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UVOĐENJE EKOLOŠKIH DIREKTIVA EUROPSKE UNIJE U PRAVNI SUSTAV REPUBLIKE HRVATSKE

Uvodno izlaganje uz raspravu Okruglog stola na simpoziju Goriva 2006

Sažetak

Zbog sve snažnijih gospodarskih i političkih integracija, posebice na europskom kontinentu, pojačavaju se nastojanja u ujednačavanju normi i propisa u raznim područjima gospodarstva. Ovo se posebice odnosi na područje kvalitete i zaštite okoliša, što ima vrlo veliki utjecaj na stanje i razvoj naftne industrije.Postizanje sadašnjih i pogotovo budućih zahtjeva kvalitete goriva predstavlja osnovni uvjet opstanka na tržištu za svaku kompaniju. Promjene su takve da će imati vrlo ozbiljne posljedice na kompanije koje ne budu na vrijeme reagirale na odgovarajući način, posebice u dosezanju vrlo strogih parametara kvalitete. Prema tome i razvoj naftne privrede u Hrvatskoj mora ići u pravcu postizanja standarda koji važe u EU. Premda naša zemlja još nije politički integrirana u EU, velikim dijelom svog gospodarstva vezana je uz EU što implicira i prihvaćanje legislative i normi EU.

Uvod

Zbog velike disproporcije u razvijenosti naše zemlje i EU, poglavito u usporedbi sa «starim» članicama EU, uvođenje tzv. «čistih» goriva mora ići postupno s obzirom na ekonomsko stanje u zemlji i tehnološkim mogućnostima rafinerija, ali isto tako i s obzirom na stanje (starost) motornog fonda u zemlji. Naime, još uvijek je relativno velika zastupljenost vozila starijih tipova, koja nemaju suvremene sustave za pročišćavanje ispušnih plinova koji zahtijevaju primjenu goriva prema najnovijim specifikacijama. Ovakav pristup postupnog uvođenja «čistih» goriva poštuje i socioekonomske uvjete okruženja, koje prihvaćaju i zakonodavne institucije i proizvođači automobila.

Hrvatska, kao relativno najrazvijeniji dio geografskog područja jugoistočne Europe, a koji još nije dio EU, i hrvatska naftna kompanija INA-Industrija nafte, d.d., kao

vodeća naftna kompanija ovog područja, čine velike napore u području rafinerijske prerade kako bi se dostigla kvaliteta goriva sukladno normama EU. Cilj je doseći zahtjeve kvalitete koji će važiti u EU od 2009. / 2010. godine (EURO V).

To najbolje oslikava tzv. Svjetska povelja o gorivu – The World-Wide Fuel Charter (WWFC), kojom se preporučuju globalni standardi za kvalitetu goriva uzimajući u obzir tehnologije za pročišćavanje u vozilima i zahtjeve korisnika automobila širom svijeta. Drugim riječima, to je relativno nepristrana globalna harmonizacija kvalitete goriva, koja uzima u obzir očekivanja potrošača i mogućnosti tehnologija za kontrolu emisije iz vozila na određenim područjima tako da korist imaju i kupci i društveno – politička zajednica.

Pokretačka sila, koja određuje sadašnju i buduću kvalitetu goriva je svakako zaštita okoliša – u ovom slučaju smanjenje ispuštanja štetnih tvari u zrak iz automobila, odnosno njihovo dovođenje u strogo regulirane norme /zahtjeve.

Da bi se to postiglo u optimalnim i prihvatljivim uvjetima, mora se poštovati međuovisnost u sustavu: v o z i l o ↔ e m i s i j e ↔ g o r i v o.

Međuovisnosti u ovom sustavu temelj su za optimalno zakonodavstvo koje regulira područje zaštite čovjekovog okoliša, odnosno emisija.

Zakonodavno reguliranje emisija i kvalitete goriva u EU

Zakonodavni okvir reguliranja emisija u EU predstavljaju *direktive*.

Direktiva je zakonodavni akt EU koji zahtijeva od zemalja članica postizanje određenog rezultata bez uvjetovanja sredstava za postizanje toga rezultata ili cilja. Direktive ostavljaju članicama određen stupanj slobode da se primijene kao egzaktna pravila. Direktive su samo poveznica zemalja članica kojima su upućene i mogu biti upućene jednoj zemlji, grupi zemalja ili svima.

Implementacijom direktiva se utvrđuju usuglašeni ciljevi koji se provode u zemljama članicama, ali ostavljajući slobodu izbora puta za njihovo postizanje (održavajući obvezu postizanja rezultata): “Direktiva treba biti spona prema rezultatu koji se treba postići upućena svakoj zemlji članici, ali se svakom nacionalnom zakonodavstvu treba ostaviti izbor forme i metoda provedbe.” (art. 249, ex. 189)

Provođenje odredbi direktiva neposredno utječe na sustav *vozilo – emisije – gorivo*:

- Automobilska industrija u vozila ugrađuje sve sofisticiranije i djelotvornije sustave za smanjenje emisije.
- Djelotvornost sustava za pročišćavanje ispušnih plinova iz automobilskih motora povećava se smanjenjem određenih spojeva i/ili grupa spojeva u gorivu – poglavito sumpora.
- Sve stroža ograničenja emisija definirana EURO zahtjevima prisiljavaju rafinerije na uvođenje novih tehnologija – poglavito za hidroobradu goriva.

Direktivama Europske unije reguliraju se i emisije iz vozila i temeljni parametri kvalitete goriva.

Direktive – emisije iz vozila:

- *Direktiva 70/220/EEC* je osnovna direktiva nadopunjavana nekoliko puta; neke od najvažnijih dopuna uključuju emisijske zahtjeve:

- Euro 1 zahtjevi (EC 93): direktive 91/441/EEC (samo za putnička vozila) ili 93/59/EEC (putnička i laka komercijalna vozila)
- Euro 2 zahtjevi (EC 96): direktive 94/12/EC ili 96/69/EC
- Euro 3/4 zahtjevi (2000./2005.): direktiva 98/69/EC, dopunjena 2002/80/EC
- Euro 5 zahtjevi (2008): predloženo prilagođavanje *[COM(2005)683] publicirano u prosincu 2005. (?)*

Direktive* – kvaliteta motornih goriva:

- Benzin:

Direktiva 78/611/EEC → ograničava se sadržaj olova u benzinu s olovom najviše 0.4 g/l

Direktiva 85/210/EEC → ograničava se sadržaj olova u benzinu s olovom najviše 0.15 g/l; uvodi se bezolovni motorni benzin - BMB

Direktiva 85/536/EEC → regulira se dodavanje oksigenata

Direktiva 87/416/EEC → zabranjuje se olovo u regular benzinu.

- Dizel / plinska ulja:

Direktiva 75/716/EEC → ograničava se sadržaj sumpora u plinskom ulju najviše 0.5 % / 0.3 % od X. mj. 76. / X. mj. 80.

Direktiva 93/12/EEC → ograničava se sadržaj sumpora u dizelskom gorivu najviše 0.2 % / 0.05 % od X. mj. 94. / X. mj. 96.

Direktiva 1999/32/EC → dopuna direktive 93/12/EEC; ograničava se sumpor u plinskom ulju/marinskom plinskom ulju na 0.2 % od VII. mj. 2000. i 0.1 % od I. mj. 2008.

Direktiva 2005/33/EC → dopuna direktive 1999/32/EEC; sumpor u marinskom plinskom ulju 0.1 % od I. mj. 2010.

Auto-oil Program (počeo 1994.) daje temeljne osnove za daljnje definiranje kvalitete motornih goriva:

- *Direktiva* 98/70/EC ograničava sadržaj sumpora u BMB na 150 / 50 mg/kg, odnosno za dizelsko gorivo na 350 / 50 mg/kg od 01.01.2000./01.01.2005.
- *Direktiva* 2000/71/EC donosi prilagodbu čl. 10 Direktive 98/70/EC (metode mjerenja)
- *Direktiva* 2003/17/EC donosi dopunu Direktive 98/70/EC; ograničava sadržaj sumpora u bezolovnom motornom benzinu i dizelskom gorivu najviše 10 mg/kg od 01.01.2009.

* *navedene su slijedom donošenja*

Zakonodavno reguliranje kvalitete goriva u Hrvatskoj

Temeljem Zakona o zaštiti okoliša (NN 82/94 i 128/99) i Zakona o zaštiti zraka (NN 178/04) donošene su uredbe:

- *Uredba o kakvoći tekućih naftnih goriva (NN 76/97)*
  Propisuje EURO II zahtjeve kvalitete - izuzeće za sumpor u Hrvatskoj (bezolovni benzin = 1000 mg/kg do 1.07.02.; dizelsko gorivo = 5000 mg/kg do 31.12. 99.)
- *Uredba o kakvoći tekućih naftnih goriva – izmjene i dopune (NN 66/99)*
  Usklađivanje s pristupom hrvatske u WTO; uvode se kontingenti – dozvola za količine koje odstupaju od kvalitete propisane Uredbom
- *Uredba o kakvoći tekućih naftnih goriva (NN 83/02)*
  Propisuje EURO III zahtjeve kvalitete za dizelsko gorivo – Eurodizel (EN 590:1999)
- *Uredba o kakvoći tekućih naftnih goriva – izmjene i dopune (NN 100/04)*
  Propisuje EURO III zahtjeve kvalitete za bezolovni benzin Eurosuper 95 (EN 228:1999); u Eurodizel se može dodati najviše 5 % v/v FAME)
- *Uredba o kakvoći tekućih naftnih goriva – izmjene i dopune (NN 98/05)*
  Propisuje EURO III / IV zahtjeve kvalitete za bezolovni benzin i dizelsko gorivo (Eurosuper / Eurosuper NS; Eurodizel / Eurodizel NS)
- *Uredba o kakvoći tekućih naftnih goriva (NN 53/06)*
  Propisuje EURO IV / V zahtjeve kvalitete za bezolovni benzin i dizelsko gorivo (Eurosuper / Eurosuper BS; Eurodizel / Eurodizel BS)

  Odstupanja od čl. 18 i 19 Uredbe (kontingenti) dopušta se za:

Bezolovni benzin (Super 95, Super plus 98)	do 31.12.2008.; od 1.01.2009. najviše 10 mg/kg S
Dizelsko gorivo	do 31.12.2008.; od 1.01.2009. najviše 10 mg/kg S
Plinska ulja / loživo ulje	do 31.12.2009.; od 1.01.2010. najviše 0.1 / 1.0 % m/m S
Brodska plinska ulja	do 31.12.2009.; od 1.01.2010. najviše 0.1 % m/m S

Vrste i kvaliteta motornih goriva u Hrvatskoj

Sukladno važećoj Uredbi o kakvoći tekućih naftnih goriva na tržištu Hrvatske postoje sljedeće vrste goriva:

- Bezolovni motorni benzin - EUROSUPER PLUS 98 (nije u skladu s Euro zahtjevima kvalitete)
- Bezolovni motorni benzin - SUPER 95 (nije u skladu s Euro zahtjevima kvalitete)
- Bezolovni motorni benzin - EUROSUPER 95 (EN 228:2004) / EUROSUPER BS

- Dizelsko gorivo - DIESEL** (nije u skladu s Euro zahtjevima kvalitete)
- Dizelsko gorivo - EURODIESEL** (EN 590:2004) / EURODIESEL BS**

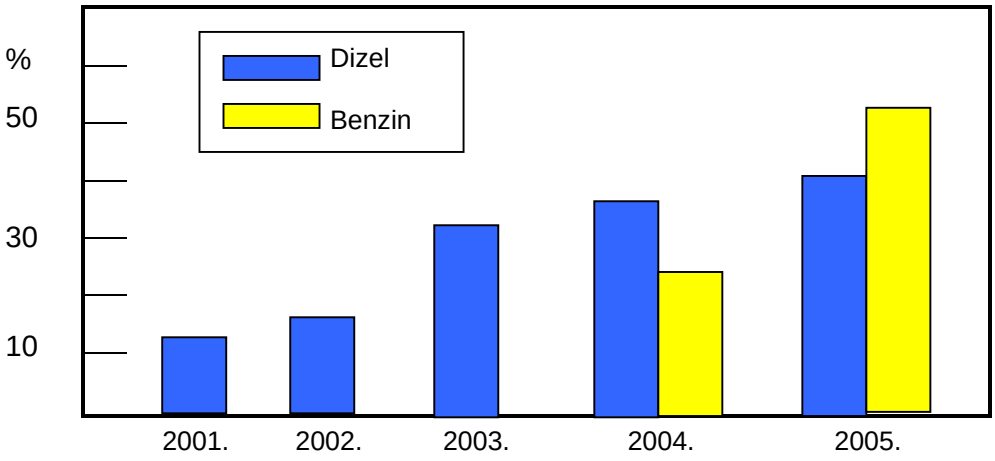
Držeći se načela o postupnom uvođenju goriva sukladnih Euro zahtjevima kvalitete, odnosno poštujući prethodno navedene kriterije, uvođenje ovih goriva na tržište Hrvatske odvijalo se u sljedećem vremenskom razdoblju:

- *Eurodizel* (Euro III) ☞ svibanj 2001. (1,4 godine od uvođenja u EU – 2000. g.)
- *Eurosuper 95* (Euro III) ☞ travanj 2004.(4,3 godine od uvođenja u EU – 2000.g.)
- *Eurodizel* / *Eurodizel BS* (Euro IV / V) ☞ siječanj 2006. (1 godina od uvođenja u EU – 2005. godine)
- *Eurosuper 95* / *Eurosuper 95 BS* (Euro IV / V) ☞ siječanj 2006. (1 godina od uvođenja u EU – 2005. godine)

Za goriva koja ne udovoljavaju Euro zahtjevima kvalitete (Super 95, Dizel i Super plus 98) mora se dobiti odobrenje od nadležnih državnih tijela za plasman na tržište točno određenih količina ovih goriva.

Udio potrošnje motornih goriva Euro zahtjeva kvalitete u Hrvatskoj neprestano raste, počevši od vremena njihovog uvođenja na tržište Hrvatske (slika 1).

Slika 1 – Udio potrošnje goriva «Euro» kvalitete na tržištu Hrvatske



Od vremena kada je na tržište Hrvatske 2001. godine uvedeno dizelsko gorivo, sukladno tada važećim Euro III zahtjevima kvalitete (Eurodizel) njegov udjel u prodaji dizelskih goriva je sa cca 10 % u 2001. godini porasao na cca 40 % u 2005. godini.

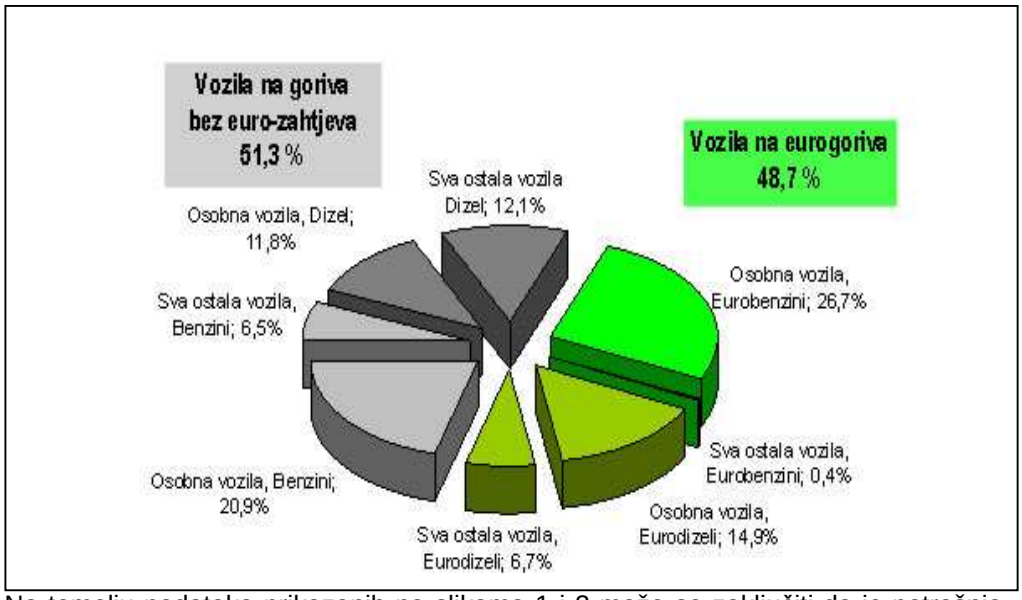
** *nazivi istaknuti na benzinskim postajama*

Slična situacija je i s bezolovnim benzinom Eurosuper 95; prilikom uvođenja 2004. godine njegov udjel u prodaji benzina bio je cca 25 %, da bi u 2005. već porastao iznad 50 %.

Da bi se utvrdili stvarni zahtjevi motornog fonda u zemlji i time dobio realni uvid u vrstu goriva koja se zahtijeva u primjeni, a da odgovara pojedinim tipovima vozila, posebno s obzirom na starost, odnosno opremljenost uređajima za pročišćavanje ispušnih plinova, nadležno Ministarstvo pokrenulo je izradu studije. Studija je utvrdila stvarne potrebe vozila s obzirom na kvalitetu goriva u Hrvatskoj. Nosilac projekta bio je Hrvatski autoklub - HAK.

Temeljem provedenih snimanja i nakon obrade rezultata dobila se slika realnog stanja (sl. 2).

Slika 2: Udjeli vozila koja mogu koristiti pojedine vrste goriva u RH u 2006. godini (prema studiji HAK-a)



Na temelju podataka prikazanih na slikama 1 i 2 može se zaključiti da je potrošnja goriva Euro zahtjeva kvalitete bila veća nego što zahtijeva postojeći motorni fond zemlje (2006. godina):

- potrošnja Eurosupera 95 bila je za cca 23 % veća nego što to zahtijeva vozni park,
- potrošnja Eurodizela bila je za cca 18 % veća nego što to zahtijeva vozni park.

Usporedbe radi u tablici 1 dan je pregled vrsta (asortimana) motornih goriva u zemljama okruženja.

Tablica 1: Motorna goriva u zemljama okruženja *

ZEMLJA	STANJE NA TRŽIŠTU	PROIZVODNJA
Slovenija	BMB i dizel (Euro IV / V)	- - -
Italija	BMB i dizel (Euro IV / V)	BMB i dizel (Euro IV / V)
Madžarska	BMB i dizel (Euro IV / V)	BMB i dizel (Euro V)
Austrija	BMB i dizel (Euro IV / V)	BMB i dizel (Euro V)
B i H	BMB i dizel (Euro III)+ MB 98 s olovom	- - -
Rumunjska	BMB i dizel (Euro III, Euro IV od I. mj. 2007.)	BMB i dizel (Euro III/IV)
Bugarska	BMB i dizel (Euro III, Euro IV od I. mj. 2007.)	BMB i dizel (Euro III/IV)
Srbija	MB s olovom, BMB, D2, BMB i dizel (Euro III i Euro IV)	Mb s olovom, D2, BMB i dizel (Euro III)
Hrvatska	BMB i dizel (Euro IV/V) + BMB, Dizelsko gorivo (kontingenti)	BMB i dizel (Euro IV) + BMB i dizel

** moguće su promjene*

Primjena biogoriva

Zbog stalnog rasta cijena nafte na svjetskom tržištu, kao i zbog sve strožih propisa u zaštiti okoliša, zakonodavno se počela regulirati njihova primjena – bilo kao čistih goriva, bilo u smjesi s fosilnim gorivima.

U EU je primjena biogoriva regulirana Direktivom 2003/30/EC. Navedenom direktivom se promiče uporaba biogoriva u zemljama EU tako da do 2005. godine njihov udjel u ukupnom udjelu motornih goriva bude 2 %, a do 2010. godine 5,75 %.

U Hrvatskoj je kvaliteta i uporaba biogoriva regulirana Uredbom o kakvoći biogoriva (NN 141/05). Sve bitne odrednice u Uredbi su prenesene iz Direktive 2003/30/EC. Uredba je stupila na snagu 1.01.2006. godine, a 2007. je prva godina za koju se donosi plan stavljanja biogoriva u promet na domaće tržište. Planom se određuje obvezna količina biogoriva koju dobavljač goriva mora staviti u promet na domaće tržište. Još nije preciziran udio goriva koji bi se trebao staviti na tržište u 2007. godini a u skladu sa čl. 16 Uredbe.

Mogući problemi u primjeni Uredbe u Hrvatskoj ogledaju se prvenstveno u slijedećem:

- (neadekvatna) sirovinska osnova u poljoprivrednoj proizvodnji,
- neriješeni poticaji u poljoprivredi,
- nedostatni kapaciteti za proizvodnju biodizela (FAME) i bioetanola,
- infrastruktura kod proizvođača i distributera goriva,
- kvaliteta goriva sukladna Euro zahtjevima kvalitete,
- struktura i tipovi vozila (vozni park).

Primjena biogoriva, pored nesumnjivih ekoloških prednosti, može izazvati i određene probleme prilikom skladištenja ili korištenja, kao što su npr. problem stabilnosti, niskotemperaturna svojstva, isparivost, itd.

Motorni benzin (norma EN 228:2004, dopušta maks. 5 % v/v etanola)

Prednosti:

- Povećava se oktanska baza ("pool") benzina
- Benzini su ekološki prihvatljiviji (smanjenje emisija)
- Određeno smanjenje uvoza nafte

Nedostaci / problemi u sustavu:

- Povećani problemi u skladištenju i prijevozu (higroskopnost)
- Uvođenje novih aditiva (antikorozijski, biocidi)
- Formulacije motornih benzina (problemi isparivosti u skladištenju, logistici i primjeni)
- Veća cijena ukoliko nema poticaja

Dizelsko gorivo (norma EN 590:2004, dopušta maks. 5 % v/v biodizela – FAME, metilni ester masnih kiselina)

Prednosti:

- Povećava se cetanska baza ("pool") plinskih ulja
- Gorivo je ekološki prihvatljivije (smanjenje emisija)
- Poboljšavaju se primjenska svojstva goriva (mazivost)
- Određeno smanjenje uvoza nafte
- Biodizel (FAME) se može koristiti kao čista komponenta u svim novijim dizel vozilima

Nedostaci / problemi u sustavu:

- Povećani problemi u skladištenju i prijevozu (higroskopnost)
- Uvođenje novih aditiva (antikorozijski, biocidi)
- Odvojeni sustavi kada se koristi kao čista komponenta (100 %)
- Veća cijena ukoliko nema poticaja

Zaključak

1. Hrvatska postupno uvodi goriva Euro zahtjeva kvalitete na tržište:
    - BMB - Euro III (4.3 god. od uvođenja u EU)
    - Dizel - Euro III (1.4 god. od uvođenja u EU)
    - BMB i DG - Euro IV (1 god. od uvođenja u EU)
    - BMB i DG - Euro V (istovremeno – 2009. ?)
2. Sadašnje vrste goriva odgovaraju stanju motornog fonda u Hrvatskoj.
3. Potrošnja goriva po vrstama je neracionalna s obzirom na motorni fond (razlog: premala razlika u cijeni s obzirom na kvalitetu, tendenciozan i često nestručan nastup javnih medija, …).
4. Veća potrošnja goriva Euro kvalitete u vozilima bez sustava za obradu ispušnih plinova ne doprinosi smanjenju emisije.
5. Trend pomlađivanja motornog fonda u Hrvatskoj uvjetovat će stalno povećanje udjela Euro kvalitete.
6. Ulazak Republike Hrvatske u EU (2009./ 2010.?) izjednačit će zahtjeve kvalitete goriva s EU za što se stvaraju pretpostavke u hrvatskoj naftnoj industriji (modernizacija rafinerija).
7. Naftna industrija većine zemalja okruženja slijedi trendove kvalitete goriva (neke su ispred rokova); ostale zemlje počinju ostvarivati planove modernizacije rafinerija.
8. Korištenje biogoriva (100 % ili u smjesi s fosilnim gorivima) postaje obveza.
9. Prerada nafte u Hrvatskoj mora biti spremna proizvesti goriva Euro kvalitete i osigurati dovoljne količine za tržište bez obzira na zakonodavne obveze – to naprosto zahtijeva tržište.

INTRODUCTION OF THE EUROPEAN UNION ENVIRONMENTAL DIRECTIVES INTO THE LEGAL SYSTEM OF THE REPUBLIC OF CROATIA

Abstract

Due to increasing economic and political integrations, especially on the European Continent, efforts are being increased to co-ordinate standards and regulations in different areas of the economy. This particularly refers to the area of environmental quality and protection, having a major impact on the condition and development of the oil industry.

The achievement of the present and especially the future fuel quality requirements constitutes the basic condition of market survival for any company. Changes are such that they shall bear most serious consequences on companies not responding in a timely and adequate manner, especially as regards the achievement of most stringent quality parameters.

That is why oil economy development in Croatia must also go in the direction of achieving standards valid in the EU. Although our country has not yet joined the EU, a large part of its economy is linked with the Union, implying also the acceptance of its legislation and standards.

Introduction

Due to a major disproportion as regards our country's development with regard to that of the EU, especially when it comes to its «old» members, the introduction of the so called «clean» fuels must proceed gradually, given the country's economical condition and the refineries' technological possibilities, but also given the condition (the age) of the country's vehicle pool. Namely, there is still a relatively high share of the older makes, not equipped with modern systems for the purification of exhaust gases, requiring fuel application according to the latest specifications.

Such an approach of gradual introduction of «clean» fuels also respects the socio–economic conditions of its environment, adopted by both legislators and automobile manufacturers.

Croatia, being relatively the best developed part of the geographic area of Southeastern Europe not yet part of the EU, and its domestic oil company INA-Industrija nafte, d.d., as the leading oil corporation in the area, are investing huge efforts into the area of refinery processing, in order to achieve fuel quality in keeping with the EU standards. The purpose is to achieve quality requirements that will be valid in EU in 2009 / 2010 (EURO V).

This is best illustrated by the so called World–Wide Fuel Charter (WWFC), recommedning global standards for fuel quality, taking into account the status of treatment technologies in vehicles and automobile users' requirements worldwide. In other words, it is a relatively impartial global harmonization of the fuel quality, taking into account consumer requirements and possibilities of technologies of vehicle emission control in certain areas, to the benefit of both the consumers and the socio–political community.

The driving force determining both the present and the future fuel quality is by all means environmental protection – in this case reduced pollutants automotive emission i.e. their compliance with strictly regulated standards /requirements.

In order to achieve this under optimal and acceptable conditions, the interdependence within the system must be respected: vehicle $\leftrightarrow$ emission $\leftrightarrow$ fuel.

Interdependences in the system are the basis for optimal legislation regulating the area of environmental protection i.e. emissions.

Legislative regulation of fuel emission and quality in the EU

The legislative framework of emission regulation in the EU are the *directives*.

A directive is a legislative act of the EU requiring from its member state to achieve a given result, without conditioning the means for achieving the result or objective in question. Directives leave to the member states a certain degree of freedom to be applied as exact rules. Directives are merely a link of the member states they are directed to and as such may be directed to a single country, a group of countries or to all member states.

Through the implementation of directives, co-ordinated objectives are being determined, implemented in the member states, but leaving free choice as to the manner of their achievement (keeping the commitment to achieve results): "Directive should be the link to the result to be achieved, directed to each member state, leaving to each national legislation the choice of the form and method of implementation." (art. 249, ex. 189)

Implementing stipulations of directives has an immediate impact on the system vehicle – emission – fuel:

- Automobile industry keeps introducing into vehicles increasingly sophisticated and efficient emission reduction systems.
- Efficiency of the automotive engine exhaust treatment systems is increased through the reduction of certain compounds and/or groups of compounds in the fuel – especially sulphur.
- Increasingly stringent emission limitations defined through EURO requirements force the refineries to introduce new technologies – particularly those for fuel hydrotreatment.

EU Directives regulate both vehicle emissions and basic fuel quality parameters.

Directives – vehicle emission:

- *Directive 70/220/EEC* is the basic directive, supplemented several times, while some of the most significant supplements include emission requirements:

- Euro 1 requirements (EC 93): directive 91/441/EEC (for passenger vehicles only), or 93/59/EEC (passenger and light-duty cargo vehicles)
- Euro 2 requirements (EC 96): directive 94/12/EC or 96/69/EC
- Euro 3/4 requirements (2000./2005.): directive 98/69/EC, supplemented by 2002/80/EC
- Euro 5 requirements (2008): adaptation suggested *[COM(2005)683] published in Dec. 2005. (?)*

Directives* – Motor Fuel Quality:

- Petrol:

Directive 78/611/EEC – limits leaded gasoline lead content to max. 0.4 g/l
Directive 85/210/EEC – limits leaded gasoline lead content to max. 0.15 g/l; introduction of unleaded petrol
Directive 85/536/EEC – oxigenate addition regulated
Directive 87/416/EEC – lead phase out in *regular* petrol.

- Diesel / gas oils:

Directive 75/716/EEC – limits the gas oil sulphur content to max. 0.5 % / 0.3 % from Oct. 76 / Oct. 80.
Directive 93/12/EEC - limits the diesel fuel sulphur content to max. 0.2 % / 0.05 % from Oct. 94 / Oct. 96.
Directive 1999/32/EC - supplementing directive 93/12/EEC; limits the gas oil / marine gas oil sulphur content to 0.2 % from July 2000 and to 0.1 % from Jan. 2008.
Directive 2005/33/EC - supplementing directive 1999/32/EEC; sulphur in marine gas oil 0.1 % from Jan. 2010.

The Auto-oil Program (launched in 1994) provides the basics for further motor fuel quality definition:

- D*irective* 98/70/EC limits sulphur content in BMB to 0.015 / 50 mg/kg, i.e. in diesel fuel to 0.035 / 50 mg/kg from 01/01/2000 / 01/01/2005
- *Directive* 2000/71/EC adjusts art. 10 of Directive 98/70/EC (measurement methods)
- *Directive* 2003/17/EC supplements Directive 98/70/EC; limits sulphur content in unleaded motor gasoline and diesel fuel to max. 10 mg/kg from 01/01/2009.

* *listed in the order of appearance*

Legislative Regulation of Fuel Quality in Croatia

Under the Environmental Protection Act (Official Gazette 82/94 and 128/99) and the Air Protection Act (OG 178/04), the following regulations have been passed:

- *Regulation on the Quality of Liquid Oil Fuels (OG 76/97)*
  Prescribes EURO II quality requirements – exemption for sulphur in RC (unleaded gasoline = 1000 mg/kg until 1/07/02.; diesel fuel = 5000 mg/kg until 31/12/ 99.)
  - *Regulation on the Quality of Liquid Oil Fuels – Ammendments and Supplements (OG 66/99)*
    Co-ordination with Croatia's s joining the WTO; contingents introduced – permits for quantities not complying with the quality stipulated by the Regulation
  - *Regulation on the Quality of Liquid Oil Fuels (NN 83/02)*
    Stipulates EURO III diesel fuel quality requirements - Eurodizel (EN 590:1999)
  - *Regulation on the Quality of Liquid Oil Fuels – Ammendments and Supplements (NN 100/04)*
    Stipulates EURO III quality requirements for unleaded gasoline Eurosuper 95 (EN 228:1999); Eurodizel may be added max, 5 %v/v FAME)
  - *Regulation on the Quality of Liquid Oil Fuels – Ammendments and Supplements (NN 98/05)*
    Stipulates EURO III / IV quality requirements for unleaded gasoline and diesel fuel (Eurosuper / Eurosuper NS; Eurodizel / Eurodizel NS)
  - *Regulation on the Quality of Liquid Oil Fuels (NN 53/06)*
    Stipulates EURO IV / V quality requirements for unleaded gasoline and diesel fuel (Eurosuper / Eurosuper BS; Eurodizel / Eurodizel BS)

  Aberrations from art. 18 and 19 of the Regulation (contingents) is permitted for:

Unleaded petrol	
(Super 95 and Super plus 98)	by 31/ 12/ 2008; from 1/01/2009 max.10 mg/kg S
Diesel fuel	by 31/ 12/ 2008; from 1/01/2009 max. 10 mg/kg S
Gas oils / Fuel oil	by 31/ 12/ 2009; from 1/01/2010 max. 0.1 % m/m S/1.0 % m/m S
Marine gas oils	by 31/ 12/ 2008; from 1/01/2010 max. 0.1 % m/m S

Types and Quality of Motor Fuels in Croatia

In compliance with the valid Directive on the Quality of Liquid Ol Fuels on Croatian Market, there are the following fuel types:

- Unleaded petrol - EUROSUPER PLUS 98 (not in compliance with Euro quality requirements)
- Unleaded petrol - SUPER 95 (not in compliance with Euro quality requirements)

- Unleaded petrol - EUROSUPER 95 (EN 228:2004) / EUROSUPER 95 BS
- Diesel fuel – DIESEL (not in compliance with Euro quality requirements)
- Diesel fuel - EURODIESEL (EN 590:2004) / EURODIESEL BS

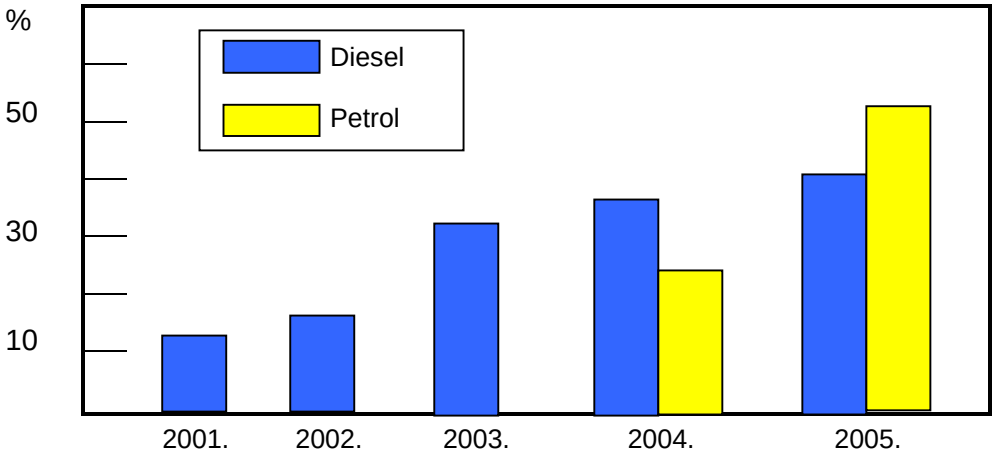
Abiding by the principle on gradual introduction of fuels matching Euro quality requirements i.e. respecting the above mentioned criteria, the introduction of the said fuels into Croatian market was proceeding according to the following schedule :

- *Eurodizel* (Euro III) ☞ May 2001 (1.4 years since the introduction in the EU – in 2000)
- *Eurosuper 95* (Euro III) ☞ April 2004 (4.3 years since the introduction in the EU – in 2000)
- *Eurodizel* / *Eurodizel BS* (Euro IV / V) ☞ January 2006 (1 year since the introduction in the EU – in 2005)
- *Eurosuper 95* / *Eurosuper 95 BS* (Euro IV / V) ☞ January 2006 (1 year since the introduction in the EU – in 2005)

For the fuels not matching the Euro quality requirements (Super 95, Dizel and Super plus 98), a clearance must be issued by the competent state bodies for marketing strictly determined volumes.

The consumption share of Euro quality requirements motor fuels in Croatia is constantly increasing, ever since their introduction into the Croatian market (Fig. 1).

Figure 1 – Consumption share of Euro quality fuels on Croatian market

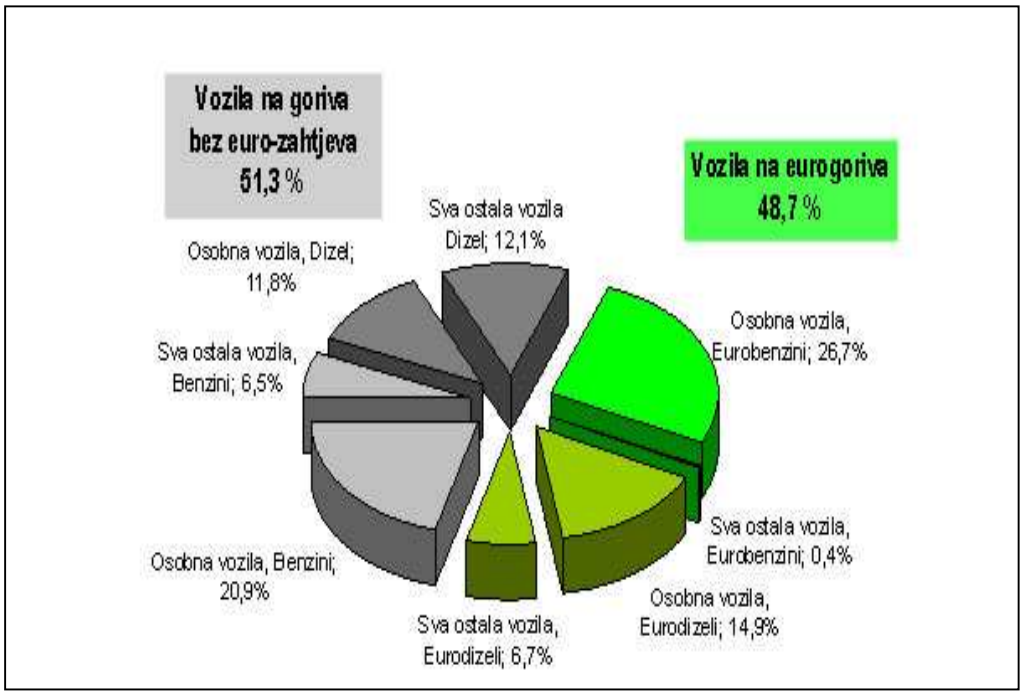


Ever since the introduction of diesel fuel into the Croatian market in 2001 in keeping with the then valid Euro III quality requirements (Eurodizel), its share in the sale of diesel fuels has gone from ca. 10 % in 2001 to ca. 40 % in 2005.

Similar is true of the unleaded gasoline Eurosuper 95; during its introduction in 2004, the share in gasoline sales was ca. 25 %, only to rise above 50% by 2005.

In order to establish real requirements of the country's vehicle pool and thus obtain a realistic insight into the kind of fuel required for consumption, matching individual vehicle types, especially given their age i.e. equipment by exhaust gas treatment systems, the competent Ministry has launched the elaboration of a study. The study has established real vehicle needs in terms of fuel quality in Croatia. The project bearer was the Croatian Automobile Authority – HAK. Based on conducted research, after results processing, a realistic picture was obtained (Figure 2).

Figure 2: Share of vehicles capable of using individual fuel types in Croatia in 2006 (according to the National Automobile Authority study)



/Vehicles using fuels without Euro-requirements 51.3%
Vehicles using fuels with Euro-requirements 48.7%
Passenger vehicles, diesel fuel 11.8
All other vehicles, diesel fuel 12.1
Passenger vehicles, Euro gasoline 26.7
All other vehicles, gasoline 6.5
Passenger vehicles, gasoline 20.9
All other vehicles, Euro gasoline 0.4
All other vehicles, Euro diesel fuel 6.7
Passenger vehicles, Euro diesel fuel 14.9

Based on data shown in Figures 1 and 2, one may conclude that the consumption of fuel matching Euro quality requirements was higher than required by the country's existing vehicle pool (2006):

- consumption of Eurosuper 95 was ca. 23% higher than required by the pool,
- consumption of Eurodizel was ca. 18% higher than required by the vehicle pool.

Table 1: Motor fuels in surrounding countries *

COUNTRY	MARKET CONDI ION	PRODUCT ON
Slovenia	Unleaded petrol and diesel fuel (Euro IV/V)	- - -
Italia	Unleaded petrol and diesel fuel (Euro IV/ V)	Unleaded petrol and diesel fuel (Euro IV / V)
Hungary	Unleaded petrol and diesel fuel (Euro IV/ V)	Unleaded petrol and diesel fuel (EuroV)
Austria	Unleaded petrol and diesel fuel (Euro IV/ V)	Unleaded petrol and diesel fuel (EuroV)
B & H	Unleaded petrol and diesel fuel (Euro III)+ Petrol 98 (leaded)	- - -
Romania	Unleaded petrol and diesel fuel (Euro III, Euro IV as of Jan. 2007)	Unleaded petrol and diesel fuel (Euro III/IV)
Bulgaria	Unleaded petrol and diesel fuel (Euro III, Euro IV as of Jan. 2007)	Unleaded petrol and diesel fuel (Euro III/IV)
Serbia	Petrol (leaded), Unleaded petrol, Diesel D2, Unleaded petrol and diesel fuel (Euro III and Euro IV)	Petrol (leaded), Diesel D2, Unleaded petrol and diesel fuel (Euro III)
Croatia	Unleaded petrol and diesel fuel (Euro IV/V) + Unleaded petrol, Diesel fuel (contingents)	Unleaded petrol and diesel fuel (Euro IV) + Unleaded petroland, Diesel fuel

** changes possible*

Application of Biofuel

Due to a constant oil price increase on the global market, as well as due to increasingly stringent environmental protection regulations, legislation has begun regulating their application – either as pure fuels, or blended with fossil fuels.

In the EU, the application of biofuels is regulated by the Directive 2003/30/EC. The said directive promotes the use of biofuels in the EU countries, so that, by 2005, their share in the total share of motor fuels should be 2%, and, by 2010, 5.75%.

In Croatia, the quality and use of biofuels has been regulated by the Regulation on the Quality of Biofuels (OG 141/05). All the important guidelines have been taken over from the Directive 2003/30/EC. The Directive has entered into force on 1/01/2006, and 2007 is the first year envisaging the local marketing of biofuels. The plan specifies the mandatory volume of biofuels that the fuel supplier has to market locally. The fuel share to be marketed by 2007, in keeping with art. 16 of the Regulation, has not been determined yet.

Possible problems regarding the application of the Regulation in Croatia regard more or less the following:

- (inadequate) raw material basis in agricultural production,
- unresolved agricultural incentives,
- insufficient capacities for producing biodiesel fuel (FAME) and bioethanol,
- infrastructure at the disposal of both producers and distributors,
- fuel quality consistent with Euro quality requirements,
- structure and types of vehicles («vehicle pool»).

Biofuel application, apart from obvious environmental benefits, is also associated with certain problems, so that the entire system needs to be balanced based on this, as well as based on the fuel type:

Petrol (standard EN 228:2004, allowing max. 5 %v/v EtOH)

Benefits:

- Octane gasoline pool increased
- Gasoline is environmentally more tolerable (emission reduction)
- Certain reduction of oil import

Drawbacks / system problems:

- Increased problems of storage and transportation (hygroscopy)
- Introduction of new additives (anticorrosion, biocide)
- Motor gasoline formulations (evaporation problems in storage, logistics and application)
- Increased price with no incentives

Diesel fuel (standard EN 590:2004, permitting max. 5 %v/v of biodesel - FAME)

Benefits:

- Increased cetane pool of gas oils
- Environmentally more tolerable fuel (emission reduction)
- Improved fuel performances (lubricity)
- Certain reduction of oil import
- Biodiesel (FAME) may be used as a pure component in all recent diesel vehicles

Drawbacks / system problems:

- Increased problems of storage and transportation (hygroscopy)
- Introduction of new additives (anticorrosion, biocide)
- Separate systems when used as a pure component (100%)
- Increased price with no incentives

Conclusion

1. Croatia is gradually introducing the Euro quality requirements on the market:
   - Unleaded petrol - Euro III (4.3 years since introduction in the EU)
   - Diesel - Euro III (1.4 years since introduction in the EU)
   - Unleaded petrol and Diesel - Euro IV (1 y. since introduction in the EU)

- Unleaded petrol and Diesel - Euro V (at the same time – 2009?)

2. The present fuel types match the condition of the vehicle pool in the country.
3. Fuel consumption per types is uneconomical given the vehicle pool (due to: too low a price difference given the quality, pretentious and often unprofessional position of the public media, …).
4. Increased consumption of the Euro quality fuels in vehicles without exhaust gas treatment systems does not contribute to reduction emission.
5. The "rejuvenation" trend of the vehicle pool in Croatia shall bring a constant increase of the Euro quality fuels' share.
6. Croatia's joining of the EU (2009/2010?) shall make the fuel quality requirements equal as in the EU, and our country's oil industry (refineries) is already preparing for that).
7. Oil industry of most surrounding countries are following the fuel quality trends (some even ahead of schedule), while others are beginning to implement their refinery modernization plans.
8. Use of biofuels (100 % or blended with fossil fuels) becomes mandatory.
9. Oil processing in Croatia must be capable of providing Euro quality fuels and ensuring sufficient volumes for the market, regardless of the legal requirements – it is simply required by the market itself.

UDK	Ključne riječi:	Key words:
351.777(4)	EU program zs čišće motorno gorivo 2007-2009	EU programme for clean motor fuel 2007-2009
340.134	zakonodavni uvjeti	legislative conditions
.001.26	gledište optimizacije i usklađenja	optimization and harmonization viewpoint
.001.23	gledište terminskog plana	scheduiling viewpoint
.004.14	gledište potražnje i potrebe	viepoint of demand and needs
(4 62)	Europska unija	European Union
(497.13)	Hrvatska	Croatia
"2007 2009"	razdoblje 2007 2009 g.	period 2007 - 2009 y

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