

A dynamic and colorfull meeting

“In situ” vehicle conversions into NGVs were performed in the Jockey Plaza Center. A complete kit of mechanical conversion procedures were also given to visitors. They also got the opportunity to join a technical tour—visiting refuelling stations and assembling workshops—which allows them to make a direct contact with this industry and to learn deeper the advantages of NGVs.
OEM NGV Price Advantage

The first and second charts which were originally made by Daewoo and Hyundai were modified as the fuel prices change over time. The 2004 and 2005 diesel and CNG prices were previously in US$. We converted them into Euro with current currency rate of US$1 = Euro 0.835446. However, main data, such as fuel consumption, remain the same as it was used as a reference in the calculation above.

In the comparison 2004-2006 chart, you can see that using a CNG bus could be more and more profitable since diesel price continues to increase a lot while CNG price either increased a little or even decrease (2005-2006).

You can calculate your country price advantage by using your local fuel prices. The data that you can use for your calculation is as follows:

Set a mileage, for example, 90,000km/year;
Fuel consumption for Daewoo bus:
- Diesel: 2.8km/litre diesel
- CNG: 2.1km/m3 CNG
Fuel consumption for Hyundai bus:
- Diesel: 2.3 km/litre diesel
- CNG: 2.1 km/litre CNG

Use your current CNG and diesel prices: current fuel price x (90,000/fuel consumption).

Fuel savings may vary for each country as fuel prices (and fuel energy contents) also vary.

Show the comparison chart above to your government and local public transport companies,…and buy CNG buses.
Omnitek CNG Engine Completes 50,000 km Demonstration Project in Thailand

Omnitek Engineering, Corp., San Marcos California, is happy to report that one of it’s 200 horsepower natural gas engines has completed a 50,000 km demonstration project in Thailand and has surpassed all expectations.

The 8-month project resulted in an average savings to the operator of 63% in fuel costs alone. Maintenance costs were also lower when compared to a diesel engine. The vehicle was a cement truck, covering about 400 to 500 km every day.

Local support came from the Omnitek representative in Thailand, E2E Co., Ltd. in Bangkok, who was also responsible for system integration and scheduled maintenance for the engine.

The 6-cylinder Perkins based 5.8 liter Omnitek CNG engine is equipped with Omnitek’s advanced engine management system, which features electronic fuel injection, closed-loop mixture control and six individual ignition coils.

E2E and Omnitek are currently preparing to put an additional 200 engines into service before the end of the year.

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