MIDDLE EAST TECHNICAL UNIVERSITY

RESEARCH AND DEVELOPMENT ACTIVITIES IN

2013

RESEARCH COORDİNATION AND
INDUSTRIAL LIAISON OFFICE
March 2014

TABLE OF CONTENTS

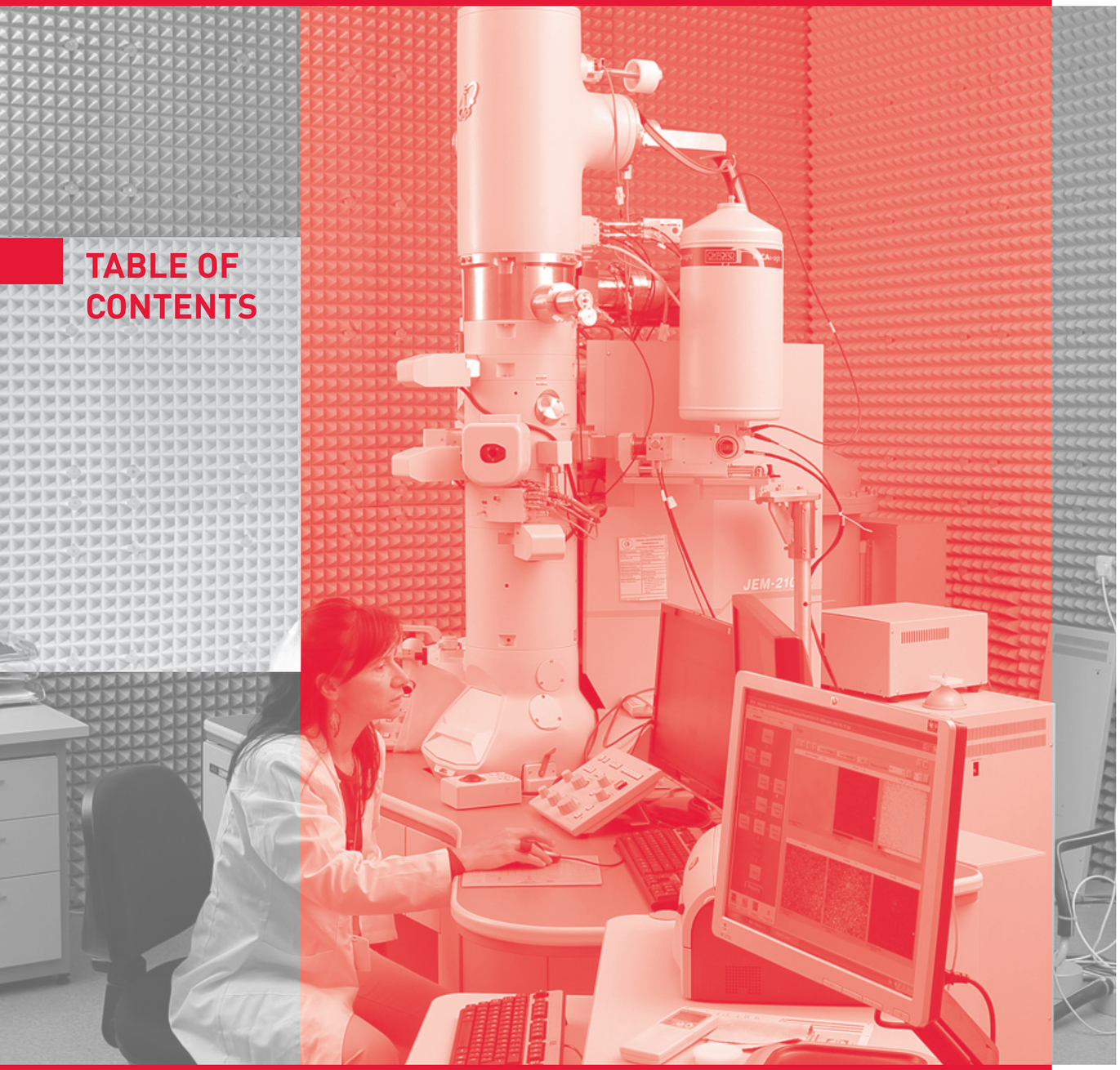


TABLE OF CONTENTS

R & D IN METU AT A GLANCE

- About 30 % of the total budget is derived from competitive research funds.
- METU is the sole university among Turkish universities which makes the most benefit of EU and TÜBİTAK funds.
- There are always more than 600 on-going research and development projects in METU, excluding the projects supported within BAP (Scientific Research Projects) programme of METU.
- While more than 250 students complete doctorate programmes, more than 1000 students can successfully finalise post-graduate programmes every year.
- More than 50 postdoctoral researchers continue their research in METU.
- METU has the highest working capital in Turkey (an annual amount of 35 million TL) among universities, excluding universities with Medical Faculties, with 24 research and application centers, 365 laboratories and the first central laboratory subordinated to its Rectorate.

PREAMBLE

We can say that 2013 was a successful year for our university in terms of the number of the research-development activities and their outcomes. On the national level, METU took the first place in the ranking ''Index of Entrepreneurial and Innovative Universities.'' In the international rankings on the other hand (such as Times Higher Education University Ranking), METU succeeded to rank in the band between 201 and 225 thanks to the high points it got from the domains ''research incomes'' and ''recognition in the field of research''.

The statistics of METU concerning the numbers of research-development projects and scientific publications show a positive development over the years. In compliance with the objectives mentioned in the ''Strategic Plan 2011-2016'' of our university, we aim at enhancing the ''effects'' of research outcomes. The establishment of an ''Knowledge Transfer Office'' in 2013 was a step towards this end. This office is supported within the scope of ''TÜBİTAK 1513 Technology Transfer Offices Support Programme'' and it is responsible for the coordination of activities as far as university-industry coordination is concerned.

Another development in 2013 was the diversification of ''Training Programmes for Researchers'' developed and implemented by our University. Postgraduate theses are realised for the needs of several sectors (defence and space, health technologies, sustainable energy and transformation) within the scope of Researchers Development Programme for the Defence Industry (SAYP) and Cooperation Development Programme for Research Centres (MİGEP) and qualified researchers are schooled and trained in these fields.

2013 was a year in which planning and the preparations were made for Horizon2020, the new research-development and innovation support programme of EU which has been inaugurated in 2014. Our university succeeded to get 11 % of the funds allocated to Turkey within the Seventh Framework Programme and it's of great significance that we benefit from Horizon2020 in an efficient way. We are striving to enhance our support to researchers in terms of project development and management so as to enable the circulation of our researchers in Europe and conduct highly effective research-development projects in the European Research Domain.

We congratulate all our researchers for the success brought about in 2013 and we wish that 2014 be a year full of new successful projects in this sense as well.

Prof.Dr. Volkan M. Atalay
Vice President

Prof.Dr. İrem Dikmen Toker
Research Coordinator

RESEARCH MANAGEMENT SYSTEM IN METU:

INSTITUTIONAL SUPPORT MECHANISMS

INTRODUCTION

This report aims at giving information about the R&D activities and research projects conducted in the Middle East Technical University and the innovations introduced in the research management system in 2013.

RESEARCH MANAGEMENT SYSTEM IN METU: INSTITUTIONAL SUPPORT MECHANISMS

The units supporting the research-development activities in METU and the commission which guide the research activities are addressed in the chapter.

RESEARCH POLICIES COMMISSION

The Research Policies Commission (APK) is a unit which was established with the decision 2010/1-5 dated 23.02.2010 of the Senate of METU so as to develop strategies and research politics in line with the objectives of the University and follow up and evaluate research activities and performance of the University.

The commission which is comprised of 12 members under the presidency of Vice Rector has prepared the Report concerning the Strategic Programme Proposals with Regard to Research Activities and formalised the goals and priorities taken into the METU Strategic Plan 2011-2016 in terms of research activities. More information about the agenda, minutes of its meetings and the issues handled in the Commission is available at the website of apk.metu.edu.tr.

Natural Members:

Prof .Dr. Volkan Atalay	Vice President, President of the Commission
Prof. Dr. Çiğdem Erçelebi	Vice Rector
Prof. Dr. İrem Dikmen Toker	Assistant to the President

Elected Members:

Prof.Dr. Ayşe Güneş Ayata	Political Science and Public Administration
Prof. Dr. Erdin Bozkurt	Geological Engineering
Prof. Dr. Tülin Gençöz	Psychology
Prof. Dr. Melih Pınarcıoğlu	Urban and Regional Planning
Prof. Dr. Ülkü Yetiş	Environmental Engineering
Prof. Dr. Altuğ Özpineci	Physics
Doç .Dr. Semra Sungur	Elementary Education
Doç. Dr. Ali Özgür Yılmaz	Electrical and Electronics Engineering
Doç. Dr. Ayşe Elif Erson	Biology

Note: Prof.Dr. M. Tuncay Birand served as the President of the Commission between March 17 and July 31, 2010.

SCIENTIFIC RESEARCH PROJECTS (BAP) COMMISSION:

BAP consists of projects conducted with allocation supports from the appropriation budget regarding scientific research in METU and those projects not supported within the research budget. BAP Commission is responsible for the evaluation of BAP proposals, approval, support, conduct of services, follow up, evaluate the outcomes and release to the public.

Members

Prof .Dr. Volkan Atalay	Vice President, President of the Commission
Prof. Dr. Canan Özgen	Graduate School of Natural and Applied Sciences
Prof. Dr. Meliha Altunışık	Graduate School of Social Sciences
Prof. Dr. Nazife Baykal	Graduate School of Informatics
Prof. Dr. Erdal Bayramlı	Graduate School of Natural and Applied Sciences
Prof. Dr Zeki Çamur	Faculty of Engineering
Prof. Dr. Oğuz Işık	Faculty of Architecture

The Research Coordination Office:

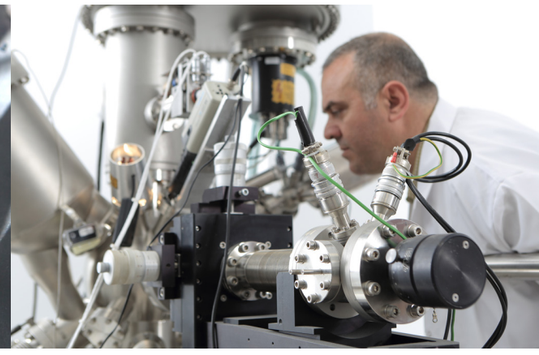
The Research Coordination Office was established in 1994. It coordinates the research activities of the University, provides institutional support for researchers in the development phase of R&D projects, enhances in-house and out-house cooperation in terms of R&D. This office develops and implements programmes, such as ÖYP, DOSAP, MİGEP and SAYP, for the training of researchers and development of cooperation in line with the research politics and needs of the University supports academics in the phase of application for national and international projects in collaboration with the Project Support Office and coordinates the activities of cooperation with the industrial sector through the Knowledge Transfer Office.

Project Support Office (PDO):

PDO gives information about the national and international support programmes and supports the researchers in the phases of project development and project writing. PDO is comprised of two sub-units: National and International projects. PDO Unit for International Projects assists METU researchers during the preparation, submission and management phases of projects designed for competitive internationally-funded research programmes, the principal one being the EU's current research programme entitled Horizon2020. On the other hand, the Unit for National Projects provides support especially for TÜBİTAK and SAN-TEZ projects. In addition, the personnel unit of PDO (former TÜBİTAK-EU Project Office) realizes the employment and payment formalities of the personnel working in national and international projects.

Project Development Office (PGO):

PGO specifies the areas which should be enhanced in accordance with the priorities set by the Research Policies Commission and the Strategic Plan and designs programmes in this sense. The Researchers Training Programme for the Defence Industry and Teknotez (Graduate theses funded by ODTÜ Teknokent) are programmes designed and implemented by PGO. PGO also undertakes the duty of enhancing the possibilities of cooperation between researcher groups by creating platforms in different fields (such as Initiative for Renewable Energy, Ecosystems and Sustainability (I-REES, yesap.metu.edu.tr).



Knowledge Transfer Office (BTO):

ODTÜ-BTO was established in 2013 with the support given within the scope of TÜBİTAK 1513 Support Programme for the Technology Transfer Office. METU and ODTÜ Teknokent made a joint application to the related invitation made by TÜBİTAK in 2013 for the first time so as to support Technology Transfer Offices (TTOs) in Turkish universities and succeeded to rank among the 10 universities who could secure this support. This project will cover a time period of 10 years and it is expected to provide a total support amounting up to 10 million TL. The action plan for the years 2013-2014 regarding the project has been designed and METU Knowledge Transfer Office (BTO) has been established as the unit that would be responsible for the coordination of the related activities.

The duties assigned to the Knowledge Transfer Office are as follows:

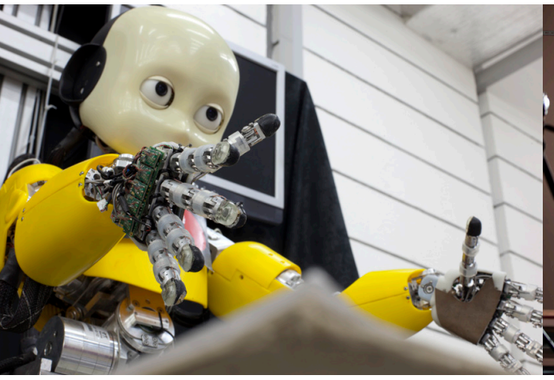
- implementing the project 1513 in line with the priorities of the University,
- providing support to academy and industry with regard to information, project development, project design, implementation, evaluation and sharing the project outcomes in order to enhance the effects of project outcomes and enable to get more benefits from project support programmes,

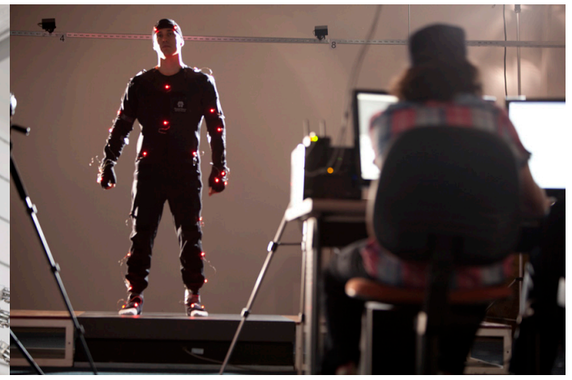
- managing information portfolios in universities and regulating the information transfer processes,
- coordinating cooperation activities between universities and an array of industries (apprenticeship, development of joint substructures / programmes and R&D projects etc.),
- promoting the information portfolios, research capacities and substructures,
- carrying out matching activities in line with the demands of researchers and industries,
- providing support to industrialists and researchers in sharing intellectual and industrial property rights, applications intended to put inventions under patent protection and commercialization process,
- rendering consultancy services about the specification of contract types and terms which are most appropriate to projects and cooperation models and negotiation processes concerning contract terms.

The Coordination Office for the Collaboration Development Programme for Research Centers (MİGEP):

This coordination office supports research centers reporting to the Rectorate which were established by funding from the Ministry of Development. This office supports centers during the development phase of R & D and innovation projects and works actively to enhance possibilities for cooperation with industry and public sector both on national and international level.

The units mentioned above work in cooperation with the units stated below which operate in ODTÜ Teknokent:





Teknokent Technology Transfer Office (TTO):

ODTÜ Teknokent TTO was established in 2007 within the body of Technopolis. ODTÜ Teknokent TTO aims at providing possibilities for the continuation of research enabling that academic knowledge does not remain restricted to publications, but it is put at the disposal of industry, and thus both academicians and researchers provide financial contribution to the host university. To this end, ODTÜ Teknokent TTO renders legal and financial consultation services to academicians and companies in METU during patenting process of their inventions having commercialization potential. It operates in coordination with Knowledge Transfer Office.

Teknokent Projects Office (TPO):

ODTÜ Teknokent TPO, which was established in 2010 and operates in coordination with the METU Project Support Office, supports researchers in the preparation, submission implementation and management of international projects. TPO also renders consultation services in the development and implementation processes of large scale and multi partnered national and international projects.

RESEARCH PERFORMANCE IN 2013: A SUMMARY

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PROJECTS SUPPORTED WITHIN THE SCOPE OF NATIONAL AND INTERNATIONAL SUPPORT PROGRAMMES

The number of national projects (TÜBİTAK, SANTEZ etc.) which are being carried out in our university as of December 31, 2013 increased to 95 and the total budget for projects exceeded 35 million TL. METU gets the most benefit from R&D supports provided by TÜBİTAK among Turkish universities (www.tubitak.gov.tr/sites/default/files/ardeb10_0.pdf). According to the report ''TÜBİTAK, Turkey in the 7th EU Framework Programme'' (September 2011), METU is also the university that gets the most benefit from international research funds among Turkish universities. METU was able to secure 11 % of the funds used in our country within the scope of 7th Framework Programme up to now. The number of international projects being implemented in our University as of December 31, 2013 reached 51, for which the total budget was 177 million EURO with a share of 8 million EURO granted to METU.

RESEARCHERS

Post graduates having universal qualifications constitute the most significant outcome of the research activities carried out in METU. While a total of 1228 postgraduate diplomas were awarded in the academic year of 2012-2013 including 272 doctorate diplomas, 7897 students received education, 2955 of them were doctoral students.

The total number of graduates within the Academic Member Training Programme (ÖYP), which makes a direct contribution to research activities with its education dimension, reached 420 in 2013. About 500 ÖYP researchers supported by the Ministry of Development and Council of Higher Education continue their studies in METU at the moment. While 152 post graduate researchers who carried out research in our University within the scope of Postdoctoral Research Programme (DOSAP) have completed their works and returned to their institutions, 45 guest doctor researchers continue their studies within the framework of DOSAP in our University. Other 9 researchers who won scholarship within the scope of the scholarship programmes ''2232-Researchers Returning to Homeland'' and 2236-CO-FUNDED Brain Circulation Scheme'' started their studies in METU in 2013.

RESEARCHERS WHO CAME TO METU IN 2013 WITHIN THE SCOPE OF THE PROGRAMMES ''2232 RESEARCHERS RETURNING TO HOMELAND'' AND ''2236 CO-FUNDED BRAIN CIRCULATIONSCHEME''

Name of the Researcher	Supervisor	Department
2232		
Dr. Emre Taşçı	Prof. Dr. Şakir Erkoç	Physics
Dr. İlker Ümit Uzun Kaymak	Assoc. Dr. İsmail Rafatova	Physics
Dr. Hülya Atmacan	Assoc. Dr. İsmail Turan	Physics
Dr.Kemal Efe Eseler	Assoc. Dr. Serhat Çakır	Physics
Dr. Ahmet Yıldız	Prof. Dr. Şebnem Düzgün	Mining Engineering
Dr. Mert Efe	Prof. Dr. Hakan Gür	Metallurgical and Materials Engineering
2236		
Dr. Tuncay Yalçınkaya	Assist. Prof. Dr. Ercan Gürses	Aerospace Engineering
Dr. Cesim K. Dumlu	Prof. Dr Bayram Tekin	Physics
Dr. Shumaıla Karamat	Prof. Dr. Ahmet Oral	Physics

PUBLICATIONS

The increase realised in the performance of scientific research in our University has been reflected in the number of publications as well. The scientific articles of our academicians scanned in the Web of Science in 2012 have reached 1.306 representing an increase of 14 %. The number of articles per academic member or instructor in scientific periodicals or books abroad increased from 1.58 to 1.73.

TECHNOLOGY TRANSFER

Research and innovation supports provided by our University play an important role in the success of more than 300 R&D organizations located in ODTÜ Teknokent as well. The cooperation between our academic units and centers and the companies operating in Technopolis becomes more and more widespread and reaches more effective levels with new support models. More than 100 joint research projects have been initiated with the cooperation of our University and the companies located in Techopolis in the recent year. 49 SAN-TEZ projects are carried out in cooperation with the companies operating in Technopolis. While the number of international patent applications executed by Technopolis Technology transfer Office (TTO) on behalf of our academicians reached 100, the number of patents obtained reached 30.

PROJECTS

PROJECTS SUPPORTED BY THE MINISTRY OF DEVELOPMENT

Technological infrastructure and researcher development projects were implemented in METU in 2013 with the support of the Ministry of Development. Contracts were signed with companies in 2013 for the Cooperation Development Programme for Research Centers (MİGEP) supported within the scope of Ministry of Development Researcher Development Programme and the student admission process has already been initiated. A total budget of 1 million TL has been secured from the Ministry of Development to support the research of graduate students enrolled at METU associated with 6 research centers operating in electric-electronic-informatics, biomedical, energy and automotive sectors (the centers of BİLTİR, BİOMATEN, GÜNAM, MEMS, MODSİMMER and RÜZGEM) within the scope of MİGEP initiative. 25 graduate students working in industry or getting scholarship from industry have begun to carry out their dissertation studies using the infrastructure of the above mentioned centers.

A study to evaluate the space requirement for the "Research Park'' project initiated in 2012 has also been completed in 2013. This park aims at enabling that research and implementation centers in our University continue their activities in an effective way, more researchers have the possibility of using the infrastructures of centers, interdisciplinary research projects are developed and industry and society get more benefits from the research activities carried out in our University in priority fields. The total space of the Research Park reaches 25,000 m2. It is intended to start the construction in the midst of 2014 and conclude it in 2016. This park, supported by the Ministry of Development, has been taken into the investment programme.

Three advanced research projects were implemented in 2013 with the support of the Ministry of Development. The total budget of R&D Center for Wind Energy Technology (RÜZGEM), one of these projects, is about 19,705,000 TL; an amount of 4,500,000 TL has been invested within this project in 2013. The project budget of the Sea Ecosystem and Climate Research Center (DEKOSİM), a project conducted between 2012 and 2014, is 6,475,000 TL and an investment amount of 3,000,000 TL has been realized within this project in 2013. The third project is that of the Biomaterials and Tissue Engineering Center (BİOMATEN). The total budget in this project amounts to 6,112,000 TL and the investment budget amounted to 500,000 TL in 2013.

RESEARCH INFRASTRUCTURE DEVELOPMENT PROJECTS

A project invitation was made in 2013 for ''Academic Member Training Programme (ÖYP) Research Infrastructure Development Projects'' in order to enhance the research laboratories and support postgraduate educational activities in our University and 15 projects were supported with an amount of 3,200,000 TL in this concept. The purpose of these projects is the realisation and the establishment of the infrastructure in our University which 533 ÖYP researchers from 85 different universities in our country enrolled in our University need for their post-graduate studies.

Within these projects, in which 107 academic members and 283 ÖYP research associates participate, the existing infrastructure will be enhanced and new laboratories will be set up in the departments of Physics, Chemistry, Biological Sciences, Bio-Technology, Electrical and Electronics Engineering, Civil Engineering, Geological Engineering, Mining Engineering, Metallurgical and Material Engineering, Petroleum and Natural Gas Engineering.

The contribution of the research infrastructure, which will be realised within these projects, to research-development performance of our University will be evaluated on a continuous and regular basis (R&D projects taken over through the new infrastructure, number of academic units using the infrastructure, research outcomes etc).

NATIONAL AND INTERNATIONAL PROJECTS INITIATED IN 2013

NATIONAL AND INTERNATIONAL PROJECTS INITIATED IN 2013

R&D projects are classified in two groups according to the finance source: national and international projects. While Framework Programmes, Life Long Learning-LLP, NATO etc. are international sources of financing, supporting units such as the Ministry of Finance, TÜBİTAK programmes and SAN-TEZ are among the national sources of finance. More details are given in the following chapters about national and international projects.

INTERNATIONAL PROJECTS

196 international projects have been completed in METU as of December 31, 2013. The total budget of these finalized projects was 368,507,779 EURO; the budget share of METU therein was 25,544,778 EURO. The number of international projects implemented in METU in 2013 was 51. The total budget of on-going projects is 176,538,470 EURO; the budget of METU therein is 7,861,476 EURO. The distribution of on-going projects is as follows:

Distribution of the On-going Projects with respect to Funding Programmes

Project Type	Number	Total Budget	Share of METU
7th Framework Programme	40	173.417.875 €	7.266.961 €
Life Long Learning Programme (LLP)	5	2.086.303 €	142.874 €
Others*	6	1.034.292 €	451.642 €
Total	51	176.538.470 €	7.861.477 €

*Yahoo, NATO etc.

METU ranks in the first place in the ranking ''The Most Successful 10 Universities with Reference to the Total Number of Partnerships in the 7th Framework Programme''. The number of the framework projects, including those that are on-going and those that have been completed, is 136. METU participated in 58 projects within the scope of the 6th Framework Programme implemented between 2002 and 2006. The total budget of these projects conducted in the 6th Framework Programme amounted to 159,347,985 EURO with a METU share of 12,104,905 EURO. The number of the 7th Framework Programme projects in which METU participated in was 76. While the total budget of these projects was 340,433,178 EURO, the share of METU amounted to 15,103,116 EURO. As can be seen from the table below, although the total budget of the projects in which METU took part in the 7th Framework Programme was doubled in comparison to the projects in the 6th programme, the share of METU increased by only 30 %.

Framework Programme Performance of METU

Programme	Number of Projects	Total Budget	METU Share
5th Programme	2	2.842.000 €	79.000 €
6th Programme	58	159.347.985 €	12.104.905 €
7th Programme	76	340.433.178 €	15.103.116 €
Total	136	502.623.163 €	27.287.021 €

Total budget of 8 projects (4 of them within the Long Life Learning Programme, 4 in others) for which international financing has been ensured in 2013 amounts to 2,151,206 EURO; where METU share therein is 54,893 EURO.

16 of the on-going projects in METU were initiated in 2013. 8 of these projects are those which are implemented within the scope of the 7th Framework Programme with a total budget of 18,643,593 EURO and a METU share of 1,540,078 EURO. 7 projects within the 7th FP which weren't included in the lists in 2013 as per their contract dates will be initiated in 2014.

The distribution of all the projects, both completed and on-going, by years is shown in Figure 1.

Figure 1. Distribution of FP projects by years with respect to start date (6th FP in blue, 7th FP in red)

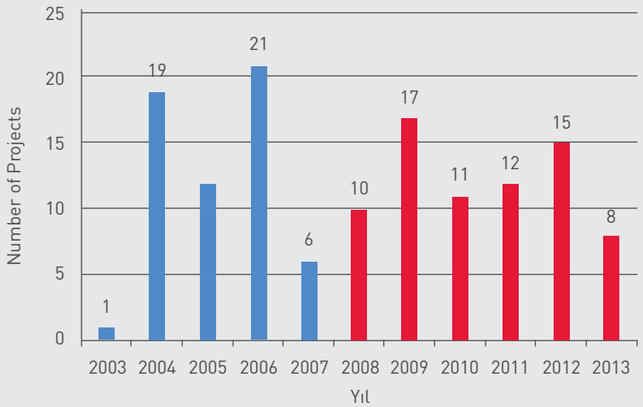
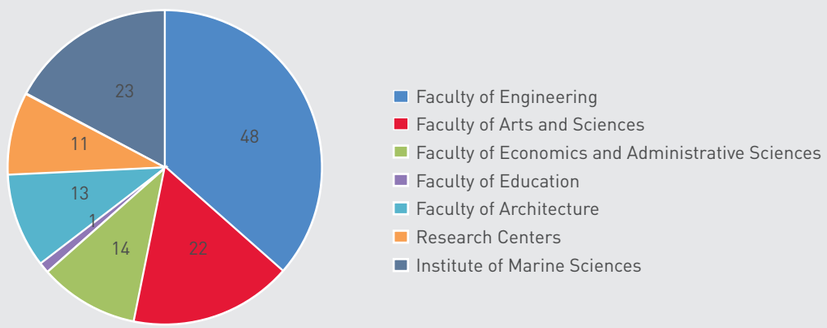
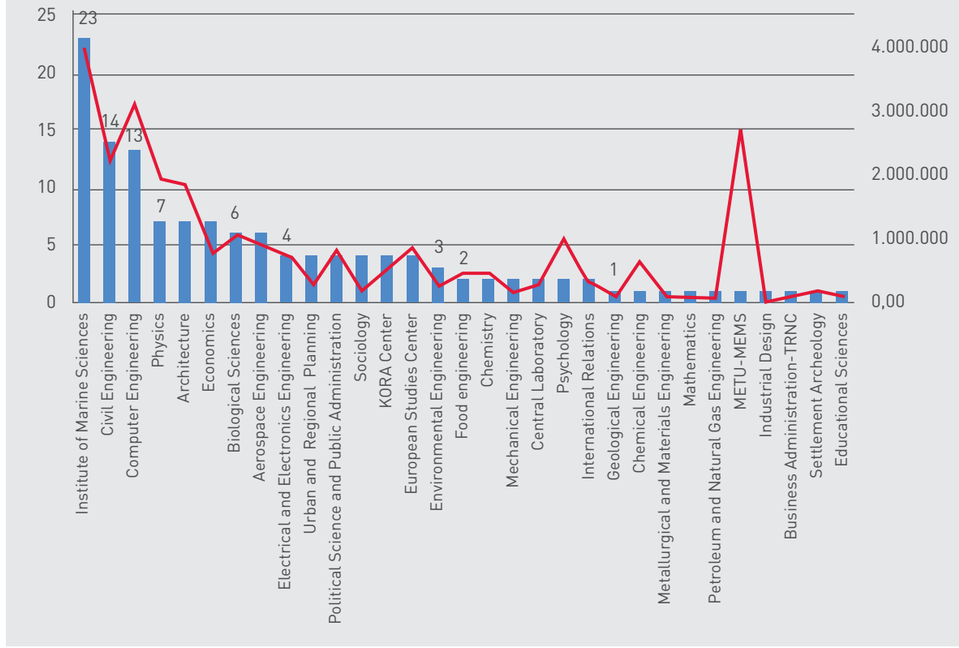


Figure 2: Distribution of FP projects with respect to Faculties and Centres



As we look into the distribution of the completed and on-going FP projects with respect to the budgetary METU share and numbers according to departments and centers in METU, we see that the Institute of Marine Sciences has the highest budget share with its 23 projects. The Computer Engineering department and METU-MEMS Center rank in the second and third place with respect to their budgetary share with their 13 and one FP projects, respectively. The number of projects and total budget are shown in Figure 3.

Figure 3: Contribution of FP Projects with respect to number (blue bars) and budget (red line) with respect to departments and centres.



News from activities and success stories of international projects implemented within 2013 in METU are given in this section.

FOLADIS, the first Career Integration Grant (CIG) project in METU has been completed.

Project Name:

FOLADIS (Mechanism, modeling and forecasting of landslide displacements)

Principal Investigator:

Assist.Prof.Dr. Nejan Huvaj Sarıhan – Faculty in the Civil Engineering Department

The project of FOLADIS (Mechanism, modelling and forecasting of landslide displacements), a project supported within the scope of the Marie Curie Research Programmes and Scholarships International Reintegration Grants (IRG)1, has been completed under the execution of Assist. Prof.Dr. Nejan Suvan Sarıhan, faculty in the Civil Engineering Department, as METU's first project within the scope of this programme. A total of 14 projects are being implemented in this programme as of 2013. This programme aims at facilitating the comeback of post-doctoral researchers in any part of the world back to Europe and it will not be continued within the scope of the New EU Research and Innovation Framework Programme Horizon2020 which will be in effect between 2014 and 2020 after the 7th Framework Programme.

1. This programme was restructured under the name "Career Integration Grants – CIG" after 2010 in line with the new requirements.

Closing meeting of METU-MEMS, the Research Potential (REGPOT) project with the highest budget in Turkey, has been realized.

Project Name:

METU-MEMS: "METU-MEMS Research and Applications Center" (2,7 million €)

Principal Investigator:

Prof.Dr. Tayfun Akın, Director of METU-MEMS, Faculty in the Electrical and Electronics Department

REGPOT is a support programme aiming at perfection of research organizations which already have quasi perfect research possibilities. The closing meeting of the project with the title "METU-MEMS Research and Applications Center" supported from the 1st of December, 2009 for 4 years in the field of the Capacities Special Programme - Research Potential (Call Identifier FP7-REGPOT-2009-1) in the scope of the EU 7th Framework Programme was realised on the 26th and 27th of November, 2013. Many representatives from various companies, universities and research institutes in Europe got together in this event with the heading "METU-MEMS Project Brokerage Event on the MEMS and Microsystems Technologies". In this way it aimed at establishing a common dialogue platform to ensure the participation of the representatives from academic institutions and industry having project ideas in the field of MEMS and Microsystems Technologies within the EU framework programme of Horizon2020 put into effect as of 2014. The participants had the opportunity to share research outcomes, the technologies they develop and to exchange project ideas in prearranged meetings with the representatives of companies, SMEs, universities and research organizations. In addition representatives of TÜBİTAK and universities made presentations about Horizon2020. Various representatives of national and international universities and industry also shared their project ideas through presentations.

Last Stakeholders Meeting of the REFRESH Project has been realized

Project Name:

REFRESH (Adaptive strategies to mitigate the impacts of climate change on European Freshwater Ecosystems)

Principal Investigator:

Prof.Dr. Meryem Beklioğlu, Faculty in the Biology Department

Last Stakeholders Meeting of the REFRESH project, a project realized with the participation of 25 institutions around Europe with the aim of developing mitigation strategies to reduce the negative effects of climate change on freshwater ecosystems in Europe, was held on the 2nd of December, 2013 with the participation of researchers, nature protection associations, non-governmental organizations, representatives of private sector and ministries. The knowledge produced during the project was shared with other stakeholders at the local, regional and national level so as to facilitate and popularize protection and restoration applications of freshwater ecosystems.

Institute of Marine Sciences has completed 4 international projects

The Institute of Marine Sciences has taken part in 23 projects in total since the beginning of the 5th Framework Programme. While the portfolio budget of these projects amounted to 179,372,849 EURO, the METU share therein was 4,034,890 EURO. 6 of these projects are on-going, while 4 of them have been completed with success in 2013. Two of the projects EUROFLEETS (Towards an alliance of European Research Fleets), MEECE (Marine Ecosystem Evolution in a Changing Environment), ODEMM (Options for Delivering Ecosystem-Based Marine Management) and UP-GRADE-BS SCENE (Up-Grade Black Sea Scientific Network) were infrastructure development projects and the others were research projects.

METU has received its first project supporting research for the benefit of SMEs

Project Name:

INSYSME (Innovative Systems for Earthquake Resistant Masonry Enclosures in Rc Buildings)

Principal Investigator:

Prof.Dr. Ahmet Yakut, Faculty in the Civil Engineering Department

The project INSYSME (Innovative Systems for Earthquake Resistant Masonry Enclosures in Rc Buildings) has been accepted to be supported under the heading of "Research for the Benefit of SMEs" in the Capacities Special Programme within the 7th Framework Programme. The project, which is executed by Prof.Dr. Ahmet Yakut, Faculty in the Civil Engineering Department, is the first of its kind of METU under this heading. 16 partners from 7 European countries will be taking part in this project and will be supported with a total budget of 1,800,000 EURO.

METU Faculty of Education has received its first 7th Framework Programme project

Project Name:

TeachEdMobile (Integrating Mobile Applications into Teacher Education)

Principal Investigator:

Assist.Prof.Dr. Evrim Baran, Faculty in the Educational Sciences Department

The project of TeachEdMobile (Integrating Mobile Applications into Teacher Education), a Marie Sklodowska Curie Career Integration Grant, was initiated in the Faculty of Education in 2013 under the execution of Assist.Prof.Dr. Evrim Baran who is a faculty in the Educational Sciences Department.

METU has received its first project within the International Incoming Fellowships (IIF) programme

Project Name:
PLATEAU (Palaeolithic Populations in Armenia and Turkey: Expanding Archaeological Understanding)
Principal Investigator:
Prof.Dr. Burcu Erciyas, Faculty in Settlement Archaeology Programme

The project PLATEAU (Palaeolithic Populations in Armenia and Turkey: Expanding Archaeological Understanding) is another project within the 7th Framework Programme initiated in 2013 under the scientific consultation of Prof. Dr. Burcu Erciyas, faculty in the Settlement Archaeology Programme, within the scope of the International Incoming Fellowships (IIF) programme under the Marie Curie People Special Programme. This is the first IIF project initiated in METU and currently there exists 22 projects within the scope the Marie Curie People Special Programme. There are also 3 other new projects still in negotiation under this programme which will be initiated in 2014.

YAHOO is supporting a METU project

Project Name:
Going Beyond Frequency: Exploiting Social Signals and Sentiments for Improving Query Suggestions
Principal Investigator:
Assist.Prof.Dr. İsmail Şengör Altıngövde, Faculty in the Computer Engineering Department

Assist.Prof.Dr. İsmail Şengör Altıngövde, faculty in the Computer Engineering Department, is the first researcher in Turkey who could secure this support given within the scope of 2013 Yahoo Faculty Research and Engagement Programme with his project proposal aiming at enriching results displayed in search engines during a search taking into account social media trends and user opinions.

HORIZON2020@METU

We have being continuing our preparatory activities since the beginning of 2013 to be able to get the most benefit from the Horizon 2020 programme. This programme will receive special attention among the research activities of our University in the following years. The actions regarding this programme can be found under the tab HORIZON2020@metu in the website of the Project Support Office (www.pdo.metu.edu.tr).

Presentations have been made in several faculties and departments within the scope of the activities concerning Horizon 2020. These presentations can be found under the tab HORIZON2020@metu using a METU user name and password. The presentations realised in faculties and departments and the number participants are as follows:

- Faculty of Education (December 6, 2013) Number of participants: 14
- Faculty of Architecture (December 12, 2013) Number of participants: 12
- Civil-Geology-Environmental Engineering Departments (December 20, 2013) Number of participants: 24

Attendance to meetings in order to initiate new projects and loans to on-going international projects have been financed in 2013 as well, by means of the Deposit Fund Account which was opened in 2010 by transferring the remaining balances in the accounts of finalized projects. In this way, 30 on-going projects were provided loans and gratis support was granted to 30 project proposals in 2013.

PROJECTS SUPPORTED THROUGH NATIONAL SOURCES

PROJECTS SUPPORTED BY TÜBİTAK ARDEB (ACADEMIC RESEARCH FUNDING PROGRAMME)

The performance of METU in terms of TÜBİTAK supports are as follows. METU ranks first in the list in terms of the number of projects implemented as of the end of 2012.

UNIVERSITIES	PUBLIC	RESEARCH	RAPID SUPPORT	INTERNATIONAL	TOTAL NUMBER OF PROJECTS
ORTA DOĞU TEKNİK	15	131	22	31	199
EGE	2	83	30	40	155
İSTANBUL TEKNİK	7	96	18	30	152
BİLKENT	2	81	5	35	124
ANKARA	4	74	25	13	116
HACETTEPE	2	63	37	14	116
BOĞAZİÇİ	2	67	4	16	89
SABANCI	1	70	1	14	87
KOÇ	1	67	3	9	80
DOKUZ EYLÜL	1	55	12	9	77

Total budget of TÜBİTAK ARDEB projects initiated in 2013 is more than 12 million TL. This number exceeds 35 million TL when the budgets of 1007 KAMAG and SAVTAG projects are included.

Performance in the 1001 Programme in 2013

Our University has always been at the front row among universities which obtain the utmost support over years in the scope of the Scientific and Technological Research Projects Support Programme (1001).

On the other hand, when we carry out an evaluation in terms of project applications and support performance of projects in which our University acts as executive body, we can say that our University has had a good rate of success in this sense. The diagram below demonstrates the success of our University in 2013. Even though the universities presenting projects get diversified compared to previous years, METU was able to sustain its high success rate.

Our University made 98 project proposals within the scope of the Scientific and Technological Research Projects Support Programme (1001) in the 1st and 2nd periods in 2013 and 45 of these proposals have been approved in terms of getting supported.

Application Period	University	Projects approved
2013 1st Period	İstanbul Technical University	26
	METU	23
	Ege University	23
	Boğaziçi University	21
	Hacettepe University	20
	Ankara University	18
	Koç University	18
	İstanbul University	14
	Erciyes University	14
	Sabancı University	12
	Karadeniz Technical University	11
	Others	258
	TOTAL	458
2013 2nd Period	METU	22
	İstanbul Technical University	13
	Bilkent University	12
	Sabancı University	11
	Gazi University	10
	Boğaziçi University	9
	TOBB Economy and Technology University	8
	Ege University	8
	Ankara University	7
	İstanbul University	7
	Kocaeli University	7
	Dokuz Eylül University	5
	Andolu University	5
	Others	208
	TOTAL	332

Application Period	Total projects approved (Turkey)	Number of applications (METU)	Total projects approved (METU)	Success Rate (%)
2009 September	274	68	25	36
2010 March	332	59	22	37
2010 September	321	48	14	29
2011 March	271	61	21	34
2011 September	219	49	16	32
2012 March	320	55	22	40
2012 September	289	39	10	25
2013 March	458	57	23	40
2013 September	332	41	22	53

Performance in the 1003 Programme in 2013

The R&D projects developed in the priority areas within the programme newly initiated by TÜBİTAK in 2012 are supported in a highly competitive environment. The researchers in METU show great interest in this programme which provided concrete outcomes and 3 projects in the programme 1003 in which METU is one of the executive institutions have been initiated in 2013 within the scope of the programme.

- The project with the heading ''Implantable Neurostimulation/Neuromodulation Devices Design and Development'' executed by Prof.Dr. Nevzat Gencer from Departmen of Electrical and Electronics Engineering in METU is implemented in cooperation with the company Kardiosis operating in ODTÜ Teknokent. The project was qualified as supportable in the application within the scope of the invitation with the heading ''TC0101-Innovative Medical Devices for Diagnostic, Therapy and Support'' selected as a priority area. It is a project of great significance as it is foreseen to make a great contribution in the field of public health with medical device production.

- Another successful application from METU in 2013 was the one made within the project invitation ''EN00201-Hydrogen Production, Distribution and Storage Technologies.'' This is the first project within the programme 1003 received by METU as project administrator and it is executed by Assist. Prof.Dr. Serkan Kıncal, an academic member from the Department of Chemical Engineering. The project presented with the heading ''Development of Hydrogen Production Processes and Technologies using Non-stoichiometric Oxides'' was selected as supportable from among a great number of projects.

- Another successful project approved to be realised under the administration of METU in 2013 was the project carrying the heading ''Examination of Luminescence Characteristics of Various Borate Compounds with Metal Ion Implantation and Carboranthiol Films Composed on Metal Surfaces'' presented by Assoc.Prof.Dr. Ayşen Yılmaz from the Department of Chemistry. This first project was approved within the scope of the project invitation with the heading ''B0101122-Development of New Boron Products and Production Technologies and the Extension of Boron Usage Fields'' made within the programme 1003 and it will be realized in cooperation with several researchers from different universities. It is envisaged that the project, supported with a budget of 500.000 TL, will make valuable contributions to this newly developing field and the related literature in general.

Performance in the 1505 Programme in 2013

Two projects with a total budget of 740.000 TL have been initiated within the scope of University-Industry Cooperation Development Programme in 2013. The details of these projects within the 1505 programme are shown in the table below:

Project	Project Executive	Department	Company
Real-time Image Processing and Rail Error Analysis for Railways	Assoc.Prof.Dr. İlkay Ulusoy	Electrical and Electronics Engineering	KURASER Demiryolu Tek.İnş.El.Elekt. Bil.Dan.Dış.Tic.Ltd.Şti
Preparation of Finite Element Software for the Analysis of Dams	Assist.Prof.Dr. Yalın Arıcı	Civil Engineering	ES Proje Mühendislik Müşavirlik Ltd.Şti.

REAL TIME IMAGE PROCESSING AND RAIL ERROR ANALYSIS FOR RAILWAYS

Assoc.Prof.Dr. İlkay Ulusoy Parnas
METU, Electrical and Electronics Engineering Department

Railways have to be controlled continuously to prevent probable accidents. Such controls are realized with a control locomotive by gathering information from the components of a railway (rail, bolts, sleepers, fittings, nuts etc.). A camera is used to gather such information. The system enables to analyze the railway components by processing two-dimensioned or three-dimensioned camera images and thus specify errors. Measuring devices developed by us are installed on the test locomotive, real time images are taken underway and error analysis is made automatically. Thus probable fractures/breaks, errors of switch system or screws can be specified.

Performance in the 1007 Programme in 2013

18 projects in total within the scope of the TÜBİTAK 1007 programme are executed as of the end of 2013 in our University. The total budget of these projects amounts to 140 million TL.

Two projects in the programme 1007 were initiated in 2013 in our University with a total budget of over 23 million TL. The information about two other projects in the fields of defence and space initiated within the scope of SAVTAG cannot be shared here because of confidentiality regulations.

Performance in the Bilateral Cooperation Projects in 2013

In 2013, a total of five projects were supported within the scope of Bilateral Cooperation Programme. These projects were executed in cooperation with scientists from Romania, Germany, Slovakia and Russia.

Performance in the 1005 Programme in 2013

The National New Ideas and Products Research Support Programme was inaugurated in 2013 and the sole application made to this programme from our University was accepted to be supportable. The project with the heading ''Data Base Study regarding Pictures and Turkish Words normed in Terms of Semantics and Emotionality in the Turkish Population'' was one of the 7 projects supported by TÜBİTAK across the country in this period.

SAN-TEZ PROJECTS

Our University has been one of the most successful universities within the scope of the programme Industry Theses (SAN-TEZ) initiated by the Ministry of Science, Industry and Technology. 49 SAN-TEZ projects were being executed in our University as of the end of 2013. The total budget of these projects amounts to about 28 million TL. As can be seen in the table below, our University has had an increasing success in terms of SAN-TEZ project supports.

Number of SAN-TEZ projects and related budgets over the years

Inauguration year	Number of project initiated	Total project budget (in TL)
2007	2	308,336.00
2008	3	1,178,452.16
2009	3	1,368,080.88
2010	6	4,487,923.35
2011	10	9,080,585.77
2012	14	8,463,936.45
2013	11	3,142,809.88
Total	49	28,030,124.49

The table below shows the performance of our University in SAN-TEZ projects over the years. While the table above shows the projects executed in METU as of ''the project contract date'', the table below shows the number of applications made across the country and projects of METU which were approved in the period in question. The contracts of the projects which are approved in the 2nd period in each case are the first to be signed in the next calendar year.

Success Rate of METU in SAN-TEZ Projects

Application Period	Number of Total Projects Approved	Number of METU Projects Approved
2010 1st Period	43	5
2010 2nd Period	68	6
2011 1st Period	84	10
2011 2nd Period	108	11
2012 1st Period	94	7
2013 1st Period	69	6
2013 2nd Period	141	15

The overall performance of our University with regard to project applications and approvals across the country shows that it is among the most successful universities in terms of SAN-TEZ projects.

There are 11 SAN-TEZ projects that were initiated in 2013. 15 projects, the applications of which were accepted in the 2nd period in 2013, are not included in this number. The success rate of our University in terms of SAN-TEZ projects in 2013 is 56 %. The following list shows the SAN-TEZ projects approved in the 1st and 2nd periods in 2013.

Sequence Number	Application Period	Project Name	Project Executive	Department
1	2013-1	Sequencing Similar Trademark Logos in Big Database	Assist Prof. Dr. Sinan Kalkan	Computer Engineering
2	2013-1	Composition of Flange Advance Interface and Design Programme	Assist Prof. Dr. Ercan Gürses	Aerospace Engineering
3	2013-1	Active Wrist joint intended to Enhance Energy Effectiveness in Robotic Orthesis Systems	Prof. Dr. Uluç Saranlı	Computer Engineering
4	2013-1	Development of Original Software for Frosting Simulation in Aircraft Engines	Prof. Dr. Serkan Özgen	Aerospace Engineering
5	2013-1	Zeolite Synthesis and Antibacterial Applications	Assoc. Prof. Dr. Burcu Akata Kurç	Central Lab.
6	2013-1	Heat Rejection from Electronic Pallets on Rotating Tables by means of a Heat Pipes System	Doç. Dr. İlker Tarı	Mechanical Engineering
7	2013-2	Ontology Based Decision Support System	Prof. Dr. Ferdanur Alpaslan	Computer Engineering
8	2013-2	Hydroxyapatite Coating of Titanium Implants with Thermal Plasmas	Prof. Dr. Tayfur Öztürk	Metallurgical and Material Engineering
9	2013-2	The Production and Sintering of Refractor Metal Dusts by means of Electrochemical Method	Prof. Dr. İshak Karakaya	Metallurgical and Material Engineering
10	2013-2	ATEŞKES (Specification of the Location of a Firearm through Optimisation of Acoustic Sensor Networks)	Prof. Dr. Mehmet Kemal Leblebicioğlu	Electrical and Electronics Engineering
11	2013-2	Large Scale Multiple Touch-Operated Interfaces	Prof. Dr. Kürşat Çağıltay	Computer and Instructional Technologies
12	2013-2	Development of Outstanding Performance Glasses Designed in Nano Dimensions for Photovoltaic Energy Systems	Prof. Dr. Raşit Turan	Physics
13	2013-2	Development of a New Navigation System Using Inertial Measurement Unit and Global Positioning System	Prof. Dr. Buyurman Baykal	Electrical and Electronics Engineering
14	2013-2	Development and Application of High Temperature Resistant Resin Systems to be used in Rocket Missile Systems with Fibre/Fabric Reinforcement	Prof. Dr. Özdemir Doğan	Chemistry
15	2013-2	Production of Original Unmanned Air Vehicles with Ground Station and Integration of Geographical Information System	Assoc. Prof. Dr. Dilek Funda Kurtuluş	Aerospace Engineering
16	2013-2	Development of Cache-Memory Strategies for Meta-Search Engines	Assist. Prof. Dr. İsmail Sengör Altıngövde	Computer Engineering
17	2013-2	Development of Light Sensitive Antimicrobial Applications for Medical and Food Sectors	Prof. Dr. Hüseyin Avni Öktem	Biology
18	2013-2	Design of a High Resolution Robust Beam Sheaving Algorithm	Assoc. Prof. Dr. Çağatay Candan	Electrical and Electronics Engineering
19	2013-2	Design of a H.264 Compatible Video Codec on FPGA Programmable Integrates	Yrd. Doç. Dr. Fatih Kamışlı	Electrical and Electronics Engineering
20	2013-2	Active Noise Barrier for Booth Passages	Assoc.Prof.Dr. Arzu Sorguç	Architecture
21	2013-2	Examination of Phytochemical AMPK Activators against Obesity and Development of Food Supplement	Assoc.Prof.Dr. Nursen Çoruh	Chemistry

The details of one such project is given below:

Project Name: THE PRODUCTION AND SINTERING OF REFRACTOR TUNGSTEN METAL DUSTS BY MEANS OF ELECTROCHEMICAL METHOD

Project Executive: Prof.Dr. İshak Karakaya
Department: Metallurgical and Material Engineering

The Project in Summary:

Tungsten is a metal, which is used in several military applications, with the highest melting point and an expansion coefficient in the lowest temperature. Its importation is subjected to the agreements of Missile Technology Control Regime (MTCR) and Wassenaar Arrangement in which Turkey is also a contract party. In this project, a method, which has already been developed by us to a certain extent, will be further developed for the production of tungsten and the use of the obtained tungsten dust in end products. The related patents were taken from Turkey, and Canada and Russia in 2010 and 2012 respectively. The new method will constitute a serious alternative for the existing production method. If the aimed synthesising of tungsten dusts and production of sintered semi-products can be realised, it will pave the way that the difficulties in obtaining tungsten will be eliminated.

UDAP (NATIONAL EARTHQUAKE RESEARCH PROGRAMME) RESEARCH PROJECTS

There are 5 projects (details presented in table below) supported and executed by METU within the scope of the UDAP programme (National Earthquake Research Programme) of the Earthquake Department subordinated to the Disaster and Emergency Management Agency in the Prime Ministry. Two of these projects have been initiated in 2013. Total budget of the projects implemented in our University as of 2013 amounts to approximately 900,000 TL.

No	Project Name	Project Executive	Department
1	Turkey Disaster Data Bank	Assist.Prof.Dr. Burçak Başbuğ Erkan	Statistics
2	TEKDİY: Pilot Project for Dwellings Resistant to the Effects of Tsunami	Prof.Dr. Ahmet Cevdet Yalçıner	Civil Engineering
3	Actualisation of Turkey's Seismic Hazards Map	Prof.Dr. Sinan Akkar	Civil Engineering
4	CANKUŞ: Development of Automatic or Mobile Distance Controlled Earthquake Damage Monitoring and Rescue Systems Using Unmanned Aircraft Vehicles and Integration of these Systems to Disaster Rescue Systems	Assist.Prof.Dr. Selim Temizer	Computer Engineering
5	The Paleo-Sysmology of Kütahya Faulting	Prof.Dr. Erdin Bozkurt	Geological Engineering

TUJJB (NATIONAL GEODESY-GEOPHYSICS ASSOCIATION OF TURKEY) RESEARCH PROJECTS

There are two projects supported and implemented by the National Geodesy-Geophysics Association of Turkey as of the end of 2013, the total budget of which amounts to about 515.000 TL.

No	Project Name	Project Executive	Department
1	The Development of Flow Estimation Models Based on Geographic Information Systems in Tributaries in Kızılırmak Basin where no Flow Measurements can be Realised	Prof.Dr.Zuhal AKYÜREK	İnşaat Mühendisliği
2	Specification of Probable Damages which an Earthquake can Cause in Erzincan	Assoc.Prof.Dr. Ayşegül Askan Gündoğan	İnşaat Mühendisliği

PROJECTS OF THE DEVELOPMENT AGENCY

In 2013, one project of the Development Agency was initiated which is supported by the Development Agency in Ankara.

No	Project Name	Project Executive	Department
1	Wind Energy Technologies Sectoral Analysis Project	Assoc.Prof.Dr. Oğuz Uzol	RÜZGEM

METU-GATA (GÜLHANE MILITARY MEDICAL ACADEMY) COOPERATION PROJECTS

The cooperation between METU and GATA, which was initiated with a protocol signed in 2004, has been put into practice with success until now. It aims at the execution of joint training and research activities and interdisciplinary projects to be implemented jointly by academic members from METU and GATA.

GATA supports several works and studies carried out in our University in the diverse matters such as the development of human balance systems, system developments for CBRN applications, interaction of some medicines in cancer cells, reasons for ischemic stroke risk, examination of some diseases with methods of tissue engineering. In this concept, GATA provides assistance in several practices such as sampling from patients (blood, embryo etc.), clinical evaluation of patients, tests on animals and various analyses (especially cell culture, Doppler ultrasound device, microarray analysis, biochemical analysis etc.).

19 projects in total have been completed up to today within the scope of this cooperation. In 2013, 11 projects were supported with a total project budget (METU support) of 195.207 TL.

One of the projects developed in this cooperation programme is executed by Assoc. Prof.Dr. Tülin Yanık and Prof.Dr. Fuat Özgen.

Project name:
The Effects of Hypothalamic Mechanisms on Weight and Appetite Change caused by Atypical Antipsychotics used in the Treatment of Psychotic Disorders

Project Executives: Assoc.Prof.Dr. Tülin Yanık, METU, Academic Member in the Biology Department
Prof.Dr. Fuat Özgen, GATA, Academic Member in the Psychiatry Department

A study was carried out on the obesity caused by atypical antipsychotics within the scope of several joint researchers executed in cooperation of METU Biological Sciences Department, Molecular Neuroendocrinology Laboratory and GATA Mental Health Department. Even though these medicines are successfully used in the treatment of schizophrenia, many side effects such as putting on weight, high blood pressure, diabetes, coronary heart disease come into existence. Test on animals are carried out in cooperation of METU Biological Sciences Department and GATA Mental Health Department in order to reverse the process of gaining weight because of antipsychotics and treat it. Initial outcomes indicate that weight gain can be stopped.

DSİM (OFFICE OF REVOLVING FUNDS) PROJECTS

745 projects were implemented within the body of METU DSİM in 2013. Revolving fund revenues are comprised of consulting, training and experimental services as well as research projects. Revenue generated by METU DSİM through projects, experiments and trainings in 2013 – excluding net produce – amounted to 34 million TL. The number of experiments carried out within the scope of DSİM was 1749, the income generated through these experiments amounted to 3,768,265 TL.

METU PATENTS

In 2013, There has been made 26 patent searches, 7 PCT, 10 Turkey, 7 USA, 6 EPO, 3 Japan, 3 South Korea, 1 Belgium, 1 France, 1 Germany, 1 England, 1 Italy, 1 Finland, 1 Sweden, and 1 Utility Model applications and their Intellectual and Industrial Property Rights has been secured by ODTU Teknokent Technology Office. As a result of the applications, 5 Letter Patent with examination, 1 European Patent, 3 Japan Patent, 4 USA Patent, 1 Canada Patent, 1 Georgia Patent and 1 Ukraine Patent have been taken and the other application processed are continuing. ODTU has also one "triadic patent family" which a set of patents taken at the European Patent Office (EPO), the Japanese Patent Office (JPO), and the US Patent and Trademark Office (USPTO).

5 inventions were commercialized and 1 licence agreement was signed.

The commercialisation process of the inventions in the portfolio of METU accelerated with the 1513 TTO Support Programme in 2013. Two pieces of the Disabled Access System, an invention in this portfolio, was sold to the Metropolitan Municipality of Eskişehir (ESKİ). On the other hand, negotiations have been carried out with 16 IP brokers in order to develop commercialization collaboration and Confidentiality Agreements have already been signed with 7 of them..

PATENT EXAMPLE: Prof.Dr. Murat Dicleli

METU TT0-011 / Portfolio 2014 EARTHQUAKE DAMPER
A Mechanical Dampener Which Protects Buildings and Bridges against Earthquake
Earthquake Secured Buildings are a Possibility

It reduces the possibility of damage on important structures and enables that buildings move less during an earthquake, devices are protected and activities aren't interrupted in buildings such as hospitals.
Prof.Dr. Murat Dicleli

It enables that earthquake energy is transferred to buildings and thus protects them.

It is a system which can be used in order to protect important structures such as bridges, viaducts and hospitals in regions afflicted often by earthquakes in the first place. Hospitals are especially sensitive to earthquakes. When this invention can be practically implemented in the Building Sector, one of the key sectors in our country, it will be a significant added value.

The mechanical hysteretic damper developed in the Department of Engineering Sciences in METU to dampen the earthquake energy provides better performance in comparison with earthquake isolating and dampening systems available in Turkey. It provides rigidity far beyond the normal elasticity which is compatible with displacement. This is an important characteristic of this damper independent from the material it's produced. In this way, the rigidity of the damper is easily adopted designing the pendulum damper compatible to any project.

www.metutechtto.org

Advantages
It is resistant: It is more resistant to high intensity earthquakes than existing systems.
It is secure: It moves less than all existing systems, thus protecting structures.
It is long lasting: It has longer service life compared to the existing models, 125 years.
It is cost effective: As its effect is measurable, it has cost-reducing impact.
It is compatible: It isn't affected from environmental and external physical conditions.

Our patent concerning the invention of Earthquake Damper has been licensed in many countries comprising Japan, USA and China. For more information you can contact us under teknolojitransferi@odtuteknokent.com.tr.

The list of METU patents are given in the table below:

Engineering / Communication

- ntegration of IHE profiles through the language of ebXML Business Process Specification
- Methods and Devices to Find together the Number of Sources and the angle of incidence (radar specification in wide areas)
- An Education Method
- Virtual Air Cushion System
- Rotating Drum System for Microwave Ovens
- Hysteretic Earthquake Energy Damper (HDESC)
- Gravimetric Detectors Produced in MEMS Technology with Horizontal Electromechanical Oscillation which is Placeable in Microfluidic Canals and the Related Fabrication Techniques, 3-D Mixer for TTO-13 Microwave Ovens
- Aerobic Waste Sludge Digestion Process with Sequential, Discontinuous Ozone Dosage
- Specification of Speed and Position with High Level Rotor Chute Harmonics at Electrical Machines
- Systolic Array Architecture based on SRAM for Speedy IP Search
- Measurement Method and Machinery of Surface Roughness
- Method and Apparatus for the Auto-Calibration and Prediction of both Mutual Coupling Parameters and Return/Phase of an Antenna Array
- Wave Generator on Power Level for Applications of Uninterrupted Power Supply and Motor Drives
- Double Sided Operable Shock Absorber
- Thickness Measurement of Thin Films by Using Spectrometer
- Micro Canal Heat Sink Compatible with CMOS for Electronic Cooling and its Production Method
- Broadband Cone Antenna on Adjacent Plane
- Segmentation Method based on a Subject
- A diode (Diodes Radiating Thin Film Light Based on Hydrogenated Amorphous Silicon)
- Multi-Subject Tracking Using Thermal and Visible Video Band Data Fusion for Video Monitoring Applications
- Sun Energy Intensification Optic
- Mechanical Load Transfer Device Using Contact Potential Difference
- Sound Expander and Blocker Panel System for Acoustic Control in Inner Spaces
- Disabled Access System
- Harmonic Motion Microwave Doppler Imaging System
- Element Rotating Method with Micro-Fluidic Canals for Adjustable Message Array Antennas
- Disabled Access System for Vehicles
- Feeding of Underwater Sensor Networks with Distant Sound Energy
- Mechanical Ultraviolet Camera Operated with Resonance Frequency Control/Measurement
- Multiple Frequency Electrical Impedance Imaging with Lorentz Spaces
- Hermetic Packaging Management at Pull Height Containing Vertical Transmission Lines
- Internal Heating for Hot Forging Dies
- Cloud Content Share Interaction Box

Life Sciences

- Laminated Biomaterials with surface Designs and Tissue Engineering Scaffolds
- Polyurethane Composites in Medical Purity Containing Antibacterial Zeolite and their Preparation Processes
- Bladder Tumour Detection from Urine Flushing Sediment Using FT-IR
- Chips Production Method from Jerusalem Artichoke
- Surface Design Covered with Nano-Columns Intended for Control of Cell Adhesion
- Liposomal Medicine Carrying System in Nano Dimensions Loaded with tumour Targeted Medicine
- Anti-TFN Loaded Polymeric Controlled Delivery System
- Medical Electro-Thermal Imaging
- Biodegradable Bone Cements Containing Composite Bioactive Particles
- Specification of the Real Number of Salmonella Pathogen
- Usage of Aptamer Covered Nano-Particles in Lateral Flow Test (LFA)

Chemistry / Material

- A New Industrial Applicable Method for the Production of Polycarbonates
- Original, Treatable Green Polymer which is Permeable in Oxidized Stand for the Realisation of Electrochromic Device Applications Based on Commercial RGB
- Obtaining Tungsten and Tungsten Compounds from Components containing Tungsten with Electro-Chemical Methods
- Hemi-cellulose based, antimicrobial, antifog, detractive of undesired gases, biodegradable Film and Production Method
- High Conductivity Polymer for Imaging Devices
- Method and Device for Continuous Composite Metal Foam Production
- Production of MG-NI Intermetallic Compounds in Electrolytes Containing MGCL2 with Electro-Chemical Methods

Micro / Nano

- Dielectrophoretic Microcell Chromatography Device produced with MEMS Technology with Concentric Electrodes and Spiral Microflow Canals
- Synchronous Phase and Amplitude Control with 3-Pin Topology and The Realisation of Thought with RF MEMS Technology
- Micro Production Method of Capacitive Ultrasonography Transducers with Diamond Membrane
- MEMS Piezoelectric Energy Producer for Cochlear Implants

RESEARCH PROGRAMMES

RESEARCH PROGRAMMES

COOPERATION DEVELOPMENT PROGRAMME FOR RESEARCH CenterS (MİGEP)

The Cooperation Development Programme for Research Centers (MİGEP) is a programme initiated in 2012 to be implemented in six Research and Application Centers established with the support of the Ministry of Development [METU-BİLTİR Center (BİLTİR), Micro Electromechanical Systems Research and Application Center (MEMS), METU-TSK Modelling and Simulation Center (MODSIMMER), Solar Energy Research and Application Center (GÜNAM), Wind Energy Technologies Research and Application Center (RÜZGEM, Biomaterials and Tissue Engineering Research and Application Center (BİOMATEN)] in four fields (Energy, Electric-Electronic-Informatics, Automotive and Biomedical). In this programme, it is aimed that R&D activities specified via cooperation of universities with the private sector are executed in METU centers using the physical infrastructure therein and the cooperation between these centers and private sector is enhanced through researchers who operate both in the centers in our University and the industry at the same time.

This programme is implemented by METU Research Coordination Office and the processes within the University are specified in coordination meetings with the participation of these centers. The works are carried out in accordance with the protocols signed between the centers and companies. Each MİGEP student and dissertation supervisor prepares a Spending Plan in line with the codes of practice specified by the Ministry of Development. The spending plans are approved by the President of the related Center and the Project Executive and budgets are used in accordance with these approved Spending Plans. Financial transactions with regard to MİGEP are carried out by METU Scientific Research Projects Coordination Office. Spending plans submitted to the Research Coordination Office were examined and approved and the admission of the related demands (support for research and trips) was started in June 2013.

The programme of MİGEP is supported by the Ministry of Development with a budget of 1,000,000 TL, 300,000 TL of which was assigned for 2013. Within the scope of this programme, 25 students, supported by 12 companies in total, were continuing their postgraduate education as of January 2013 using the infrastructure of the mentioned centers. For more information about MİGEP, please see http://ak.metu.edu.tr/migep.

INITIATIVE FOR RENEWABLE ENERGY, ECOSYSTEMS AND SUSTAINABILITY (I-REES / YESAP)

METU was defined as a research-oriented university in its Strategic Plan comprising the period 2005-2010 as far as the vision of the university was concerned and it was thereby underlined that project proposals in the fields of its priority areas had to be developed and supported. The field of ''Renewable Energy and Sustainability'' was selected as the first priority area to be supported and a research network was established with the heading '' Initiative for Renewable Energy, Ecosystems and Sustainability (YESAP).''

YESAP is a platform aiming at bringing the studies carried out in the fields of renewable energy, ecosystems and sustainability in different departments and units within METU under the same roof. It endeavours to this end to provide the grounds for cooperation between groups working in the fields of renewable energy, ecosystems and sustainability. YESAP also aims at coordinating research, educational and social activities, building a powerful network structure comprising several units and organizations in and outside the University and enhancing the cooperation environment in the mentioned fields in Turkey.

There are different specific fields such as Renewable Energy, Sustainable Environment Management and Technologies, National and International Sustainability Governance under the roof of METU-YESAP. Different working groups have been established in these fields. Researchers from several departments of METU are carrying interdisciplinary studies in these work groups.

The support for the projects within the scope of METU-YESAP began as of 2010 for the first time. Six projects have been supported from 2010 to 2013 in this concept and three of them have already been completed. The number of YESAP Projects supported in 2013 is 5.

They are mainly the projects of Institute of Marine Sciences and the departments of Architecture, Biology and Chemistry which were implemented in 2013 within the scope of YESAP. More information about YESAP can be found at the address of http://yesap.metu.edu.tr.

RESEARCHERS TRAINING PROGRAMME FOR DEFENCE INDUSTRY (SAYP)

This is a training programme intended for graduate and postgraduate researchers specifically designed for students (researchers) who work in companies operating in the Defence Industry and are enrolled in postgraduate programmes in METU at the same time. Such dissertations are executed as regimented projects selected to be realised in line with medium and long term research and development strategies of companies in fields of priority areas as set by the Office of Undersecretary of the Ministry of Defence.

To this end, our University has signed protocols with the Office of Undersecretary of the Ministry of Defence, ASELSAN, TUSAŞ (TAI) and ROKETSAN on the 4th of October, 2011 and HAVELSAN, FNSS and MILSOFT on the 25th of November, 2013 with the aim of realising ''Research Projects'' on the basis of postgraduate dissertations within the scope of SAYP.

A SAYP University-Industry-Collaboration event was organised on the 25th of November, 2013, the date on which the related protocol was signed with three new companies, with the participation of companies operating in the defence industry and participating in SAYP as contract parties, representatives of the companies operating in ODTÜ Teknokent and other universities. 56 project proposals were made during this event, to which media institutions devoted great interest as well.

Uncertain points in the process of SAYP have all been eliminated in 2013 and the projects were initiated in a rapid way. There are 14 SAYP projects, already implemented or in the procedure of approval, with a total budget of over 3.000.000 TL. The projects supported within the scope of SAYP are shown in the table below:.

Researcher Student's Company	Supervisor	Department	Proposed Dissertation Theme
TAI	Prof.Dr. H. Nevzat Özgüven Assist.Prof.Dr. Ender Ciğeroğlu	Mechanical Engineering	Düz Dişlilerdeki Dinamik İletim Hatasının Profil Değişimi ile Azaltılması
TAI	Prof. Dr. Metin Akgök	Mechanical Engineering	Dişli Temas Noktalarında Sürtünme Katsayısının Belirlenmesi ve Modellenmesi
ROKETSAN	Prof. Dr. Ozan Tekinalp	Aerospace Engineering	Hava Savunma Operasyonel Performans Analizi için Senaryo Optimizasyon Algoritması Geliştirilmesi
ROKETSAN	Assoc.Prof.Dr. İlkay Ulusoy Parnas	Electrical and Electronics Engineering	Değişik Arkaplanlara Sahip ve Farklı Uzaklıklarfdan Elde Edilen Kızılötesi Görüntülerde Otomatik Hedef Tespiti Adlı
ROKETSAN	Prof. Dr. Gürkan Karakaş	Chemistry Engineering	Sol jel yöntemi ile nano yapılı metalik xerojel sentezi ve karakterizasyonu projesi
ROKETSAN	Assoc.Prof.Dr. Özlem Aydın Çivi	Electrical and Electronics Engineering	Aviyonik Uygulamaları için Silindir Üstüne Yerleştirilen Antenlerin Tasarımı ve Analizi
ROKETSAN	Assoc.Prof.Dr. Halit Oğuztüzün	Computer Engineering	Model Kullanım Altyapısı Projesi (MOKA)-Simulation Model Composition Framework for Model Driven Engineering
	Assoc.Prof.Dr. Ece Güran Schmidt	Computer Engineering	Model Kullanım Altyapısı Projesi (MOKA)-Real Time Simulation Inyerface Framework for Model Driven Engineering
ROKETSAN	Prof. Dr. Süha Oral	Mechanical Engineering	Kompozit Silindirik bir Kabuğun Belirlenmiş Yükler Altında Optimum Tasarımı Projesi
ROKETSAN	Prof. Drç. Altan Kayran	Aerospace Engineering	Kompozit Yapılarda Katman İçi ve Katmanlar Arası İlerlemiş Hasar Analizi
ROKETSAN	Assoc.Prof.Dr. Funda Kurtuluş	Aerospace Engineering	Hava Aracının Yükseklik ve Yönelim Dinamiklerinin Denetimi için Güdüm Algoritması Geliştirilmesi Projesi
ROKETSAN	Prof. Dr. Orhan Yıldırım	Mechanical Engineering	Kontrollü olarak Kırılabilen Kompozit Lançer Kapağı Tasarımı
ASELSAN	Prof. Dr. Bülent Ertan	Electrical and Electronics Engineering	Yüksek Gerilim Yüksek Güçlü Fırçasız PM Motor için Sürücü Geliştirme.
ASELSAN	Prof. Dr. Bülent E. Platin	Mechanical Engineering	Development of an Error-Resistant Autopilot for an Unmanned Helicopter

NEWS ABOUT ACTIVITIES FROM METU RESEARCH AND APPLICATION CENTERS

NEWS ABOUT ACTIVITIES FROM METU RESEARCH AND APPLICATION CENTERS:

METU GÜNAM:

GÜNAM, the Workshop of ''SunCities Symposium and SolarCampus''

GÜNAM realised the expositions of Solar Technologies and Solar Projects on the 15th and 16th of November, 2013 in the METU Cultural and Convention Center within the framework of a workshop entitled ''SunCities Symposium and SolarCampus'' with the participation of 200 participants from universities, industrial sector and non-governmental institutions. This ''Sun Symposium'' was organised by the Rectorate of METU, Faculty of Architecture and ODTÜ Teknokent under the coordination of GÜNAM and sponsorship of Akü A.Ş. R&D studies carried out in the field of solar energy were reviewed in this workshop, needs and insufficiencies of our country in this respect were specified and discussed, and the participants brought forward proposals about what needs to be done in our country and universities to fill the gap in this area. Companies had opportunities to meet with participants in the fair area and a poster area and an exposition were also organised where the projects performed in universities regarding Solar Energy and Solar Cities were put on display.

METU RÜZGEM:

RÜZGEM, Wind Energy Science and Technologies Conference

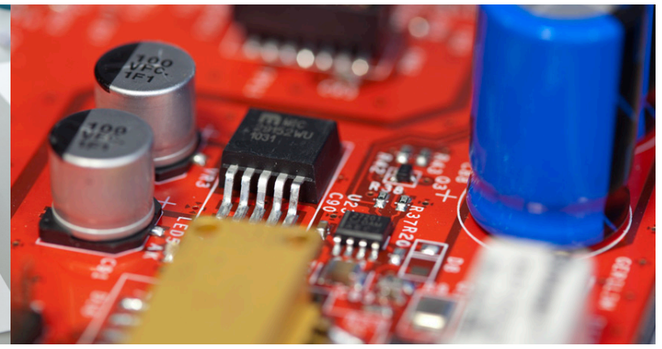
RÜZGEM Wind Energy Science and Technologies Conference was organised by RÜZGEM on the 3rd and 4th of October, 2013 in the METU Cultural and Convention Center with the participation of 75 participants. This conference provided a platform where academicians, researchers and professionals came together to present and discuss their research regarding wind energy and wind turbine technologies from various aspects.

INSTITUTE of MARINE SCIENCES:

Institute of Marine Sciences organised workshops within the scope of it EU-funded and 1007 Programme projects

A workshop with the heading ''Steps toward application to End-to-End modelling in Mediterranean and Black Seas'' was organised by the METU Campus of Institute of Marine Sciences in Erdemli, Mersin on the 26th and 27th of February, 2013 within the scope of the project ''Policy-oriented Marine Environmental Research for the Southern European Seas (PERSEUS)'', an EU 7th Framework Programme Project executed by Prof. Dr. Ahmet Erkan Kıdeyş, the manager of the Institute of Marine Sciences. EURO-BASIN Annual Meeting

2013 was organised in the Green Park in Taksim, İstanbul between 22nd and 24th of October, 2013 with the participation of 47 participants within the scope of the project ''International BASIN Program Basin-Scale Analysis, Synthesis & Integration (EURO-BASIN)'', a EU 7th Framework Programme Project also executed in the Institute of Marine Sciences. Furthermore, An Anchovy Workshop was organised in Trabzon on the 17th of May, 2013, with the participation of 92 participants in collaboration with the Ministry of Agriculture within the scope of a project of the Institute of Marine Sciences with the heading ''Specification of Anchovy Reserves in the Black Sea by acoustic method and Realisation of a Continuous Monitoring Model for the National Fishery Data Collection Programme'', a project supported by TÜBİTAK as well.



METU-MEMS:

Closing event concerning METU-MEMS REGPOT Project within the EU 7th Framework Programme

The closing event of the METU-MEMS project with the heading ''METU-MEMS Research and Applications Center (METU-MEMS)'' within the FP7-REGPOT-2009-1 scheme was organised in the METU Cultural and Convention Center on the 26th and 27th of November, 2013 with the participation of 85 participants. This is a project, which was supported as of the 1st of December, 2009, in the Capacities Special Programme, Research Potential within the scope of EU 7th Framework Programme. Many representatives from various companies, universities and research institutes in Europe got together in the event with the heading ''METU-MEMS Project Brokerage Event on the MEMS and Microsystems Technologies''. In this way it aimed at establishing a common dialog platform to ensure the participation of the representatives from academic institutions and industry having project ideas in the field of MEMS and Microsystems Technologies within the new EU framework programme of Horizon2020. The participants had the possibility to share research outcomes, the technologies they developed and exchange project ideas in prearranged meetings with the representatives of companies, SMEs, universities and research organizations. In addition representatives of TÜBİTAK and universities made presentations about Horizon2020. Various representatives of national and international universities and industries also shared their project ideas through presentations. Furthermore, ''3. National MEMS and Microsystem Technologies Workshop (MEMS-TR'13)'' was held on the 25th of November, 2013 in the METU Cultural and Convention Center within the scope of the related project with the participation of 122 participants. This MEMS-TR workshop is organised to bring the groups, working on MEMS in research organizations and industry in Turkey together, create awareness in this sense across the country and establish a platform paving the way that this technology creates industrial added value and it is aimed that it becomes a regular workshop held on an annual basis.

AFET:

Disaster Management Center establishes Turkey Disaster Data Bank

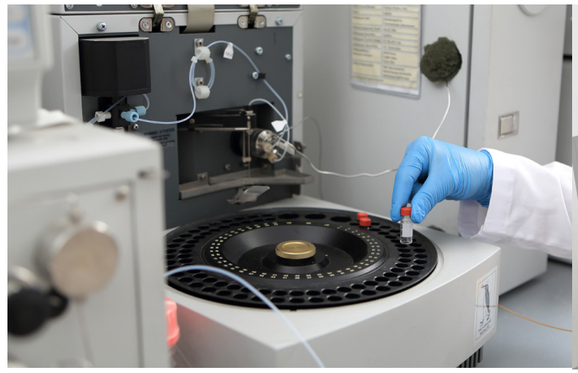
Below you will find detailed information about the project TURKEY DISASTER DATA BANK (TDDB), a project initiated by Disaster Management Application and Research Center in 2013.

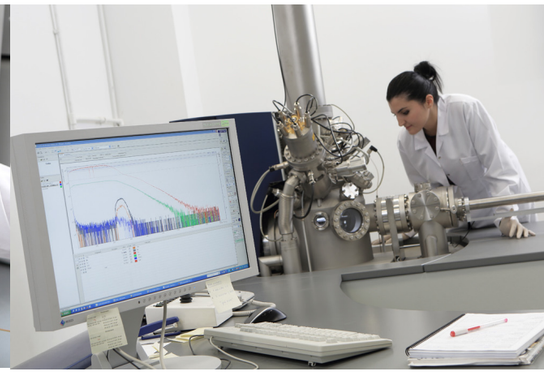
The project of TDDB is a project realised by cooperation of Disaster and Emergency Management Directorate in the Prime Ministry with METU Disaster Management Application and Research Center. Within the scope of this project, various information sources and statistical data will be presented to every interested person, particularly to researchers and employees who work in this field as of April 2014. It is a user-friendly, sustainable and improvable disaster data bank.

TDDB is comprised of the following modules with respect to disasters:

- document module including books/booklets, institutional reports, articles, dissertations, pictures, videos, presentations, audio materials, periodicals and materials for the Disabled and
- analysis module that comprises statistical data and their statistical analysis.

Comprehensive studies are carried out to enrich the portal with data concerning former disasters in an effort to obtain data going as back as 100 years in cooperation with shareholder institutions.



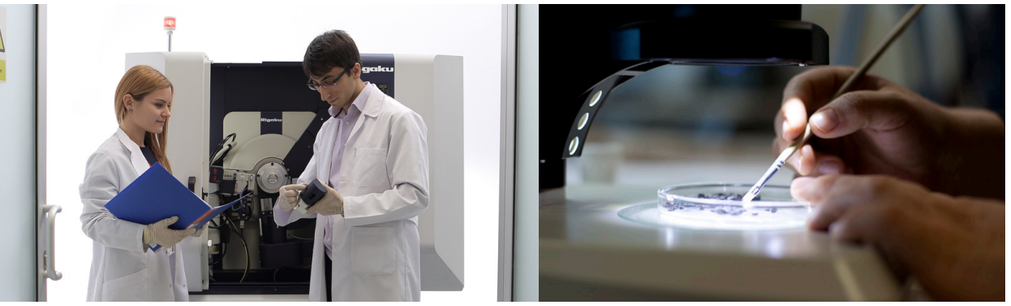


INAUGURATED UNITS AND INFRASTRUCTURE INVESTMENTS OF THE CenterS IN 2013

METU-TSK MODSİMMER:

Simulator and Advanced Technologies Laboratory and Cockpit Assembly and Vibration Drive Unit

Simulator and Advanced Technologies Laboratory and Cockpit Assembly Unit of MODSİMMER was realised to be used as a moving platform after the related allocation was assigned in 2013 within the project of the Ministry of Development realised between 2007-2009. Furthermore, the Vibration Drive Unit was taken from the laboratory of the Faculty of Engineering to be assembled in this context.



METU RÜZGEM:

"Composite Material" and "Structure Mechanics and Material" Laboratories and "Large-Scale Wind Tunnel"

RÜZGEM Composite Material Laboratory was expanded in 2013 and Structure Mechanics and Material Laboratory was restructured with new test equipments. The concept and detailed design of RÜZGEM Large-Scale Wind Tunnel which is established to render service to aviation, construction and wind energy industries have come to the final stage. In addition, test machinery was set up in Electromechanical Laboratory intended to test wind energy generators.

INSTITUTE OF MARINE SCIENCES:

Genetics, Oceanography and Microbiology Laboratories and Environmental Awareness Training Center

Various infrastructure investments were realised in 2013 within the scope of ''Marine Ecosystems and Climate Research Center (DEKOSİM), System, Prediction and Service Development Project'' executed by the Institute of Marine Sciences and supported by the Ministry of Development. Three new laboratories were inaugurated in the institute as well: Genetics Laboratory in order to specify the genetic diversity in our seas, Chemical Oceanography Laboratory which would render service in the specification of water-soluble ions and Microbiology Laboratory intended for the determination of biodiversity of marine microorganisms. An Environmental Awareness Training Center was also inaugurated with the purpose of providing training in order to create environmental awareness. In addition, two pieces of sub-bottom profiler devices, named Argo, were positioned in the Mediterranean and Black Sea respectively within the scope of the same project so as to monitor physical parameters in the seas continuously. A system comprised of a surface buoy and diverse receivers on a wire stretching from buoy to the bottom of the sea was also set up with the purpose of monitoring the continuous change in the physical parameters in the sea water by taking measurements from the same location and tests are continuing in this project.

METU-BİLTİR:

Unit of Intelligent Transport Systems

In the light of indications that applications regarding the Intelligent Transport Systems would gain more and more importance in Turkey, BİLTİR center established a Unit of Intelligent Transport Systems in May 2013 so as to institutionalise the studies in this field under the presidency of Assistant Professor Hediye Tüydeş Yaman, academic member in the Transportation Engineering Unit operating within the Civil Engineering Department.

METU-KAYNAK:

Advanced Welding Technologies Laboratory

Welding Technologies and Non-Destructive Testing Research/Application Center has been operating with success as of 1991 onwards without interruption, the year in which its regulation was publicised. Welding Center was established in the framework of an intergovernmental project between Turkey and Germany (1988 – 1996).

The Center makes a comprehensive contribution to the industry in our country training international welding engineers, weldors and non-destructive test specialists of level 1 and level 2. In this sense, 131 participants took part in the trainings concerning international welding engineering in 2013. The number of those who participated in the training programme for non-destructive testing was 70. Our Center trained 1133 welding engineers, 2380 non-destructive test specialists and about 4500 weldors in total as of the end of 2013.

The establishment of the Advanced Welding Technologies Laboratory of our R&D Department, the projection of which was initiated in 2012, was completed in 2013. This laboratory aims at realising research, test and analysis studies with high added value which can not be supplied in the national market. The R&D studies here focus mainly on power-intensive melting in steel alloys (hybrid plasm arc welding) and solid state welding techniques in aluminium alloys taking thereby international developments in this field into account. TÜBİTAK and BAP projects are continuing in these fields. Furthermore, welding process simulation is also being realised since 2012 using SYSWELD software and the laboratory also gives quality service to our industry in the fields of distortion/residual stress analysis in production with welding and welding design.

MIDDLE EAST TECHNICAL UNIVERSITY