

What Is Engineering?

Margi Lee

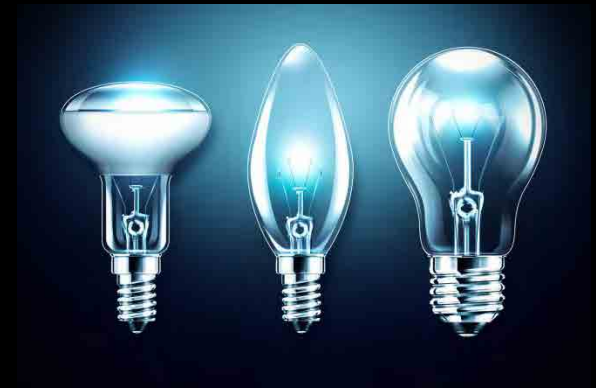
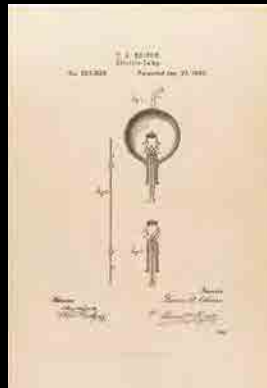
Assoc. Professor

Director of Engineering Technology

Florida Gateway College

Engineering Is...

- Applying scientific theory to design, develop, and analyze technological solutions to a problem or objectives
- Designing, building, and maintaining structures, machines, devices, systems, materials and processes



Engineering Is...

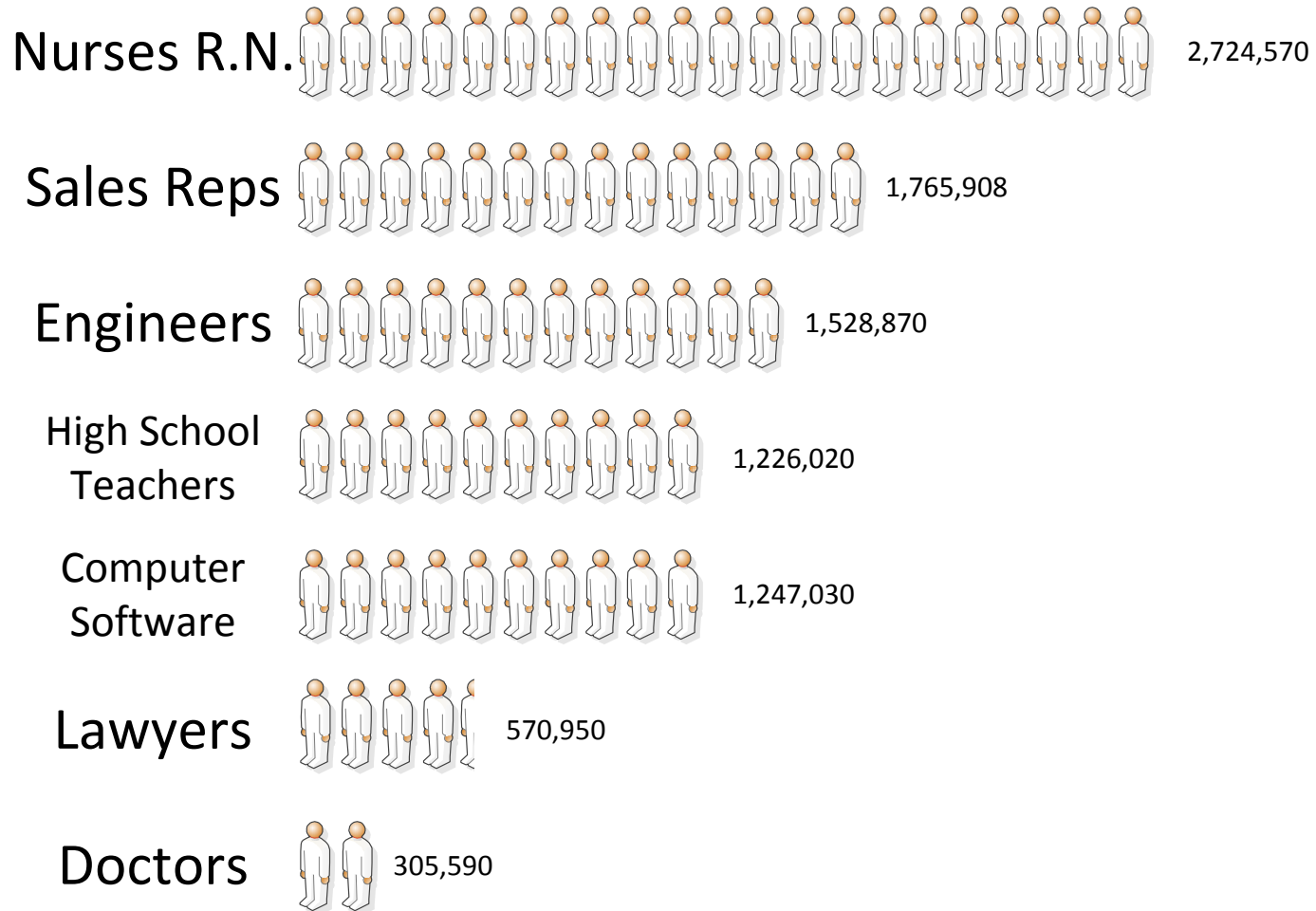
- 4 Major Disciplines
 - Civil
 - Mechanical
 - Electrical
 - Chemical
- Sub-disciplines derived from concentrations or extensions of the major disciplines
- Interdisciplinary combinations of the major disciplines and/or other sciences

Did You Know...?

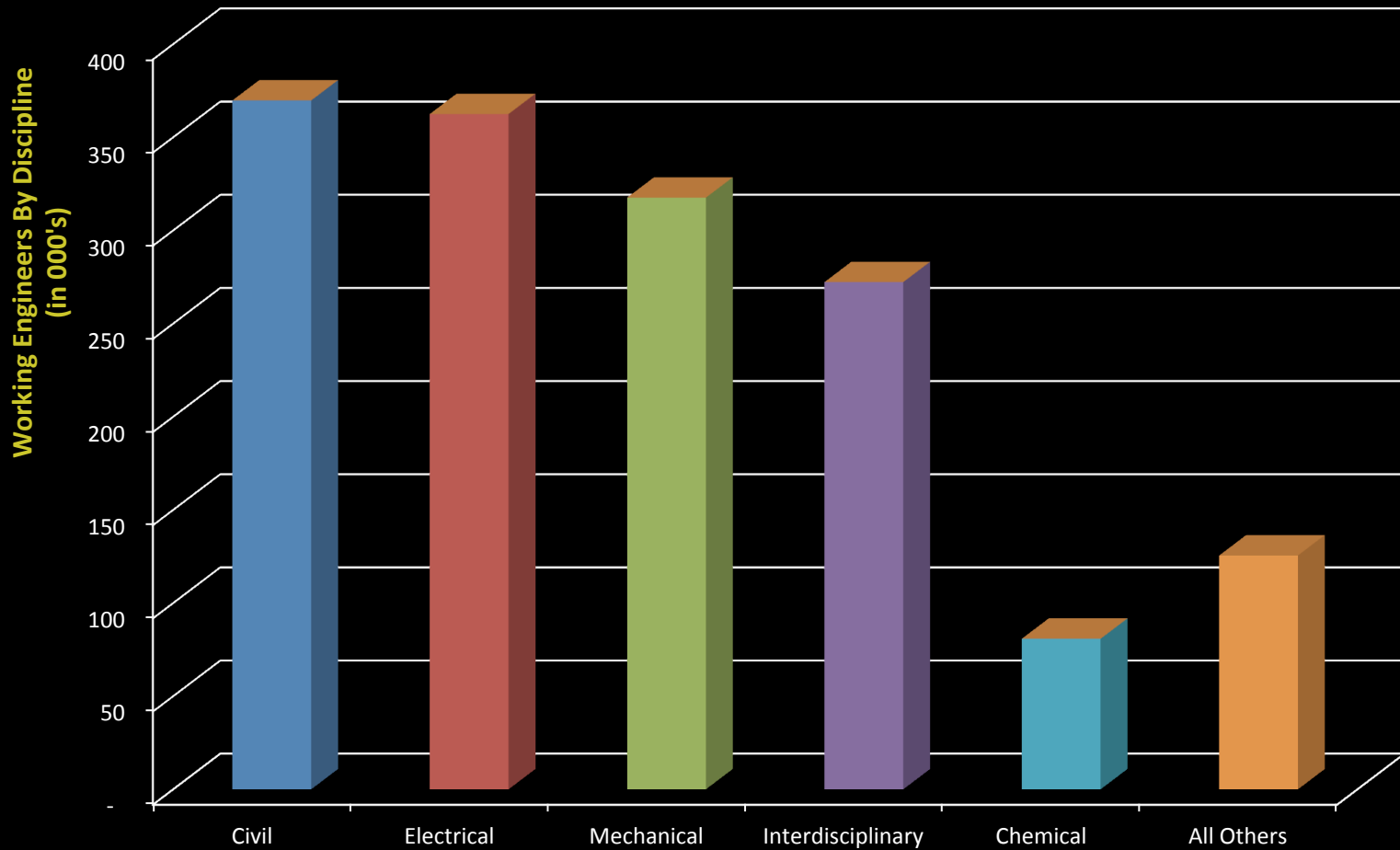
- 1 out of every 100 Americans with a job is employed as an engineer!



U.S. Employment by Occupation



Engineering Disciplines



Civil Engineering

The design and construction of...

Infrastructure – Dams & Water Treatment



Hoover Dam – Black Canyon, CO

Infrastructure – Highways



Nanpu Bridge Interchange – Shanghai, China

Infrastructure – Highways



Interstate Interchange – Kansas City, MO

Infrastructure – Railways



Norfolk & Southern Railway Yard – Roanoke, VA

Infrastructure – Airports



Charlotte Douglas International Airport – Charlotte, NC

Infrastructure – Bridges



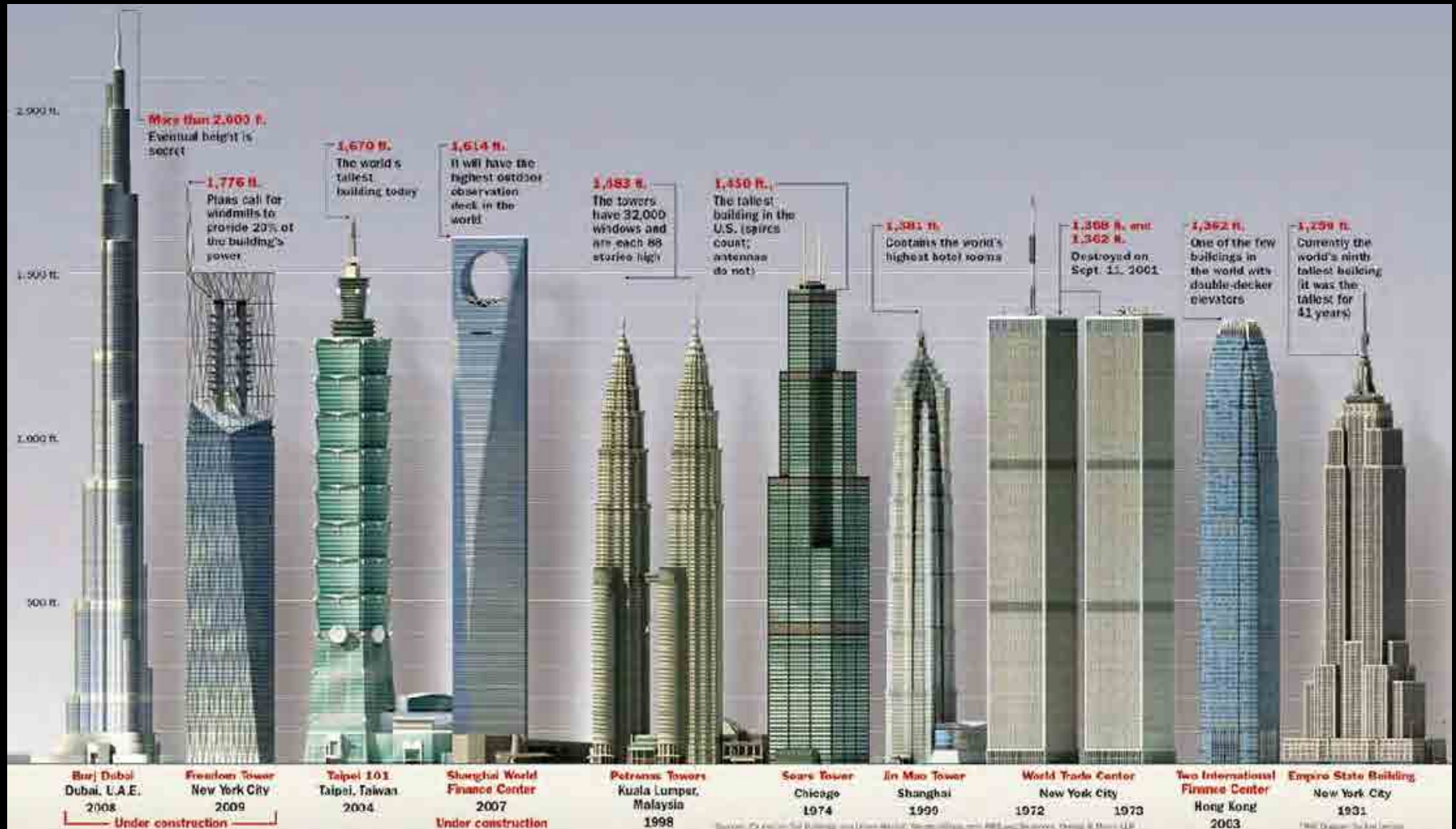
Kunshan-Grand Bridge – Danyang, China 164,800 meters

Buildings



www.dexigner.com

Buildings – Supertalls



Infrastructure

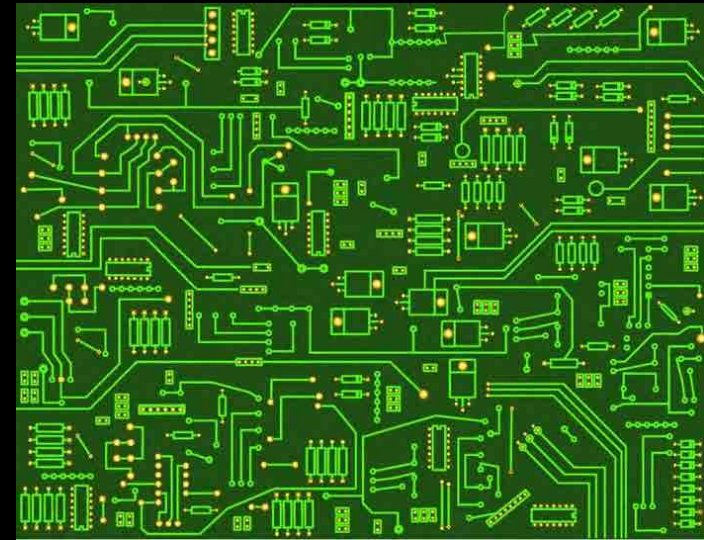
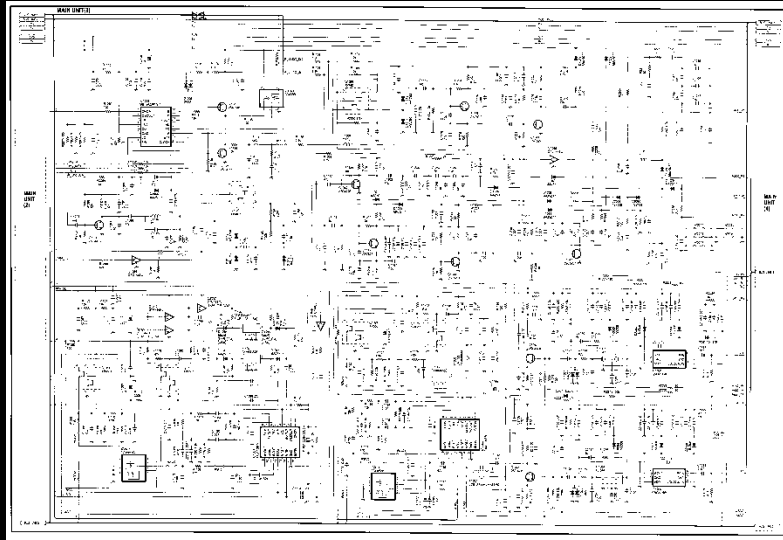


Palm Jumeirah – United Arab Emirates (Dubai)

Electrical Engineering

The design and fabrication of various electrical and electronic systems, such as...

Electrical and Electronic Circuits



Computer Hardware



Intel Core i7 internals

Electro-Optical Systems



Electric Power Generation



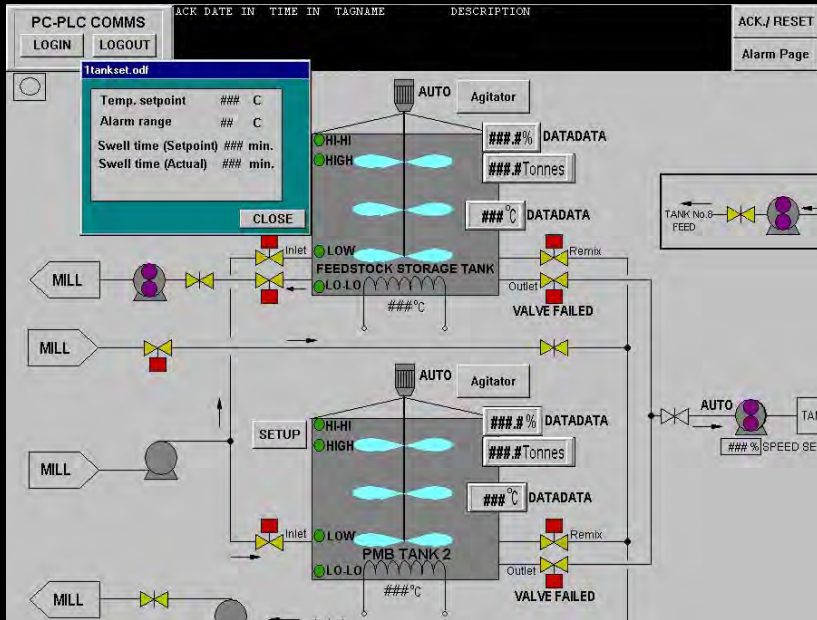
John E. Amos Plant -- American Electric Power , Winfield, WV

Telecommunications



ALTAPATH, Ltd. – Atlanta, GA; Empower Network – St. Petersburg, FL
American Electronic Components, Inc. – Boonton, NJ

Controls and Automation



Graybar Services, Inc. – St. Louis, MO
Allen Bradley Rockwell Automation – Milwaukee, WI

Mechanical Engineering

The design, manufacture, operation
and maintenance of mechanical
systems, such as...

Machine Design



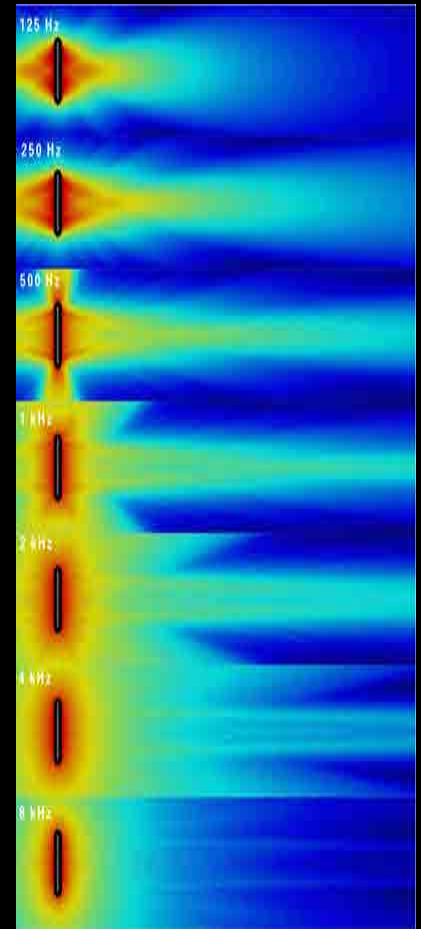
Galbiati Group Engineering & Machining – Pascolo, Italy; KUKA Roboter GmbH – Gersthofen, Germany;
Zhangjiagang Fillex Beverage Machinery Co. Ltd. --

Aerospace



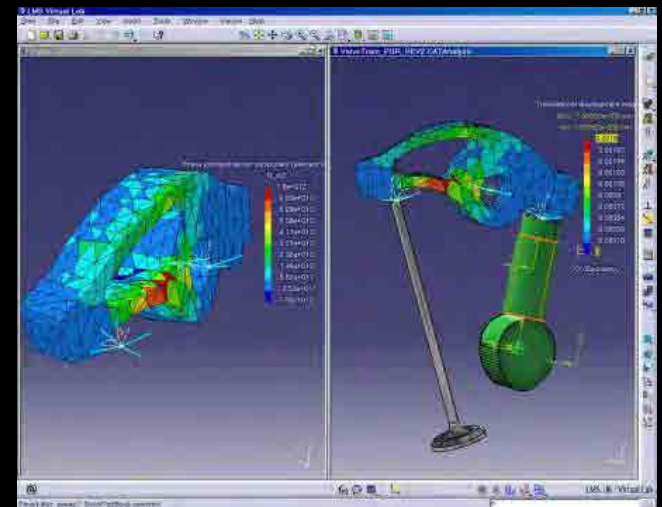
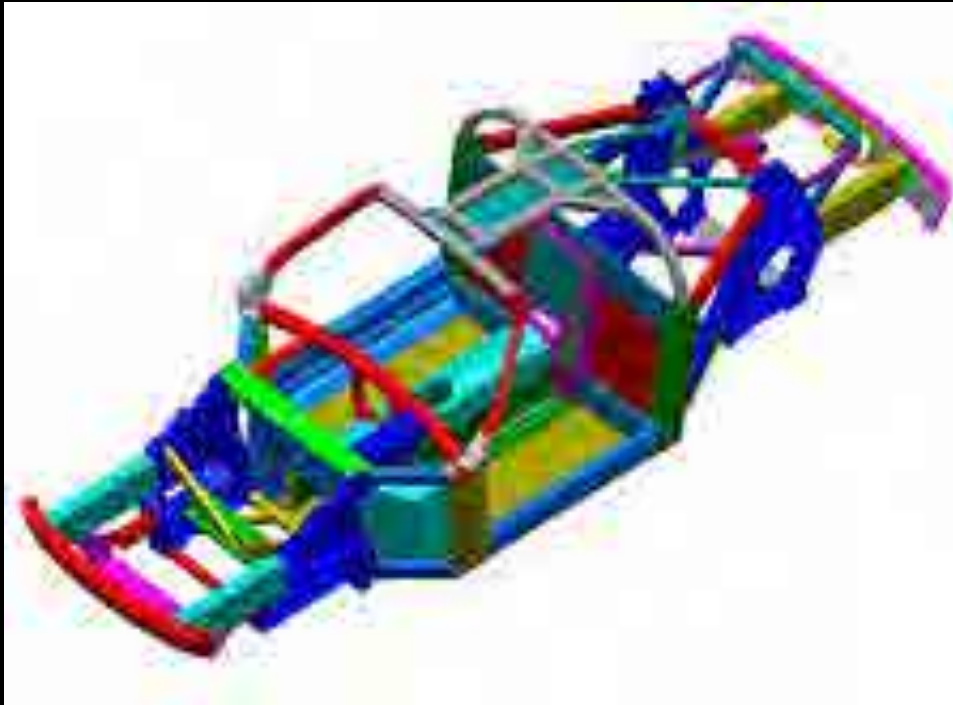
Boeing 777 and 777-300E – Boeing , Chicago Illinois
Shuttle Discovery – NASA

Accoustical



Fletcher Music Hall – Chautauqua , NY
Sound Wave Line Array – Meyer Sound Laboratories, Inc. Berkeley, CA

Vehicles



Ford GT Aluminum Frame – Ford Motor Co., Deerfield, MI

Thayer Adsit Hydrogen Engine – PTC, Needham, MA

LMS Imagine.Lab – LMS International Siemens, Leuven, Belgium

Motors and Generators



LM2500 22mW Generator – General Electric
44k hp Motor – Arnold AFB, TN
Motor Stators – IPS PenCoil, Greenville, SC

Manufacturing



Manufacturing



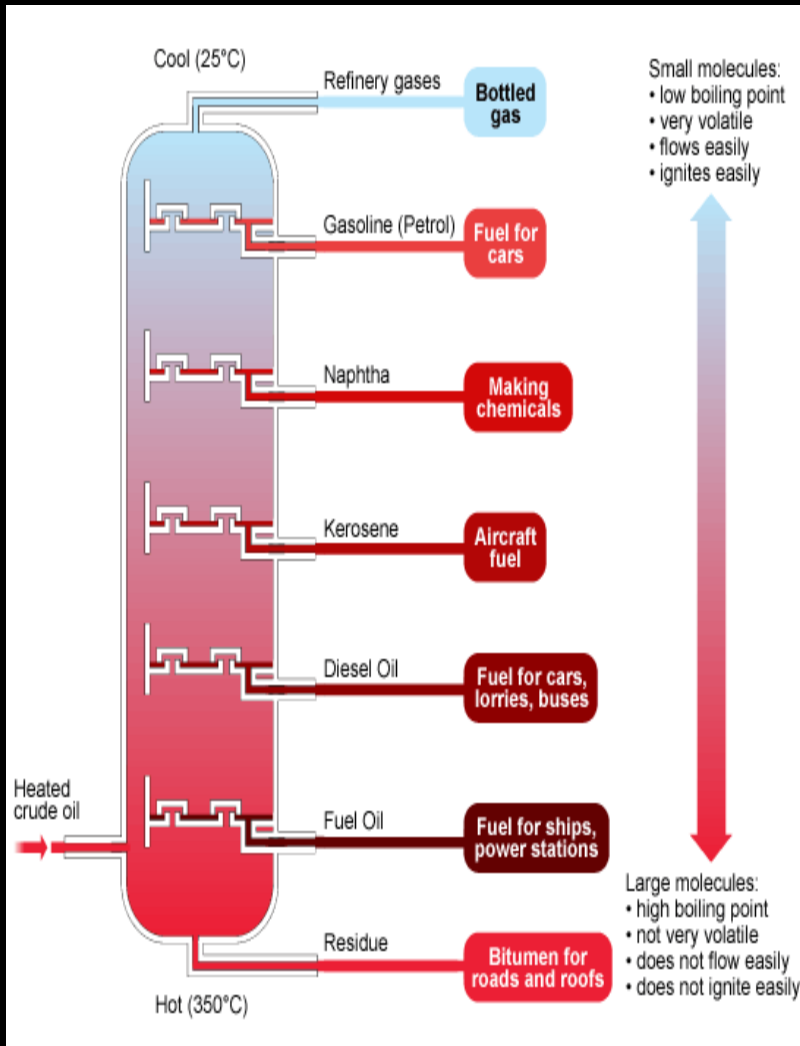
Chemical Engineering

The application of physics, chemistry, biology, and engineering principles in order to carry out chemical processes on a commercial scale

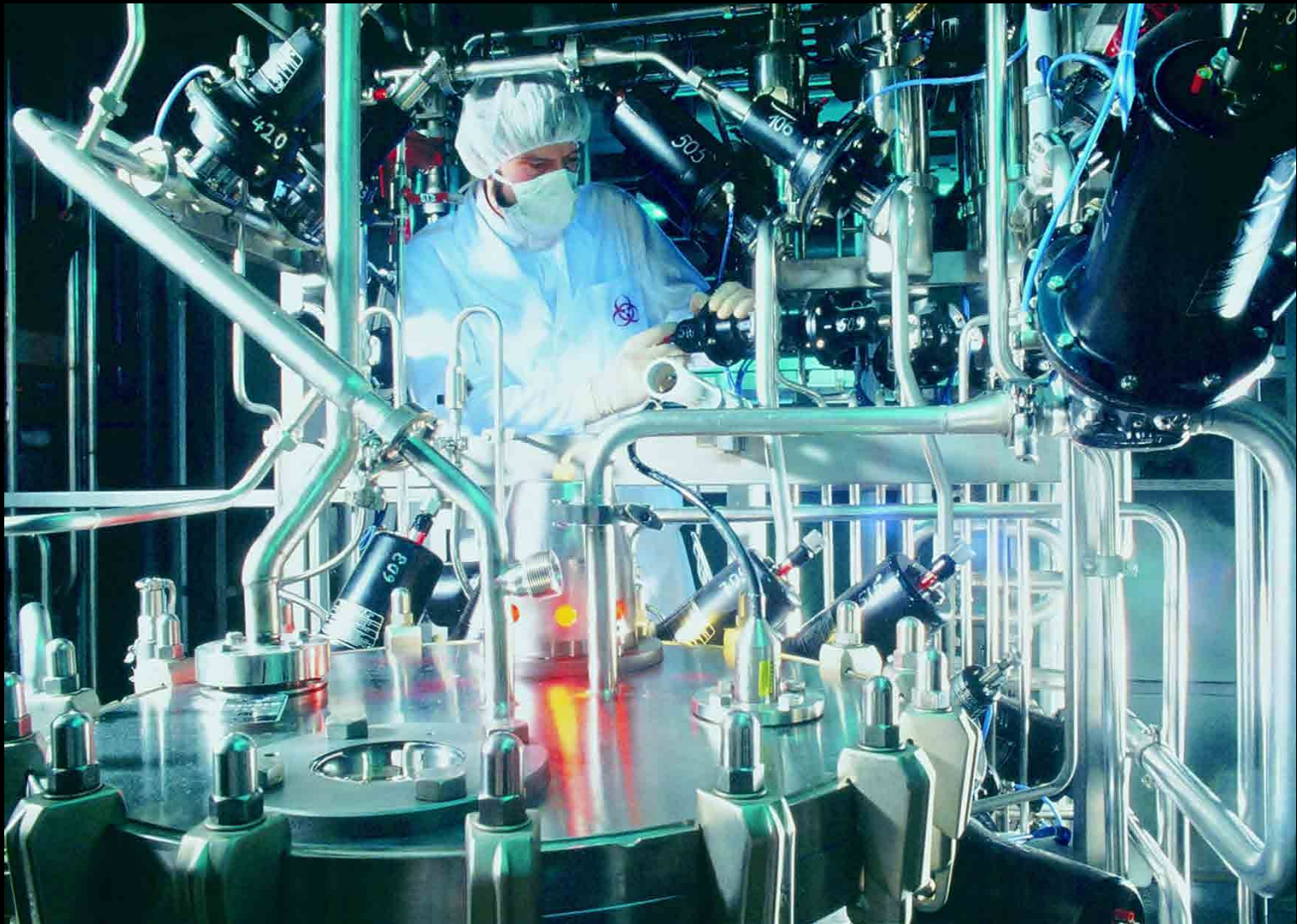
Pulp & Paper



Distillation



Pharmaceuticals



Environmental



Environmental



Interdisciplinary Engineering

- Naval Engineering
- Mining Engineering
- Systems Engineering
- Biomedical Engineering
- Industrial Engineering
- Nuclear Engineering