



**The CCIS's 2015  
Golden Innovation Awards**



**Innovative Slovenia**



If we continue to be innovative, we need not fear the future.

Samo Hribar Milič, General Manager of the CCIS

## 4 Introductory thoughts from the Prime minister

Dear innovators and visitors to Innovation Day 2015,

It is the very nature of humans to constantly explore, to search for new solutions as well as upgrade and improve the existing ones. Curiosity, the desire for something new and the spirit of innovation have driven development and progress through the ages. Today, when using all those things in life that we take for granted, we simply forget that every single one is the fruit of human invention and innovation across time. It is impossible to imagine our lives without all that which was borne of the creativity of our forefathers. Today the integration of infrastructure, which facilitates mass innovation and the creation of innovation ecosystems, is a driving force of entrepreneurship as well as the generation of value essential to economic development. Indeed, innovation is of key importance in the mentality, operations and the success of individuals and companies alike. Undoubtedly, progressive enterprises that invest in their personnel and the search for ever-new solutions can enjoy success in the competitive global market.

With its longstanding fervent spirit of innovation, Slovenia has a huge creative potential capable of ensuring the comprehensive development of an economy and society which is both successful and sustainable in the long term. Structural solutions promoting innovation have to be created in order to fully achieve this potential, while at the same time the individual must be empowered and, critical of the extant situation, dare to search for answers and solutions to challenges which may lie out of their comfort zone. Mutual support, collaboration and open dialogue shall play a crucial role in this process, and we must encourage each other to be open and bold in this quest. Such a mind-set will sometimes require forgetting one's own needs, as well as the courage to overcome fear, thus allowing us to move forward, to grow, and to help others.

We live in an era of precipitous progress in which the threats and opportunities of change occur more rapidly than ever before. Only the innovative who in the elaboration of strategies fully use their ability to observe and listen, shall compete successfully and actively participate in the economic and social development that shall take us in new directions. This era is undoubtedly upon us, for which reason the CCIC inaugurated this Innovation Day event to award and promote Slovenia's spirit of innovation both locally and internationally. In addition to encouraging innovation and entrepreneurial activity, our further aim is ensure that government creates a suitable environment through the adoption and implementation of measures that would allow an appropriately restructured Slovene economy to emerge from the crisis invigorated, restructured and well prepared for the challenges of the future.

I would like to take this opportunity to welcome the development of the Innovative Slovenia programme established by the CCIS to promote and support the entire process of innovation, from concept to development. This scheme also allows entrepreneurs to identify new strategies, markets and opportunities, as well as present their products, technology and services in a broader international environment. The best innovations serve to build visibility, thus this Innovation Day makes a significant contribution to the promotion of innovativeness, intelligent solutions and entrepreneurship both in Slovenia and abroad.

I trust that this year's Innovation Day has been an opportunity to profit from new ideas and realisations, as well as provide many of you - and the golden award winners especially - new business opportunities. May I wish all of you future success!

***Miro Cerar, Prime minister of the Republic of Slovenia***

## 5 Introductory thoughts from the Minister of Economic Development and Technology

Dear innovators,

As a value and a driving force of Slovene society, the spirit of innovation - the creative mentality which is forever in search of new approaches as well as novel or improved solutions - is much appreciated in a turbulent world, as well as an essential element in achieving ongoing economic development. May I congratulate you, as winners, for living this value and transferring it into your accomplishments.

Innovation is frequently used in conjunction with such issues as economic growth, industrial policy, R&D and new markets - within which contexts it is also measured and assessed. A series of indicators and metrics, developed by the European Commission, allows the direct comparison of EU states and larger economies around the world. According to the Innovation Union Scoreboard 2015, Slovenia is an innovation follower, and remains well above average in such measures as citation in international scientific publications, while it continues to record upward trends in relation to intellectual property rights and collaboration involving innovative SMEs. Unfortunately, our country is still below average in other areas, including non-technological innovation and sales revenues deriving from innovation.

Hence the promotion of innovativeness and awarding the best innovations continues to be extremely important. The CCIS innovation awards are not merely a tribute to the very best of the best, they are also a message to the coming generation, entrepreneurs and the public at large that innovation in full consideration of the user is a precondition for the development of any commercially successful product or service. Slovenia's Ministry of Economic Development and Technology is preparing measures to increase innovation within this nation's enterprises, including the commercialisation of market research and further facilitating knowledge transfer within the economy. It is my heartfelt belief that these measures can be efficiently employed to further improve results.

***Zdravko Počivalšek, Minister of Economic Development and Technology***

## 6 As you sow, so shall you reap

From its very beginnings, humankind has tailored its future through creativity; likewise, ingenuity focused on making life better and easier is embedded in our thinking. Our forefathers discovered fire, invented the wheel, extracted and processed minerals, devised the steam engine and harnessed electricity. In this digital age I am confident that there's no end to development and progress because human ingenuity is forever eager to create something faster, simpler and better.

Development is closely related to the creative processes of an ever-increasing number of people who exhibit a diversity of skills, knowledge and experience. Existing solutions are constantly questioned, investigated and adapted, while new ones are created and tested. Consequently, in a competitive world, innovation is essential to the endurance of any organisation, as well as of crucial importance to a company in achieving market success and at least preserving, if not enhancing, its competitive position. The spirit of innovation and an innovative society is a global development paradigm which requires insatiable curiosity in the face of challenges as well as enduring creative restlessness in the search for workable solutions. Such is manifest in the improvement of existing technologies and the search for new opportunities.

Innovation has to be considered holistically and comprehensively, from the idea and its development, through such issues as intellectual property rights, engaging with partners, positioning, promotion and marketing, to end use and maintenance; innovators are undoubtedly at the heart of this process, but it is the user as beneficiary - i.e. people - who are ultimately called upon to adopt an innovation. Hence the end-user has to be borne in mind throughout all processes of innovation, and, as such, the solution has to be perceived as simple, user-friendly and useful. How to design and implement innovation to this purpose, as well as how to present it, are creative elements which are no less important than the technology itself.

Slovenia's record in the field of innovation is best illustrated by two Slovenian sayings: You've made your bed, now lie in it and A bad beginning makes a bad end. So, where does our country currently stand as regards innovation? According to European analyses and estimations based on measurements made using strict and exacting criteria, Slovenia is fairly average for the European Union. However, according to the 2015 European Innovation Scoreboard - which provides a comparative assessment of research and innovation performance across EU states - Slovenia is today described as a strong innovator. This leap from innovation follower to innovation leader has been fostered by the 2.6 percent annual growth in this country's innovation index over the past eight years, and this is likewise reflected in improved economic performance as well as better quality and well paid jobs. Furthermore, Slovenia is also listed in the upper third of the EU-28 on the basis of the value of its intellectual assets. Given favourable conditions in global trade, there is good reason to be optimistic as regards the expectation that Slovenian business and the economy as a whole shall profit from its indigenous innovative endeavour.

I would like to take this opportunity to thank and congratulate all the innovators who made this year's twelve golden innovations possible. Your contribution to the reputation and competitiveness of our country is appreciated. Your hard work, commitment, passion and creativity testify to the fact that as long as the spirit of innovation is pursued, we need not fear the future.

***Samo Hribar Milič, General Manager of the Chamber of Commerce and Industry of Slovenia***



**42<sup>nd</sup>**  
of 144 countries in relation to  
innovation (World Economic Forum-  
WEF scorecard).

Indicator as to the sophistication of an economy,  
which underlies commercial success.



**14<sup>th</sup>**  
of 61 countries in the number of  
researchers per capita (IMD).

More knowledge in the workplace increases value-  
added in the economy.



**Top one-third**  
of EU-28 countries in the value of  
intellectual assets (Innovation Union  
Scorecard 2015)

High value of intellectual assets is the consequence of  
filed patents filings and registered trademarks.



**10<sup>th</sup>**  
of 61 countries in R&D expenditure  
relative to GDP (IMD).

Builds potential for higher value added.



Achieving **2.6 %**  
growth (4th highest in EU-28) in innovative  
activity over the past 8 years (Innovation  
Union Scoreboard 2015)

Gradual transition from an innovation follower to an  
innovation leader, and a consequent improvement in  
economic performance and better-paid jobs.

*is capable of promoting and realising his ideas*

reflects upon new issues  
as well as the needs  
of the environment around her

*is creative, resourceful  
and audacious*

is someone who sees things  
in a different way

*thinks about innovation in his sleep,  
and reflects upon a problem until he  
finds a solution*

is forever alert and  
open to everything  
new, can engage  
with others and  
listens carefully

# A good innovator

*identifies a problem  
and, avoiding  
pessimism, solves it*

**is fearless and persists with her ideas**

has curiosity ‘under his skin’

**is persistent yet intrinsically  
a little lazy, hence his  
intention to find easier  
solutions**

is not in love with her idea,  
but further investigates,  
develops and upgrades it

*is never entirely satisfied with outcomes, hence he/  
she is forever pursuing improvements, as well as  
new and better solutions*

*is an unusual character whose ideas contribute to the  
development of society*

## Recipients of the CCIS's 2015 Golden Innovation Awards

Company	Innovation	
Acroni d.o.o. Razvojni center Jesenice, d.o.o.	Development of continuous cast X120Mn12 high carbon manganese steel	10
BSH Hišni aparati d.o.o. Nazarje	Built-in fully automatic coffee center IC6	12
Domel, d.o.o. Razvojni center Nela, d.o.o.	Development of a new generation of high-efficiency energy label vacuum motors	14
Farma GRS, d. o. o.	Development of chemical synthesis and isolation of ivabradine as a hydrobromide salt and its use in pharmaceutical formulations	16
Gorenje d.d.	New generation of built-in ovens H-BIO 45/60-14	18
Krka, d. d., Novo mesto	Development of different forms of an active ingredient, together with their applications in the treatment of schizophrenia	20
Lek d. d.	Artificial stomach and intestines for the purposes of analysis and steering the development of complex drug formulations	22
Lek d. d.	Invention and development of a catalytic process for the production of key intermediates in the synthesis of a drug for the treatment of Parkinson's disease	24
Quadrofoil d.o.o.	Quadrofoil - an energy-efficient personal hydrofoil	26
SiEVA d.o.o.	Pressure sensor glow plug	28
SiEVA d.o.o. PE Novo Mesto TPV d.d.	Redefinition of the fold shape of steel tubes, which increases both their static and dynamic load capacity in car seat support frame constructions	30
Steklarna Hrastnik d.o.o.	Optimisation of B-furnace – innovative glassworks furnace solution in compliance with market requirements	32

**Innovation:****Development of continuous cast X120Mn12 high carbon manganese steel****Company:**

Acroni d.o.o.

Cesta Borisa Kidriča 44, SI-4270 Jesenice, Slovenia

E-mail: info@acroni.si

www.acroni.si

Razvojni center Jesenice, d.o.o.

Cesta Franceta Prešerna 61, SI-4270 Jesenice, Slovenia

**Innovators:**

Matevž Fazarinc, PhD, Boštjan Bradaškja, PhD, Boštjan Pirnar, MSc, Jure Bernetič, PhD, Matjaž Marčetič, Viktorija Marušič, MSc, Anton Košir, MSc, Milan Klinar, MSc

**Brief description:**

A new process for the continuous casting of mangalloy was developed. The extremely broad solidification interval prevented this alloy to be cast on a contionus caster. With a lot of ingenuity and process know-how, we managed it. This process facilitates a far better yield from input raw materials, i.e. between 80 to 85% as opposed to 50 to 55% using the standard method (ingot casting).

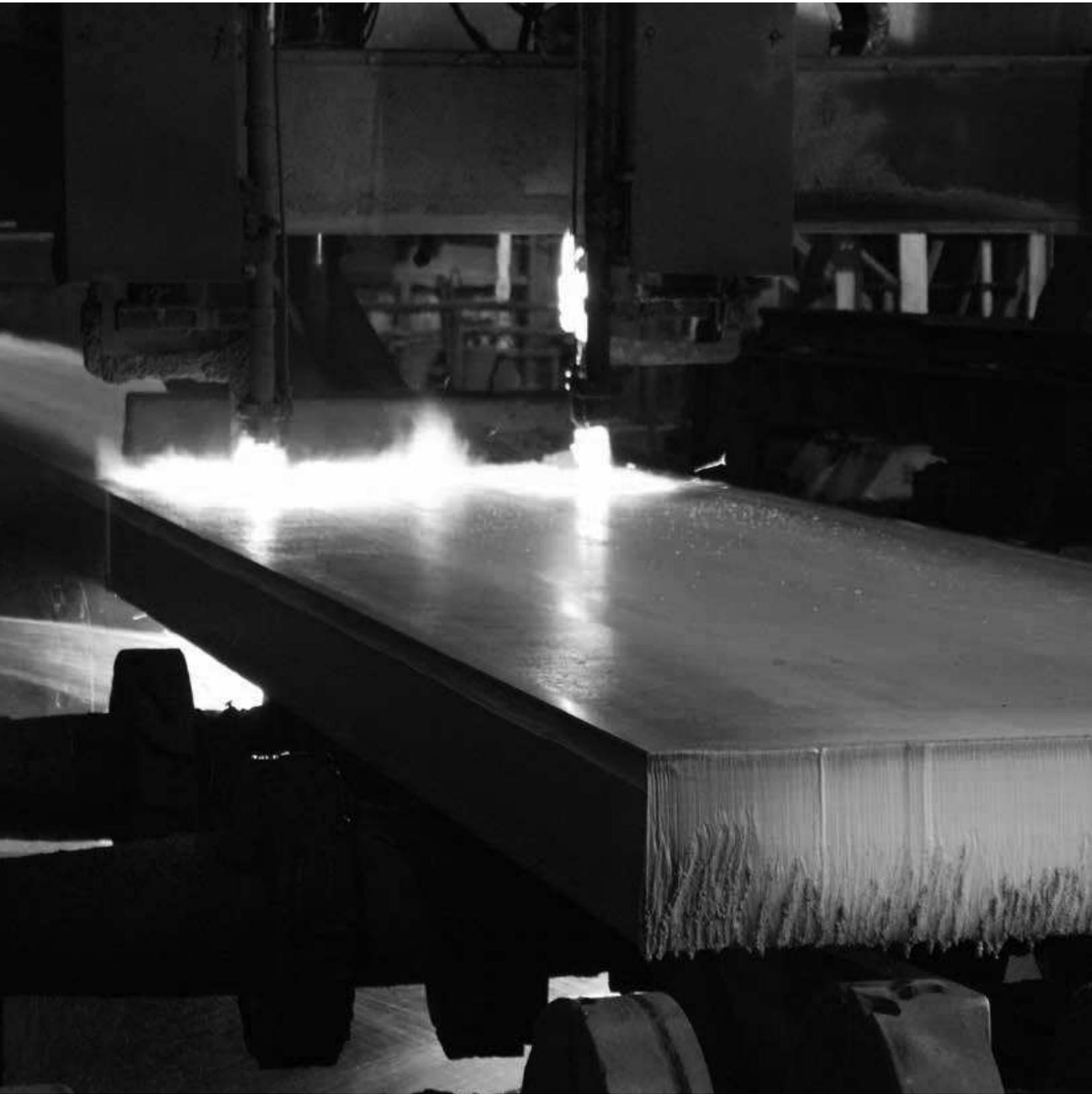
**Strategic partners of the companies:**

Abraservice France has been a strategic partner in the development and testing of this steel, and customers today include such companies as Audi, VW and Boeing.

**Golden Award Argumentation:**

The new process is a radical change to the erstwhile manufacture of high carbon manganese steel, a product which enjoys a large market consequent to its use in everything from the petrochemicals sector to vehicles. A specific industrial process has been patented under the PCT. Substantial market potential also derives from Acroni's capacity to produce a wide range of dimensions. Moreover, this innovation is destined to improve profitability, preserve jobs as well as an increase in gross value added per employee.

*Some of the greatest ideas are written on beer mats.*



**Innovation:****Built-in fully automatic coffee center IC6****Company:**

BSH Hišni aparati d.o.o. Nazarje  
 Savinjska cesta 30, SI-3331 Nazarje, Slovenia  
 T: +386 3 83 98 222 (Nazarje)  
 +386 1 5830 850 (Ljubljana)  
<https://www.bsh-group.com/laender/si/>

**Innovators:**

Aleš Semprimožnik, Primož Gortnar, Iztok Drobež, Samo Lemež, Vitko Remšak,  
 Samo Kvar, Branko Zavolovšek, Danilo Ramšak, Uroš Pečnik, Aleš Kreslin,  
 Peter Leskovšek, Igor Kramar

**Brief description:**

The “perfect built-in” approach is a guarantee that IC6 fully automatic coffee centers are in perfect harmony with other built-in new generation appliances, such as ovens, compact ovens and microwaves. A series of innovative features guarantee outstanding coffee, while the fully-automatic self-cleaning function steam cleans the milk system. Invention also extends to a high degree of technical protection with regard to the key features of the product, which is the subject of 14 patents.

**Strategic partners of the company:**

BSH collaborates with several strategic partners, including Gronbach, Katek and the oven manufacturer Bosch-Siemens Hausgeräte GmbH (BSH).

The innovation was granted a 2015 Interior Innovation Award as well as the Best of Best 2015 by the German Design Council (<http://www.german-design-council.de>).

**Golden Award Argumentation:**

The innovation is an up-scale of the Bosch, Siemens and Neff ranges of in-built automatic coffee machines, a development which shall allow these manufacturers to preserve and even enhance their market shares. Sales revenues from appliances manufactured between November 2014 and April 2015 amounted to 20.7 million euros.

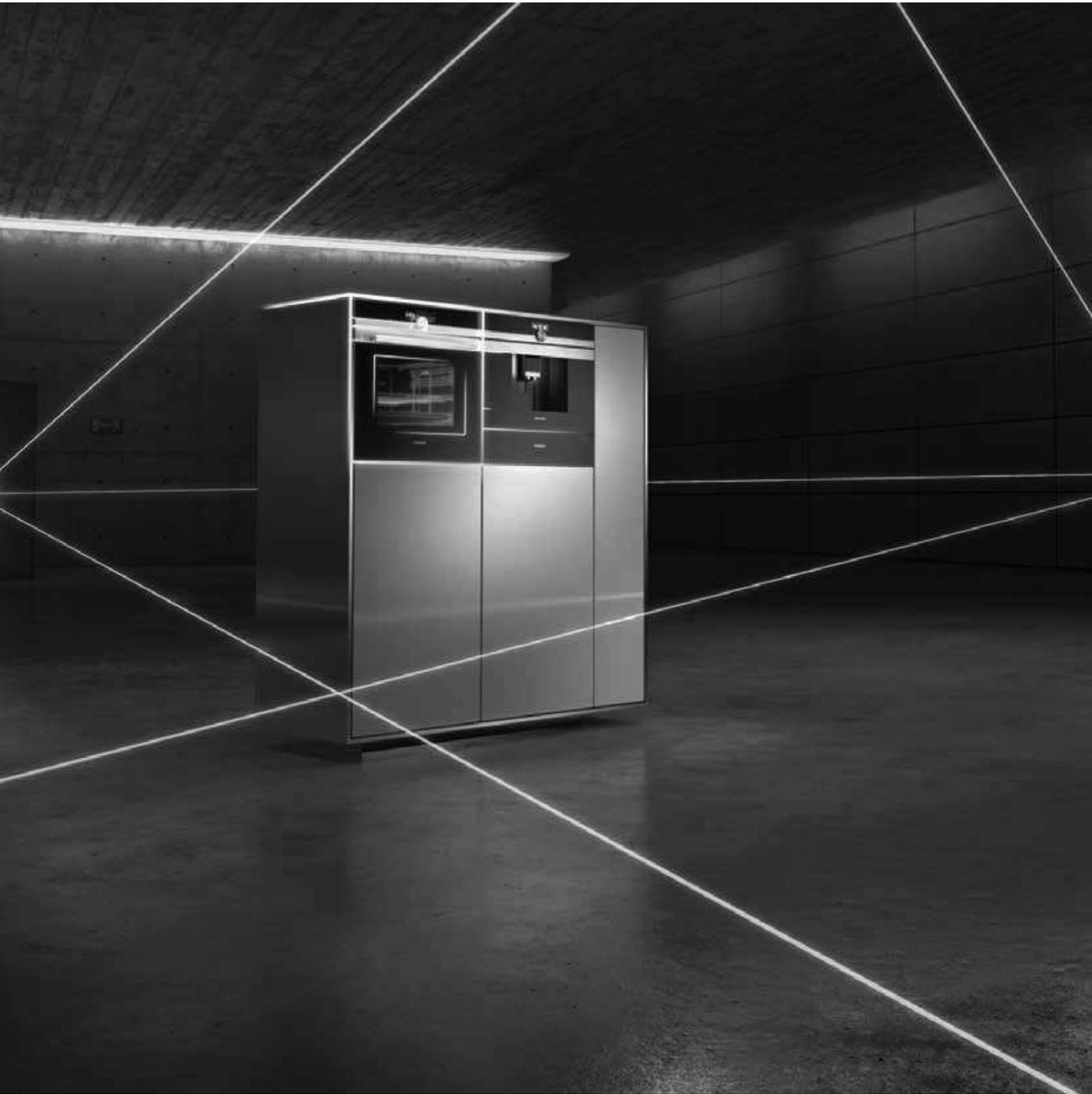
The materials used in the product itself demonstrate a high commitment to environmental protection. Distinguished by its lower water and energy consumption, as well as a reduction in coffee-making time, the appliance produces less waste.

*The more diverse the team, the more creative the solutions.*

# B/S/H/

BSH Hišni aparati d.o.o. Nazarje





**Innovation:****Development of a new generation of high-efficiency energy label vacuum motors****Company:**

Domel, d.o.o.

Otoki 21, SI-4228 Železniki, Slovenia

E-mail: info@domel.com

www.domel.com

Razvojni center Nela, d.o.o.

Na plavžu 79, SI-4228 Železniki, Slovenia

E-mail: info@nela.si

www.nela.si

**Innovators:**

Romana Kavčič, Janez Rihtaršič, Igor Markič, Tomaž Čemažar, Andrej Biček, Blaž Benedik, Simon Rant, Miha Kern, Primož Bajželj, Iztok Mohorič, Branko Jovič, Barbara Benedičič, Katarina Prezelj, Matevž Rihtaršič, Teja Bertoncelj, Matjaž Čemažar

**Brief description:**

This eco-design innovation is a response to EU directives in relation to energy consumption and efficiency in vacuum cleaners. The company's goal was to produce a highly-efficient lightweight motor that will establish a global trend in dry aspiration vacuum cleaners.

**Strategic partners of the companies:**

Philips, Electrolux, Arčelik, Karcher, Nilfisk, Rowenta and Fakir all rank among the best known customers for these vacuum motors.

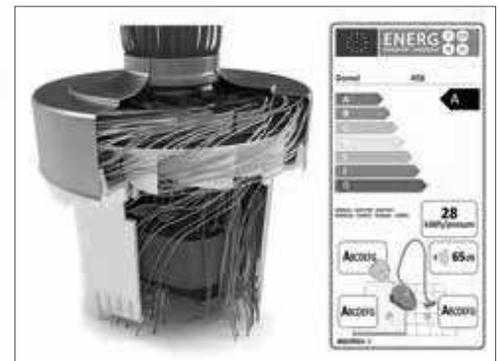
**Golden Award Argumentation:**

This innovation sets a new global trend in high-efficiency - namely the A+, A++ and A+++ energy labels - vacuum motors and enhances Domel's position as a technological leader in this market.

Due to its low weight and reduction in the amount of materials used in the manufacture of this product, per unit CO<sub>2</sub> emissions are reduced by 20%. All of this motor's components are recyclable.

*A true developer never loses sight of the problem.*





**Innovation:****Development of chemical synthesis and isolation of ivabradine as a hydrobromide salt and its use in pharmaceutical formulations****Company:**

Farma GRS, d. o. o., Novo mesto  
Seidlova cesta 70, SI-8000 Novo mesto, Slovenia  
E-mail: info@farma-grs.si  
www.farma-grs.si

**Innovators:**

Primož Benkič, PhD, Miro Dobravc, Urška Gojak Krivec, Miran Hvalec, MSc, Anton Kočevar, Berta Kotar Jordan, MSc, David Kralj, PhD, Dušan Krašovec, Anica Pečavar, PhD, Matej Smrkolj, PhD, Urška Turk, Rok Zupet, PhD

**Brief description:**

This pertains to the chemical synthesis, isolation and purification with crystallisation of the active ingredient ivabradine as a hydrobromide salt, together with several innovative solutions in the development and manufacture of finished pharmaceutical products in the form of tablets. Ivabradine hydrobromide is a new form of an active ingredient used in cardiology for the treatment of angina pectoris and ischemic heart diseases.

**Development and Application Specifics:**

Being granted a patent is quite unique and most recognisable in our industry.

**Golden Award Argumentation:**

This innovative solution facilitated the efficient manufacture of a quality generic pharmaceutical which has been introduced into key markets. This patent-protected innovation has increased the company's market share as well as gross value added per employee.

*We are the most innovative when understanding all the obstacles on our path to product realization.*

(19)



(11)

**EP 2 276 742 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

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of the grant of the patent:  
**22.01.2014 Bulletin 2014/04**

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**C07D 223/16** <sup>(2006.01)</sup> **A61K 31/55** <sup>(2006.01)</sup>  
**A61P 9/04** <sup>(2006.01)</sup>

(21) Application number: **09731459.5**

(86) International application number:  
**PCT/EP2009/054159**

(22) Date of filing: **07.04.2009**

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**WO 2009/124940 (15.10.2009 Gazette 2009/42)**

(54) **IVABRADINE HYDROBROMIDE**

IVABRADINHYDROBROMID

BROMHYDRATE D'IVABRADINE

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL  
PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA RS**

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**Patentanwälte**  
**Beselerstrasse 4**  
**22607 Hamburg (DE)**

(30) Priority: **07.04.2008 SI 200800080**

(56) References cited:  
**US-A- 5 296 482 US-A1- 2005 228 177**

(43) Date of publication of application:  
**26.01.2011 Bulletin 2011/04**

- **STAHL P H ET AL: "Handbook of Pharmaceutical salts, passage" HANDBOOK OF PHARMACEUTICAL SALTS : PROPERTIES, SELECTION, AND USE, WEINHEIM : WILEY-VCH VERLAG, DE, 1 January 2002 (2002-01-01), pages 329-333,342, XP002472779 ISBN: 978-3-906390-26-0**

(73) Proprietor: **KRKA, tovarna zdravil, d.d., Novo mesto**  
**8501 Novo mesto (SI)**

**Innovation:****New generation of built-in ovens H-BIO 45/60-14****Company:**

Gorenje d.d.

Partizanska 12, SI-3320 Velenje, Slovenia

E-mail: info@gorenje.com

www.gorenje.com

**Innovators:**

Sebastjan Kotnik, Elvir Čaušević, Mitja Rudolf, Borut Turičnik, Uroš Kokolj, Xander Gunnewijk, Erwin Jurriens, Blaž Brezovnik, Goran Hrustl, Primož Ločičnik, Matjaž Es, Nina Movh, Željko Glišić, Uroš Kokol, Božidar Pobirk, Ana Marija Kodrin, David Dokl, Gregor Štumpfel, Jure Plaskan, Matej Zorman, Andrej Kaiser, Timotej Globačnik, Edin Huremović, Blaž Kramer, Tomo Koželjnik, Miloš Kužner, Simon Tržan, Andrej Žnidarko, Tomaž Rehar, Simon Grobelnik, Boštjan Stropnik, Renata Meža, Franc Koren, David Javornik, Meta Golčman, Damjana Kumer, Tomaž Krajnc, Franc Šmon, Slavko Glasenčnik, Rok Grobelnik, Janez Pirtovšek, Srečko Šimunkovič, Urška Pavčnik, Ivanka Pungartnik, Matevž Popič, Lidija Pritržnik, Tomi Krašovec, Urša Kovačič, Janez Matauš, Aleš Plahutnik, Robert Ravnjak, Andrej Sitar, Roman Podlesnik, Damjan Praprotnik, Matej Čremožnik, Benjamin Vozlič, Franc Bastl, Nejc Svetec

**Brief description:**

Gorenje built-in ovens from the new generation, developed by Gorenje Group innovators, are among the largest on the market as regards their volume. In spite of innovative technology their energy consumption is low. The ovens were developed in two height versions: the normal - 60 cm and the compact - 45 cm; namely, the latter is conquering a growing share of the market. In addition to the conventional mode of cooking these ovens enable a healthier way of food preparation with steam and microwaves.

Their competitive advantage is a specially patented interior shape - HomeMade, which imitates the functioning of home bread baking oven. Gorenje ovens offer more than 100 automatic cooking programs; and for more advanced users even cooking in steps which are set by the user himself.

Built-in oven with an interactive colour touch screen received one of the most important international design awards - Red Dot.

In the last year and this year the new ovens have already been presented in most of Gorenje markets around the world.

**Strategic partners of the company:**

Gorenje markets these innovative household appliances in Europe, Australia, as well as the Middle and Far East, under its Atag, Asko, Pelgrim, Gorenje and Gorenje+ brands.

The Gorenje built-in oven with interactive colour touch screen was granted a Red Dot Design Award in 2014, and in 2015 the new generation combined steam oven received a Plus X Award in Bonn (Germany).

**Golden Award Argumentation:**

The innovative Asko range of ovens sees Gorenje enter the premium end of the market. Modular combinations of similarly designed appliances has made it easier for the company to enter new markets which is reflected in an increase in market share.

This innovation and the consequent realisation of the project has resulted in a six percent increase in the production. In addition to securing existing jobs it has also helped create 66 new ones.

*Real innovation derives from engineers realising their latent ideas.*



**Innovation:****Development of different forms of an active ingredient, together with their applications in the treatment of schizophrenia****Company:**

Krka, d. d., Novo mesto  
Šmarješka cesta 6, SI-8501 Novo mesto, Slovenia  
E-mail: info@krka.biz  
www.krka.si

**Innovators:**

Primož Benkič, PhD, Sergeja Bombek, PhD, Polona Bukovec, Lidia Černoša, MSc, Urška Gojak Krivec, Urška Juršič, Jožica Kastelic, Vesna Krošelj, PhD, Marjo Merslavič, PhD, Matej Pavli, PhD, Matej Smrkolj, PhD, Marko Štefanič, PhD, Sandra Urek Blatnik, MSc, Anamarija Vajs, MSc, Miha Vrbinc, PhD

**Brief description:**

This involves two generic pharmaceutical products containing aripiprazole - a modern active ingredient from the therapeutic class of atypical antipsychotics - in the form of a base and hemifumarate salt in different strengths. In developing these two products the company adjusted to the diverse patent situation in key East and Western European markets and achieved an optimal marketing strategy.

**Development and Application Specifics:**

Krka's innovation has benefitted schizophrenia patients who now have access to an affordable safe and efficient medicine of the highest quality.

Likewise, the sale of these ingredients in foreign markets has been a great success for the company.

**Golden Award Argumentation:**

Upon launching the generic drug in key markets - including Germany, the UK and Poland - the company has acquired the largest market share. By the end of 2014, Krka's product was the leading generic aripiprazole in Germany, while sales in other markets continue to increase.

*Our greatest motivation is to remain ahead of the competition.*





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**02.03.2011 Bulletin 2011/09**

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**A61P 25/18 (2006.01)**

(21) Application number: **07818336.5**

(86) International application number:  
**PCT/EP2007/008247**

(22) Date of filing: **21.09.2007**

(87) International publication number:  
**WO 2008/034628 (27.03.2008 Gazette 2008/13)**

(54) **ARIPIPRAZOLE HEMIFUMARATE AND PROCESS FOR ITS PREPARATION**  
**ARIPIPRAZOLHEMIFUMARAT UND VERFAHREN ZU DESSEN HERSTELLUNG**  
**HEMIFUMARATE D'ARIPIPRAZOLE ET PROCEDE DE PREPARATION ASSOCIE**

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Designated Extension States:  
**AL BA HR MK RS**

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8000 Novo Mesto (SI)
- **STEFANIC, Marko**  
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- **VAJS, Anamarija**  
8000 Novo mesto (SI)
- **KROSELJ, Vesna**  
8310 Sentjernej (SI)

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(73) Proprietor: **Krka Tovarna Zdravil, D.D., Novo Mesto**  
**8501 Novo Mesto (SI)**

(74) Representative: **UEXKÜLL & STOLBERG**  
**Patentanwälte**  
**Beselerstrasse 4**  
**22607 Hamburg (DE)**

(72) Inventors:  
• **MERSLAVIC, Marjo**  
**8351 Straza pri Novem mestu (SI)**

(56) References cited:  
**EP-A- 0 367 141 US-A1- 2006 223 820**



**Innovation:****Artificial stomach and intestines for the purposes of analysis and steering the development of complex drug formulations****Company:**

Lek d. d.

Verovškova 57, SI-1526 Ljubljana, Slovenia

E-mail: info.lek@sandoz.com

www.lek.si

**Innovators:**

Igor Legen, PhD, Sandra Brglez, Alenka Bevc, Uroš Klančar, PhD,  
 prof. Janez Diaci, PhD (Faculty of Mechanical Engineering, Ljubljana),  
 Lovro Kuščer, PhD (Faculty of Mechanical Engineering, Ljubljana)

**Brief description:**

These devices mimic peristaltic movements of the stomach and small intestines to enable the development of bio-relevant dissolution methods crucial in drug development. The patented innovation comprises of two simulators of the gastrointestinal tract: the 'artificial stomach' and 'artificial intestines'. In 2013-2014, the simulators significantly contributed to the improved success rate of bioequivalence studies.

**Development and Application Specifics:**

The innovation has reduced the need for clinical trials. It was deemed the company's best innovation in 2014.

**Golden Award Argumentation:**

The simulators' major advantage is the reduction in the need for and consequent cost of bioequivalent studies using human volunteers, which is a major expense in the development of drugs. In addition, the consumption of water has been reduced 10-fold thanks to the simulators.

Timely completion of drug registration documentation allowed the company to enter key markets six months earlier than anticipated. Further to cost reduction, the innovation also resulted in an increased market share together with the generation of several million euros in sales revenues.

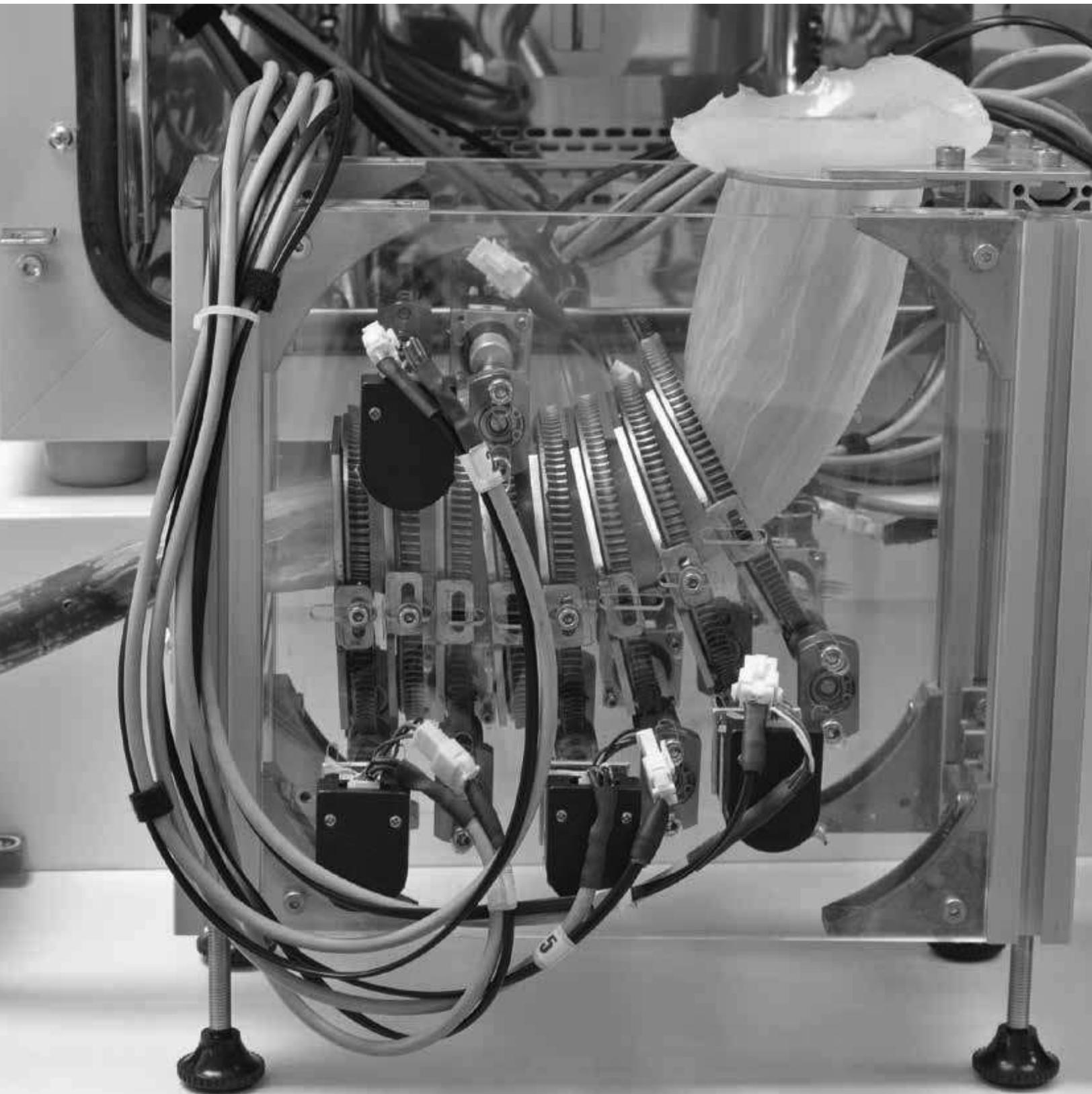
*Our inspiration derives from the wish to achieve continuous improvement and sustainable growth.*



član skupine Sandoz  
 a Sandoz company



Innovative Slovenia



**Innovation:****Invention and development of a catalytic process for the production of key intermediates in the synthesis of a drug for the treatment of Parkinson's disease****Company:**

Lek d. d.

Verovškova 57, SI-1526 Ljubljana, Slovenia

E-mail: info.lek@sandoz.com

www.lek.si

**Innovators:**

Zdenko Časar, PhD, Tomaž Mesar, MSc

**Brief description:**

Facilitating the industrial production of a key intermediate in the synthesis of the drug cabergoline for the treatment of Parkinson's disease. The process involves a significantly shorter reaction time (from 3 days to just 1 day) as well as higher yield of the reaction product (up from 56% to 94%). Moreover, it enables considerably lower use of reagents and organic solvents, thereby contributing to a more eco-friendly and safer synthesis.

**Development and Application Specifics:**

The beneficiaries of this innovation are Parkinson's disease sufferers, thus the drugs which now derive from it are to be found in most European pharmacies.

A contribution to the 16 February 2015 online edition of the American Chemical Society's Noteworthy Chemistry noted that "this work helps us understand an N-demethylation reaction".

**Golden Award Argumentation:**

The innovation has enabled LEK to take a market share in the production of cabergoline-based drugs. As a new generic provider of cabergoline in Europe, LEK additionally reduces the drug's price and consequently increases value for state health budgets.

The intermediate is registered in key EU countries and has now been launched in North and South American markets as well as Asia.

*At our most innovative when confronted with the most challenging.*



član skupine Sandoz  
a Sandoz company



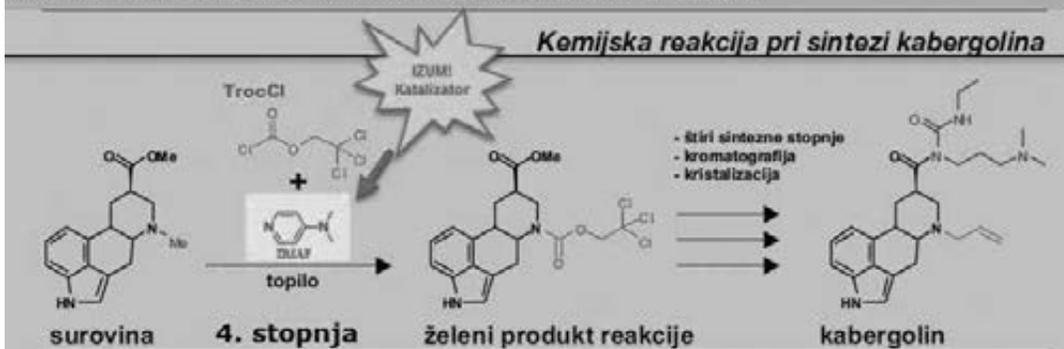
Innovative Slovenia

Z. Časar, T. Mesar, »Preparation of N-6 demethylated, 9,10-dihydrolysergic acid alkyl esters«, EP 2 294 067 B1 (patent podeljen: 18.2.2015).

Z. Časar, T. Mesar, »A DMAP-Catalyzed Approach to the Industrial-Scale Preparation of N-6-Demethylated 9,10-Dihydrolysergic Acid Methyl Ester: A Key Cabergoline and Pergolide Precursors«, Org. Process Res. Dev. 2015, 19, 378–385. (članek objavljen on-line 31.12.2014 in 20.2.2015 v končni številki revije)

Delo je povzeto tudi v spletni publikaciji »Noteworthy Chemistry« (številka 16. februar 2015) pod naslovom »This work helps us understand an N-demethylation reaction«.

Spletna publikacija »Noteworthy Chemistry«, ki jo izdaja Ameriško kemijsko društvo (American Chemical Society), tedensko objavlja izbrane najbolj inovativne ideje iz širšega nabora kemijske literature.



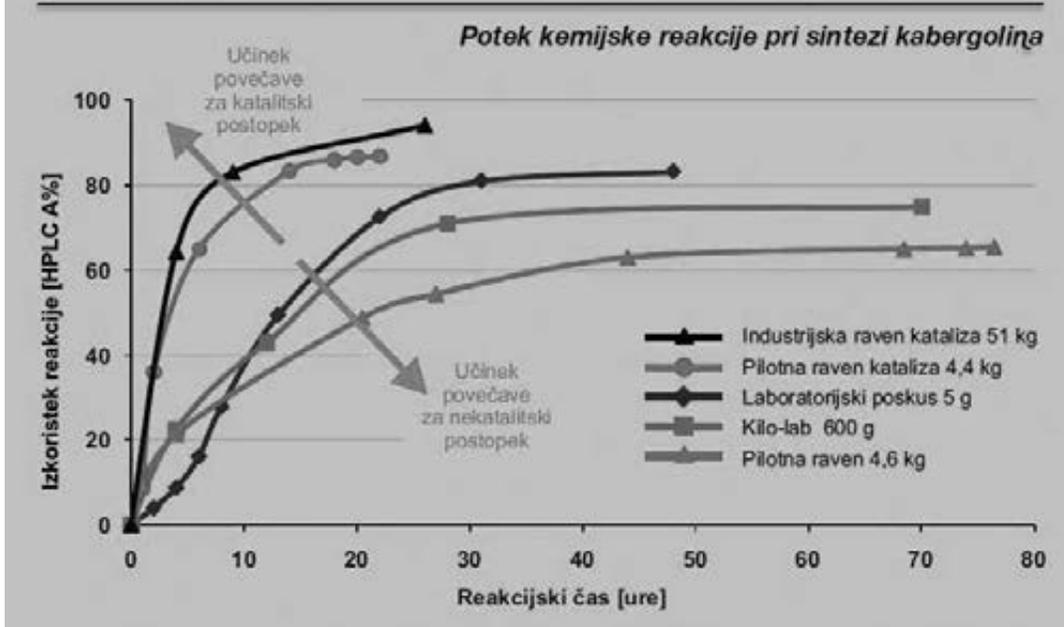
**Izkoristek:** za literaturno znan proces 56% (pilotni nivo); za izumljen katalitski proces 94% (industrijski nivo)

**Čas reakcije:** za literaturno znan proces 3 dni; za izumljen katalitski proces 1 dan

**Poraba TrocCl:** 6.2 kg/kg produkta za znan proces in 2.4 kg/kg produkta za izumljen katalitski proces

**Poraba baze/katalizatorja:** 1.61 kg/kg produkta za znan proces in 0.01 kg/kg za produkta izumljen katalitski proces

**Poraba topila:** 51.2 kg/kg produkta za znan proces in 25.8 kg/kg za produkta izumljen katalitski proces



**Innovation:****Quadrofoil - an energy-efficient personal hydrofoil****Company:**

Quadrofoil d.o.o.

Partizanska ulica 38, SI-2310 Slovenska Bistrica, Slovenia

E-mail: [info@quadrofoil](mailto:info@quadrofoil)

<http://quadrofoil.com>

**Innovators:**

Simon Pivec, Ermin Kosovel, Klemen Tavčar, Miloš Velimirović, Marjan Rožman

**Brief description:**

Quadrofoil, an aesthetic, functional and ergonomic watercraft which is extremely energy-efficient and meets the most stringent emissions criteria. Running costs amount to less than one euro per hour. Due to its shape and hydrofoils, the Quadrofoil doesn't cause waves, thus it ensures a safe and comfortable ride even in rough water. Its patented steering system is the first in the world to convey the lightness and agility of driving a car to a watercraft, and provides users the novel adrenaline experience of flying on water.

**Strategic partners of the company:**

Quadrofoil has customers come from all over the world, including the USA, Australia, Russia, China, Mauritius, UAE, Saudi Arabia, the UK, Monaco and New Zealand.

Quadrofoil received an international award at the Internautica Fair in Portorož.

**Golden Award Argumentation:**

This new and revolutionary personal watercraft is a global novelty and innovative in its design, energy efficiency and ecological profile.

A new business model has also been developed for marketing the Quadrofoil watercraft.

*Motivated to preserve the environment through innovation.*





**Innovation:****Pressure sensor glow plug****Company:**

SiEVA d.o.o.

Polje 15, SI-5290 Šempeter pri Gorici, Slovenia

E-mail: [info@sieva.si](mailto:info@sieva.si)

<http://sieva.si/>

**Innovators:**

Gverino Ratoša, SiEVA

Tomaž Mlakar, SiEVA

Davorin Rejc, SiEVA

Rudi Kragelj, Hidria AET

Peter Uršič, Hidria AET

Silvin Šavle, Hidria TC

**Brief description:**

A revolutionary system for diesel engine cold start, an innovation which has been recognised as the best by the world's foremost automotive manufacturers. At engine start it meets the most stringent environmental and greenhouse gas emission standards. It is now the subject of 15 international patents, and the company anticipates that due to this innovation company market share in this segment will grow to over 30% of the global needs.

**Strategic partners of the company:**

This innovation has been granted a series of international patents. The world's leading motor manufacturers rank among SiEVA's strategic partners.

**Golden Award Argumentation:**

This revolutionary glowplug meets most demanding requirements of the automotive sector. The company is now positioned as a reference development centre for diesel engine components capable of competing with the most eminent European manufacturers.

Marketing is also an important element in the success of a product, which is 10- to 15-times higher than existing solutions.

*No innovation can be realised without motivated team.*





**Innovation:****Redefinition of the fold shape of steel tubes, which increases both their static and dynamic load capacity in car seat support frame constructions****Company:**

SiEVA d.o.o. PE Novo mesto  
 Polje 15, SI-5290 Šempeter pri Gorici, Slovenia  
 E-mail: info@sieva.si  
<http://sieva.si/>

**TPV d.d.**

Kandijaska cesta 60, SI-8000 Novo mesto, Slovenia  
 E-mail: tpv@tpv.si  
[www.tpv.si](http://www.tpv.si)

**Innovators:**

Vili Malnarič, MSc, Rajko Marinčič, MSc,  
 Tomaž Savšek, PhD, Dušan Šimec, Blaž Župan,  
 Veljko Goleš

**Brief description:**

This innovative design and manufacturing process lead to new fold shapes of high-strength steel tubes which support the cushion of a car seat. The product is successfully marketed by a leading European manufacturer of car seat height-adjustment components.

**Strategic partners of the companies:**

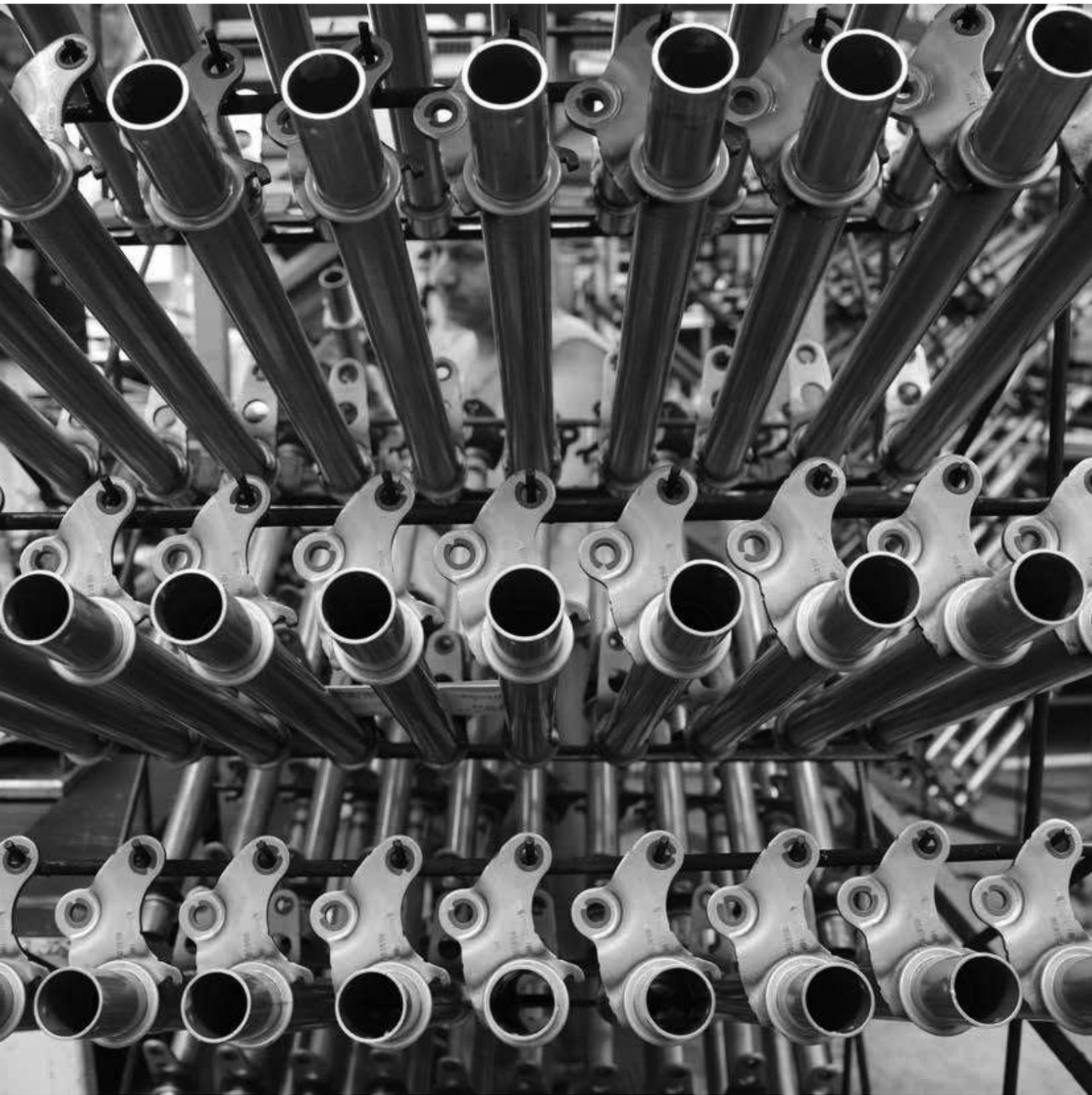
European manufacturers of prestige vehicles are the major users of this innovation.

**Golden Award Argumentation:**

In addition to increasing its share of key export markets, the innovation also enhances SiEVA's visibility and reputation as a technology supplier. Consequently the company strengthened its position as a component development partner of major players in the automotive sector.

*Motivated by the desire to solve the insoluble.*





**Innovation:****Optimisation of B-furnace – innovative glassworks furnace solution in compliance with market requirements****Company:**

Steklarna Hrastnik d. o. o.  
Cesta 1. maja 14, SI-1430 Hrastnik, Slovenia  
E-mail: [info@steklarna-hrastnik.si](mailto:info@steklarna-hrastnik.si)  
<http://steklarna-hrastnik.si/>

**Innovators:**

Robert Gaal, Matjaž Bučar, Janez Tomažin, Pero Ereiz, Roman Tušek, Jaša Polutnik

**Brief description:**

Technological and energy efficiency improvements to the company's B-furnace had a positive impact on both the working and natural environment. In addition to the reduction in power consumption, there has been a 64% fall in the use of mains water and near 90% reduction in NOx emissions. These eco-improvements have also yielded the company an increase in production capacity.

**Strategic partners of the company:**

The company's strategic partners include Coca Cola, Villeroy & Boch, Brown-Forman, Bacardi, and Heineken International.

**Golden Award Argumentation:**

The innovation resulted in an increased capacity and lifetime of the furnace, a reduction in energy consumption and CO<sub>2</sub> emissions, as well as better quality glass. This enhancement of production will allow the company to service a more demanding market niche – the perfume industry.

*At our most innovative when faced with limitations.*

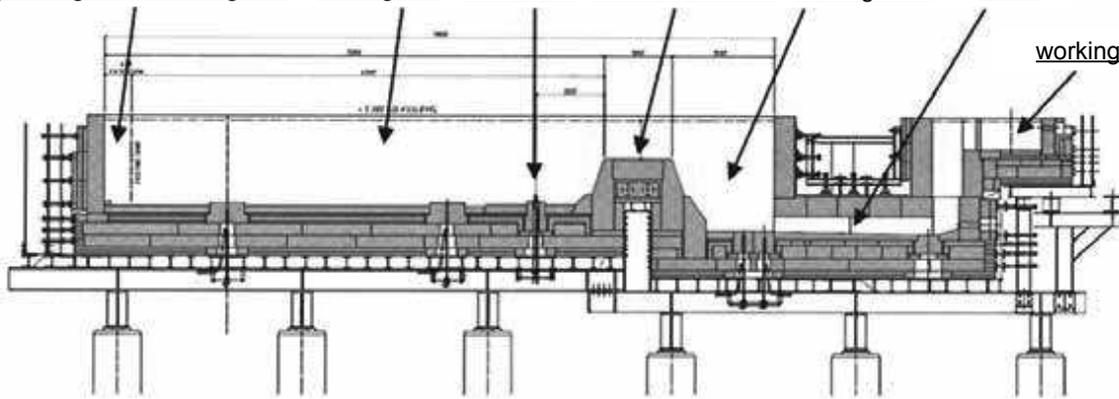


STEKLARNA HRASTNIK



Innovative Slovenia

lengthening of the melting end   melting end   electrodes   air cooled barrier   refining shelf   throat   working end



## 34 Other recipients of 2015 Innovation awards

### Silver awards for innovation

Company	Innovation
SwatyComet d.o.o. <a href="http://www.swatycomet.si">www.swatycomet.si</a>	Spring end grinding ICE SPRING®
Container d.o.o. <a href="http://www.container.si">www.container.si</a>	Control unit for an offshore oil pumping station
Sico d.o.o. <a href="http://www.sico.si">www.sico.si</a>	The double sided horizontal log splitter ROBUST 600 with loading and transport system
Ledinek engineering, d.o.o. <a href="http://www.ledinek.com">www.ledinek.com</a>	Kontizink M120-60kN S120 - high performance finger-jointing line
Kreativni aluminij, d.o.o. in Boxmark Leather, d.o.o. <a href="http://www.kreal.si">www.kreal.si</a> <a href="http://boxmark.si/">http://boxmark.si/</a>	XTREME Outdoor Collection Aluminium Framed Upholstered Outdoor Furniture
Kemijski inštitut <a href="http://www.ki.si">www.ki.si</a>	Multi-function catalyst for the efficient conversion of gas mixtures of methane and carbon dioxide in the synthesis gas
Hidria Rotomatika, d.o.o., Spodnja Idrija <a href="http://si.hidria.com">http://si.hidria.com</a>	The »Air Light« manufacturing line
MAHLE Letrika, Proizvodnja električne in elektronske opreme za motorna vozila, d.o.o., Šempter pri Gorici <a href="http://www.letrika.mahle.com">www.letrika.mahle.com</a>	High-efficiency AAP compact alternator
Elan, d.o.o. <a href="http://www.elanskis.com">www.elanskis.com</a>	The AMPHIBIO 4D Technology
Chipolo d.o.o., Hrastnik <a href="http://www.chipolo.net">www.chipolo.net</a>	Chipolo – the smart pendant
Regionalni center za razvoj d.o.o., Zagorje ob Savi <a href="http://www.rcr-zasavje.si/">www.rcr-zasavje.si/</a>	Entrepreneurially in the business world
ETI d.d., Izlake in RC eNeM d.o.o., Podružnica keramični elementi in varovalke <a href="http://www.eti.si">www.eti.si</a>	Manufacturing line for the production of ceramic pipes
ETI d.d., Izlake in RC eNeM d.o.o., Podružnica Keramični elementi in varovalke <a href="http://www.eti.si">www.eti.si</a>	Development of new steatite materials

Company	Innovation
Tips d.o.o. <a href="http://www.tips.si">www.tips.si</a>	"Honey Badger" - the most useful combination of characteristics required for towing vehicles (Ground Service Equipment)
Numip d.o.o., podružnica Krško <a href="http://www.numip.si">www.numip.si</a>	Cutting of heat exchanger tubes in nuclear power plants (for sampling) by using unconventional technologies
Metal Ravne d.o.o., Ravne na Koroškem <a href="http://www.metal-ravne.com">www.metal-ravne.com</a>	New products from steel made by ESR procedure
BSH Hišni aparati d.o.o., Nazarje <a href="https://www.bsh-group.com/">https://www.bsh-group.com/</a>	MaxxiMUM kitchen machine
Esotech d.d. <a href="http://www.esotech.si">www.esotech.si</a>	Wastewater treatment plants for drinking water
Roto Pavlinjek d.o.o. <a href="http://www.rotosi.si">www.rotosi.si</a>	Wastewater purifying plants with integrated biological decomposition
Adria Mobil, d.o.o., Novo mesto <a href="http://www.adria-mobil.si">www.adria-mobil.si</a>	Altea4four – a unique marketing approach and a unique desing and technological solution
HYB, d.o.o. in IN.Medica d.o.o. <a href="http://www.hyb.si">www.hyb.si</a>	Closed blood sampling system (CBSS)

### Bronze awards for innovation

Company	Innovation
TPV Trženje in proizvodnja opreme vozil d.d. Novo mesto PE Brežice <a href="http://www.tpv.si">www.tpv.si</a>	BMW Shifting Gear Assembly Device
Nieros Metal d.o.o., Slovenj Gradec <a href="http://www.nieros-metal.si">www.nieros-metal.si</a>	Expert system for welding
Castoola d.o.o. <a href="http://www.castoola.com">www.castoola.com</a>	The Castoola Platform
Reflex d.o.o. <a href="http://www.reflex.si">www.reflex.si</a>	The »RX Warm-k 0,7 We« Glass

### Diploma for innovation

Company	Innovation
Airlabs, Aleš Pavlin <a href="http://www.airlabs.eu/">http://www.airlabs.eu/</a>	Airlabs technology for smart agriculture and forestry



## Innovative Slovenia

### Innovation promotion and support programme

The Chamber of Commerce and Industry of Slovenia (CCIS) developed the Innovative Slovenia Programme to promote as well as nurture and support the entire process of innovation – from conception to implementation. Through a variety of activities we aim to foster the spirit of innovation in Slovenia, and thereby contribute to success in foreign markets.

The Innovative Slovenia Programme encompasses the following activities:

- **INFORMING** on topics relevant to an enterprise's performance and development is an ongoing activity of the CCIS.
- **PROMOTION** of innovations and innovative companies through modern communication channels.
- **TRAINING COURSES.** The CCIS organises some ten training courses for business annually, and these provide participants with a broad range of skills and knowledge, from strictly specialised to general. The lecturers are eminent professionals from Slovenia and abroad.
- **CONFERENCES** focused on delivering enterprises information on emerging and future technologies and, in order to promote development collaboration, the engagement of enterprise with companies and organisations in Slovenia and abroad.
- **CONNECTING** various publics in order that they may exchange information, experience and best practice, is one of the key roles of the CCIS. As a meeting point the CCIS connects Slovenian enterprises with research institutions and other companies both locally and internationally.
- **INTERNATIONALISATION** of development, initiating delegations and facilitating meetings aimed at the promotion of collaboration and the initiation of common development projects.
- **COUNSELLING AND MENTORSHIP**, providing companies advice and assistance in various fields and areas pertaining to innovation.
- **PROMOTING YOUTH** and developing the creative and innovative potentials of young people – start-up weekends, support to students in the development of innovative food products (the EU's Ecotrophelia competition) as well as collaboration with the Start:up Slovenia initiative.
- **AWARDING INNOVATIVITY.** The CCIS has the country's longest tradition in awarding innovation.

## Chamber of Commerce and Industry of Slovenia Innovation Awards

**The CCIS Innovation Awards have a long tradition, and this year we celebrate the 19th edition. New innovative and improved products and production technologies are awarded, as are innovations pertaining to organisation, service provision and marketing.**

Selection of the CCIS Innovation Award winners is a two-step process. Firstly, the regional chambers invite entries from local innovators, and their projects and innovations are assessed according to a set of criteria which are applied both regionally and thence nationally. All innovations that meet the application criteria are considered, whilst the best within the individual competitions receive gold, silver and bronze awards.



The outstanding innovations from Slovenia's thirteen regions are then considered and judged in the context of a national competition for the country's best innovation, at which it is far from easy to attain a golden award. All entries must meet three main criteria pertaining to originality, viability and contribution to the clean environment as well as six sub-criteria.

The innovation:

- has to be original, new or significantly better from that which is currently available on the market.
- must be attributable and, accordingly, adequately protected (e.g. under a patent, brand, trademark or secret know-how).
- should be commercially viable and thus capable of enjoying market success (i.e. recognised by customers, consumers or users).
- promotes or upgrades the innovation culture in the participating organisation and makes a positive economic or social contribution locally, regionally, nationally or internationally.
- is a positive development in the context of environmental issues.

The innovations presented in this catalogue made it through two selections as well as fulfilled all of the abovementioned criteria, hence they are considered fully deserving of the 2015 CCIS's Golden Innovation Award.

We congratulate all award winners

**The CCIS's 2015 Golden Innovation Awards**

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