Programme
ESMATS 2015 - 16th European Space Mechanisms and Tribology Symposium

22 September (16:00 – 18:00)
Pre-registration
Stand Preparation for Exhibitors

Day 1 - 23 September 2015

08:00  Morning Sessions authors’ Breakfast at Euskalduna Cafeteria (direct access from street)
08:00  On-site Registration (throughout the day)

Opening  Chairman: L. Gaillard, ESA/ESTEC (The Netherlands)

09:00  Welcome, General Information, Programme
       L. Gaillard
       ESA/ESTEC (The Netherlands)

09:10  Welcome of Head of ESA Mechanical Engineering TEC-M
       C. Stavrinidis
       ESA/ESTEC (The Netherlands)

09:20  Welcome of CNES
       A. Borrien
       CNES (France)

09:30  SENER Historical Overview: from Ships to Spacecrafts
       D. Rodríguez
       SENER Ingeniería y Sistemas (Spain)

09:50  End of opening Session

Session 1 Pointing 1
Chairman: T. Knodel, RSSZ

10:00  Testing of the BepiColombo Antenna Pointing Mechanism
       P. Campo
       SENER Ingeniería y Sistemas (Spain)

10:20  Antenna Pointing Mechanisms for Solar Orbiter High and Medium Gain Antennas
       J. Vázquez
       SENER Ingeniería y Sistemas (Spain)

10:40  Development and Qualification of an Antenna Pointing Mechanism for the Exomars High-Gain Antenna
       S. St-Andre
       MDA Corporation (Canada)
11:00 Effect of MoS2 Debris Bump Formation on Positioning Accuracy of a Mechanism with an Internal clearance
M.M. Gorski
Kongsberg Defence and Aerospace (Norway)

11:20 Coffee Break

Session 2 Tribology 1
Chairman: E. Roberts, ESTL-ESR Technology (United Kingdom)

11:50 Recent Observations on the Performance of Hybrid Ceramic Tribo-Contacts
M. Buttery
ESR Technology (United Kingdom)

12:10 SLPMC – New Self Lubricating Polymer Matrix Composites for Journal and Ball Bearing Applications in Space
A. Merstallinger
AAC (Austria)

12:30 Specialized Hybrid Rolling Bearings for Space Use – Project ROLOKOS
J. Grygorczuk
Space Research Centre of the Polish Academy of Sciences (Poland)

12:50 Lubricity and Tribochemical Reactivity of Advanced Materials Under High Vacuum Conditions
A. Igartua
Fundación TEKNIKER (Spain)

13:10 Lunch Break (Reserved tables for afternoon session Authors)

Session 3 Instruments 1
Chairman: E. Urgoiti, SENER (Spain)

14:10 Development Challenges of Utilizing a Corner Cube Mechanism Design with Successful IASI Flight Heritage for the Infrared Sounder (IRS) on MTG; Recurrent Mechanical Design not Correlated to Recurrent Development
P. Spanoudakis
CSEM SA (Switzerland)

14:30 Realization and Performance Validation of the In-Field Pointing Mechanism for the Evolved Laser Interferometer Space Antenna
G. Witvoet
TNO (The Netherlands)

14:50 Cryogenic Motor Enhancement for the NIRISS Instrument on the James Webb Space Telescope
D. Aldridge
COM DEV International (Canada)

R. Paul
OHB System AG (Germany)

15:30 Sample Canister Capture Mechanism for Mars Sample Return: From Concept to TRL 6 (Including 0-⁰g Environment)
L. Montemurro
CGS S.p.A. (Italy)

15:50 Coffee Break
16:20 Velocity Compensated Passive Damper Solves Thermal Gradient Deployable Issues  
S. Starin  
Avior Control Technologies, Inc (United States)

16:40 Bi-Axial Solar Array Drive Mechanism: Design, Build and Environmental Testing  
N. Philips  
SSTL (United Kingdom)

17:00 Antenna Scan Mechanism for an Inter Satellite Link of a Constellation Program  
I. Köker  
Airbus DS GmbH (Germany)

17:20 Development of Magneto-Resistive Angular Position Sensors for Space Applications  
R. Hahn  
HTS GmbH (Germany)

17:40 End of Presentations

19:00 Cocktail Reception at Euskalduna Hall

Day 2 - 24 September 2015

08:00 Morning Sessions authors’ Breakfast at Euskalduna Cafeteria (direct access from street)  
08:30 On-site Registration and Hall opening

09:00 Flip Mirror Device for Sentinel-3 SLSTR  
I. Arregui  
SENER Ingeniería y Sistemas (Spain)

09:20 A Fully Integrated Focus Mechanism for a High Resolution Camera  
N. Philips  
SSTL (United Kingdom)

09:40 Design and Dynamic Optimization of a Tristable X-Ray Attenuator Mechanism for the STIX Instrument  
M. Lai  
Almatech (Switzerland)

10:00 Design, Development and Testing of a Scan Focus Mechanism for the SPICE Instrument  
W. Holmes  
ESR Technology (United Kingdom)

10:20 SPICE SDM: Innovative Approaches for Linear Motion and Heat Management  
K. Relecom  
APCO Technologies (Switzerland)

10:40 Coffee Break / Poster Visit / Committee Meeting (60 minutes) / Student Winner
Session 6 Locking 1
Chairman: C. Dupuy, CNES (France)

11:40 James WEBB Space Telescope Deployment Tower Assembly Deploying Anomaly and Lesson Learned
A.N. Tran
Northrop Grumman Aerospace Systems (United States)

12:00 Sentinel-1 SAR DEM Deployment Mechanisms Recovery
C. Compostizo
SENER Ingeniería y Sistemas (Spain)

12:20 Sentinel-1 SAR Deployment Testing - Lessons Learned
S. Schwarz
Airbus DS GmbH (Germany)

12:40 ExoMars MSA. 'Test HDRM' Development for Separation Performance Verification
L. Caldirola
RUAG Schweiz AG, RUAG Space (Switzerland)

13:00 Articulated Deployment System for Antenna Reflectors
M. Kroon
Airbus DS Netherlands (The Netherlands)

13:20 Lunch Break (Reserved tables for afternoon session Authors)

Session 7 Tribology 2
Chairman: L. Gaillard, ESA/ ESTEC (The Netherlands)

14:20 The Performance and Life of Fluid-Lubricated Harmonic Drives @ Gears
E.W. Roberts
ESTL-ESR Technology (United Kingdom)

14:40 The Synergistic Effects of MoS2 and Liquid Lubrication
M. Buttery
ESR Technology (United Kingdom)

15:00 The Evaluation and Validation of New Creep Barrier Films for Prevention of Oil Loss by Migration
M. Hampson
ESTL – ESR Technology (United Kingdom)

15:20 Double Transfer Experiments to Highlight Design Criterion for Future Self-Lubricating Materials
G. Colas
University of Toronto (Canada)

15:40 Coffee Break

Session 8 Components 1
Chairman: A. Meschini, TAS-I (Italy)

16:10 Modelling and Simulation of Electromagnetic Effects in Space Mechanisms
F. Liebold
ESA/ESTEC (The Netherlands)

16:30 Torque-Enhancer Technology in Magnetic Wobbling Gears
G. Puchhammer
Karl Rejlek GmbH (Austria)
16:50 Voice Coil Actuators for Two MTG Instruments
F. Barillot
Cedrat Technologies (France)

17:10 Invited speaker: NIRSPEC: from Requirements to Design and Back
Pierre Ferruit
ESA/ESTEC (The Netherlands)

17:30 End of Presentations

18:00 Walk to Guggenheim – Visit starts at 18:00 until 20:00

21:00 Dinner at Azkuna Zentroa - Arrival latest at 20:30, Dinner starts at 21:00

The 16th ESMATS Symposium Dinner will be held in Azkuna Zentroa, an old wine warehouse transformed by Phillipe Stark, and one of the most iconic buildings in the city. Life music entertainment during dinner finalized by Magician Show.
Day 3 - 25 September 2015

08:00  Morning Sessions authors’ Breakfast at Euskalduna Cafeteria (direct access from street)
08:30  On-site Registration and Hall opening

Session 9 Components 2
Chairman: X. Francois, TAS-F (France)

09:00  Recent Steps Towards a Common Understanding of Ball Bearing Load Capacity
       S. Lewis
       ESTL – ESR Technology (United Kingdom)

09:20  Highly Integrated High Accuracy and Resolution Optical Encoder for Space Application
       T. Talvat
       Codechamp (France)

09:40  Slipring and Angular Sensor for the Spacebus G3 Solar Array Drive Mechanism
       C. Courtois
       RUAG Space (Switzerland)

10:00  HarmLES – Development of Dry Lubricated Harmonic Drives ® Gears for Space Applications
       A. Merstallinger
       AAC (Austria)

10:20  High Detent Torque Rotary Actuator Development
       I. Santos
       SENER Ingeniería y Sistemas (Spain)

10:50  Coffee break

Session 10 Locking 2
Chairman: M. Gittins, ADS-STV (United Kingdom)

11:20  MTG Scan Launch Locking Mechanisms
       A. Sacristán
       SENER Ingeniería y Sistemas (Spain)

11:40  Intermediate Experimental Vehicle. Jettison Mechanism Engineering and Test
       L. Caldirola
       RUAG Schweiz AG, RUAG Space (Switzerland)

12:00  Design, Qualification and Lessons Learned of the Shutter Calibration Mechanism for EnMAP
       Mission
       T. Schmidt
       HTS GmbH (Germany)

12:20  Bi-stable SMA Shutter Mechanism Development and Testing
       M. Haeberlein
       Airbus DS GmbH (Germany)

12:40  Doors Mechanism for Feedthrough Operation in Solar Orbiter
       FDM Subsystem
       J. Viñals
       SENER Ingeniería y Sistemas (Spain)
13:00 Closure Remarks
13:30 Lunch Break
14:30 Buses leave for 2 company visits finishing at 18:00 at the airport and 18:30 in Bilbao city center

Poster List

Topic 1: Launch Vehicles

P01 Novel Approach to Side Eject a Spacecraft from a Launch Vehicle
A. Haslehurst
SSTL (United Kingdom)

P02 Development of a Non Explosive Low Shock (NELS) Hold Down and Release System
J. Augustijn
Airbus Defence and Space Netherlands BV (The Netherlands)

P03 Nanometric Positioning with Piezoelectric Actuator & High Stability Strain-Gages
F. Barillot
Cedrat Technologies (France)

P04 "Cryomechanism": a Cryogenic Rotating Actuator.
J. Barriere
CEA-Saclay, IRFU-SIS (France)

P05 Performance of Magnetic-Superconductor Non-contact Harmonic Drive for Cryogenic Space Applications: Speed, Torque and Efficiency Measurements
E. Díez Jiménez
MAG SOAR (Spain)

P06 Ball Bearing Stiffnesses – A New Approach Offering Analytical Expressions
P. Guay
Airbus Defence & Space (France)

P07 A Novel Hold-Down and Release Mechanism for Non-Explosive Actuators Based on SMA Technology
N. Nava
Arquimea (Spain)

P08 Development and Closed-Loop Experimental Results of a Reaction Sphere Elegant Breadboard
L. Rossini
Centre Suisse d’Electronique et de Microtechnique – CSEM (Switzerland)

P09 Mole Penetrator Driven by an Electromagnetic Direct Drive (EMOLE)
J. Grygorczuk
Space Research Centre, Polish Academy of Sciences (Poland)

P010 Mechanical Testing on the Core Sample Transportation Mechanism of the ExoMars 2018 Mission
C. Melzer
Hoch Technologie Systeme GmbH (Germany)
Topic 3: Tribology and Materials

P011  Cu-Al-Ni Shape Memory Single Crystal Wires with High Transformation Temperature
      A. Hautcoeur
      Nimesis Technology (France)

P012  Low Friction Coefficient Oxide Ceramic Coatings
      B. Pietrzyk
      Lodz University of Technology, Institute of Materials Science and Technology (Poland)
Exhibition and Congress floor plan
Exhibitors area for stands and posters

Booth exhibitor list

1. Sierra Nevada Corporation
2. CEDRAT TECHNOLOGIES
3. Phytron GmbH
4. CDA InterCorp
5. Eaton
6. Rockwell Collins Deutschland GmbH
7. MACCON GmbH
8. SENER
9. SENER POLAND
10. CEROBEAR GmbH
11. ADR
12. HARMONIC DRIVE ESPAÑA SLU
13. SYMETRIE
14. Honeywell
15. Metal Estalki, S. L.
16. RUAG Space Switzerland
17. RUAG SPACE
18. ESR Technology Ltd
19. Glenair UK Ltd
20. Space Research Centre of the Polish Academy of Sciences (CBK PAN)
21. NEA Electronics
22. Avior Control Technologies, Inc
23. ATG Europe
Entrance
Level 0

Cafeteria and Committee Meeting - Room D2 Level -1
16th European Space Mechanisms and Tribology Symposium

Bilbao, 23rd - 25th September 2015

Address of the Symposium site:
Euskalduna Concert Hall and Conference Center
Av Abandoibarra, 4 - 48011 Bilbao, Vizcaya, Spain
www.euskaduna.net

- Public parking available in Euskalduna Congress Palace
- Cloakroom / left-luggage facility is available for ESMATS participants in the exhibitors hall.

General information about ESMATS is available at www.esmats.eu