



I. R. Iran
Ministry of Science Research and Technology
Iranian Research Organization for Science & Technology
(IROST)

Presented by
Dr. Ahmad Akbari
Vice Minister and
President of IROST

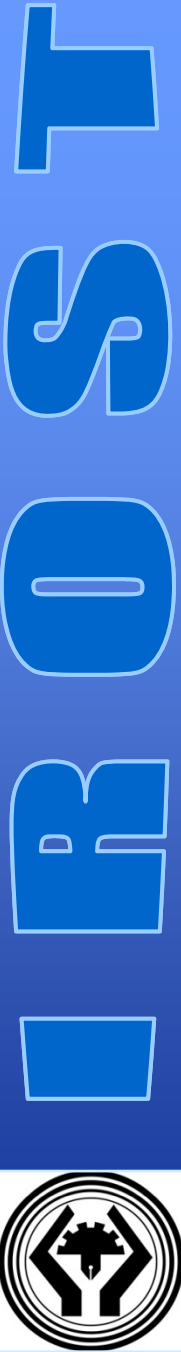
Ministry of Science, Research and Technology

Iranian Research Organization for Science and Technology (IROST)



IROST Background

- IROST was founded in 1980, as an applied research organization.
- IROST is affiliate member of Ministry of Science, Research and Technology (MSRT)
- IROST is the center for advanced technology research, according to the potentials of country.



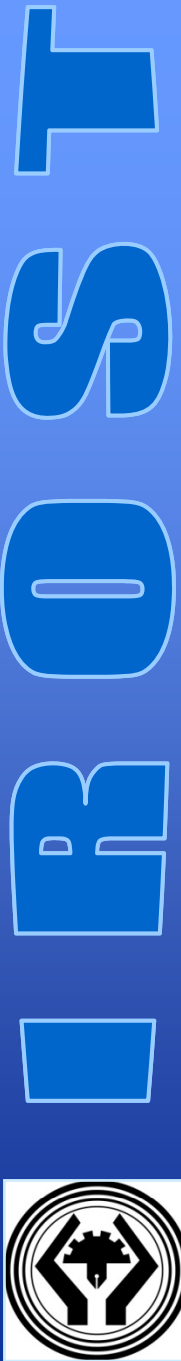
Objectives & Policy

- To spread awareness about the investment opportunities in:
 - Aerospace Science,
 - Biotechnology,
 - Green Chemistry Technology,
 - Nanotechnology,
 - New & Renewable Energy and
 - Environment Friendly Technologies.
- Training and help for development of technology to the entrepreneurial community,
- To outline a set of incentives and concessions for the industry to attract investment in the field of advanced technologies,
- Technology commercialization and
- Transfer of technology.



IROST Facilities

- IROST provides infrastructure as well as enhance human resources for the development of technology in IROST Incubating Technology Center.
- IROST provides an appropriate institutional and laboratory framework to achieve their objectives.



IROST Departments consists of:

Department of Chemical Technologies

Department of Biotechnology

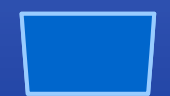
Department of Electronic & Computer

Department of Mechanics

Department of Advanced Material & Renewable Energies

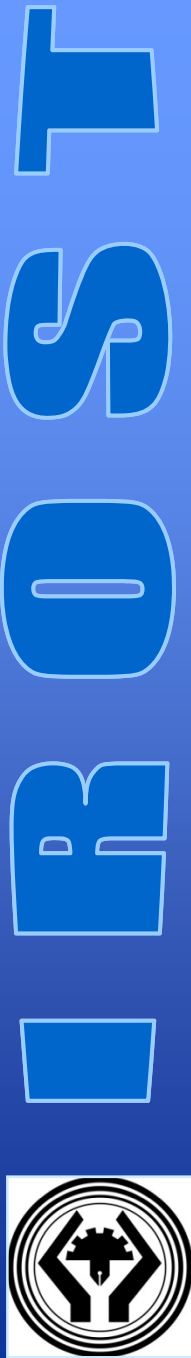
Department of Agriculture

Department of Advanced Technologies



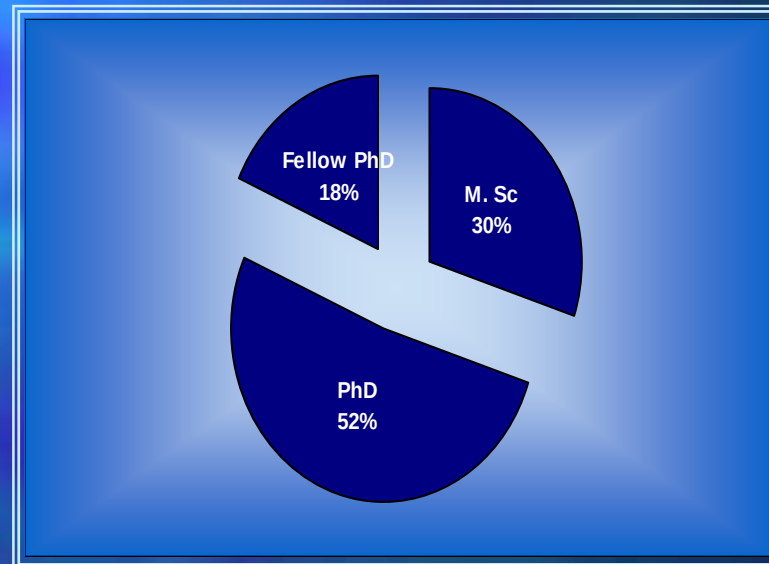
Aims & Objectives

- Regenerate workforce and to move advanced sciences from laboratory into industry.
- Develop the human resources and process to support ability of country to leverage and add value.
- Development of advanced technologies and commercialization of successful projects.



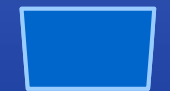
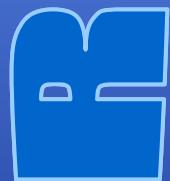
IROST Researchers

- Total number of staffs: 135
- Associate Prof.: 8
- Assistant Prof.: 46
- Researchers: 47
- Assistant researchers: 35



Outline of Research & Development in IROST

- Research... Laboratory manufacturing
- Development of Technology....Consumer.
- Research... Product Development
- Manufacturing ... Marketing and Sale.



Department of Mechanics



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Department of Mechanics Projects

- 1- Compilation of energy consumption, and energy labeling for residential fans.
- 2- Design and calculation of a prototype Diesel engine cycle based on DME (die methyl ether) fuel
- 3-Design and construction of a programmable processor for treatment of metals at low temperatures

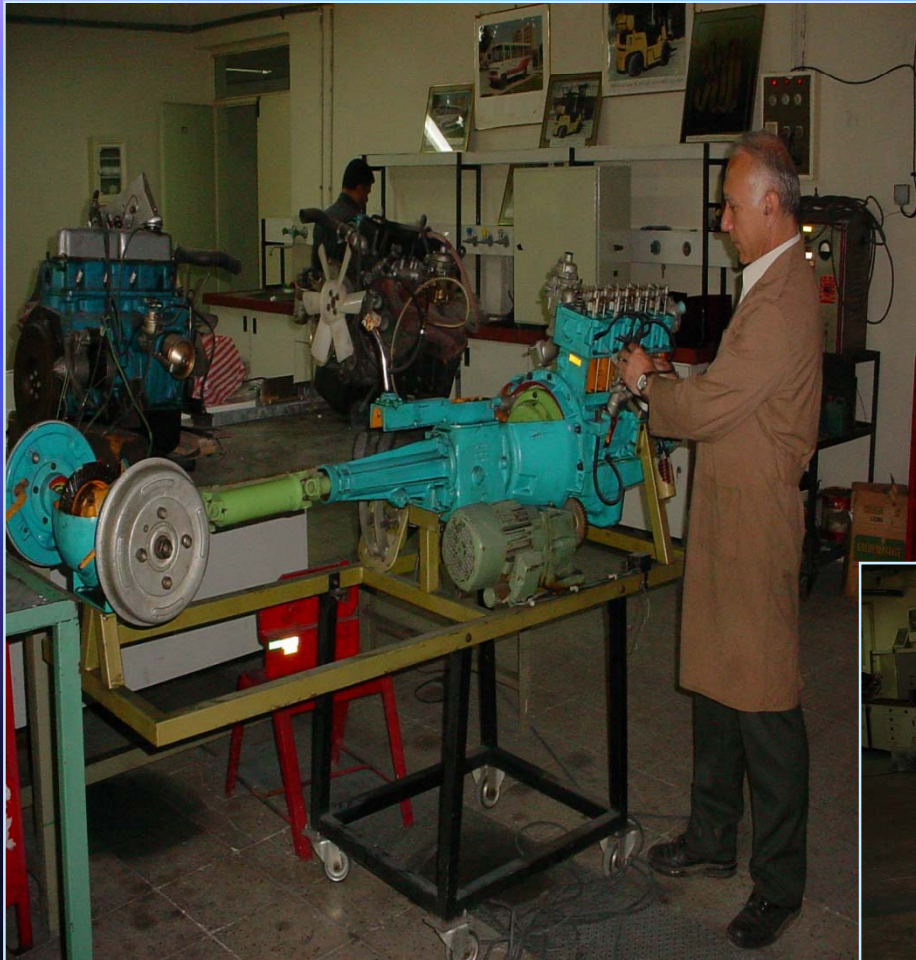
Megatoronic Laboratory



TSOER



Engine Test Laboratory



ASOER



Freeze Dryer

Fully designed & made at IROST



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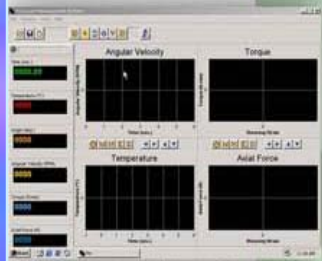
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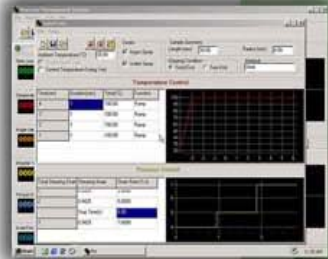
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Hot Torsion Test Machine



Post processing software



Programming Software

Control Panel

Inductively heated specimen

Protected atmosphere enclosure



IROST

Longitudinal RTL view

Longitudinal LTR view

Hydraulic power pack

Induction heating furnace (RF)

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Electro-optic targets

Shock wave supersession by
FPGA programming

Micro processor translator/filter



Post processing unit

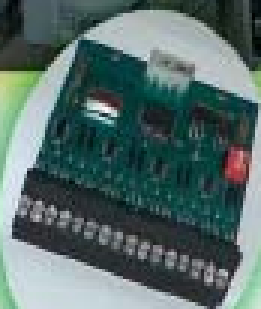


Final test of EOT in IROST

An array of laser cameras
forming a laser curtain



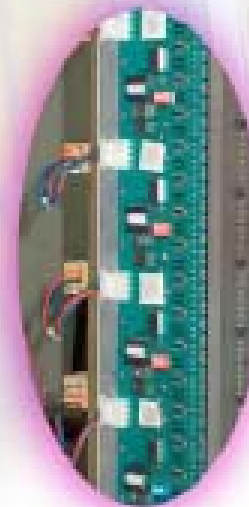
Plexi-glass colimators and line
generators used in a laser curtain maker



An FPGA based unit receiver



Shock wave (supersonic)



An array of receivers

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Chemical Technologies Department



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Chemical Technologies

Department Facilities

- Different processes for manufacturing of pharmaceuticals
- Different processes for manufacturing of Silymarin, Ammonium Glycyrrhizinate, Hesperidin, Rutin and liquid herbal extracts
- Different processes for dairy products manufacturing
- Different processes for food additives manufacturing

- Waster-water resources analysis, investigation to reduce the pollutants and/or hydraulic loading, waste-water sampling and analysis, pilot studies to optimize the different waste-water treatments, upgrading of the existing waste-water treatment plants
- Natural gas conversion
- A culture promotion of scientific temper through seminars/ symposia/ workshops

- Extension of technical services to industries
- Design & Construction of multipurpose pilot plants
- Cellulosic pots pilot plant
- Mini-pilot plant for Dimethyl ether production
- Cryogenic Grinding mini-pilot plant for spices and medicinal plants
- Test Station for Polymer Exchange Membrane (PEM) Fuel cell
- Pilot Plant for Medicinal Plant Processing by Counter-Current Method

De-Methyl Ether (DME) Pilot Plant

Green Fuel!



Alumina Pilot Plant



TSOR



Dental Alginate Pilot Plant



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Nanotechnology



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Biotechnology Department



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Biotechnology Department

Research Laboratories and Facilities Includes:

- Enzyme Technology lab
- Environmental Biotechnology labs (Biodegradation & Bioremediation labs)
- Molecular Biology lab
- Protein Chemistry lab
- Extremophile Microorganism lab
- PTCC laboratories
- Mini Pilot plant and Pilot Plant Laboratories for fermentation system and recovery products.

Fermentor (3000 L)

Fully designed & made by IROST



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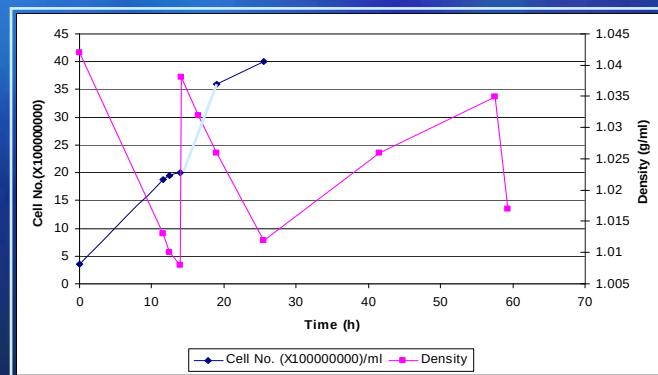
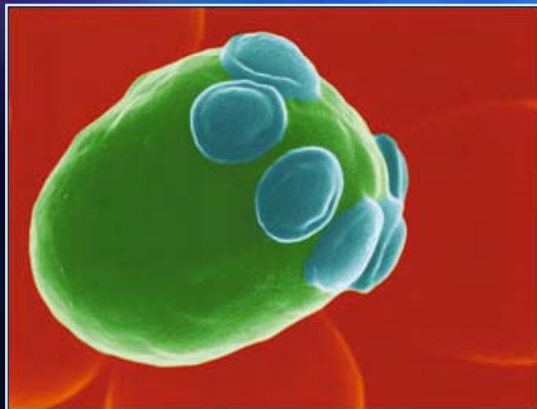
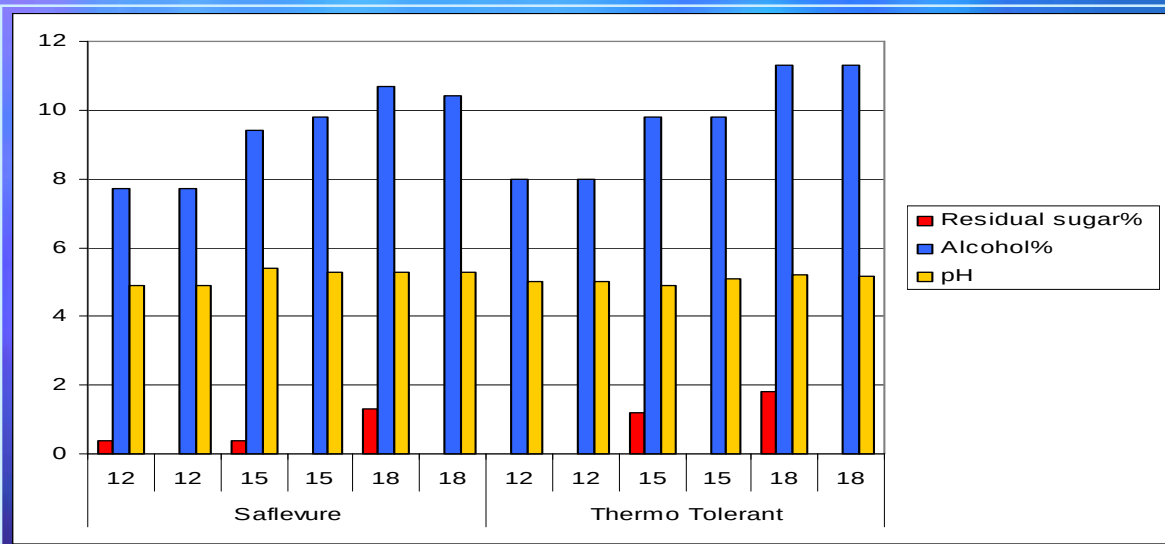


Biotechnology Pilot Plant

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Improvement of Alcohol Production in Pilot Plant Scale

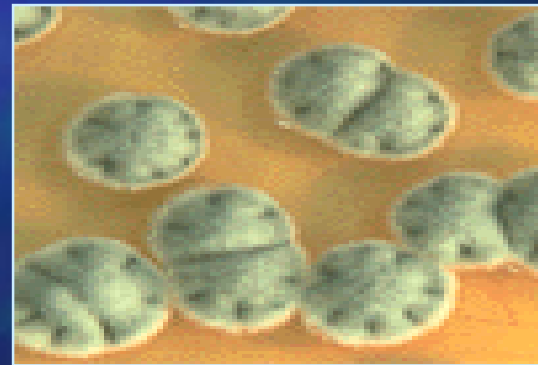


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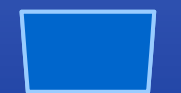
The Persian Type Culture Collection (PTCC)

- -Established in 1982
- - Affiliated member of WFCC since 1984, with the code PTCC 124 I.
- Regional reference center of biotechnology(Biotechnology MIRCEN) since 1992.
- Research and Training Activities for west and central Asia, Environment friendly technology.



UNESCO MICROBIAL RESOUECES CENTERS (MIRCENS) NETWORK

UNESCO Microbial Resources Centres



Persian Type Culture Collection

- -Screening of wild strain from biodiversity resources of Iran for bioactive molecules.
- -Collection and maintenance of industrial microorganisms from different area of Iran
- -Regional Centre for deposit of Type strain.



Persian Type Culture Collection

- Training and Workshop:
- Industrial Microbiology and Fermentation Process every year
- Improvement of Industrial Microorganisms by Mutation and Selection. every year
- Regional Workshop /conference on Geo-Biotechnology February 2007
- Regional Conference/ Workshop on Extreme Environment and Extremophile Organisms November 2007



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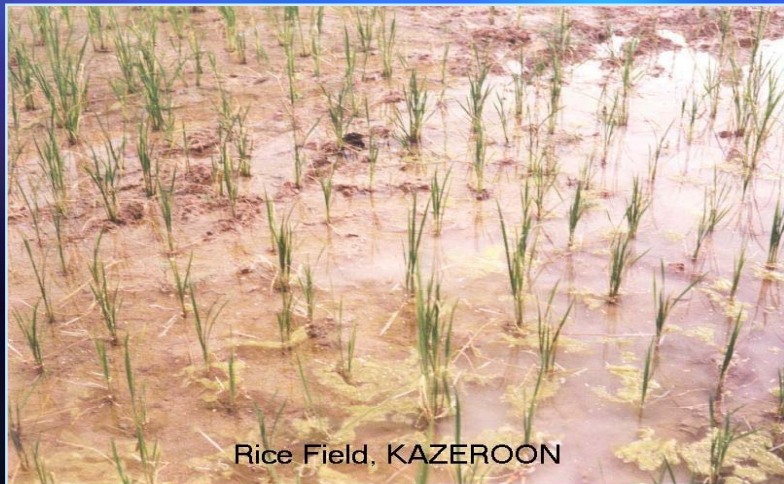
The Persian Type Culture Collection (PTCC)



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Biological Control of Malaria

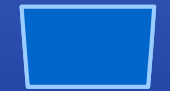
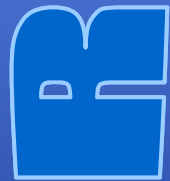


KAZEROON



Bio-Flash Company

A Real Sample of Research into Industry

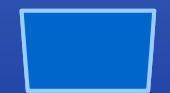
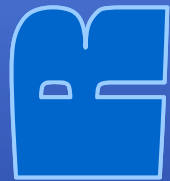
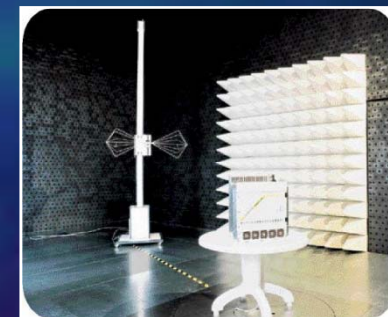
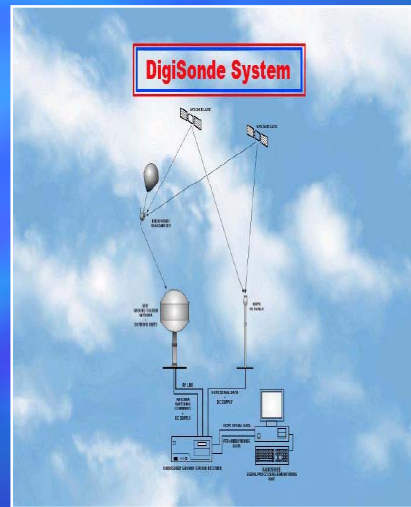




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Department of Electronic & Computer



The laboratories of the Electronic & Computer department

- Communication & Space Technologies Laboratories:
- Space Technology Center (STC)
 - 1) Satellite Signal Processing & Data Center Lab
 - 2) Space Battery Lab
 - 3) Space Simulator Lab
 - 4) Solar Cell Test Bed Lab

- 
- 5) Space Quality Assurance Lab
 - 6) TMTC Lab
 - 7) Space Software Test-bed Lab
 - 8) Space Sensor, Monitoring and Control Lab

- Communication & Electronic Lab.
 -
 - Satellite Remote Sensing Lab.
 -
 - Energy & industrial automation group
-
- 1) Telecommunications lab.
 - 2) Electronics lab.
 - 3) Power electric lab.

Biomedical engineering group:

- 1) Biomedical instruments test lab.
- 2) Electronics & power lab
- 3) Telemedicine Lab

Information technology & intelligent laboratories:

- 1) Artificial intelligence lab.
- 2) Software test lab
- 3) computer networks lab

Mesbah Engineering Model

Electronic box mounted on a trolley



Separation switches



Part of the structure, Al7076 T6



Thermal subsystem



Attitude control subsystem



Specially written computer program

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Mesbah mini-satellite ground model



Internal harness



Magnetic damper



Base band modulators



Thermal radiators



Fixed cross yagi antenna



Modular structure



UHF power combiner



GG boom in the deployed configuration

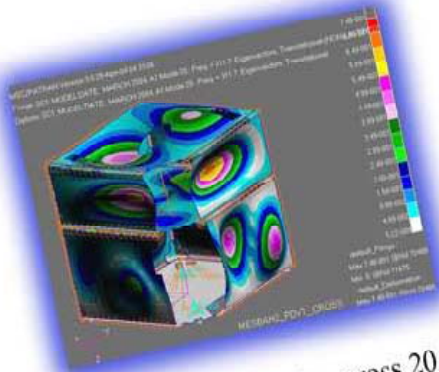


Tray type design

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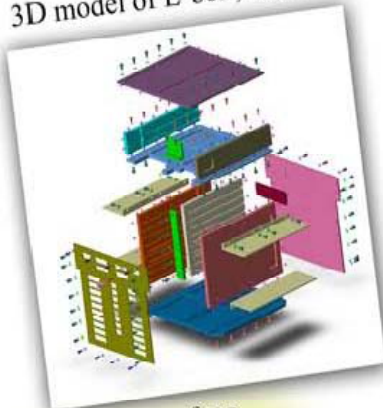


Computer Aided Design



Modal analysis - cross 20

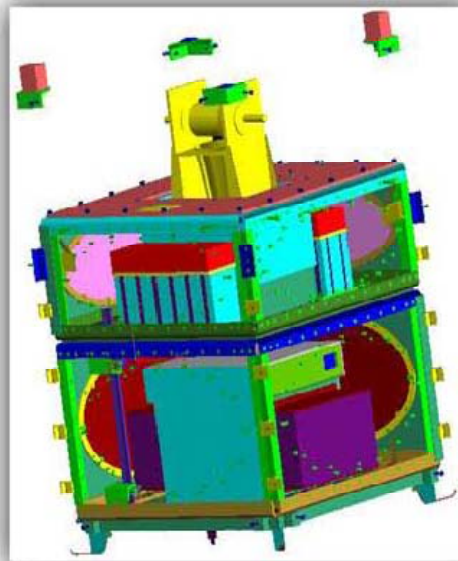
3D model of E-box, exploded view



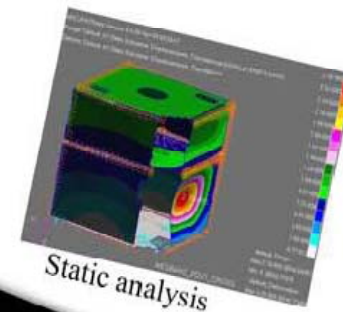
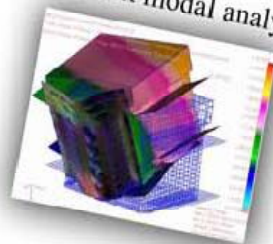
Launcher interface



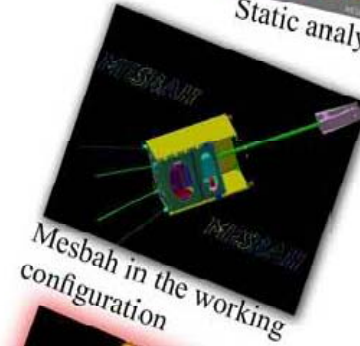
3D model of MESBAH structure



E-box modal analysis



Static analysis



Mesbah in the working configuration



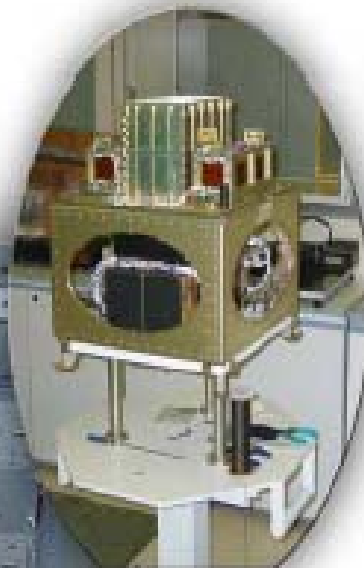
Launcher fairing

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Mesbah FM, EGSE, MGSE

Integration of GG boom and batteries



Integrated EM in Clean room



Batteries during thermal vacuum test



Transport container



Integration of e-box



Mesbah ground station

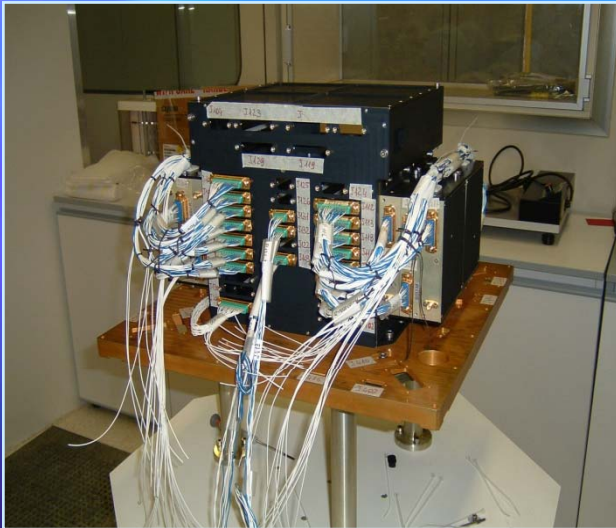


Integrated without solar panels

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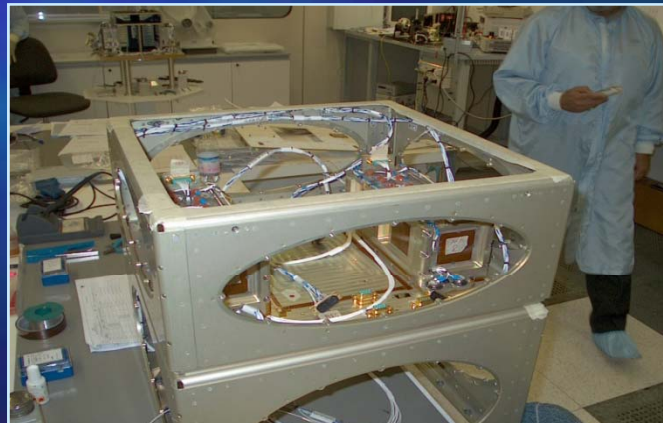
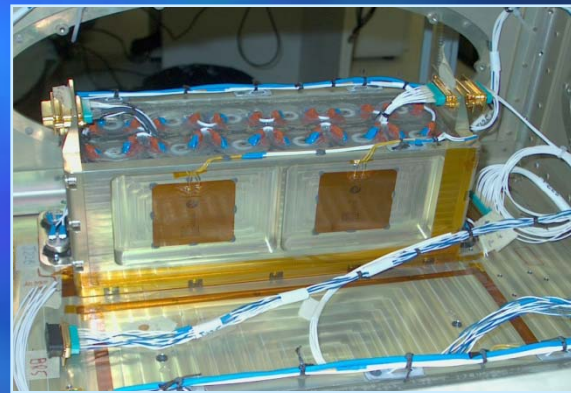
Mesbah Satellite Integration



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Mesbah Satellite Integration



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Mesbah Satellite



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Newly Established Laboratory



EMC Lab



Space Simulator Lab



Sun Simulator Lab

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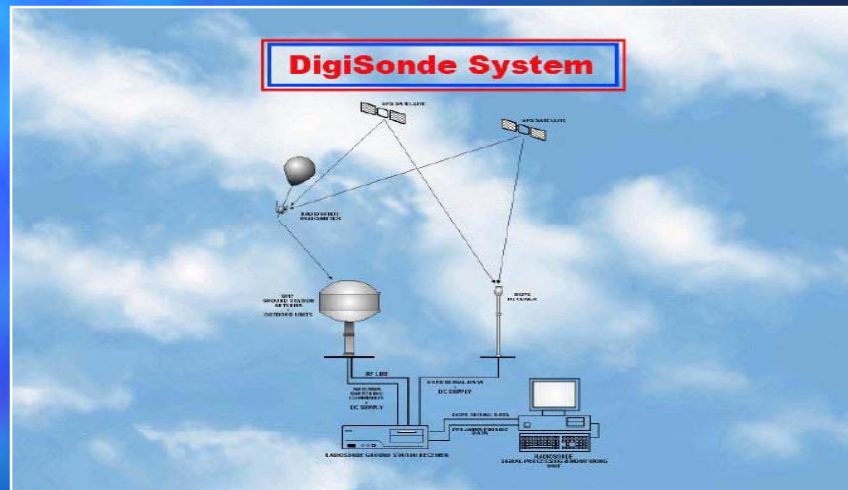


Digi-Sonde System

Upper Air Observation System



Digital Radio Sonde



Digi Mon Ground Station

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Telecommunication Laboratory Facilities



**Spectrum/Network
Analyzer**



**Digital Transmission
Analyzer**



**Transmission /Reflection
Network Analyzer**



Electronic Laboratory Facilities



Electronic Load



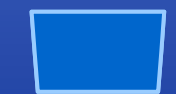
HF Oscilloscope



HF Signal Generator



Frequency Synthesizer



Medical Engineering laboratory



Research Laboratories Facilities Includes:



ASOER



Haemodialysis Machine

Fully Designed and Made by Medical Engineering Group



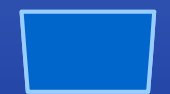
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World Energy Policy

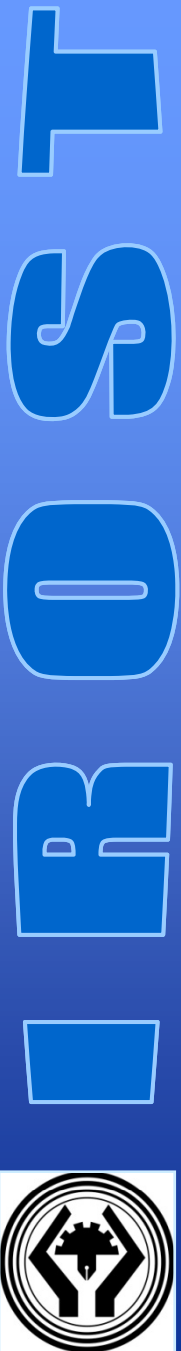
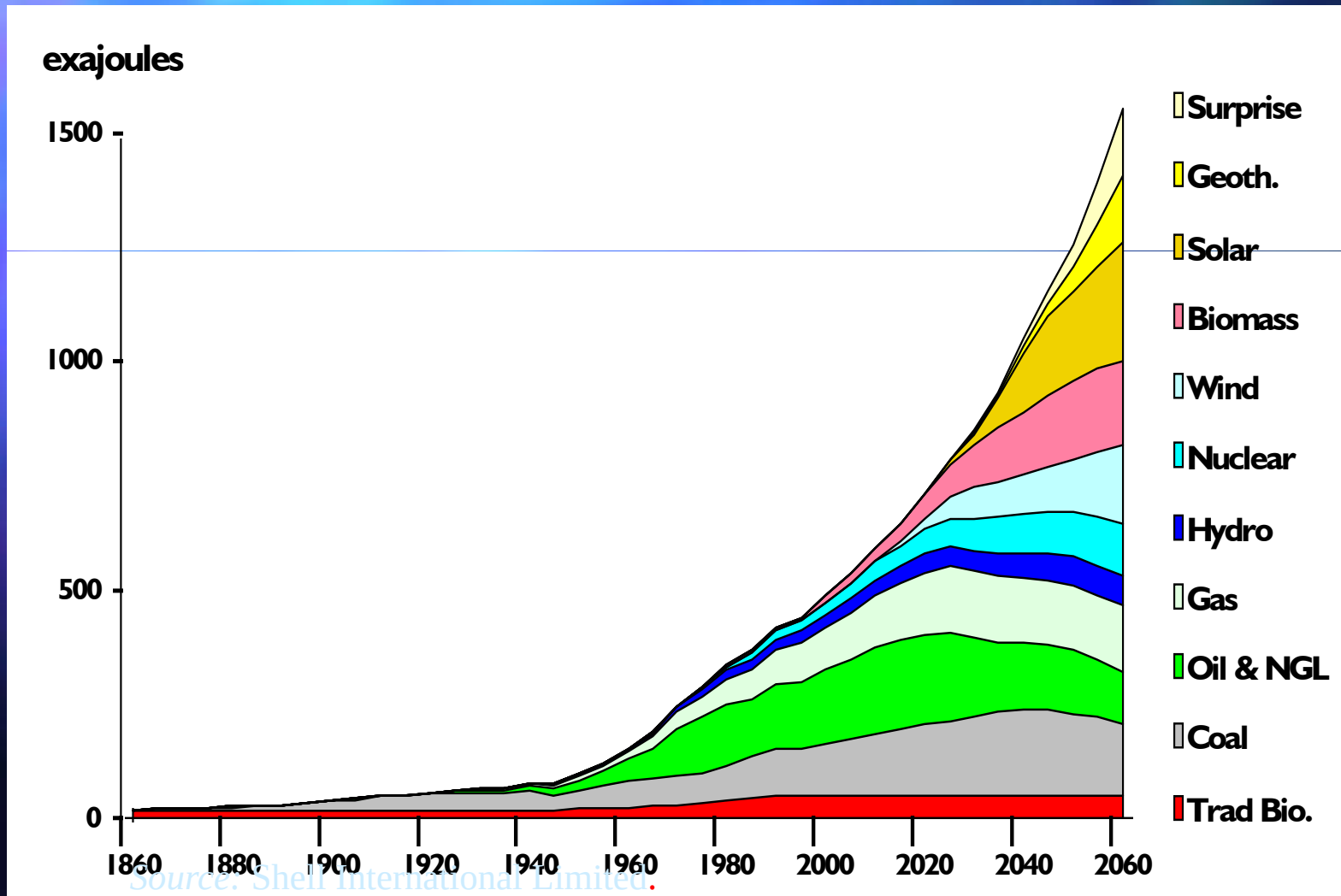
The 5 Pillars of International Energy Policy are:

- 1) Guarantee National Energy Independence and security of supply.
- 2) Protect the Environment and step up efforts to reduce greenhouse Gas Emissions.
- 3) Guarantee energy at Competitive Prices.
- 4) Guarantee Social and Territorial Unity by ensuring energy access for all.
- 5) Oil overdependence and petro-fuel decline offer the world an incentive towards the discovery of renewable energy.



Energy Supply: The Shell Scenario

Sustained Growth Scenario



Advanced Materials & Renewable Energy Department

Solar Guest House



FOR



Advanced Materials & Renewable Energy Department Facilities

1-1- Material analyses laboratory

- a) Metallography laboratory
- b) Carbon- Sulfur analyzer

1-2- Moulding, Alloying and Casting Laboratory

- a) Vacuum Induction Melting Furnace (VIM)
- b) Vacuum Arc Re-melting Furnace (VAR)

Advanced Materials & Renewable Energy Department Facilities

1-3: Surface Engineering and corrosion laboratories

a: surface engineering laboratory.

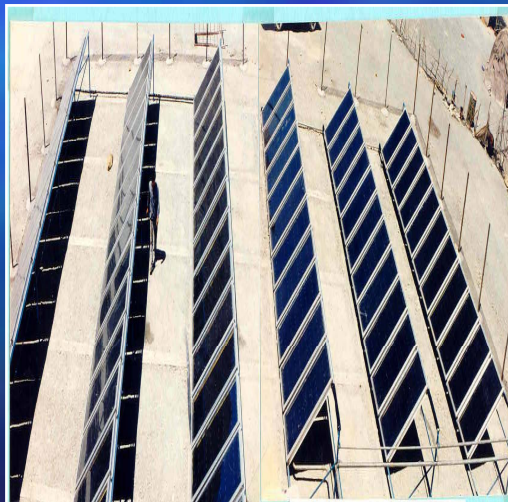
b: Corrosion laboratory

1-4- heat treatment laboratory

1-5-Powder Metallurgy, Magnetic and Amorphous laboratory

1.6: Solar Energy Lab.

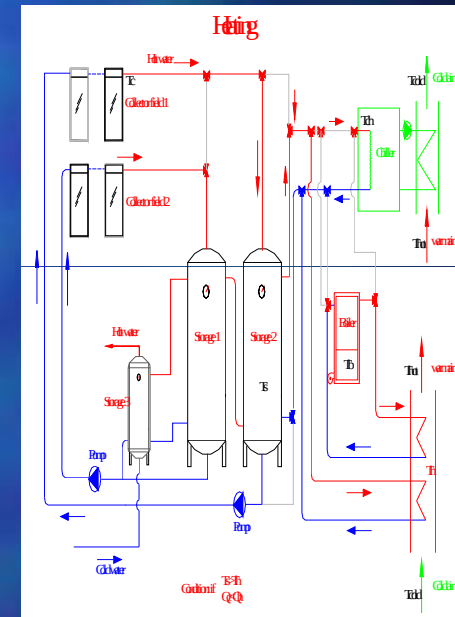
Advanced Materials & Renewable Energy Department



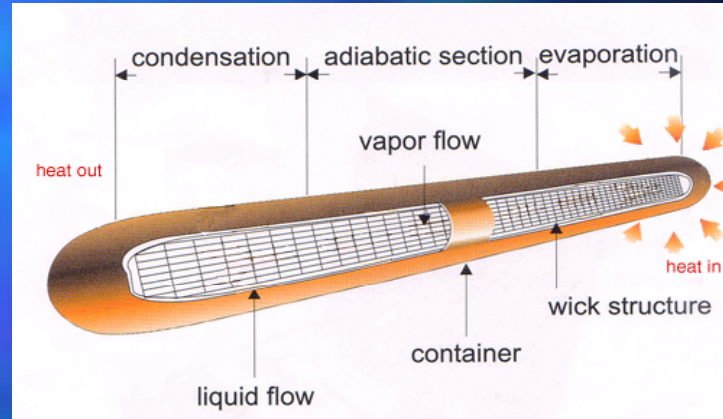
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Advanced Materials & Renewable Energy Department



Advanced Materials & Renewable Energy Department



Heat Pipe Solar Collector



MOSALA(MOSQUE) OF ZABOL
SOLAR HOT WATER SUPPLY



Advanced Materials & Renewable Energy Department



ASER



Department of Agriculture



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Department of Agriculture has several laboratory including:

- Biocontrol Lab.
- Insect rearing and insectarium Lab
- Plant tissue culture Lab.
- Processing Lab.
- Agriculture machinery testing and evaluation Lab.
- Animal science feed Lab.

Department of Agriculture

Data Collecting Machine



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Department of Agriculture

Plant Tissue Culture



TSOIR



Proposed Area of Cooperation

- Bio-fuels and their Application
- Renewable Energies and their Application
- Agriculture and Water-Industrial Waste Management
- Training and Capacity Building
- Space Technology and its Application Network between Centres of Excellence of COMSATS Countries
- Medicinal Plants Training, Technology Transfer, and Commercialization

**Thanks
for
Your Attention**

