



University of São Paulo

Faculty of Animal Science and Food Engineering – FZEA



FZEA USP



Who we are.

University of São Paulo - USP

- USP is the largest public university in Brazil and was created in 1934

12 *campuses*: São Paulo (4), Piracicaba, São Carlos (2), Ribeirão Preto, Bauru, Pirassununga, Santos e Lorena.

- 42 Units of Education and Research
- 33 Agencies central offices of direction and service
- 6 Specialized Institutes
- 4 Hospitals
- 4 Museums





University of São Paulo USP

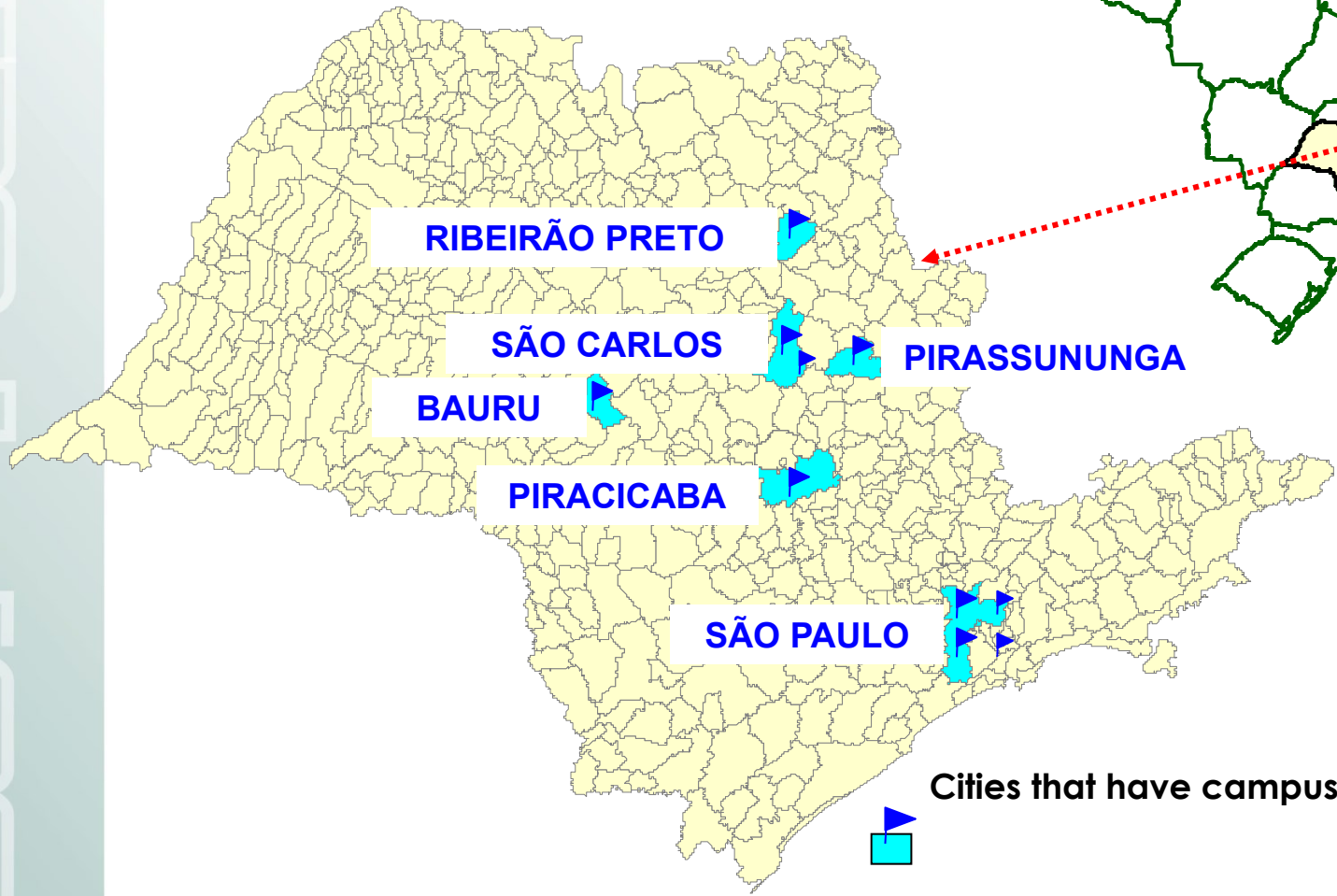
- Keeps 234 undergraduate courses and 230 graduate programs;
- Nearly **92,064** students (**58.303** undergraduate, **28.498** graduate and **5.263** specialists);
- Nearly **5.860** faculty members and **16.837** staff members.



BRAZIL



SÃO PAULO STATE



RIBEIRÃO PRETO

SÃO CARLOS

PIRASSUNUNGA

BAURU

PIRACICABA

SÃO PAULO

Cities that have campus USP



USP
FREE



Faculty of Animal Science and Food Engineering - FZEA



USP FZEA

Educational Programs

■ Undergraduate programs (Annual Vacancies)

- Animal Science
40 students/year
- Biosystem Engineering
60 students/year
- Food Engineering
50 students/year – day shift
50 students/year – night shift
- Medicine Veterinary
60 students/years

■ Graduate Programs

- Master and Ph.D in Animal Science;
- Master and Ph.D in Food Engineering;
- Master and Ph.D in Engineering and Science of Materials;
- Master and Ph.D in Bioscience animal;
- Professional Master in Meat industry;





Who we are: Recycling research group, Energy Efficiency and Green Numerical Simulation

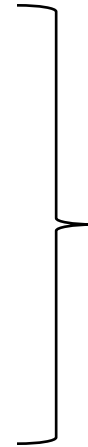
- Our team strives to promote the sustainability of production systems linked to the agribusiness.
- research in the area of recycling and energy efficiency aimed at the development and evaluation of applied technologies.
 - reducing cost or incorporation of greater cost-efficiency, always aiming at environmental management appropriate to each situation.
- evaluation and optimization of processes and/or equipment,
 - field surveys for the development of indicators of energy and waste management.
- Development of prototypes and driving tests.
- Mathematics modeling and numerical simulation.





Our approach

- Train people
- Introduce Solar Energy
- Energy efficiency
- São Paulo State vision



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PROJECT / PARTNERSHIPS

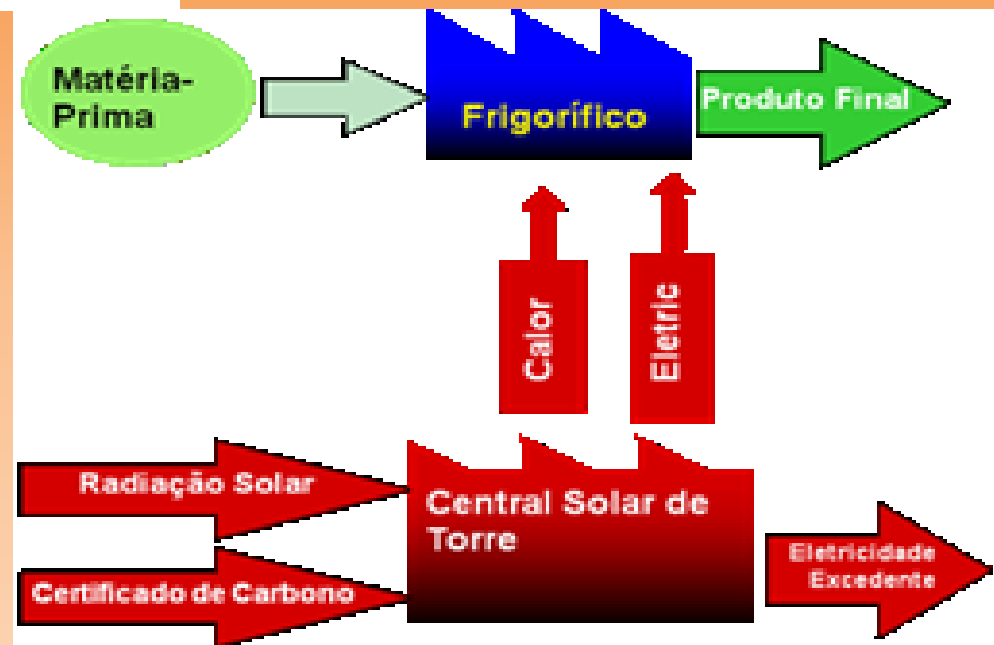
SMILE - HYBRID-SOLAR MICROTURBINE SYSTEMS
FOR CO-GENERATION OF ELECTRICITY AND HEAT FOR
AGRO INDUSTRY SECTOR

- SOLINOVA
- USP / FZEA Pirassununga
- ADECARVE
- DLR
- BNDES
- Elektro

GENERAL PURPOSE - SMILE

- Deploy the first two solar concentration power plants in Brazil, which will provide heat and electricity by predefined processes;
- Study mechanisms of sizing, operation, maintenance, focusing on electricity generation;
- Sizing economic viability of cogeneration process (electricity + heat) based on cases related to agribusiness.

The Process



PROJECT / PARTNERSHIPS

CEISA – Studies of Heliothermic Power (CSP): Educational Consortium for Sustainability in Agribusiness

- USP / FZEA Pirassununga
- Brandenburgische Technische Universität Cottbus-Senftenberg
- Aachen University of Applied Sciences (Jülich Campus)
- DLR
- SOLINOVA
- Industrial Solar GmbH
- STEAG from Brasil
- DAAD/CAPES/GIZ/ iNOVA

GENERAL PURPOSE - CEISA

- The overall objective is to formulate a vision for the sustainable implementation of CSP technology in Brazil and assemble specific working groups.
- The specific objectives are:
- The cooperation between academic institutions and companies;
- Studies of regulatory instruments in environmental: overview of regulatory instruments related to renewable energy in Germany and Europe.
- Analysis of the potential and weaknesses concerning the heliostats technology.
- Training courses (summer courses) to disseminate technology and design techniques.



INOVA ENERGIA

Implementation of the first hybrid plant CSP/Biomass and the first center of excellence in simulation and Technological diffusion in Brazil.

STEAG ENERGY SERVICES DO BRASIL LTDA (**leader**)
UNIVERSIDADE DE SÃO PAULO (**ICT**)
SOLINOVA INOVAÇÃO TECNOLÓGICA E EMPRESARIAL LTDA (**partner**)
GT2 ENGENHEIROS ASSOCIADOS LTDA. (**partner**)
ERB - ENERGIAS RENOVÁVEIS DO BRASIL S.A. (**partner**)
TSK GRUPO (**partner**)
GUARDIAN DO BRASIL VIDROS PLANOS LTDA. (**partner**)
COMPANHIA ENERGÉTICA DE MINAS GERAIS (**partner**)



Ministério da
Ciência, Tecnologia
e Inovação



1. Objectives

Objective of the Business Plan

The Business Plan presented aims at deploying the first Center of Excellence in Simulation and technological diffusion and the first hybrid CSP/Biomass plant in Brazil. The project also provides for the integration of suppliers for inclusion in the national chain of equipment and development of seeded and pioneer batch to be inserted in the hybrid power plant . Corporate partners by consolidating projects together, also plan forming a Special Purpose Company (SPC), to be developed and matured by brainstorming in the formed group.

Research in Renewable Energy in FZEA-USP

Celso. E. L. Oliveira, Dr. Sc. (celsooli@usp.br)

GREEN – Research Group on Recycling, Energy Efficiency and Numerical Simulation (www.fzea.usp.br/green/)

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