



1º Workshop de
WINOVAÇÃO

25 e 26 de agosto de 2016

ORBITAL
ENGENHARIA

Célio Costa Vaz

Presidente

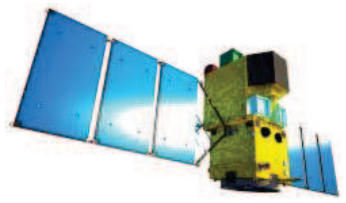


TIMELINE

R&D

2001

2005



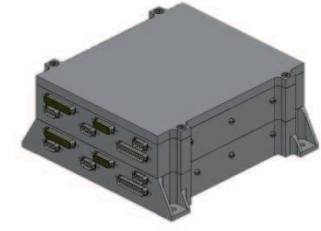
2007



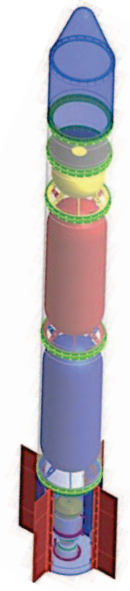
2008



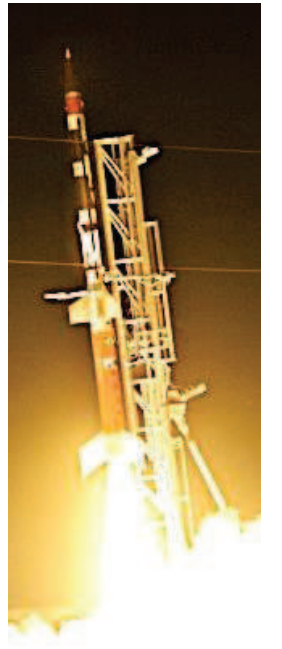
2010



2012



2014



1MR\$ R&D SOLAR ARRAYS / 20MR\$ REVENUE

6 MR\$ R&D LIQUID ROCKET PROPULSION

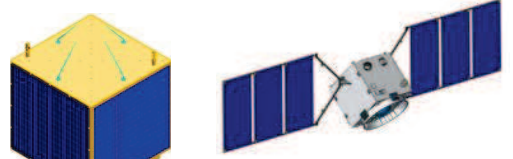
1MR\$ R&D MICROGRAVITY SUBORBITAL PLATFORM/ 6 MR\$ REVENUE

0,5MR\$ POWER SUPPLY EQUIPMENTS

0,5MR\$ LIQUID ROCKET STAGE

TIMELINE

CONTRATOS



2001
SATEC

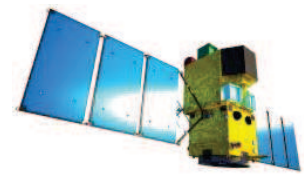
2002
PMM AMAZ.



2005
CBERS-2B



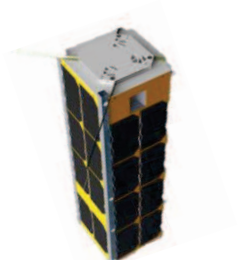
2007
CBERS 3&4



2010
PMM LATTES
PSM - ME



2012
TECHDEMOSAT-1



2013
SERPENS



2014
14-BISAT
PSM - MQ



2015...
SGDC - ToT
CBERS 4A
PESE

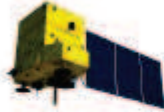
Modelos de Vôo Entregues ao INPE

Painéis Solares / Geradores Solares



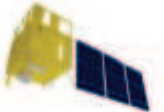
SATEC

Technological Satellite



CBERS-2B

China-Brazil Earth Resources Satellite



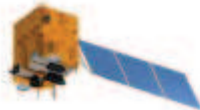
CBERS-3

China-Brazil Earth Resources Satellite



LATTES

Brazilian Dual Mission Scientific Satellite



CBERS-4

China-Brazil Earth Resources Satellite

SOLAR ARRAY

CBERS-4

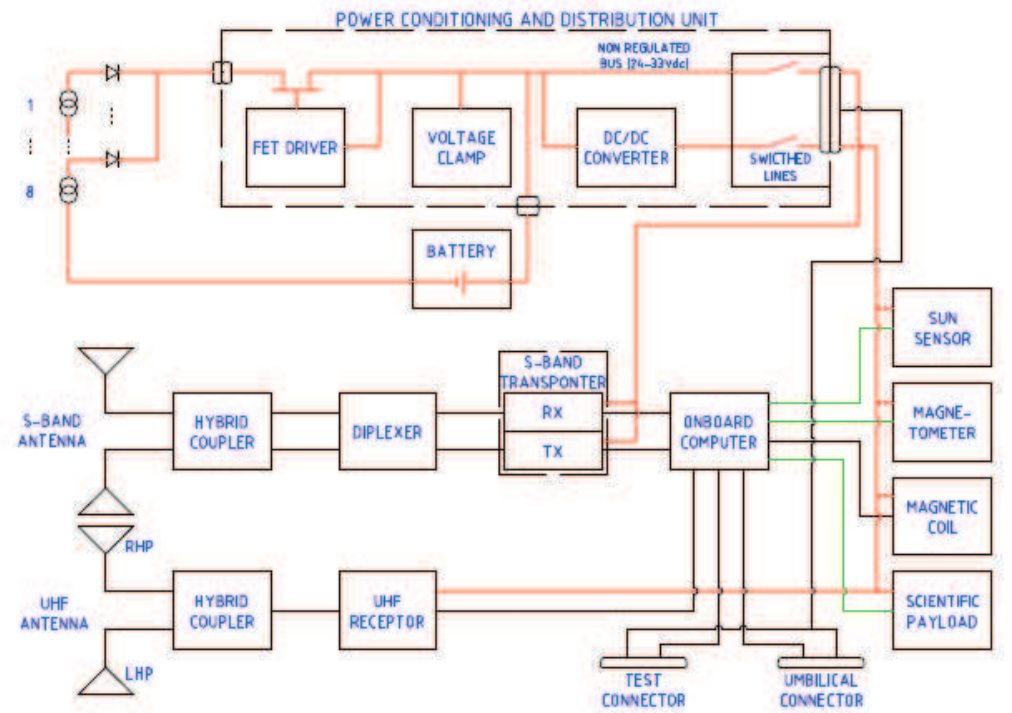
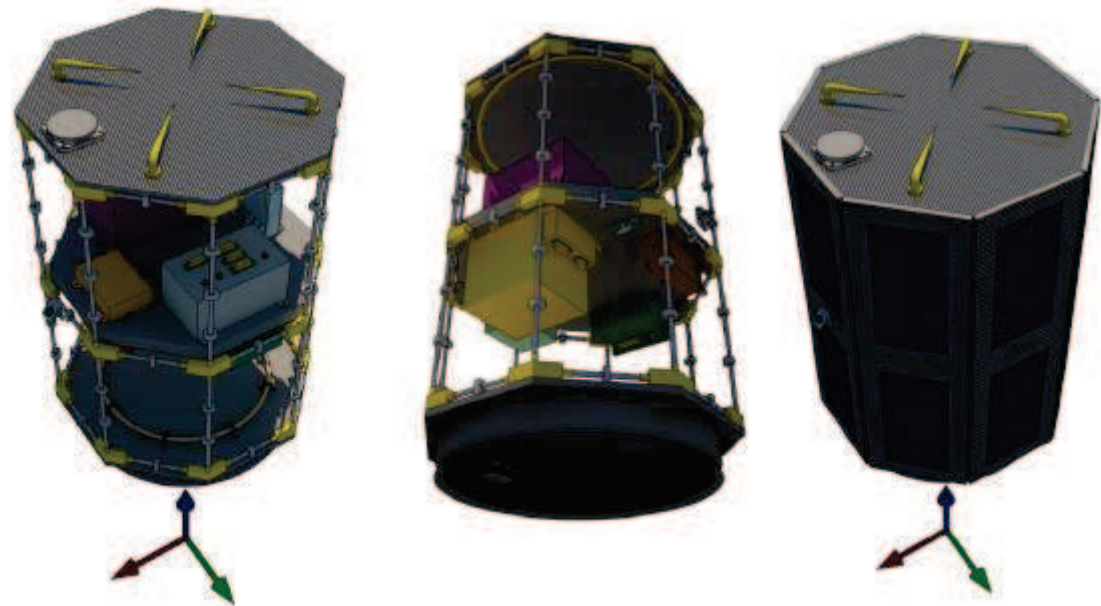


Engenharia de Sistemas - Microsatélite

Apoio: FAPESP

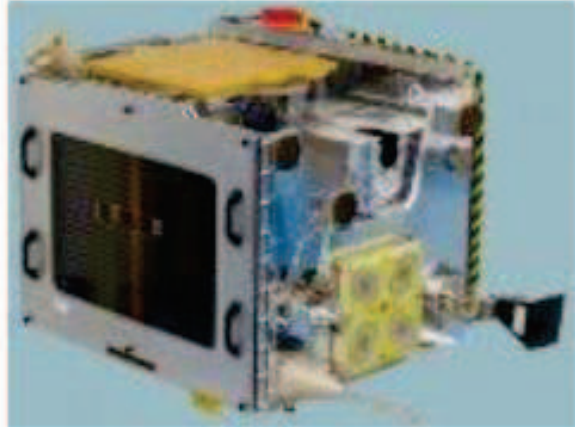
MICROSATELLITES DESIGN

Total mass < 25 kg
Power < 50 W



Componentes para Microsatélite

Fornecimento para Mercado Internacional



TechDemoSat-1

SCA's supplied by Orbital Engenharia to SSTL.

Successful launched on 2014.

Solar cells from European supplier.

Engenharia de Sistemas - CubeSats

Projeto e Fabricação de Painéis Solares



Brazilian CubeSat: **SERPENS** – Space System for Research and Experiments with Nanosatellites

Electrical Performance Test result: 27,58W.

Fligh Model Successfull launched on 2015.

Solar cells from USA supplier.

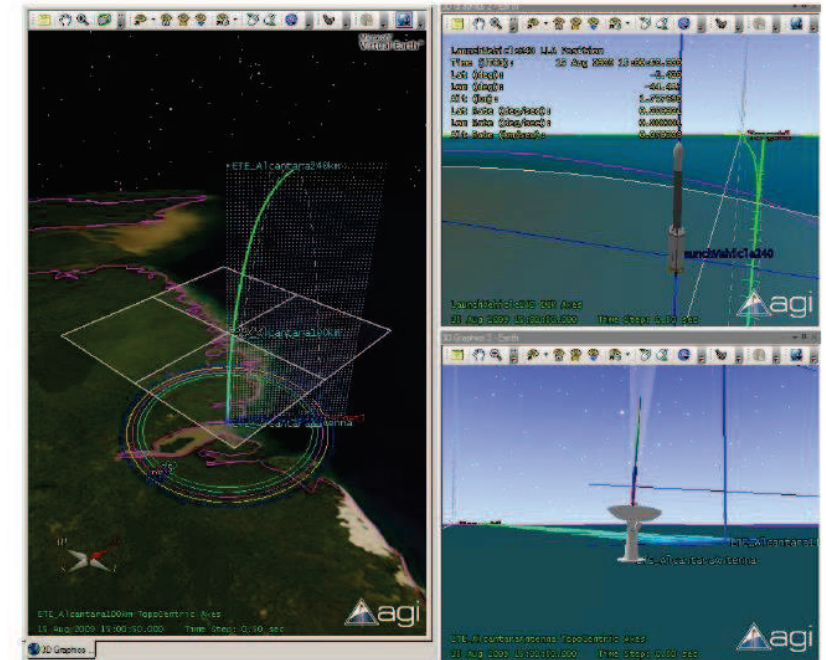
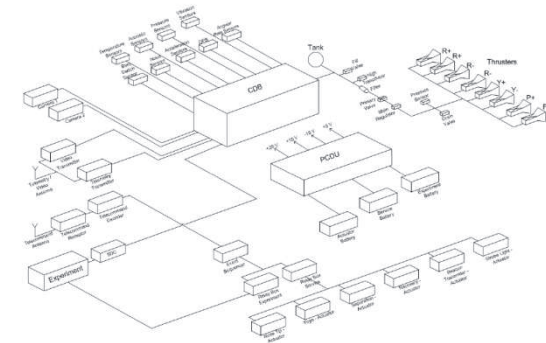
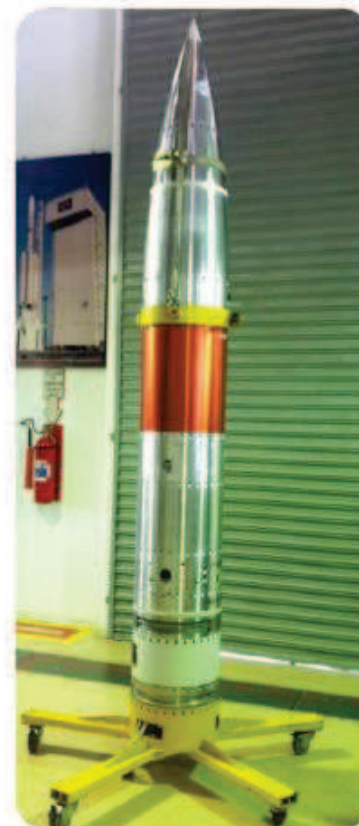
327,5x83mm

Plataforma Suborbital de Microgravidade



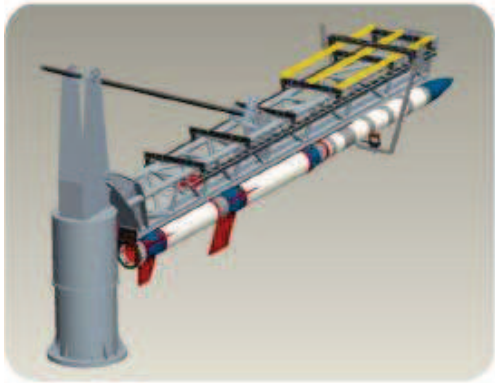
Tecnological Capacity:

- Control Software
- Recovery System
- Separation System
- Cold Gas System
- Onboard Energy Distribution

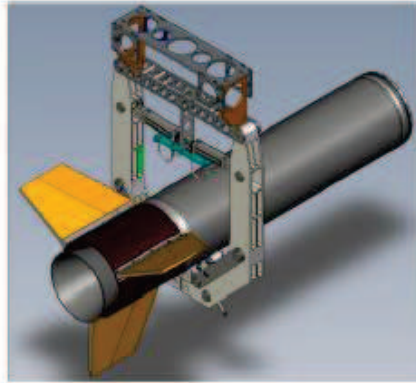


Engenharia de Sistemas

Equipamentos de Apoio em Solo



VSB-30 on Launcher



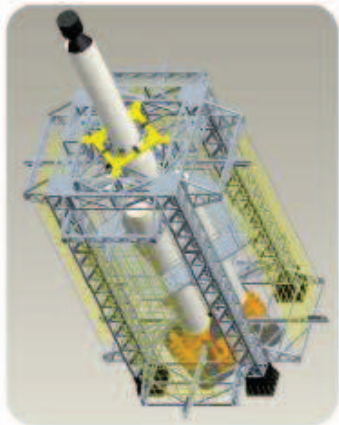
Design



Assembling and Test



VS-30



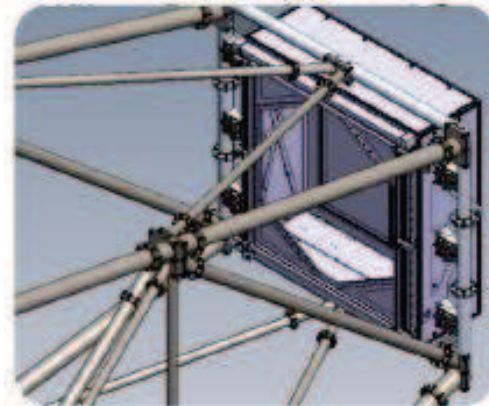
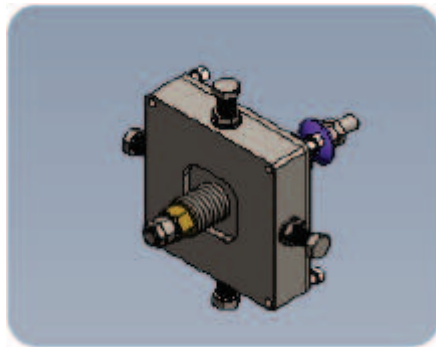
VLS – 1st Stage Separation Test Device

Engenharia de Sistemas

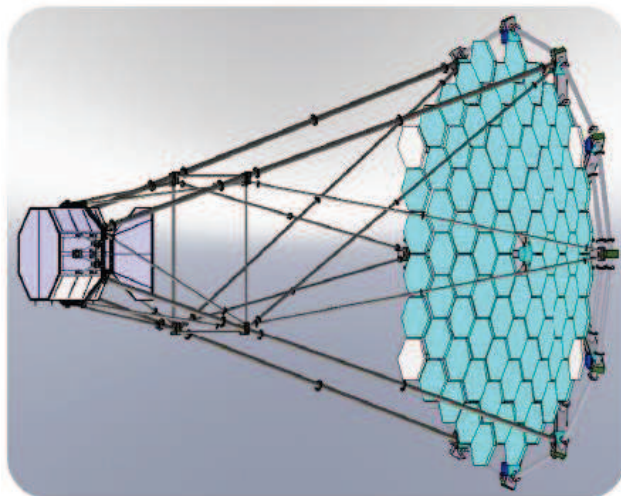
Estrutura para Câmera

Cherenkov Telescope Array CTA

Sistema de Ajuste
Patente Requerida



Montagem
Realizada em
Berlin - Alemanha



Propulsão Líquida

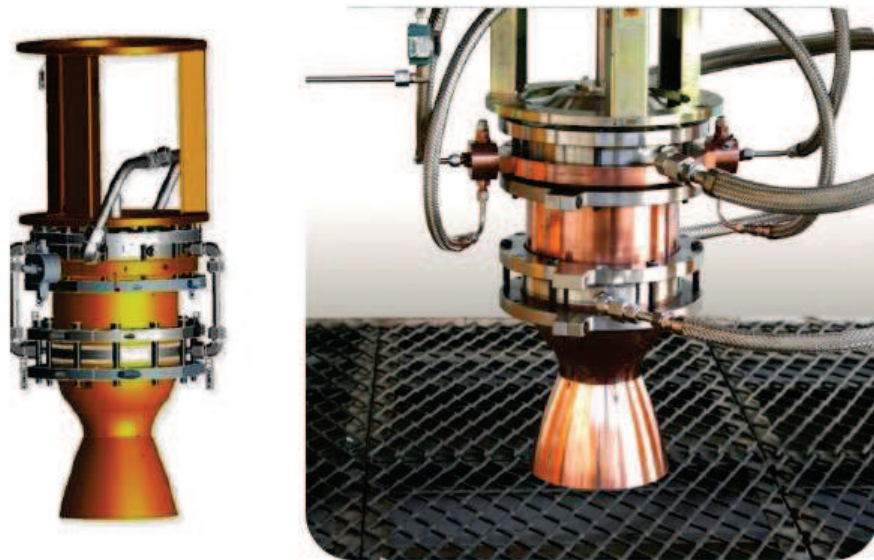
Desenvolvimento do Motor L15

LIQUID ROCKET ENGINE

Design, Development, Manufacturing, Assembly and Tests.

Alcohol and LOX

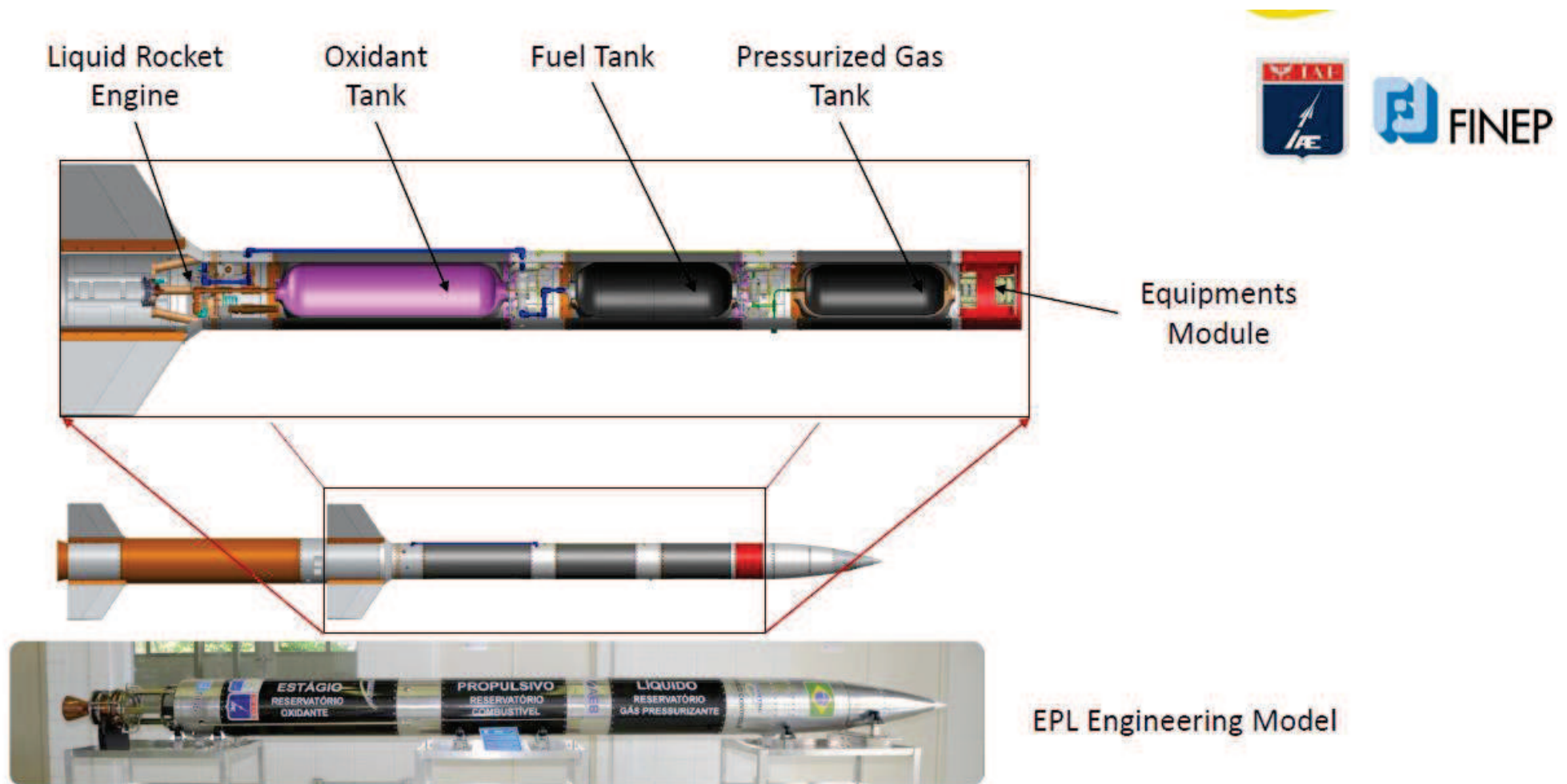
15KN



HOT FUNCTIONAL TEST

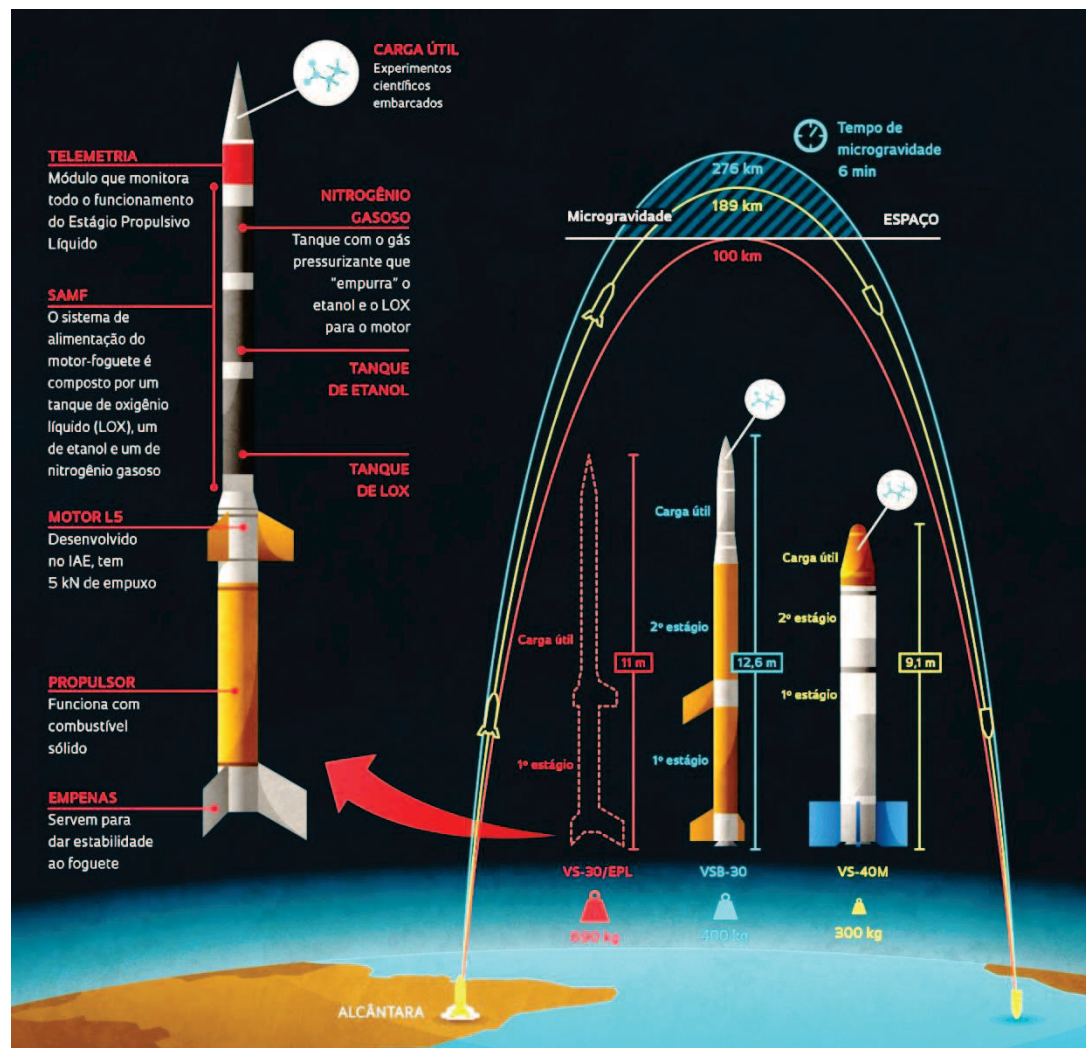
Engenharia de Sistemas

Estágio Propulsivo Líquido - EPL



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Estágio Propulsivo Líquido - EPL



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Estágio Propulsivo Líquido - EPL



Três Prêmios FINEP de Inovação Tecnológica Região Sudeste



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