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**WWW.METALURGIA.RO**

Readers from abroad can subscribe through Editura Științifică F.M.R.

Conturile EDITURII ȘTIINȚIFICE F.M.R.

**BANCPPOST** Sucursala Grivița, București

RON: 82BPOS70706464746RON01

**ATEBANK ROMANIA** Sucursala București-Grivița

RON: RO53MIND001000007585RO01

USD: RO67 MIND 001 00000 7585 US01

EURO: RO10 MIND 001 00000 7585EUR01

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Bucharest, ROMANIA

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# **METALURGIA INTERNATIONAL**

## **NO. 7 - 2012**

## **ISSN 1582 - 2214**



**Romanian Metallurgical Foundation**

**Scientific Publishing House**

**HONORARY PRESIDENT OF SCIENTIFIC PUBLISHING HOUSE**

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## Press Information

### Welcome news: the date has now been settled –

**GIFA, METEC, THERMPROCESS, NEWCAST are being held in Düsseldorf from 16. to 20. June 2015**

The industry has been waiting for this news: the date for the next GIFA, METEC, THERMPROCESS and NEWCAST has now been settled. The international trade community will be able to experience the four successful technology trade fairs again in Düsseldorf from 16. to 20. June 2015. Project Manager Friedrich-Georg Kehr: "We are delighted to have found another date in the early summer, which will certainly help to create a good atmosphere for discussions and business transactions in the halls on the exhibition site."

The last "Bright World of Metals" set a new record for the trade fairs, with about 2,000 exhibitors, 78,558 square metres of stand space and 79,000 visitors from 83 different countries. The events held last year therefore had a strong impact on the foundry technology, metallurgy, thermo process technology and castings industries that exhibited there too. Numerous business transactions were already concluded while the fairs were still in progress, while most of the companies also reported that business continued to develop exceptionally well afterwards.

Kehr: "We hope that this momentum is maintained over the coming three years as well. Our aim is to stay in contact with exhibitors, visitors and the media throughout the years between the events too, via our informative and up-to-the-minute trade fair portals." Business and product news that is updated on a daily basis is provided on the websites [www.gifa.de](http://www.gifa.de), [www.metec.de](http://www.metec.de), [www.thermprocess.de](http://www.thermprocess.de) and [www.newcast.de](http://www.newcast.de).

GIFA, METEC, THERMPROCESS, NEWCAST 2015 Press Department

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28.02.2012

Press photos, logos and a site plan can be found in our photo database, which is available in the press service section of the trade fair websites.



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USt-IdNr. DE 119 360 948  
St.Nr. 105/5830/0663

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Exhibition Industry



Ausstellungs- und  
Messe-Ausschuss der  
Deutschen Wirtschaft

Öffentliche Verkehrsmittel:  
U78, U79: Messe Ost/Stockumer Kirchstr.  
Bus 722: Messe-Center Verwaltung

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## BIOGAS OBTAINED FROM CORN SILAGE AND/OR COW MANURE IN THE REPUBLIC OF SERBIA AS A ROAD TRANSPORT FUEL

Branimir MILOSAVLJEVIC<sup>1</sup>, Radivoje PESIC<sup>2</sup>, Jovanka LUKIC<sup>2</sup>, Sasa BABIC<sup>1</sup>

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**Key words:** anaerobic digestion, biogas, corn silage, cow manure, motor vehicle.



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**Abstract:** Serbia has great potential for the production of the biogas, due to growing energy crops and livestock are the greatest potential of its agriculture. The use of biomass through anaerobic digestion to get the biogas, would reduce the need for the state to import energy, environmental protection should be raised to a higher level, the economy would be improved, unemployment in rural areas would be reduced and prevent migration of population from these regions. If we add to the fact that the European Union set itself the goal to 2020 year 20% of energy provided from renewable energy sources (at least 25% of bioenergy in the future can come from biogas produced from organic materials such as corn silage or animal manure), anaerobic digestion is imposed as a very acceptable technologies. In this paper, viewed as a potential production of biogas as a transportation fuel in the Republic of Serbia, which are the barriers that impede greater development of this branch of industry and suggestions on the experience of other countries to promote or encourage the same.

### 1. INTRODUCTION

It is a great dissonance between bombastic statement, of new or renewable fuels and their benefits, because under these are implying pure components. A typical replacement thesis is related to the natural gas that, and without it, will be a fuel of this century. Optimistic studies of natural gas in vehicles operate with pure methane. Unfortunately, pure methane has nowhere in nature. He is still in mixture with other admixtures in different percentages. The main point is that natural gas and biogas should be accepted as a technically superior quality raw material for motor fuel [1].

In order to biogas could be used as a transportation fuel, it has to percolate, so that the volume of the methane is at least 95%. Only then biogas can be used as fuel in vehicles that were originally modified to operate on natural gas.

The technology of biomass and utilization of animal manure by anaerobic digestion (AD) is a superb and safe technology for obtaining biogas. If we add the fact that Serbia has a large farming area with agriculture crops (corn soya, sunflower, rapeseed...) and great potential in livestock, we can say that this is a good basis for the production of such renewable transportation fuels.

### 2. BASIC PARAMETERS OF ANAEROBIC DIGESTION

Anaerobic digestion is the decomposition of organic material under the influence of microbial populations that exist in the environment without oxygen. During anaerobic digestion (fermentation) organic materials are decomposing under the influence of methane bacteria and occurs biogas is

composed mixture of methane CH<sub>4</sub> (40-75%), carbon dioxide CO<sub>2</sub> (25-60%), a small percentage of other gases such as hydrogen H<sub>2</sub>, hydrogen sulphide H<sub>2</sub>S (0-1%) and carbon monoxide CO (2%). Biogas is lighter than air, no smell and no colour. Ignition temperature is between 650 -750 °C and it burns with clean blue flame. Caloric value is about 20 [MJ/Nm<sup>3</sup>] [2].

Anaerobic digestion can treat a wide range of organic material originating from agriculture, industry or municipal wastewater. Basically any liquid or solid organic waste from food and agricultural industry (whey, waste from slaughterhouse, used oil, grease and food waste from restaurants, liquid manure or municipal water) can be treated by anaerobic digestion.

Animal manure is a potentially large biomass resource. Dehydrated manure has the same energy content as a wood, and when it used for heating, the efficiency is only 10%. About 150 million tons of dry manure is used as fuel throughout the world. The conversion efficiency of animal waste can be increased up to 60% if it's in the process that produces biogas through anaerobic digestion.

Production of biogas only from animal manure is unviable, but adding cosubstrate (e.g., corn silage) increased profitability. As a contribution that can be specified by the fact is that almost 85% farm scale plants for the production of biogas in Germany used cosubstrate in anaerobic digestion.

It is important that each biogas plant must to have a clear picture what kind of energy needed to produce and to see what type of energy to match potential customers as well as costs of delivery of such energy. In this sense, input of organic matter is an important operating parameter, which indicates how much corn silage or liquid cow manure can be entered depending on the volume of digester in unit time [2].











