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ISSN 0350-350X
GOMABN 43, 6, 317-330
Stručni rad / Professional Paper
UDK 351.777 (4) : 614.7 : 665.6.013.5.001.6.001.26.001.23 : 340.134 : 336.57 : 341.217 (4) : (497.13)

OPTIMALNO UVOĐENJE "ČISTIH" GORIVA U HRVATSKOJ

Sažetak

Postizanje sadašnjih i pogotovo budućih zahtjeva kvalitete goriva predstavlja osnovni uvjet opstanka rafinerija na tržištu, posebice u EU.

Prema tome i razvoj prerade nafte u Hrvatskoj mora ići u pravcu postizanja zahtjeva kvalitete u EU, koje preuzimaju i ostale europske zemlje.

Uvod

Što određuje nastojanja u pravcu proizvodnje i primjene «čistih» goriva?

To su, prije svega, zajednička nastojanja motorne/automobilske i naftne industrije uz direktivne i provedbene mjere zakonodavne vlasti, koje uključuju:

- reguliranje toksičnih emisija ⇨ automobilska industrija,
- stroga ograničenja sumpora u motornim gorivima ⇨ naftna industrija,
- specificiranje strukturnog sastava goriva ⇨ naftna industrija,
- potpuno uklanjanje olova iz benzina širom svijeta ⇨ naftna industrija.

Pojam *optimalnog uvođenja* «čistih» goriva u Hrvatskoj treba prvenstveno shvatiti kao *postupno uvođenje* «čistih» goriva. Dva su razloga za to:

- trenutačna nemogućnost proizvodnje cijele količine goriva sukladno važećim i budućim europskim standardima zbog nedostatka odgovarajućih tehnologija u rafinerijama; prvenstveno hidroobrade i
- još uvijek 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 socio – ekonomske uvjete okruženja, koje prihvaćaju i zakonodavne institucije i proizvođači automobila.

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 status tehnologija za pročišćavanje u vozilima i zahtjeve korisnika automobila

širom svijeta. Drugim riječima, to je relativno nepristrana globalna harmonizacija kvalitete goriva, koja uzima u obzir zahtjeve potrošača i mogućnosti tehnologija za kontrolu emisije iz vozila na određenim područjima tako da korist imaju i kupci i društveno – politička zajednica.

Tablica 1: Specifikacije za benzine (WWFC)

SVOJSTVO	Kategorija 1	Kategorija 2	Kategorija 3	Kategorija 4
IOB, min.	91 / 95 / 98	91 / 95 / 98	91 / 95 / 98	91 / 95 / 98
MOB, min.	82 / 85 / 88	82 / 85 / 88	82 / 85 / 88	82 / 85 / 88
Oksidacijska stabilnost, min.	360 min.	480 min.	480 min.	480 min.
Sumpor, mg/kg, maks.	1000	200	30	0 (<10)
Metali (Fe, Mn, Pb) g/l	-	-	-	-
Gustoća, kg/m^3	725 - 780	715 - 770	715 - 770	715 - 770
Kisik, % m/m, maks.	2.7	2.7	2.7	2.7
Aromati, % v/v, maks.	50 %	40	35	35
Olefini, % v/v, maks.		20	10	10
Benzen, % v/v, maks.	5	2.5	1	1
Čistoća rasplinjača	8			
Čistoća brizgaljki goriva, % gubitak protoka, maks.		5	5	5
Čistoća usisnog ventila,maks.	9			
Talozi u stublini	ne spec.	spec.	spec.	spec.

Tablica 2: Specifikacije za dizelska goriva (WWFC)

SVOJSTVO	Kategorija 1	Kategorija 2	Kategorija 3	Kategorija 4
Cetanski broj, min.	48	53	55	55
Cetanski indeks, min.	46	50	52	52
Gustoća, kg/m^3	820 - 860	820 - 850	820 - 840	820 - 840
Plamište, ^{0}C, min.	55	55	55	55
Voda, mg/kg, maks.	500	200	200	200
Sumpor, mg/kg, maks.	3000	300	30	0 (<10)
T 95, ^{0}C, maks.	370	355	340	340
Kraj destilacije ^{0}C, maks.		365	350	350
Ostat. ugljik, %m/m, maks.	0.3	0.3	0.2	0.2
PAH, %m/m, maks.		5	2	2
Ukupni aromati, %m/m, maks.	25	15	15	15
Oksidacijska stab., g/m^3,maks.	25	15	15	15
Mazivost, μ, maks.	400	400	400	400
Čestice, mg/l, maks.	10	10	10	10
Čistoća brizgaljki, % gubitak protoka zraka, maks.		85	85	85

Prema WWFC motorna goriva se dijele na četiri kategorije[1]:

- Kategorija I: Tržišta bez ili s prvom razinom kontrole emisije; primarno temeljena na osnovnim performancama vozilo / motor.
- Kategorija II: Tržišta sa strožom kontrolom emisije ili drugim zahtjevima tržišta US Tier 0 ili 1 i Euro II ili ekvivalentni emisijski standardi).
- Kategorija III: Tržišta s povećanim zahtjevima u kontroli emisija ili drugim specifičnim zahtjevima tržišta (US Calif. LEV i ULEV, Euro III i IV ili ekvivalentni emisijski standardi)
- Kategorija IV: Tržišta s dodatno povećanim zahtjevima u kontroli emisija; vozila opskrbljena sofisticiranim tehnologijama za naknadnu obradu NOx i krutih čestica – PM (US Calif. LEV-II, US EPA Tier 2 i Euro IV/V)

U tablicama 1 i 2 prikazane su neke od specifikacija za benzin i dizelsko gorivo prema WWFC.

Uočljivo je da se uz glavne značajke kvalitete goriva propisuju i parametri kvalitete izgaranja / emisija.

Zakonska regulativa i kvaliteta tekućih naftnih goriva

Regulativa koju Hrvatska mora ugraditi u svoj zakonodavni sustav svakako je ona koja se primjenjuje u EU kako zato što je Hrvatska istaknula svoju kandidaturu za članstvo u EU, tako i zato što je većina trošila koja koriste goriva porijeklom iz EU i ima zahtjeve za kvalitetom goriva koja je na snazi u EU.

Direktivama EU i njima slijednim EN normama reguliraju se emisije, čime se indirektno određuje i kvaliteta goriva.

Europska zajednica je prvu direktivu u području kvalitete tekućih naftnih goriva donijela 1975. godine (75/716/EEC) propisivanjem prvih ograničenja udjela sumpora u određenim vrstama plinskih ulja. Dopunom ove direktive u 1987. godini (87/219/EEC) dalje se postrožuje dopuštena količina sumpora u plinskim uljima (loživom ulju ekstra lakom) na 0.3.% m/m.

Direktivom 93/12/EEC donesenom 1993. godine smanjuje se količina sumpora u EL loživom ulju na 0.2 % m/m od 1. siječnja 1994., a po prvi puta se direktivom ograničava količina sumpora u dizelskom gorivu na 0.05 % m/m od 1. listopada 1996. Daljnjim dopunama ova direktiva se dijeli na posebno iskazivanje kvalitete grupa loživa ulja, brodska goriva i motorna goriva (bezolovni motorni benzin i dizelsko gorivo).

Tako je 1999. godine donesena direktiva 1999/32/EC (odnosi se samo na loživa ulja i brodska goriva) kao dopuna direktive 93/12/EEC kojom se utvrđuju daljnja ograničenja količina sumpora u loživim uljima.

Početkom 2003. godine izašao je prijedlog direktive 2003/C 45 E/32 dopuna direktive 1999/32/EC a odnosi se na daljnje smanjenje količine sumpora u brodskim gorivima ovisno o namjeni plovila.

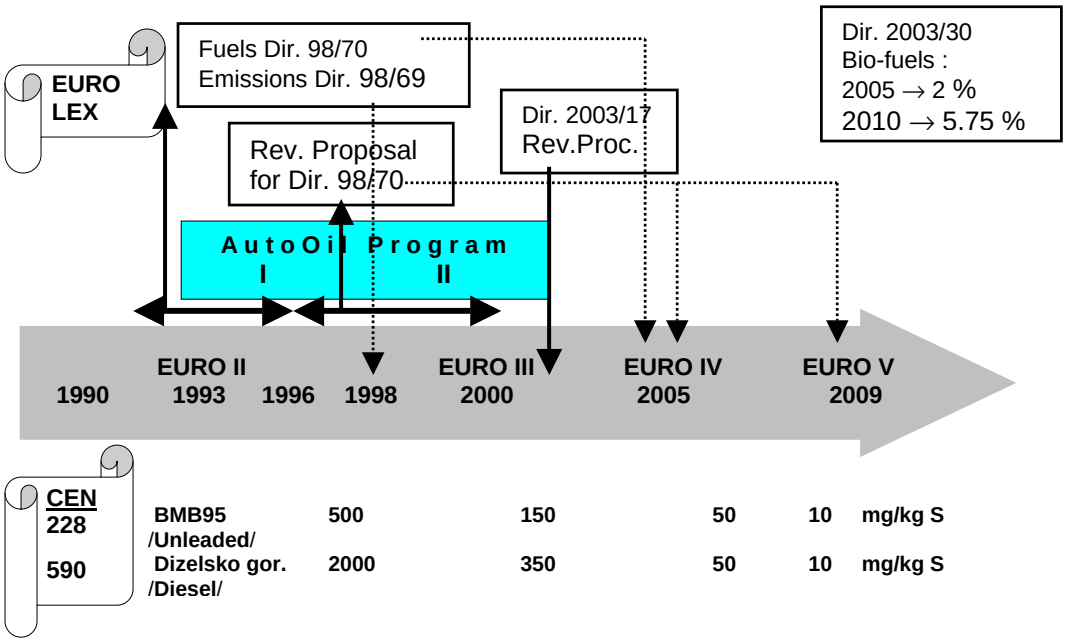
Direktiva EU 78/611/EEC od 29. lipnja 1978. utvrdila je količinu olova u benzinu u rasponu od 0.15 do 0.4 g/l. Sljedeća direktiva donesena je 1985. godine (85/210/EEC) kojom se utvrđuje količina olova u motornom benzinu s olovom na 0.15 g/l i u bezolovnom benzinu na 0.013 g/l.

Direktivom 98/70/EC, koja je dopuna direktive 93/12/EEC, utvrđuju se specifikacije za bezolovni motorni benzin i dizelsko gorivo. Početkom ožujka 2003. godine donesena je direktiva 2003/17/EC, dopuna direktive 98/70/EC koja utvrđuje specifikacije za bezolovni benzin i dizelsko gorivo od 2005. godine.

EU vijeće za okoliš postiglo je političku suglasnost o uvođenju motornih goriva bez sumpora u države članice. Prva faza uvođenja počela bi od 1. siječnja 2005., tako što bi uz goriva s važećim specifikacijama postojala i «goriva bez sumpora» (< 10 ppm). Od 1. siječnja 2009. na tržištu EU trebala bi se prodavati samo motorna goriva bez sumpora.

Na slici 1 prikazana je međuovisnost zakonodavnih postupaka (direktive) i definiranja zahtjeva kvalitete i emisija.

Slika 1: Postupak donošenja parametara kvalitete goriva i emisije u EU
Figure 1: EU Fuel Quality Developments



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

Da bi se to postiglo u optimalnim i prihvatljivim uvjetima, mora se poštovati međuovisnost u sustavu:

VOZILO ⟷ EMISIJE ⟷ GORIVA

Okvir u kojem se to odvija u zemljama EU je slijedeći:

- Društvo preko zakonodavnih tijela nameće sve strože emisijske standarde za motorna vozila.
- 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 kroz EURO zahtjeve prisiljavaju rafinerije na uvođenje novih tehnologija za hidroobradu goriva.

Zakonodavni oblik koji sve to objedinjuje su EU direktive (slika 1).

Zbog činjenice da primjena direktiva ima značajne socio – ekonomske posljedice na život jedne zemlje, put donošenja određene direktive relativno je dug, jer se analiziraju svi mogući aspekti njihove primjene.

Postupak donošenja EU direktiva sastoji se od mnogih koraka, kako bi se došlo do što kvalitetnijeg rješenja[2]:

PRIJEDLOG KOMISIJE
⇩
MIŠLJENJE PARLAMENTA (1. čitanje)
⇩
ZAJEDNIČKI STAV VIJEĆA
⇩
PROSUDBA KOMISIJE
⇩
ODLUKA PARLAMENTA (2. čitanje)
⇩
MOGUĆNOST: USUGLAŠAVANJE (VIJEĆE – PARLAMENT)
⇩
KONAČNI AKT

Određeni trendovi u postavljanju budućih ograničenja emisija a time i specifikacija goriva naziru se iz bitnih odrednica politike EU u ovom području od 2004. - …… 2:

- 10 mg/kg sumpora u konvencionalnim gorivima (98/707EEC) 2005/2009; ostali parametri kao PAH, aditivi sa sadržajem metala, Rvp itd…; nakon 2005. revizija.
- Sadržaj sumpora u dizelskom gorivu koji se ne primjenjuje u transportu 10/50 mg/kg u 2009. (?).
- Novi monitoring kvalitete goriva i zahtjeva uzorkovanja prema CEN standardima 98/70/EC, 14274 & 14275.
- Kao rezultat novih direktiva veći udjel biogoriva na tržištu.
- Fiskalni poticaji za niskosumporna goriva i biogoriva će se povećati s novom direktivom o oporezivanju mineralnih goriva.Uskoro se očekuje ograničenje sumpora u loživom ulju ekstra lakom (LU EL) i marinskim gorivima < 1000 mg/kg sumpora.

Međutim, energetska sigurnost i klimatske promjene bit će glavni pokretači u određivanju parametara kvalitete goriva i reguliranju emisija.

Sva navedena ograničenja i pooštrenje zahtjeva kvalitete uvjetovana su zacrtanim trendom smanjenja određenih zagađivača iz motornih vozila do 2010. godine, koji je EU zacrtao u svojoj dugoročnoj strategiji.

Tako se navode trendovi u smanjenju reguliranih emisija do 2010. godine za neke zagađivače (kao ishodišna godina 1995.)[1]:

- CO i NOx smanjenje za > 60%
- Čestice (dizelsko gorivo) smanjenje za > 60%
- Benzen smanjenje za > 90%
- SO_2 smanjenje za > 90%

Kvaliteta tekućih naftnih goriva u Republici Hrvatskoj

Kvaliteta tekućih naftnih goriva u Republici Hrvatskoj regulirana je Uredbom o kakvoći tekućih naftnih goriva čija je legislativna osnova Zakon o zaštiti okoliša (NN 82/94 i 128/99). Uredba je doživjela nekoliko izmjena i dopuna:

- *Uredba o kakvoći tekućih naftnih goriva (NN 76/97) - osnovna*

  Uvodi se zahtjev kvalitete EURO II (izuzeće za sumpor u RH : BMB=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)*

  Zahtjev kvalitete je EURO II (usklađivanje s pristupom u WTO ⇨ od Vlade se moraju tražiti kontingenti/dozvole za količine koje ne odgovaraju traženom zahtjevu).

- *Uredba o kakvoći tekućih naftnih goriva (NN 83/02)*

  Uvodi se zahtjev kvalitete EURO III (dizelsko gorivo ⇨ Eurodizel EN 590:1999

uz traženje dozvola za količine koje ne odgovaraju traženom zahtjevu).

- *Uredba o kakvoći tekućih naftnih goriva – izmjene i dopune (NN 100/04)*
  Zahtjev kvalitete je EURO III (BMB ⇨ Eurosuper EN 228:1999; Eurodizel ⇦ 5 % v/v FAME).
- *2005 ?*

Uzimajući u obzir mogućnosti proizvodnje i dobave goriva prema sadašnjim (i budućim) europskim normama (EN), kao i stanjem i trendovima u razvoju motornog fonda u zemlji, na tržištu Hrvatske su na raspolaganju sljedeće vrste goriva:

- Motorni benzin s olovom (SUPER 98) ⇨ na tržištu RH do 31.12.2005.
- Bezolovni motorni benzin (EUROSUPER PLUS 98)
- Bezolovni motorni benzin (SUPER 95)
  (S = 0.023 % m/m – 0.093 % m/m, srednja vrijednost 0.048 %)
- Bezolovni motorni benzin (EUROSUPER 95, sukladan europskoj normi EN 228:1999) ⇨ od travnja 2004. (zahtjev EURO III)
- Dizelsko gorivo (DIESEL)
  (S = 0.165 % m/m – 0.470 % m/m, srednja vrijednost 0.355 %m/m
- Dizelsko gorivo (EURODIESEL, sukladan europskoj normi EN 590:1999) ⇨ od svibnja 2001. (zahtjev EURO III)

ZAKLJUČAK

1. Značajnije smanjenje emisije štetnih sastojaka u ispušnim plinovima moguće je ostvariti isključivo razvojem novih automobilskih tehnologija, koje zahtijevaju goriva odgovarajuće kvalitete.
2. Opravdano je uvođenje goriva u Republiku Hrvatsku prema EN specifikacijama, odnosno EURO zahtjevima zbog energetskih i ekoloških razloga.
3. Uvođenje goriva sukladnih zahtjevima EURO IV/V mora biti postupno, poštujući socio-ekonomske kriterije i stanje i razvoj motornog fonda u zemlji.
4. Budući da proizvodnja goriva prema zahtjevima EURO IV/V zahtijeva velika sredstva za uvođenje novih tehnologija u rafinerije, Hrvatska bi trebala slijediti primjer EU koja pomaže uvođenje novih tehnologija poreznim poticajima.
   Time se brže dolazi i do krajnjeg cilja – dostizanje strogih ekoloških standarda.

OPTIMAL INTRODUCTION OF "CLEAN" FUELS IN CROATIA

Abstract

The meeting of present and especially of the future fuel quality requirements constitutes the basic precondition for market survival of the refineries, especially in the EU.

That is why the development of oil processing in Croatia must also go in the direction of achieving EU quality requirements, taken over also by other European countries.

Introduction

What directs the efforts towards production and application of «clean» fuels?

Primarily these are the joint efforts of the motor/automobile and oil industry along with directive and implemental measures of the legislative authority, including:

- regulation of toxic emissions ⇨ automobile industry
- stringent sulphur limitations in motor fuels ⇨ oil industry
- specification of structural fuel composition ⇨ oil industry
- complete removal of lead from gasoline worldwide ⇨ oil industry

The notion of *optimal introduction of* «clean» fuels in Croatia must primarily be understood as *gradual introduction* of «clean» fuels. There are two reasons for this:

- Current impossibility to produce the entire amount of fuels in keeping with the currently valid and the future European standards due to the lack of the necessary technology in refineries; primarily hydrotreatment, and
- Still comparatively high share of older type vehicles, not equipped with modern systems for purifying exhaust gases which require the application of fuels according to the latest specifications.

Such an approach of gradual introduction of «clean» fuels respects also the socio–economic conditions of the surroundings, adopted also by legislative institutions and automobile manufacturers.

This is best illustrated by THE WORLD–WIDE FUEL CHARTER (WWFC), recommending global fuel quality standards taking into account the status of technologies for purification in vehicles and requirements of automobile users worldwide.

In other words, it is a relatively unbiassed global harmonization of fuel quality, taking into account consumer requirements as well as the possibilities of technologies for automotive emission control in certain areas so that both the buyers and the socio – political community may benefit from it.

Table 1: Parameters for petrol (WWFC)

PROPERTY	Category 1	Category 2	Category 3	Category 4
RON, min.	91 / 95 / 98	91 / 95 / 98	91 / 95 / 98	91 / 95 / 98
MON, min.	82 / 85 / 88	82 / 85 / 88	82 / 85 / 88	82 / 85 / 88
Oxidation stab.,min.	360 min.	480 min.	480 min.	480 min.
Sulphur, mg/kg, max.	1000	200	30	0 (<10)
Metals (Fe, Mn, Pb,.)g/l	-	-	-	-
Density, kg/m^3	725 - 780	715 - 770	715 - 770	715 - 770
Oxigen, %m/m, max.	2.7	2.7	2.7	2.7
Aromatics, %v/v, max.	50 %	40	35	35
Olephins, %v/v, max.		20	10	10
Benzene, %v/v , max.	5	2.5	1	1
Carburettor cleanliness	8			
Cleanliness of fuel injectors, % flow loss, max.		5	5	5
Intake valve cleanliness,max.	9			
Cylinder deposits	not spec.	spec.	spec.	spec.

Table 2: Parameters for diesel fuels (WWFC)

PROPERTY	Category 1	Category 2	Category 3	Category 4
Cetane no, min.	48	53	55	55
Cetane index, min.	46	50	52	52
Density ,kg/m^3	820 - 860	820 - 850	820 - 840	820 - 840
Flash Point, ^{0}C, min.	55	55	55	55
Water, mg/kg, max.	500	200	200	200
Sulphur ,mg/kg, max.	3000	300	30	0 (<10)
T 95, ^{0}C, max.	370	355	340	340
End distillation, ^{0} C, max.		365	350	350
Resid. carbon,%m/m, max.	0.3	0.3	0.2	0.2
PAH, %m/m, max.		5	2	2
Total Aromatics, %m/m, max.	25	15	15	15
Oxidation stab., g/m^3, max.	25	15	15	15
Lubricity, μ, max.	400	400	400	400
Particles,mg/l, max.	10	10	10	10
Cleanliness of injectors, % air flow loss, max.		85	85	85

According to WWFC, motor fuels are split into four categories[1]:

- CATEGORY I: Markets without or with the first emission control level; primarily based on the basic performances of vehicle / engine.

- CATEGORY II: Markets with more stringent emission control or other market requirements (US Tier 0 or 1 and Euro II or other equivalent emission standards).
- CATEGORY III: Markets with increased requirements in emission control or other specific market requirements (US Calif. LEV and ULEV, Euro III and IV or equivalent emission standards).
- CATEGORY IV: Markets with additionally increased requirements in emission control; vehicles equipped with sophisticated technologies for the after-treatment of NOx and solid particles–PM (US Calif. LEV-II, US EPA Tier 2 and Euro IV/V).

Tables 1 and 2 show some specifications for gasoline and diesel fuel according to WWFC.

It may be observed that, along with the major properties of fuel quality, also prescribed are the parameters of combustion/emission quality.

Legal regulations and quality of liquid petroleum fuels

Regulations that Croatia must incorporate into its legislative system are by all means the ones applied in EU, not only because Croatia is now a candidate to join the membership in the EU, but also because most consumption devices using fuels originating from the EU have fuel quality requirements as valid in the EU.

EU Directives and their resulting EN standards regulate the emissions, thus indirectly setting the fuel quality.

The European Community passed the first directive in the area of liquid petroleum fuels quality back in 1975 (75/716/EEC) by setting the first sulphur content limitations for certain kinds of gas oils. The amendment to the Directive from 1987 (87/219/EEC) rendered the permissible sulphur content in gas oils (extra light fuel oil) even more stringent: 0.3.% m/m.

Directive 93/12/EEC passed in 1993 reduced sulphur content in EL fuel oil to 0.2 % m/m as of 1 January 1994, and for the first time a directive was used to limit diesel fuel sulphur content to 0.05 % m/m as of 1 October 1996. Through further supplements, this directive started separately indicating the quality groups fuel oils, marine fuels and motor fuels (unleaded motor gasoline and diesel fuel).

In 1999 passed was the directive 1999/32/EC (referring only to fuel oils and marine fuels) as a supplement to the directive 93/12/EEC setting further limitations of fuel oil sulphur content.

Towards the beginning of 2003, issued was a proposal of directive 2003/C 45 E/32 – supplement to the directive 1999/32/EC referring to a further reduction of marine fuel sulphur content, depending on the vessel purpose.

Directive EU 78/611/EEC of 29 June 1978 established the gasoline lead content in the range from 0.15 to 0.4 g/l. The next directive was passed in 1985 (85/210/EEC), setting the motor gasoline lead content to 0.15 g/l i.e. to 0.013 g/l in unleaded motor gasoline.

Directive 98/70/EC, ammending the directive 93/12/EEC, sets specifications for unleaded motor gasoline and diesel fuel. Towards the beginning of March 2003, directive 2003/17/EC was passed as an amendment to the directive 98/70/EC setting specifications for unleaded motor gasoline and diesel fuel as of 2005.

The EU Environmental Council has achieved political consent on the introduction of sulphur-free motor fuels into the member states. The first introduction phase would begin as of 1 January 2005, by introducing «sulphur-free» (< 10 ppm) fuels along with those having valid specifications. Starting from 1 January 2009, only sulphur-free motor fuels should appear on the EU market.

Figure 1 (on the page 320.) shows the mutual dependence of legislative procedures (directives) and quality defining and emission requirements.

The incentive determining both the present and the future fuel quality is by all means environmental protection – in this case reduction of automotive exhaust gases release into the air i.e. their bringing under strictly regulated standards /requirements).

In order to achieve this under optimal and acceptable conditions, the interdependence within the system must be respected:

VEHICLE ⟺ **EMISSIONS** ⟺ **FUELS**

The framework within which this proceeds in the EU countries is the following:

- The society – through the legislative bodies – imposes increasingly stringent emission standards for motor vehicles.
- Automobile industry builds increasingly sophisticated and efficient emission reduction systems into vehicles.
- Efficiency of the system for the treatment of automotive exhaust gases increases with the reduction of certain compounds and/or compound groups within the fuel – especially sulphur.
- Increasingly stringent emission limitations defined through EURO requirements force the refineries to introduce new technologies for the hydrotreatment of fuels.

The legislative form encompassing all this are the EU DIRECTIVES (Figure 1).

Due to the fact that the application of directives has considerable socio–economic effects on the life of a country, the road of passing a given directive is a relatively long one, because all the possible aspects of their application are being analyzed.

The procedure of passing EU directives consists of many steps, in order to come up with the best possible solution[2]:

COMMISION PROPOSAL
⇩
PARLIAMENTARY OPINION (1st reading)
⇩
JOINT ATTITUDE OF THE COUNCIL
⇩
COMMISION JUDGEMENT
⇩
PARLIAMENTARY DECISION (2nd reading)
⇩
POSSIBILITY : CONSENSUS (COUNCIL – PARLIAMENT)
⇩
FINAL ACT

Certain trends in setting future emission limitations and hence also fuel specifications may be guessed based on the important guidelines of EU policy in this area from 2004. - …… 2 :

- 10 mg/kg of sulphur in conventional fuels (98/707EEC) 2005/2009; other parameters, such as PAH, metal-content additives, Rvp etc…; to be revised after 2005.
- Sulphur content in diesel fuel not applied in transportation: 10/50 mg/kg in 2009(?).
- New monitoring of fuel quality and sampling requirements according to CEN standards 98/70/EC, 14274 & 14275.
- As a result of new directives: higher market share of bio-fuels.
- Fiscal incentives for low-sulphur fuels and bio-fuels shall increase with the new directive on the taxing of mineral fuels.Soon to be expectred is sulphur limitation in extra light fuel oil (FO EL) and „marine" fuels < 1000 mg/kg sulphur.

However, energy safety and climatic changes shall be the main driving forces in setting fuel quality parameters and emission regulation.

All the above limitations and more stringent quality requirements are conditioned by the set trend of reducing certain pollutants in motor vehicles by 2010, which the EU has envisaged in its long-term strategy.

Thus trends are listed in the reduction of regulated emissions by 2010, for some pollutants (with 1995 as reference year) [1]:

- CO and NOx reduction by > 60%
- Particles (diesel) reduction by > 60%
- Benzene reduction by > 90%
- SO_2 reduction by > 90%

The quality of liquid oil fuels in the Republic of Croatia

The quality of liquid oil fuels in Croatia Is regulated by the Directive on the Quality Of Liquid Oil Fuels whose legislative basis is the Environmental Protection Act (Official Gazette 82/94 and 128/99). The Directive has been modified and ammended several times:

- *Directive on the Quality Of Liquid Oil Fuels (NN 76/97) – the basic one*

  Introducing the EURO II quality requirement (exception for sulphur in Croatia: UMG=1000 mg/kg up to 1/07/02; diesel fuel =5000 mg/kg up to 31/12/ 99.)

- *Directive on the Quality Of Liquid Oil Fuels – modifications and ammendments (OG 66/99)*

  The quality requirement is EURO II (coordination with the approach in WTO ⇨ one must ask the Government for quotas/ permits for volumes not matching the requirement in question)

- *Directive on the Quality Of Liquid Oil Fuels (OG 83/02)*

  Introducing the EURO III quality requirement (diesel fuel ⇨ Eurodiesel EN 590:1999 with the request of permits for volumes not matching the requirement in question)

- *Directive on the Quality Of Liquid Oil Fuels – modifications and ammendments (OG 100/04)*

  The quality requirement is EURO III (UMG ⇨ Eurosuper EN 228:1999; Eurodiesel ⇦ 5 %v/v FAME)

- *2005 ?*

Taking into account the possibilities of fuel production and supply according to the present (and future) European norms (EN), as well as the condition and trends in the development of motor pool in the country, the following fuel types are available on Croatian market:

- Leaded motor gasoline (SUPER 98) ⇨ on Croatian market until 31/12/2005.
- Unleaded motor gasoline (EUROSUPER PLUS 98)
- Unleaded motor gasoline (SUPER 95)
  (S = 0.023 % m/m – 0.093 % m/m, medium value 0.048 %)
- Unleaded motor gasoline (EUROSUPER 95, consistent with the European norm EN 228:1999) ⇨ as of April 2004 (requirement EURO III)
- Diesel fuel (DIESEL)
  (S = 0.165 %m/m – 0.470 % m/m, medium value 0.355 % m/m
- Diesel fuel (EURODIESEL, consistent with the European norm EN 590:1999) ⇨ as of May 2001. (requirement EURO III)

CONCLUSION

1. More considerable reduction of noxious automotive gas emission may be achieved exclusively by developing new automotive technologies, requiring a defined fuel quality level.
2. The introduction of fuels according to EN specifications i.e. EURO requirements into Croatia is justifiable for environmental and energy-related reasons.
3. Introduction of fuels matching EURO IV/V requirements must be gradual, respecting socio-economic criteria and the condition and development of the motor pool in the country.
4. Since fuel production according to EURO IV/V requires major investments for the introduction of new technologies into refineries, Croatia should follow the example of the EU stimulating the introduction of new technologies by tax incentives.
5. This enables a faster reaching of the ultimate objective – the achievement of stringent environmental standards.

Literatura / References

1. World – Wide Fuel Charter, December 2002.
2. Dixon-Decleve S. (IFQC), Trends & Developments in European Automotive Fuel Quality, Rome Partnership Meeting, March 2004.

ključne riječi / key words:		
351.777 (4)	EU program za čišće motorno gorivo 1990-2009	EU programme for clean motor fuel 1990-2009 y.
614.7	zaštita okoliša	enviroment protection
665.6	prerada nafte	petroleum processing
66.013.5	rekonstrukcija postrojenja	plant reengeneering
.001.6	gledište razvoja	development viewpoint
.001.26	gledište optimizacije i usklađenja	optimization and harmonization viewpoint
.001.23	gledište terminskog plana	sceduiling viewpoint
340.134	zakonodavni uvjeti	legislative conditions
336.57	poticaj iz proračuna	state subsidy
341.217 (4)	Europska unija	European Union
(497.13)	Hrvatska	Croatia

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Primljeno / Received:
26.11.2004.