

# TECHNOSPHERE

Innovation Services at İzmir Institute of Technology



Presented By:



ATMOSFER TTO

## VOLUME 01, ISSUE 02

Cooperation with Consortiums:  
A Success Story

Collaboration Days | Köprü  
Günleri Information

What Others are Saying About  
Atmosfer TTO....

Meet & Greet: Dr. Mustafa Köksal  
of Molecular Biology & Genetics

Diagnosing Cancer with  
Microfluidics

# HORIZON 2020 REVIEW

- . PERFORMANCE
- . SME INSTRUMENT
- . APPLICATION TIPS



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## ACKNOWLEDGEMENT

*Atmosfer TTO is supported by TÜBİTAK Support Programme for Technology Transfer Offices 1513*

The goal of this program is to support the commercialization of knowledge existing in universities and transfer it to industry as products or processes. The top 50 Turkish universities based on the Entrepreneurial and Innovation University Index ranking were eligible for the program. İZTECH is one of twenty universities that received the grant to establish Technology Transfer Offices. The project is funded through 2018 with options to extend for up to 10 years.



## FROM THE DESK OF RECTOR PROF. DR. MUSTAFA GÜDEN

*Let's Foster Innovative Thinking Across İZTECH Campus...*

As a research institute, İZTECH strives to provide an environment of constant innovation and creativity with ample opportunity to close the gap between "knowledge" and "market". Our main goal for commercialization is to take all the science conducted here, turn it into quality projects and patents, and use that research to feed our local economy.

One of the enablers for the technology journey from discovery to market is the Horizon 2020 program funded by the European Commission. H2020 is a framework research program, but the key discriminators are that it emphasizes innovation, growth, marketability, and improving one's global position in technology. As the theme for this issue, I want to highlight why this program is critical for our academic performance.

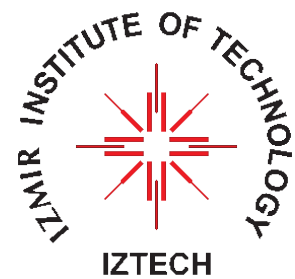
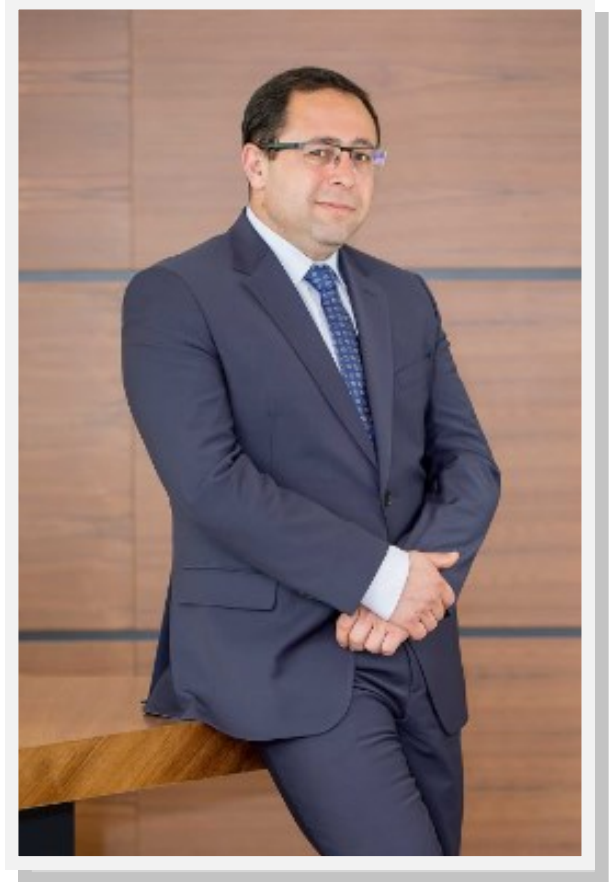
H2020 is important for Turkey, as an associated country, since it provides access to latest technological innovations, encourages new collaborations with top researchers, and offers prestige to be a contributor to such a successful program.

H2020 is important for technology transfer, since it clearly recognizes the need to stimulate technology transfer between industries and universities as evidenced by the requirement to have both as one of the eligibility criteria for obtaining the funds.

To help support our academicians, inventors, and entrepreneurs that want to learn more or apply to H2020 actions, we have a number of resources available. Teknopark İzmir and Atmosfer TTO are an integral part of our innovation ecosystem and have been working steadily to encourage industry, organizations, and other academia partners to take notice of İZTECH and to consider us when seeking partnerships to build address some of H2020's projects. For researchers, inventors, and entrepreneurs that need help in finding applications for your research results, the right partners for commercialization, or grants to obtain funding, these offices are your first stop on your technology transfer journey.

Sincerely Yours,

***President Prof. Dr. Mustafa Güden***



[www.iyte.edu.tr](http://www.iyte.edu.tr)



## GREETINGS FROM OUR GENERAL COORDINATOR

Here at Atmosfer Technology Transfer Office (TTO), our main aim is to bridge university and industrial worlds to create new applications and technology. This is the goal of our 2<sup>nd</sup> annual "Collaboration Days (Köprü Günleri) event. Last year's event was an awesome success and we are excited to announce this year's theme: University- Industry Collaborations in Horizon 2020!

Horizon 2020 is meant to be a key driver to support Europe's growth and promote innovation. To that end, Atmosfer TTO understands it's importance and is here to help guide you on your innovative journey. Our cover story "H2020 Review" provides participation and performance by country, application tips, and important details about applying to the Small and Medium Enterprise (SME) Instrument.

This issue also presents several of İZTECH's academicians who provide their experiences with working in consortiums, responding to project calls, and advice for how to be successful in your research.

We would like to thank all of you for your support of our office and all who contributed to the development of this magazine. If you are interested in being a part of the next issue, have ideas for articles, or would like your events to be included, please contact Atmosfer TTO at [technosphere@atmosfertto.com](mailto:technosphere@atmosfertto.com). Enjoy the issue!



**With my Regards/  
Saygılarımla,**

**Dr. Emrah Tomur**  
Technology Transfer  
Manager, Atmosfer TTO

### About Atmosfer Technology Transfer Office

Atmosfer Technology Transfer Office (TTO) is a small enterprise specializing in technology transfer, project development, patent consultancy, entrepreneurship, and grant support. Atmosfer TTO operates in the İzmir Technology Development Zone (Teknopark İzmir) in the scope of The Scientific and Technological Research Council of Turkey (TÜBİTAK) 1513 TTO Support Program. Located right on the İzmir Institute of Technology (İZTECH) campus, our team works to unite the knowledge and technology gained from academic studies to deliver real-world applications to industry partners.

Atmosfer TTO encourages the Academy—Industry relationship by acting as a liaison between researchers, companies and public authorities. Support includes:

- Project Development and Management
- Intellectual and Industrial Property Rights
- Legal & Research Contract Development
- Entrepreneurship and Incorporation
- Grant and Fellowship Programs
- Industrial Marketing
- Start-ups & Spin-offs

Please visit our website [www.atmosfertto.com](http://www.atmosfertto.com) to learn more about our services and how we can help you with your next big step in your career!

# KÖPRÜ GÜNLERİ

COLLABORATION DAYS  
12-13 OCTOBER 2015

**12 OCTOBER 2015, MONDAY**

## OPENING SPEECH

**Prof. Dr. Mustafa Güden**, Rector of İzmir Institute of Technology (IZTECH)

**Dr. Emrah Tomur**, Technology Transfer Manager of Atmosfer TTO

**Hakan Karataş**, Director of International Cooperation at TÜBİTAK

## KEYNOTE SPEAKERS

**Kostas Glinos**, Head of Unit , "Strategy, EFTA and enlargement countries, Russia, Asia and Pacific", Directorate-General for Research & Innovation, European Commission (EC)

**Mehmet Kürümlüoğlu**, Head of Competence Centre R&D-Management and Head of PDM/PLM Consultancy Center, Fraunhofer Institut für Arbeitswirtschaft und Organisation"

**Josema Cavanillas**, C&SI Market Leader Public & Health, EU Institutions Account Executive, Research & Innovation Director, ATOS

## PANELS

### Success Stories on International Projects/Collaborations

### Lessons Learned & Experience with International Projects/Collaborations

- Prof. Dr. Aytül Erçil, Sabancı University & Partner, Vispera Information Technologies A.Ş and Rebuslabs Ltd.
- Prof. Dr. Asuman Doğaç, Founder and General Manager, Software Research & Development Consultancy (SRDC)
- Prof. Dr. Sacide Alsoy Altınkaya, Izmir Institute of Technology
- Önder Tokçalar, Robo-Partner Project Manager, TOFAŞ
- Leyla Arsan, CEO, TAGES Industry & Information Technologies RDI S.A.
- Ahmet Bilici, Promatech - Professional Maritime Technologies (SME Instrument Phase 2)
- Dr. Ahmet Saraçoğlu, Kuartimed (SME Instrument Phase 1)
- Haluk Gökmen, Director, EGESYS - R&D and Innovation Project Support Center
- Ekin Taşkın, Managing Partner, TA-BU Solutions
- Prof. Dr. Fatma Kalaoğlu, ETEXWELD Project Coordinator, Istanbul Technical University

**13 OCTOBER 2015, TUESDAY**

## INFO DAY & B2B MEETINGS :

### H2020 Work Program Based Meeting & B2B Meetings by Participating National Contact Points (NCP) at TÜBİTAK

#### Thematic Areas:

- Çınar Adalı Öner: Food security, sustainable agriculture and forestry, marine and maritime, inland water research, and bioeconomy
- Serhat Melik: Smart, Green and Integrated Transport
- Meltem Ünlü Tokcaer: Climate action, environment, resource efficiency and raw materials
- Hasan Burak Tiftik: Information and Communication Technologies (ICT)

10:30 – 12:30 Information meetings in the parallel sessions will be organized in the 4 H2020 Thematic Areas

13:30 – 17:30 B2B meetings will be organized with National Contact Points at TÜBİTAK

**Note: Registration is required. Participation is limited for information and B2B meetings.**

Please visit [www.koprugunleri.com](http://www.koprugunleri.com) for more information and to reserve your spot.

**UNIVERSITY – INDUSTRY  
COLLABORATIONS IN H2020**



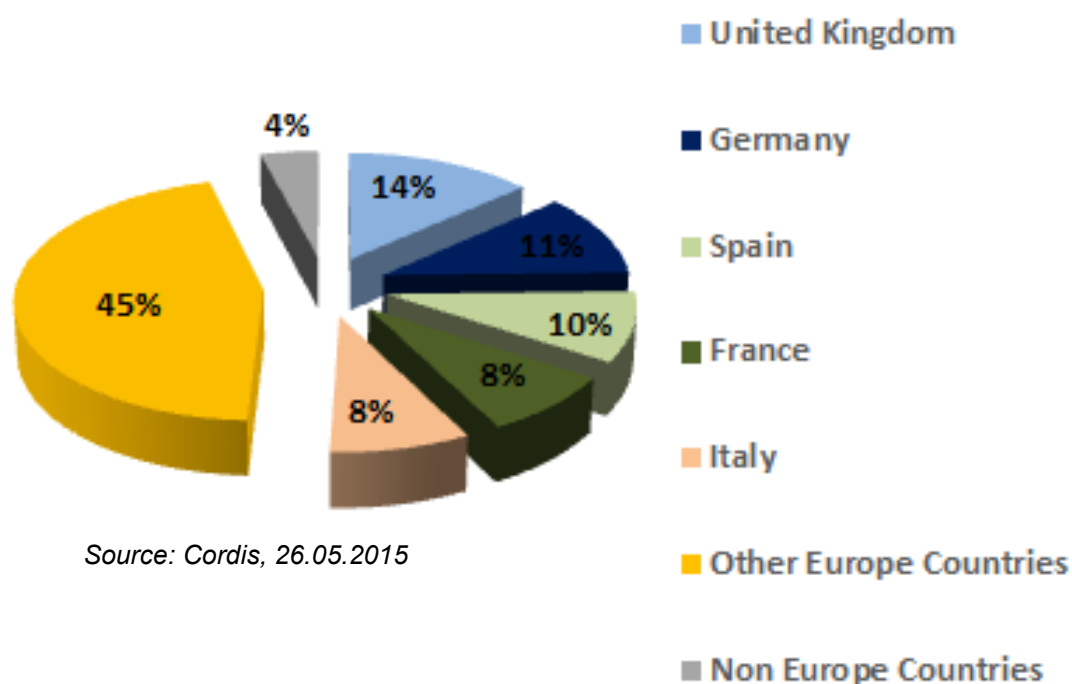
# H2020 REVIEW 2015



Implemented in January 2014, the first two-years of the H2020 working program will be concluded in December 2015. In this section, we present the performance of H2020 thus far.

According to results of the approved projects under H2020 program, United Kingdom is the first ranked country followed by Germany and Spain. Turkey is categorized under "Other Europe Countries." According to the distribution of approved projects in Turkey, the Marie Curie Individual Fellowships and Research and Innovation Staff Exchange (RISE) actions, as well as calls for the Energy and Transport sector have proven most successful.

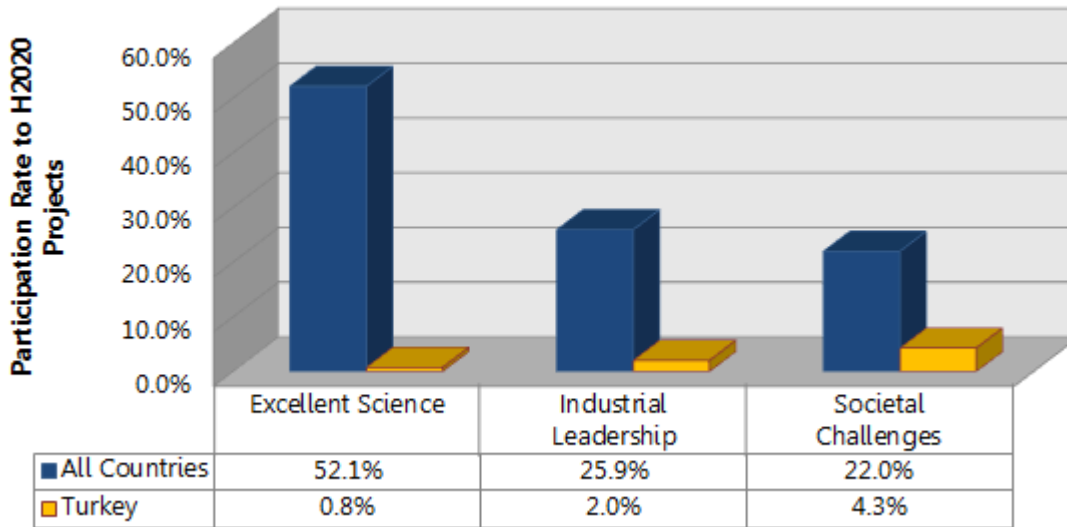
## PROJECT PARTICIPATION ACCORDING TO COUNTRY



Source: Cordis, 26.05.2015

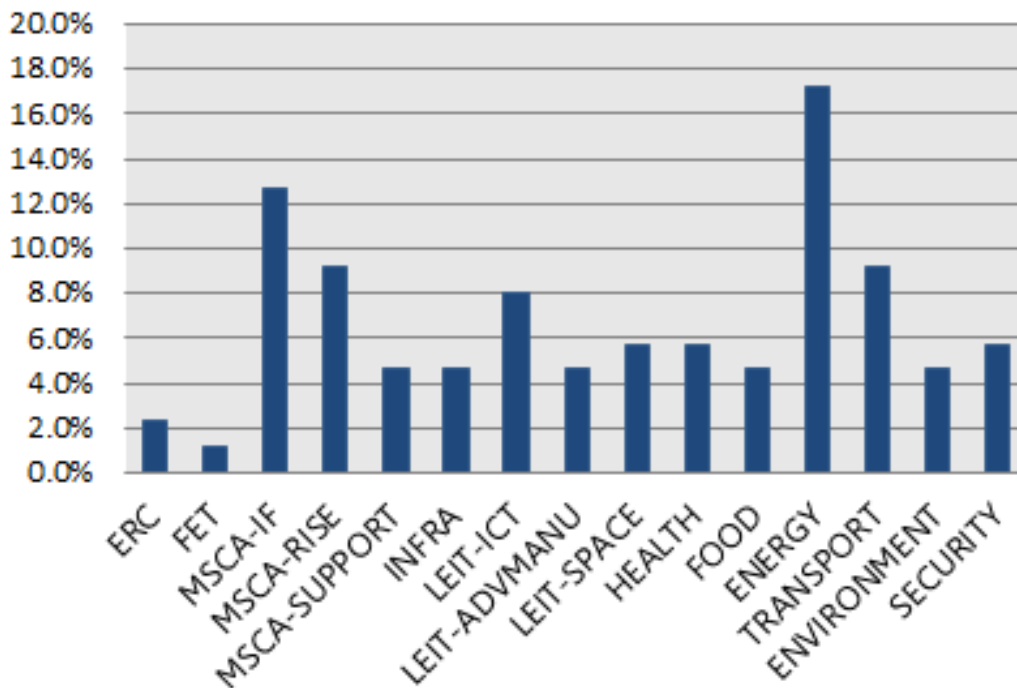


## PROJECT PARTICIPATION DIVIDED BY PROGRAM THEME



Source: Cordis, 26.05.2015

## APPROVED PROJECTS IN TURKEY BY PROGRAM



Source: Cordis, 26.05.2015



# H2020 SME INSTRUMENT

**Are you a highly innovative, ambitious and passionate small or medium-sized enterprise (SME) with global ambitions?**

**Are you looking for excellent business resources and mentorship and substantial funding wouldn't hurt either?**

## HOW CAN ATMOSFER SUPPORT YOU?

The SME Instrument is a European Union Framework Programme under Horizon 2020 offering business innovation support. If you are interested in applying for a SME action or other calls within the Horizon 2020 program, we can help!

Please contact Atmosfer Technology Transfer Office ([atmosfer@atmosfertto.com](mailto:atmosfer@atmosfertto.com)) for more details.

## SME INSTRUMENT THEMES

- High risk ICT innovation
- Nanotech, or other advanced tech for manufacturing and materials
- Space research and development
- Clinical research for the validation of diagnostics devices and biomarkers
- Sustainable food production and processing
- Blue growth
- Low carbon energy systems
- Greener and more integrated transport
- Eco-innovation and sustainable raw material supply
- Urban critical infrastructure
- Biotechnology-based industrial processes
- Mobile e-government applications
- SME business model innovation

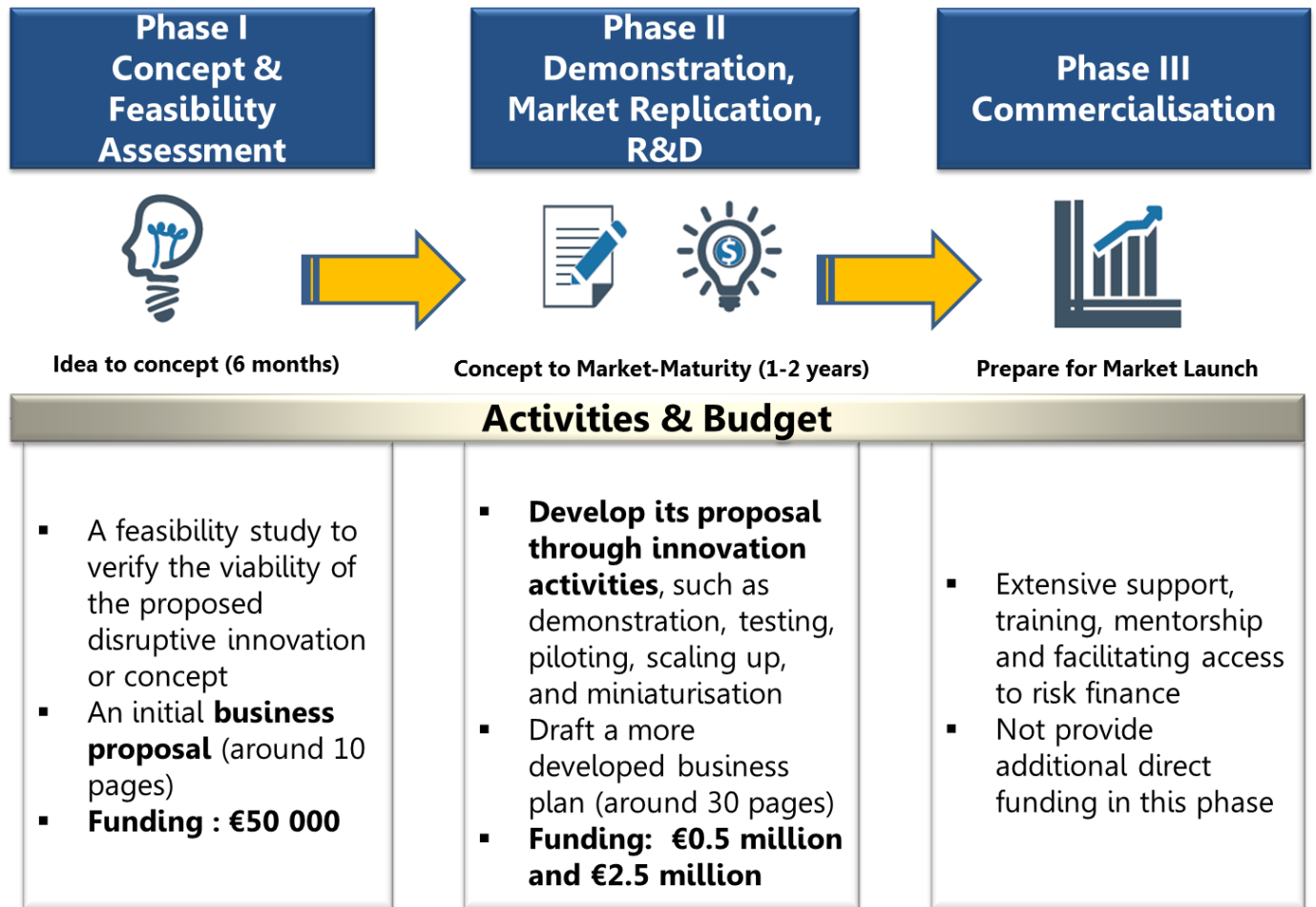






## THREE PHASE PROGRAM SUPPORT

The SME Instrument Program takes place in three phases with the aim of transforming disruptive ideas into concrete, innovative solutions with a European and global impact .



## Deadlines for all themes (Cut-off Dates for 2015)

November 25, 2015



## SME INSTRUMENT:

### ESSENTIAL TIPS FOR YOUR APPLICATION

#### Before Applying



- You need innovation, a clear ambition to grow at EU level, a demonstrated knowledge of your target market and a convincing commercialisation plan.
- You should look carefully at the objectives of the work programme and assess if your project is aligned with the intent

#### Evaluation



##### 3 Criteria:

- Impact
- Excellence
- Implementation

##### Different aspects:

- The technology
- Market knowledge
- Commercialization plan
- Financial angle

Source: EC Executive Agency for SMEs (EASME)

## DID YOU KNOW?

Atmosfer TTO offers coaching and application support!





## EVALUATION CRITERIA

### Impact



- Demonstrate that your project will generate revenues and create jobs
- Explain the market conditions and the evolution of the competition
- Provide concrete and realistic figures on the market size, the market share, the sales price
- Show at least 3 years of projection of sales volume, turnover and number of jobs created
- Describe your commercialisation plan
- Demonstrate that your project has a European or international dimension
- Explain protection of intellectual property

### Excellence



- Convince the evaluators that your product, process or service is disruptive, that it has the potential to change the dynamic of the market and possibly to address a societal challenge
- Show the added value of your idea and explain why it is viable and better than existing solutions
- Describe the opportunities and demonstrate that you understand the risks.

### Implementation



- Convince the evaluators that you can make it
- Describe technical competence and provide information on commercial competence
- Clearly describe how you will organise your team and, if you intend to use external partners to bring competences that you don't have in your company
- Explain what they will do and what they will bring
- Make realistic time frame

*Source: EC Executive Agency for SMEs (EASME)*

# Cooperation with Consortiums: A Success Story



**Project Title:** Development of the Next Generation Membrane Bioreactor System

**Programme:** Seventh Framework Programme, Collaborative Project

**Duration:** 01/09/2010-28/02/2014

**Partner Countries:** Egypt, Germany, Greece, Italy, Syria, Tunisia, Turkey, UK

*The World Water Council anticipates that by 2030, 3.9 billion people will live in areas defined as “water scarce”.* Quality of water is another crucial issue, in addition to having access. The World Health Organization (WHO) states that 1.1 billion people are deprived of clean drinking water and 2.6 billion are deprived of appropriate sanitation. Based on this fact, European Union opened a call in 2010 for a multidisciplinary research project to find innovative solutions for water treatment and water reuse. The objective of the BioNexGen was achieve a breakthrough in membrane bioreactor (MBR) technology by developing a novel single step nanofiltration MBR in order to attain sustainable wastewater treatment and reuse in municipal, agricultural and several industries in Europe and MENA (Middle East and North Africa).

*“Developing a new class of highly efficient membrane for Membrane Bioreactors in order to attain sustainable and reusable wastewater treatment”*

## HOW WAS THE CONSORTIUM DESIGNED?

The project was carried out by 7 European, 1 Turkish and 3 MENA partners, including two partners from North Africa and one from the Middle East. The consortium consisted of academic and industrial partners and of technology transfer institutions to ensure a multidisciplinary approach which was necessary to accomplish the innovative concept. Each partner played a different role in the consortium and their roles were divided into three categories:

- **Technology transfer:** Coordinator, Karlsruhe University of Applied Sciences (Germany), Steinbeis-Europa-Zentrum (Germany)
- **Membrane’s development:** Institute for Membrane Technology at Italian National Research council (Italy), Foundation for Research and Technology, Hellas (Greece), İzmir Institute of Technology (Turkey), Swansea University (UK), as well as Microdyn Nadir (Germany) and Nanothinx (Greece), as European leaders in innovative MBR membrane technology and carbon nanotubes’ manufacturing.
- **Demonstration and field test activities:** Centre de Biotechnologie de Sfax (Tunisia), Central Metallurgical Research and Development Institute (Egypt) and Al Baath University (Syria).



**BioNexGen Research  
Team Members at  
İZTECH**

Led by *Sacide Alsoy  
Altunkaya*. Department of  
Chemical Engineering



## HOW DID YOU HEAR ABOUT THE PROJECT?

When I returned from USA to Turkey, I didn't know any research groups from Europe. At the beginning of my career, I made an effort to attend at least one important conference organized by European countries. This created an opportunity to introduce myself and İZTECH and meet relevant research groups in Europe. My presentations, lectures and face to face discussions with the researchers eventually led me to this project as an invitation from coordinator of BioNexGen based on the internal recommendations.

*"It is important to attend conferences and meet with important groups so you can be included in the researcher pool and be considered as potential collaborators when it is time to write a proposal."*

## WHAT WERE THE MAJOR ACCOMPLISHMENTS OF THE PROJECT?

Many Bachelor, Master, and PhD students have been successfully involved in our collaborative research work. In total, four PhD and one Master students from different countries completed their degrees within the consortium. At İZTECH, one full time researcher was supported for 18 months. Additionally, one master, three PhD students, and one postdoctoral fellow worked as part time researcher gaining valuable experience. Besides research, we also organized two workshops: 8-9 March, 2012 at CBS, Tunisia, 15-17 May, 2013 at ITM, Italy and a final Conference 8-10 October 2013 on "Application of nanotechnology in membranes for water treatment" in İzmir, Turkey.

## HOW DO YOU FEEL ABOUT THE OUTCOME OF THE PROJECT?

BioNexGen has provided a great opportunity to apply our expertise in developing water treatment membranes and gain deeper technical knowledge in a cutting edge research project. Additionally, we benefitted from the criticisms of the industrial partner. The project not only offered excellent technical work, exchange of ideas, fruitful discussion among the colleagues involved in the project but also gave rise to cultural exchange on a personal level during our regular meetings with a variety of European and MENA countries. BioNexGen motivated us to continue pursuing new multinational collaborations within EU funded projects.

## ABOUT THE RESEARCHER



**Sacide Alsoy Altunkaya** received her PhD degree from the Pennsylvania State University, USA. She has been a professor in Chemical Engineering Department since 2007. Her research focuses on developing polymer-based membranes and nanomaterials for food, biotechnology, biomedical and environmental applications.

Specifically, she works on developing hemodialysis membranes with improved biocompatibility and transport properties; antimicrobial/ antioxidant food packaging materials with controlled release properties; polymeric scaffolds for nerve tissue engineering applications; a new class of functional low fouling membranes for water treatment applications; mathematical models to predict the relation between the membrane preparation conditions and the membrane structure.



## HOW WE'RE DOING

*The work of Atmosfer TTO has been recognized by many noted individuals and organizations. Here is a sample of their opinions:*

"We are very appreciative to work with Atmosfer TTO that we are already collecting its benefits within our on-going projects. Their professional look to business making and model is fitting completely with Turk Telekom processes. Also, their choices of the small businesses for the projects are

perfectly right that are making our job straight forward including complex problems. We feel confident and would like to continue working with Atmosfer TTO for our future projects. It is not only thorough, but also easy to work with, and always willing to take the time to discuss our concerns and respond to our needs."

—**MURAT CİVELEK, Türk Telekom A.Ş., Business Development Manager-Healthcare**

"To develop its own technologies, industry needs to have access to know-how, knowledge, and technological expertise generated by universities. This can only be provided through collaborations between universities and industry. We think that Atmosphere TTO plays an active role in this process, especially promoting beneficial interactions between university and industrial partners."

—**DR. SİNAN YILMAZ, İnci Akü San Tic. A.Ş. Project and Test Manager**

"Atmosfer TTO is helping scientists to comprehend how industry works, and coach them to cope with the real world applications and demands. The aim of the TTO is not only create new relations but also to help economical development of our region. The staff is professional and friendly as well as ready to help the scientists at İYTE at any moment of the day. Personally, I am very happy to have them at İYTE campus and enjoying working with them."

—**PROF. DR. SERDAR ÖZÇELİK, İZTECH, Dean and Professor of Chemistry, Faculty of Science**

"My academic life has been remarkably changed since Atmosfer TTO launched their activity in our campus area. In addition to our regular occupation including teaching and academic research, industrial projects have entered into our agenda as a daily work. This is definitely a big change for us."

—**PROF. DR. MUSTAFA MUAMMER DEMİR, İZTECH, Head of Material Science and Engineering**

"Atmosfer TTO has set for themselves very ambitious targets for diffusing the valuable inventions born from İZTECH to the industry. Even though technology transfer is a very complex process, so far they have been successful for coordinating researchers and industry to turn great ideas into commercial values."

—**DR. VEDAT AKGÜN , Kuantag Nanoteknolojiler Geliştirme ve Üretim A.Ş., General Manager**

"Atmosfer TTO works hard to bridge the gap between academic research outputs and the research needs of industry. As an academician and entrepreneur, I appreciate the benefit of the well-organised, genial and timely support of TTO team in many issues, such as project partner search, organisation and logistical support of meetings with project partners, preparing and launching action plans, and protecting intellectual property rights."

—**ASST. PROF. KIVILCIM YÜKSEL, İZTECH, Department of Electrical - Electronics Engineering**



WHAT OTHERS ARE  
SAYING ABOUT  
ATMOSFER...



"TTO is the shortest way to reach the right researcher. Atmosfer TTO effective communication with industry and organized activities it carries out in the best way."

—**DR. İSMAİL DURGUN, Tofaş. A.Ş. R&D / Advanced Research Administrator**

"I have worked with the group at Atmosfer on various occasions, such as patenting, EU project application, TÜBİTAK-industry projects, and faculty-industry consultancy projects. I have found the group to be a very effective interface on each occasion. In my experience, the presence and support from the TTO personnel made life much easier in handling the burden of bureaucracy and leaving the responsibility of the "technical" part to the academic to get the job done. "

—**ASST. PROF. UFUK ŞENTÜRK, İZTECH, Department of Material Science and Engineering**

"I met Atmosfer TTO through Horizon2020 projects. Since then, we have been working together to find project partners, preparation of project etc. If they were not leading every step of my journey into Horizon2020, I could not succeed to get in the project in a very short time. Now the project that I am involved, passed the first stage."

—**PROF. DR. AYSUN SOFUOĞLU. İZTECH, Department of Chemical Engineering**

"After Atmosfer TTO was founded, many things changed for our company. We won our first grant from TÜBİTAK with their assistance. Their brand new team is very aggressive. Atmosfer TTO also brought here the support of FraunHofer Gesellschaft which is one of the biggest funding foundations in the world. These days, we start another acceleration program with Atmosfer TTO, which is funded by European Union and TÜBİTAK. Things have changed a lot after the birth of Atmosfer TTO for the Teknopark İzmir companies."

—**AYHAN KARAZEYBEK, Aydia Elektronik ArGe A.Ş. (Teknopark İzmir Company), Owner**

"Atmosfer TTO is an enabling organization for companies looking for opportunities in Horizon 2020. It provides topics, projects and point of contacts as well as help for writing project proposals and preparing budgets. Moreover, if as a company you are looking for partners, who can solve your technological problems, Atmosfer TTO brings you together with labs or academicians in İYTE and either provides an interface for fast solution to your problems or helps turning those problems into research and development projects

**ASST PROF. DR. TUĞKAN TUĞLULAR, İZTECH, Department of Computer Engineering and İdivino Ar-Ge Yaz. Danş. San. Tic. Ltd. Şti.**



"The Office of Technology Transfer (TTO) at İZTECH plays a critical role to provide an interface between academia and industry. The TTO staff gives support in identifying intellectual property, pursuing patent application, finding commercial partners for potential license agreement. The TTO team has a strong relationship with academicians, monitors their ongoing research through regular visits/ meetings and inform researchers about national/ international funding opportunities. In my opinion, the most important function of Atmosfer TTO is to encourage us in applying for a patent."

—**PROF. SACİDE ALSOY ALTINKAYA, İZTECH, Professor of Chemical Engineering**



## INTRODUCING... MUSTAFA KÖKSAL OF İZTECH, MOLECULAR BIOLOGY AND GENETICS DEPARTMENT

*Dr. Mustafa Köksal is an Assistant Professor in the Department of Molecular Biology and Genetics at İZTECH. He received his BSc degrees in Molecular Biology and Genetics as well as Chemistry from Bogazici University and his PhD degree in Biochemistry and Molecular Biology at Purdue University (Indiana, USA). After his post-doctoral work at the University of Pennsylvania (Pennsylvania, USA), he began his current position at İZTECH to move back to Turkey. He benefited from multiple reintegration grants, such as European Union Marie Curie Grant, within the 7th Framework Program, TÜBİTAK through ARDEB-1000 Program, European Molecular Biology Organization through Installation Grants Program, and most recently, by TÜBA through the Young Scientist Outstanding Achievement Award Program.*

### WHAT IS YOUR FIELD OF STUDY?

My research interests are at the interface of Chemistry and Biology and focus on two facets:

- (1) discovery and understanding of underlying principles of structure-function relationships of biological macromolecules,
- (2) utilization and application of these principles to enhance and manipulate the functional properties of macromolecules

I am especially interested in the structural biology and chemistry of enzymes (biological catalysts) involved in complex biochemical transformations. We try to improve our knowledge about the mechanisms of various biochemical reactions and about the control of their aspects related to substrate/product specificity, efficiency, regioselectivity, and stereoselectivity.

Our ultimate goal is to manipulate these enzymes for biosynthesis of complex chemicals that may have economic value without affecting the environment, which is the major drawback of current chemical synthesis methods. Our primary tools to determine and understand the structures of enzymes are X-ray Crystallography and Molecular Modeling. We conduct gene cloning and expression, protein purification and characterization, and biochemical assays to complement the structural knowledge about enzymes in questions.



**Asst. Professor Mustafa Köksal**

*Molecular Biology and Genetics*





## WHAT ARE YOUR CURRENT PROJECTS?

We have a couple of different research projects currently underway in my laboratory. In one of the projects, supported by **TÜBİTAK-BİDEB and İZTECH**, we are working to manipulate an enzyme in order to enable biological synthesis of novel terpenoids, a class of natural products with many applications in chemical, pharmaceutical, and energy industry.

In another project, supported by **European Commission through Marie Curie Career Reintegration Grant and TÜBİTAK-ARDEB**, we want to determine the structures of various enzymes with demonstrated potential to catalyze production of biodiesel by microbial systems (microdiesel). In another project, supported by the **European Molecular Biology Organization** (and recently by **Turkish Academy of Sciences, TÜBA**), we want to determine the structures of various enzymes involved in biosynthesis of Taxol® (paclitaxel), a multi-billion-\$ anti-cancer drug.



## HOW DO YOUR PROJECTS IMPACT TURKEY?

The target enzymes I have chosen for my studies have potential applications in biotechnology, production of alternative fuels and novel drug leads. Our progress will help facilitate more efficient and sustainable production methods or will enable biological production of complex chemicals that are prohibitively difficult to produce via chemical synthesis. These will undoubtedly generate economic value for our country. In terms of basic science, our studies will hopefully produce scientific knowledge that will benefit the worldwide scientific community. In another aspect, I have proudly observed that my laboratory is the only laboratory that works in the field of X-ray crystallography and structural biology in Turkey. I hope that our research program will demonstrate that it can be done here in Turkey, and will train many young scientists in this field.

## ANY ADVICE FOR FUTURE RESEARCHERS?

Although I am still at the beginning of my independent scientific career, I have learned a few things along the road and would like to share with other young scientists:

### *In your knowledge:*

- Know the basics (scientific principles) of your field very well, you have no chance of survival without them
- Know your research area in and out; there should be (almost) nothing you cannot answer about your area
- Share your knowledge and results, not too soon but not too late

### *In your ideas:*

- Be critical of your research ideas but not to the extent you throw your good ideas away
- Be a perfectionist when you write a grant proposal, do not shy from getting help from others
- Do not give up; your proposal may be rejected but this only means you should perfect it and apply again

### *In your laboratory:*

- Know the scientific principles of the experimental methods you use and think creatively; if you do, you may create wonders in the lab
- Examine your results very carefully; missing a positive result is a waste, considering a negative result is plain wrong
- Keep research integrity; the worst thing you can do to your career is to mislead other scientists intentionally

## EVENT SPOTLIGHT

Hosted by Atmosfer

### INFORMATION DAY ON HORIZON 2020 | 12 MAY 2015

The one-day meeting on Horizon 2020 was organized on 12 May 2015 to İZTECH Academicians.

- Framework of European Union Programs
- Strategies of European Union 2020 Program
- Structure of H2020 Program
- H2020 Projects
- Important Points for H2020 Participation



### SME INSTRUMENT & FAST TRACT TO INNOVATION | 5 JUNE 2015

SME Instrument & Fast Tract to Innovation (FTI) programs were presented by TÜBİTAK National Contact Point Emre Yurttagül and Okan Saldoğan. Additionally, Yasemin Eda Erdal, evaluator of SME Instrument and FTI programs, provided information from an evaluator's perspective.

After the general program, one-on-one meetings with Teknopark İzmir companies were organized.





## INDUSTRY SESSION @ TRC-IFTOMM SYMPOSIUM ON THEORY OF MACHINES AND MECHANISMS 2015 | 15 JUNE 2015

TrC-IFTOMM Symposium on Theory of Machines and Mechanisms (TrISToMM) was hosted by the İZTECH, Mechanical Engineering Department. This year included an exciting new Research & Development session hosted by Atmosfer TTO. Top companies, such as TOFAŞ, Vestel, and Kale Pratt & Whitney were invited to present their company's research and development challenges. This session was a great opportunity for panelists and attendees to discuss new perspectives and exchange ideas between industry and research leaders.



## PATENT DRAFTING PROCESS WITH AN AMERICAN POINT OF VIEW | 25-26 JUNE

Atmosfer TTO organized a two day training at İYTESEM on 25-26 June 2015. Participants of the training were TTO representatives from several different universities and R&D department manager/personnel of innovative companies.

The trainer of the event, Nejat Yakupoğlu, has more than 20 years IPR experience and is a US Patent Attorney. He previously worked in patent law firms in California, Start-up companies in Silicon Valley, and as an IPR manager in an international company.

The main focus of the training was to provide fundamental information about drafting high quality patent application according to American regulations and patent litigation. Since Turkish IPR society has limited information and experience in American patent system compared to other multinational treaties (Patent Cooperation Treaty (PCT), European Patent Convention (EPC)), positive feedback was received from attendees of the training.





## UPCOMING EVENTS

### Upcoming Events Handpicked for You — 2015

These events are expected between August and November 2015 throughout Europe. If interested in attending, please contact our office for more information about these events.

WHAT?	WHERE?
<b>22nd ITS World Congress Towards Intelligent Mobility – Better Use of Space</b>	5-9 October 2015, Bordeaux – France
<b>EU Brokerage Event on Key Enabling Technologies in Horizon 2020</b>	6 October 2015, Strazburg - France
<b>Shaping the Future of Food Safety, Together</b>	14-16 October 2015, Milan - Italy
<b>Info Day on Public-Private Partnerships</b>	16 October 2015, Brussels - Belgium
<b>ICT 2015 - Innovate, Connect, Transform</b>	20-22 October 2015, Lizbon - Portugal
<b>The 7th European Aeronautics Days Aviation in Europe – Innovating for Growth</b>	20-23 October 2015, London-UK
<b>Info Day on Horizon 2020 'Smart, green and integrated transport'</b>	5 November 2015, Brussels - Belgium
<b>Info week on Horizon 2020 'Food security, sustainable agriculture and forestry, maritime and maritime inland water research and bio-economy'</b>	24-27 November 2015, Brussels - Belgium



## TECHNOLOGY PROJECTS & TRENDS

### USING MOLECULAR BIOLOGY TOOLS IN PLANT BREEDING TO PRODUCE CHEMICAL FREE VEGETABLES

#### *How important is plant breeding and genetics in vegetable production?*

Our original goal was to reduce diseases in vegetables and create resistance to insects to increase yield. However, as the yield increases, people want to eat a better quality product so we also want to create a nutritionally rich product with the taste and aroma that people demand.

Now as breeders, we are considering what types of product our consumer wants. For yield, we have reached our maximum point. Turkey produces more than 6 million tons of tomatoes annually...we don't need more, we need better.

We are basically geneticists so we trace back to the resistant strain using DNA markers to find genes which are disease resistant, develop markers, select the right plant and then give that plant to the agronomist who then plants and measures the performance of the plant. If the plant has potential for being a cultivar and is market competitive, then we can work with the seed companies who can produce and sell to farmers.

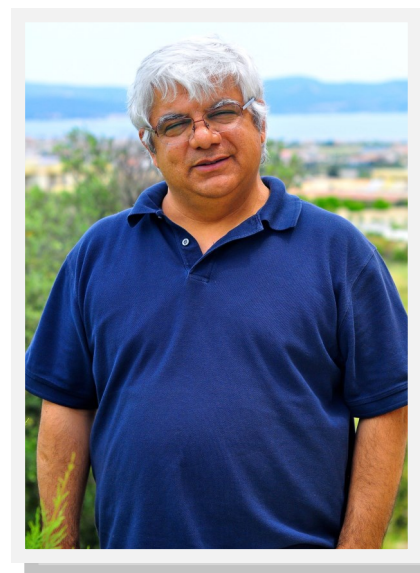
#### *How are your research and laboratory supported?*

We have one of the biggest labs in Turkey in applying molecular tools in plant breeding, therefore, we select multiple crop species based on the strategic and economic importance to Turkey. E.g., tomatoes, olives, cotton, etc.

The main supporter of the project is TÜBİTAK, which is currently funding eight projects in our lab. In fact, we are in the top ten laboratories in Turkey receiving support from TÜBİTAK. We also have four projects supported by the Ministry of Science and Technology (SANTEZ), and two projects working with the Ministry of Agriculture.

#### *What are your biggest accomplishments?*

I am most proud of the quality of students that we are releasing into the world and the development of our state-of-the-art lab. We have graduated 25 students, have 20 currently working in the lab, and offer summer internship opportunities. In total, we have published about 40 papers and presented at several international conferences.



**DR. SAMİ DOĞANLAR**

**Professor, Molecular Biology & Genetics**

*Doğanlar/ Frary Laboratory for Plant Molecular Genetics and Breeding*

## KNOWLEDGE TRANSFER SUCCESS STORY

*"Our biggest success is changing the way local breeders think about plant breeding and making them more competitive by learning about the science involved. Many of them established R&D departments, which then created lab jobs. We have had a major effect on the seed technology and quality across all of Turkey in government and private sectors."*

## FOR MORE INFORMATION

**Dr. Sami Doğanlar**, İzmir Institute of Technology,

Web: <http://plantmolgen.iyte.edu.tr/>



## TECHNOLOGY PROJECTS & TRENDS

### USING MICROFLUIDICS TO DIAGNOSE CANCER AND UNDERSTAND CELLULAR INTERACTIONS



#### DR. DEVRİM PESEN OKVUR

Associate Professor, Molecular Biology & Genetics

Controlled *in vitro* Microenvironments Laboratory

cells and then began to perform research in nanotechnology such as patterning proteins at the nanometer scales and I was hooked. I saw a lot of potential with the tools in nanotechnology for cell biology since cells and proteins are at the nano and micro meter scale and you need tools that give you control at these scales.

#### What do you concentrate on in Controlled *in vitro* Microenvironments Laboratory?

We attempt to understand how cancer cells behave compared to normal cells and understand features specific to the cancer cell. Three things that go wrong in cancer are adhesion, migration, and invasion. So we try to understand these events, what goes wrong, and how we can better characterize them.

#### How did you get started in interdisciplinary research?

I received my Bachelor's from Bilkent and then my PhD from Johns Hopkins. At that time, molecular biology was a very hot topic and I needed to set myself apart because all these people were going to know the same things as me when we graduate. How can I compete? So after my PhD, I knew I had to have an "edge" to make me more competitive for the positions.

I also have interests in several different things. If you want to do something new, you have to learn more than one thing. (*Eg if you keep being a biologist all the time, you will keep doing things the same way because you will always look from the same angle*).

I began working on the mechanical properties of

## ATMOSFER SUPPORT

- Promotional Materials and Brochure Support
- Coaching Service
- Patent Valuation and Commercialization Support

#### Dr. Devrim Pesen Okvur is currently seeking a licensor for two patented microfluidic devices:

- DDI-Chip: Low cost and effective solution to investigate distance dependent cell interactions and test agents (PCT Patent PCT/EP2014/ 070839, Sept2014)
- MetaHomingChip: Three dimensional microfluidic device that determines metastatic capacity and homing choices that will revolutionize cancer diagnostics (EPO Patent EP13154001.5, Feb2013)



### ***What are your most recent accomplishments?***

Two major inventions so far and more coming... we filed two patents for cancer cell biology, the first is about interactions between cells and cellular communication, there are different communication mechanisms based on distances. Like people, cells communicate differently depending on the distance between them and their health. In sickness, communication may be disturbed or interrupted. Most of the drugs we try to develop are trying to restore this communication. The main use for the DDI chip is to accelerate drug discovery using micro-fluidics. This product is ready to sell.

*In my lab, we are creating micro-environments by controlling space and time using micro-nano scale. "*

For the second one, we are focusing on metastasis and homing choices to determine the prognosis. I am hoping to license or work with drug companies to finalize the product.

Our TÜBİTAK 1003 collaboration project titled "Drug Delivery via Targeted Microbubbles as Ultrasound Contrast Agent and Their Use in Cancer Treatment via Controlled Local Drug Release" is ongoing. My lab carries out CivM experiments with principal investigator Dr. Sevgi Kılıç Özdemir from the Department of Chemical Engineering at İYTE and in collaboration with Dr. Mustafa Seçil from the Department of Radiology, School of Medicine at Dokuz Eylül University.

Most recently, I was selected by **Turkish Patent Institute** to represent Turkey at the **43rd International Exhibition of Inventions** in Geneva. My invention was awarded a gold medal by the international jury in the in the medical category (Medicine-Surgery-Hygiene-Orthopedics).

Finally, our paper titled "Differentiation of Normal and Cancer Cell Adhesion on Custom Designed Protein Nanopatterns" was recently accepted by ACS Nano Letters, a leading journal in the field.

### ***So what's next?***

In my new TÜBİTAK 1001 project to start this October, my lab will develop a 3D in vitro model to study new tumor formation following extravasation. We are simultaneously launching another TÜBİTAK 1003 collaboration project with principal investigator Dr. Neşe Atabey from the Department of Medical Biology, School of Medicine at Dokuz Eylül University and in collaboration with Dr. Özden Yalçın Özuysal from the Department of Molecular Biology and Genetics at İYTE. Here, we will develop a new metastasis chip.

## **ACKNOWLEDGEMENT**

I would like to thank the Turkish Patent Institute since they chose my patent to represent Turkey made it possible for me to participate in the Genevainvention exhibition.



**Contact Us to  
Help Protect  
Your Intellectual  
Property too!**

## **FOR MORE INFORMATION**

**Dr. Devrim Pesen Okvur**, İzmir Institute of Technology,

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**WOULD YOU LIKE YOUR TECHNOLOGY PROJECT TO BE  
HIGHLIGHTED IN THE NEXT ISSUE?**

Please send your article ideas to [technosphere@atmosfertto.com](mailto:technosphere@atmosfertto.com) for consideration.



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