

# TELSTAR REFERENCES

泰事达案例介绍

## THERMAL VACUUM CHAMBERS

热真空箱产品



# 1. NATIONAL INSTITUTE FOR SPACE RESEARCH- INPE BRASIL

巴西国家太空研究所项目



## BRASIL NATIONAL INSTITUTE FOR SPACE RESEARCH-INPE

巴西国家太空研究所:

*Brazil and China celebrate 20 years of CBERS Program  
30/05/2008*

中巴地球资源卫星项目 庆祝20周年

30/05/2008

### CBERS Program:

*was jointly financed by china and brazil. cbers project was set up in 1986, and the protocol on research and production of the earth resource satellite was signed by both governments in 1988. according to protocol, cbers is based on chinese concept, with 70% of overall funds financed by china and 30% by brazil.*

### CBERS 项目:

CBERS为中巴合作项目，启动与1986年，两国政府正式签署与1988年。用于研究和生产地球资源卫星。根据协议，CBERS是根据中国概念建立的卫星项目。由中国出资70%，巴西出资30%。



# 1. INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS - INPE

SAO JOSÉ DOS CAMPOS - SP - BRASIL

巴西国家太空研究所项目



## Technical data / 技术参数:

**Shape:** Mailbox chamber.

外形: 邮箱形腔体

**Thermal fluid:** Dense gaseous nitrogen.

热流体: 压缩氮气

**Useful volume:** 360 m<sup>3</sup> (6m x 7,5m x 8m).

有效容积: : 360 m<sup>3</sup> (6m x 7,5m x 8m).

**Total dimensions:** 7 m x 9 m x 9 m.

总尺寸: : 7 m x 9 m x 9 m.

**Vacuum better than:** 1x10<sup>-6</sup> mbar.

真空度: < 1x10<sup>-6</sup> mbar

**Temperature range:** from -180°C to +150°C

温度范围 GN<sub>2</sub> (压缩氮气)

< -190°C LN<sub>2</sub> 液氮

**Heating speed/Cooling speed:** 1.3°C/min.

加热/冷却 速率: 1.3°C/min.

**Shroud temperature uniformity:** <4°C.

导热层温度均匀性: <4°C

**Material shrouds:** Aluminium.

导热层材质: 铝



# 1. INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS - INPE

SAO JOSÉ DOS CAMPOS - SP - BRASIL

巴西国家太空研究所项目



## 特殊设计:

LN<sub>2</sub> shrouds flooding for long term, low temperature tests.  
液氮制冷用于长时间，低温度的测试。

6 thermal separated zones with independent Temperature control.

6个热控制组件分别控制不同区域的温度（可使得每个区域处于不同温度）

1 Mobile shroud with independent temperature control.

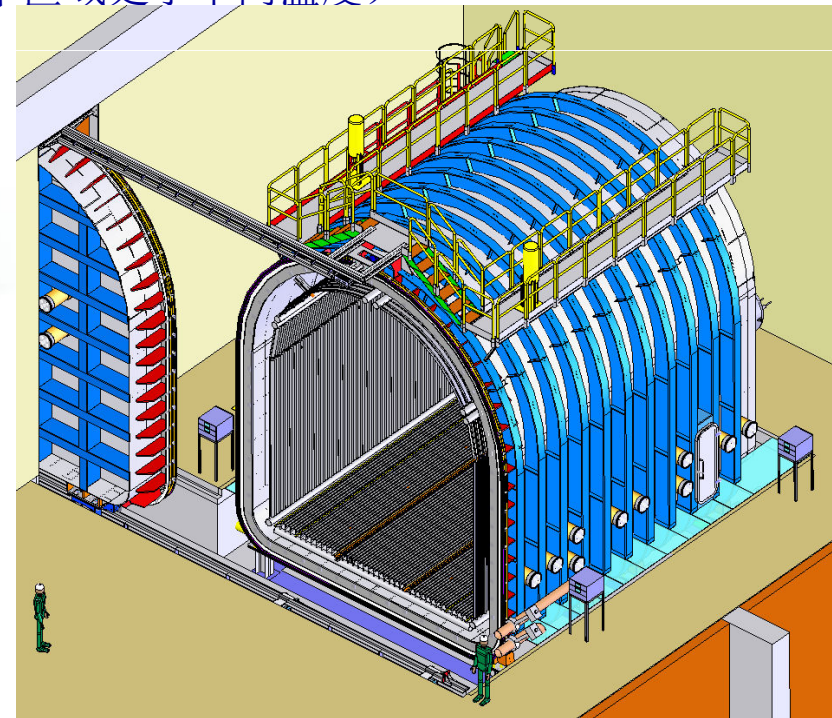
一个独立移动加热罩可独立控制温度

Redundant TCU interconnections.

每个热控制组件都是其他热控制组件的备用组件。如一个热控制组件失灵，其他的组件可承担他的工作。

Monitoring system including Quadrupole Mass Spectrometer and Quartz Crystal Microbalance.

监视系统包含：微反活性测定仪以及石英微天平



## 2. NATIONAL INSTITUTE FOR AEROSPACE TECHNOLOGY - (INTA)

国家航空航天研究所



### NATIONAL INSTITUTE FOR AEROSPACE TECHNOLOGY (INTA):

国家航空航天研究所:



**INTA is the Public Research Organization specialized in aerospace research and technology development.**

**INTA**是公共研究机构，专业从事航空航天研究和技术开发。

Among its main functions it is worth mentioning:

他的主要职能中，值得一提的是：

The acquisition, maintenance and continuous improvement of all those technologies that can be applied to the aerospace field. 对所有可以应用到航天航空领域的技术进行研究和改进。

Performing all types of tests to check, approve and certify materials, components equipment items, subsystems and systems that have an aerospace application.

对所有应用于航空航天的材料、组件、设备、子系统进行各种类型的测试

To provide technical assessment and services to official bodies and agencies, and also to industrial or technological companies.

为官方机构及工业、科技公司提供技术评估和服务。

To act as a technological centred for the Ministry of Defence.

作为国防部的技术中心。



## 2. NATIONAL INSTITUTE FOR AEROSPACE TECHNOLOGY - (INTA)

国家航空航天研究所项目



### Technical data:

#### 技术参数:

**Shape:** Mailbox chamber.

外形: 邮筒形

**Thermal fluid:** Dense gaseous nitrogen.

热流体: 压缩氮气

**Useful volume:** 64 m<sup>3</sup> (4m x 4m x 4m).

有效容积: 64 m<sup>3</sup> (4m x 4m x 4m).

**Total chamber dimensions:** 5 m x 5 m x 5 m.

总腔体尺寸: 5 m x 5 m x 5 m

**Vacuum better than:** 1x10<sup>-6</sup> mbar.

真空度: < 1x10<sup>-6</sup> mbar

**Temperature range:** from -180°C to +125°C.

温度范围: : -180°C to +125°C

**Heating/Cooling speed at the shrouds:**

> +2°C/min.

导热层加热/冷却速率: > +2°C/min.

**Shroud temperature uniformity:** < 5°C.

导热层温度均匀性: < 5°C.

**Material shroud:** Aluminium.

导热层材质: 铝



## 2. NATIONAL INSTITUTE FOR AEROSPACE TECHNOLOGY - (INTA)

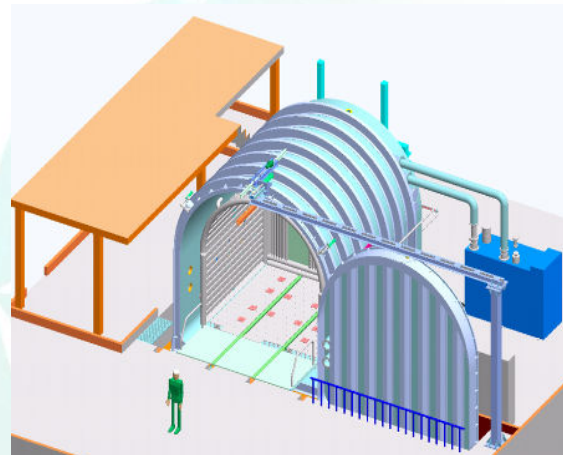
国家航空航天研究所项目



特殊设计:

*Specific design for photogrammetry.*  
可观察样品形状是否改变 (特殊3D拍摄)

*Possibility to define different thermal zones.*  
此设备, 预留增加加热组件 (将来)



### 3 ALCALA UNIVERSITY -Madrid

ALCALA 大学项目-马德里



#### Technical data/ 技术参数:

**Shape:** Vertical design. Automatic movement.

外形: 直立设计, 自动升降。

**Useful volume:**  $0.785 \text{ m}^3$  ( $\varnothing = 1 \text{ m}$ , height = 1 m).

有效容积:  $0.785 \text{ m}^3$  ( $\varnothing = 1 \text{ m}$ , height = 1 m).

**Vacuum better than:**  $5 \times 10^{-7} \text{ mbar}$ .

真空度:  $< 5 \times 10^{-7} \text{ mbar}$ .

**Temperature range:** from  $+120^\circ\text{C}$  to  $-80^\circ\text{C}$ .

温度范围: from  $+120^\circ\text{C}$  to  $-80^\circ\text{C}$ .

**Heating/Cooling speed at the shrouds:**

$1.5^\circ\text{C}/\text{min}$ .

导热层加热/冷却速率:  $1.5^\circ\text{C}/\text{min}$ .

**Shroud temperature uniformity:**  $\pm 3^\circ\text{C}$

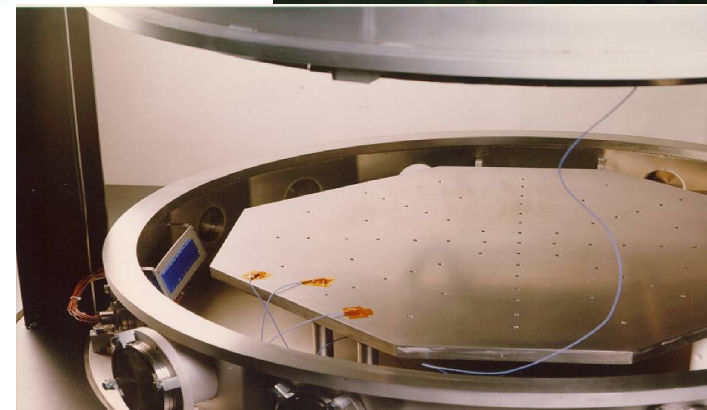
导热层温度均匀性:  $\pm 3^\circ\text{C}$

Compact table-top working surface.

整合桌面式工作台面。

Instrumentation and measurement is in the lower part.

仪器和样品在低位工作。





## 4. THALES Alenia Space

泰雷兹拉空间

THALES



### THALES Alenia Space

特雷兹拉空间

*Thales Alenia Space is at the heart of the most high-performance satellite technologies in both civil and defense sectors.*

特雷兹拉空间是民用及国防部门最高性能卫星科技的核心。

工作涉及:

Telecommunications

通讯

Space Infrastructure and Transportation

太空基础建设和运输

Observation and Environment

观察与环境

Science

所有类型的科学任务，如为天文卫星提供解决方案

Navigation

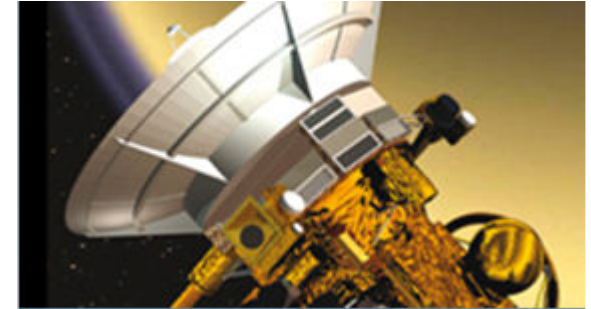
导航

Ground Systems

地面系统

Equipment and Others

设备以及其他



## 4. THALES Alenia Space Project

泰雷兹拉空间项目

THALES



### Technical data:

技术参数

**Shape:** Vertical design. Automatic movement.

外形: 垂直设计, 自动升降

**Useful volume:** 196 litre ( $\varnothing = 500$  mm, height = 500 mm).

有效容积: 196 litre ( $\varnothing = 500$  mm, height = 500 mm).

**Vacuum better than:**  $5 \times 10^{-7}$  mbar.

真空度:  $< 5 \times 10^{-7}$  mbar.

**Temperature range:** from  $+120^{\circ}\text{C}$  to  $-80^{\circ}\text{C}$ .

温度范围:  $+120^{\circ}\text{C}$  to  $-80^{\circ}\text{C}$

**Heating/Cooling speed at the shrouds:**

$1.5^{\circ}\text{C}/\text{min}$ .

导热层加热冷却速率:  $1.5^{\circ}\text{C}/\text{min}$ .

**Shroud temperature uniformity:**  $\pm 3^{\circ}\text{C}$ .

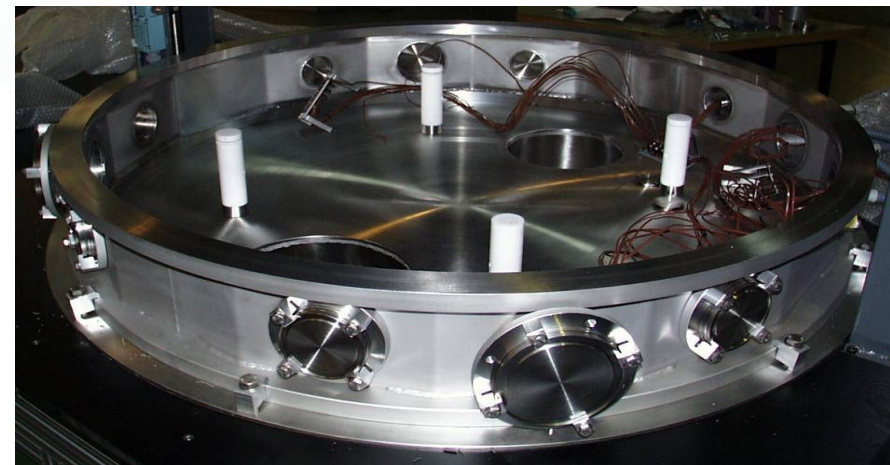
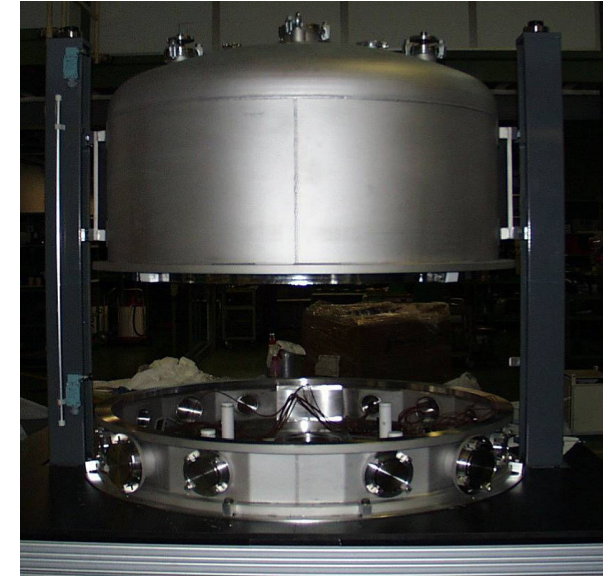
导热层温度均匀性:  $\pm 3^{\circ}\text{C}$ .

Compact table-top working surface.

整合桌面式工作台面。

Instrumentation and measurement is in the lower part.

仪器和样品在低位工作。



## 5. EADS-CASA-MADRID Project

EADS 公司项目

EADS



### Technical Data:

技术参数:

**Shape:** Horizontal design.

外形: 水平设计

**Chamber dimensions:**  $\phi = 1,7$  m,  
Length = 3,5 m.

腔体尺寸:  $\phi = 1,7$  m, Length = 3,5 m.

**Vacuum better than:**  $1 \times 10^{-5}$  mbar.

真空度:  $< 1 \times 10^{-5}$  mbar.

**Temperature range:** from  $-55^{\circ}\text{C}$  to  
 $+120^{\circ}\text{C}$ .

温度范围:  $-55^{\circ}\text{C}$  to  $+120^{\circ}\text{C}$

**Heating/Cooling speed at the  
shrouds:**  $1^{\circ}\text{C}/\text{min}$ .

导热层加热冷却速率:  $1^{\circ}\text{C}/\text{min}$ .

**Shroud temperature uniformity:**  $2^{\circ}\text{C}$ .

导热层温度均匀性:  $2^{\circ}\text{C}$

**Working surface:** optical table.

工作台面: 光学桌子



## 5. EADS-CASA-MADRID Project

EADS 公司项目

EADS



### 特殊设计:

Table supported on a seismic block,  
isolated from chamber supports.

工作桌面区别于腔体，单独固定在一个防震  
区块上。

4 shroud zones with independent  
temperature control.

四个区域拥有单独的温度控制模块。

TCU and vacuum pumps are in  
separated machinery room.

温度控制模块和真空泵在



## 5. INTA – LINES -MADRID Project

INTA 项目



### Technical Data:

技术参数:

**Shape:** Horizontal design.

外形: 水平设计

**Chamber dimensions:**  $\varnothing = 1,1 \text{ m}$ ,

Length = 2,3 m.

腔体尺寸:  $\varnothing = 1,1 \text{ m}$ , Length = 2,3 m.

**Useful volume:** 2 m<sup>3</sup>.

有效容积: 2 m<sup>3</sup>.

**Vacuum better than:**  $5 \times 10^{-7} \text{ mbar}$ .

真空度:  $< 5 \times 10^{-7} \text{ mbar}$ .

**Temperature range:** from  $-75^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$ .

温度范围: from  $-75^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$ .

**Heating/Cooling speed at the shrouds:** 1<sup>o</sup>C/min.

导热层加/冷却速率: 1<sup>o</sup>C/min.

**Shroud temperature uniformity:** +/- 1<sup>o</sup>C.

导热层温度均匀性: : +/- 1<sup>o</sup>C.



## 5. INTA – LINES -MADRID Project

INTA 项目



特殊参数:

*Table supported on a seismic block,  
isolated from chamber supports.*

*工作桌面区别于腔体，单独固定在一个防震区块上。*

*Hydraulic cover opening.*

*液压开盖设计。*

*Thermal Control Unit in separated  
machinery room.*

*热控制组件位于其他房间。*

*Scada control to fit on optical.*

*SCADA超级人机控制界面适合于光学研究。*



## 5. SPACE SYSTEMS LORAL PROJECT- U.S.A.

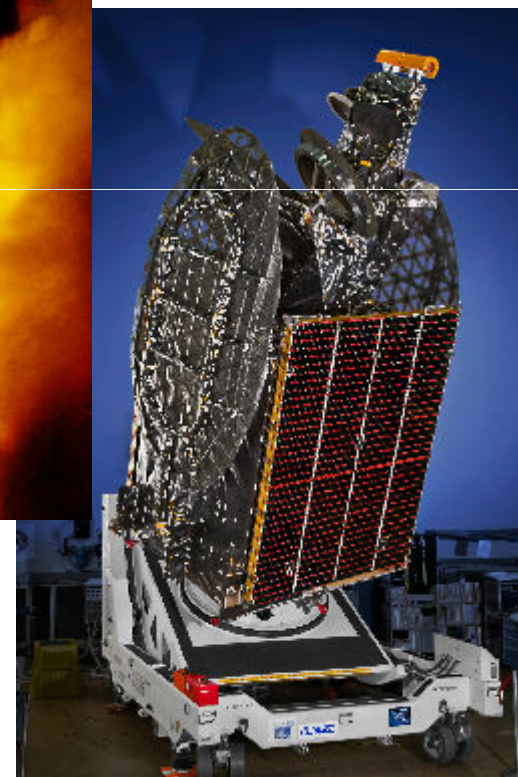
LORAL 空间系统项目-美国

SPACE SYSTEMS  
LORAL



**SPACE SYSTEMS LORAL:**  
**LORAL** 空间系统:

**The world lead in commercial  
Satellite Manufacturing.**  
商业卫星制造的世界领导者。



## 5. SPACE SYSTEMS LORAL PROJECT- U.S.A.

LORAL 空间系统项目-美国



### Recent lunches:

LORAL 空间系统今年卫星发射项目:

Date ▼	Program ▼	Company ▼	Launch Vehicle ▼	View Launch Video ▼
2011-05-20	Telstar 14R	Telesat	Proton Breeze M	
2010-12-29	Hispasat 1E	HISPASAT	Ariane 5	▶
2010-11-26	Intelsat 17	Intelsat	Ariane 5	▶
2010-10-14	XM-5	SIRIUS XM Radio	Proton Breeze M	▶
2010-07-10	EchoStar XV	DISH Network	Proton Breeze M	▶
2010-03-20	EchoStar XIV	DISH Network	Proton Breeze M	▶
2009-11-23	Intelsat 14	Intelsat	Atlas V	▶
2009-10-30	NSS-12	SES	Ariane 5	▶
2009-09-21	Nimiq 5	Telesat	Proton Breeze M	▶
2009-08-12	AsiaSat 5	AsiaSat	Proton Breeze M	▶
2009-07-02	TerreStar-1	TerreStar Networks	Ariane 5	▶
2009-07-01	SIRIUS FM-5	SIRIUS XM Radio	Proton Breeze M	▶
2009-02-27	Telstar 11N	Telesat	Zenit-3SLB	▶



## 5. SPACE SYSTEMS LORAL PROJECT- U.S.A.

LORAL 空间系统项目-美国

SPACE SYSTEMS  
LORAL



### TECHNICAL DATA:

技术参数:

**Shape:** Horizontal design.

外形: 水平设计

**Dimensions:** Diameter 900mm,  
Length 1400mm

尺寸: 直径900mm, 长度1400mm

**Pressure range:** 1000 mbar to  $1 \times 10^{-7}$   
mbar

压力范围: : 1000 mbar to  $1 \times 10^{-7}$  mbar

**Temperature range:** from  $+200^{\circ}\text{C}$  to  
 $-150^{\circ}\text{C}$ .

温度范围:  $+200^{\circ}\text{C}$  to  $-150^{\circ}\text{C}$ .

**Heating / Cooling speed:**  $2^{\circ}\text{C}/\text{min}$ .

加热冷却速率:  $2^{\circ}\text{C}/\text{min}$

**Shroud temperature stability:**  $\pm 5^{\circ}\text{C}$

导热层温度稳定性:  $\pm 5^{\circ}\text{C}$

Compact table-top working surface.

整合桌面式工作台面

Instrumentation and measurement is in  
the lower part. 仪器位于低位, 易于操作



***Thanks for your attention.***

**感谢大家!**