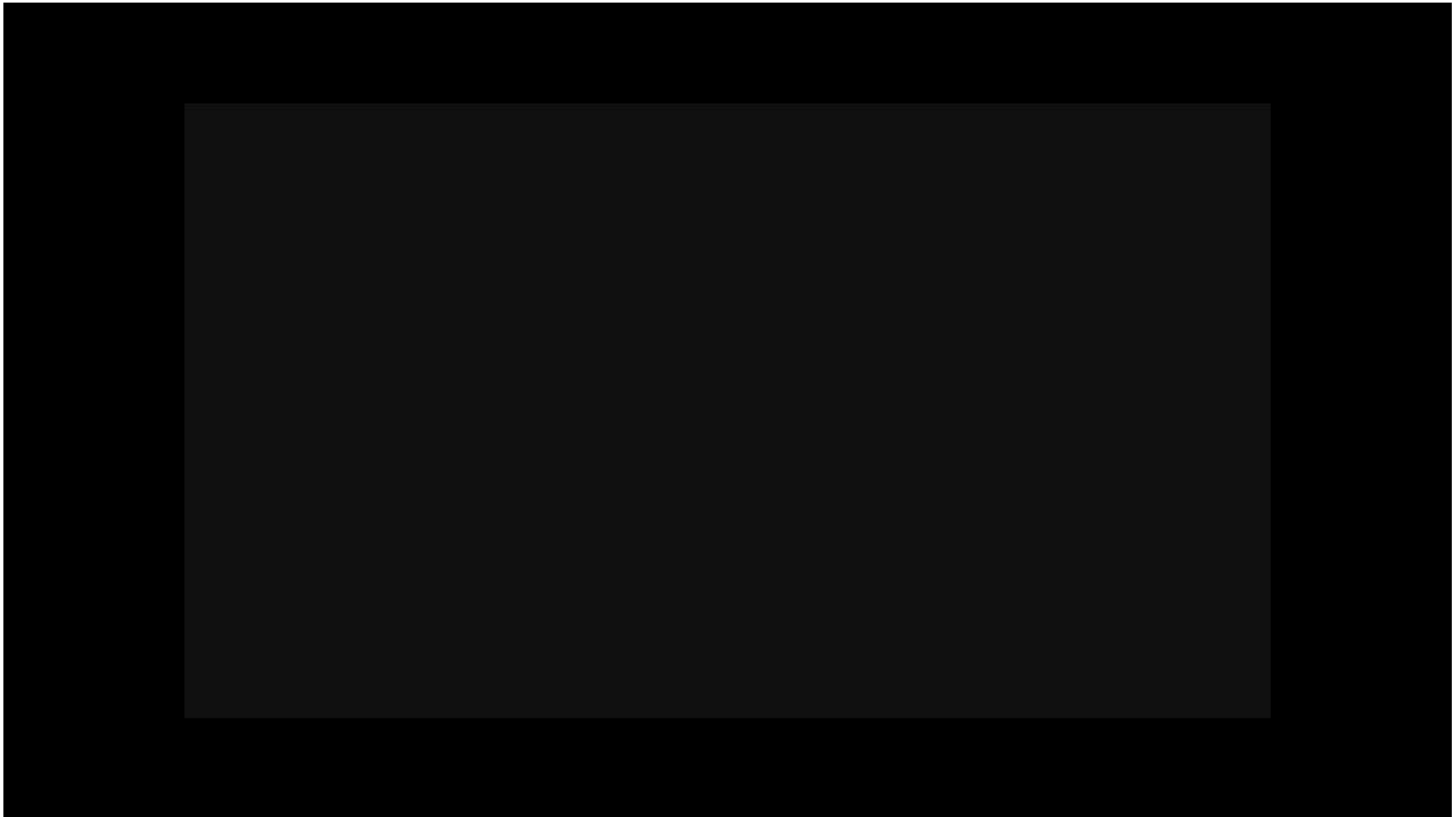


Stabilization Mounts – developments and benefits of the GSM 3000 and SSM Series

somag®
AG JENA



Company Movie





S - Sensors

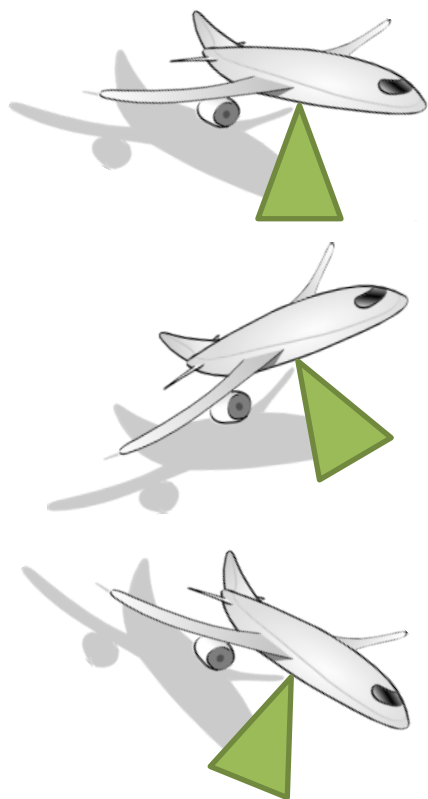
O - Optics

M - Mechanics

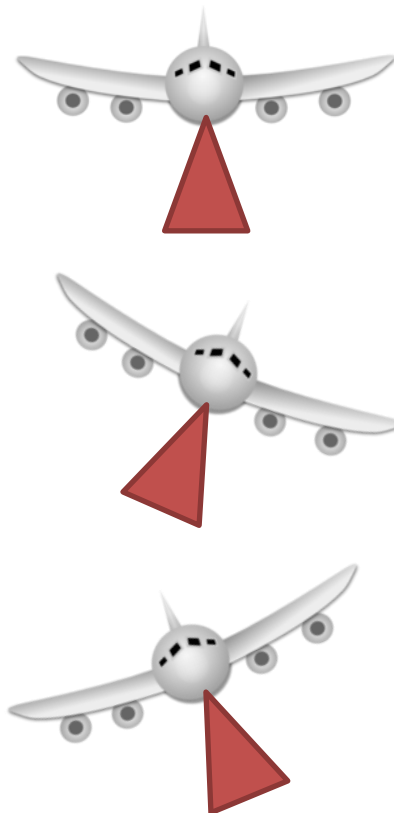
A - Application Software

G - Gadgets

Pitch



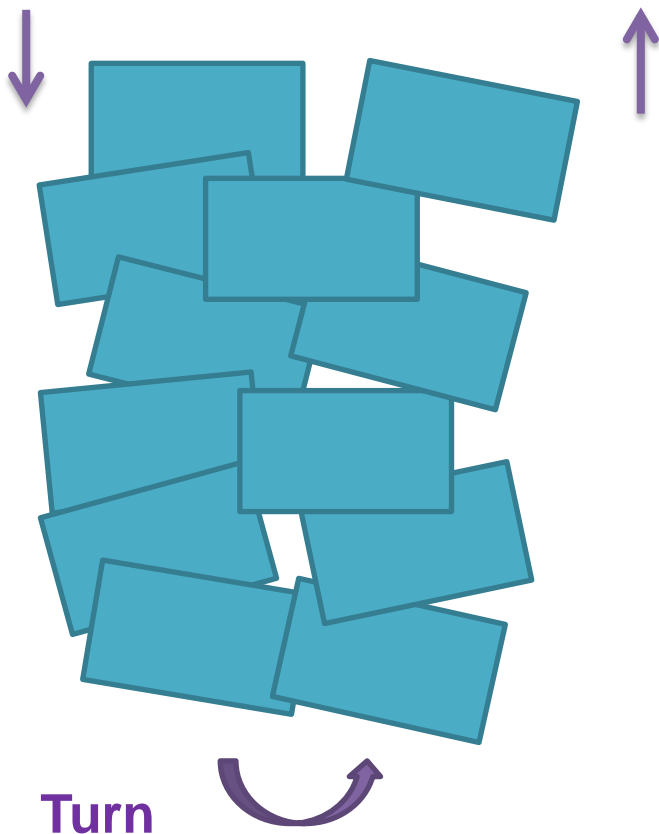
Roll



YAW



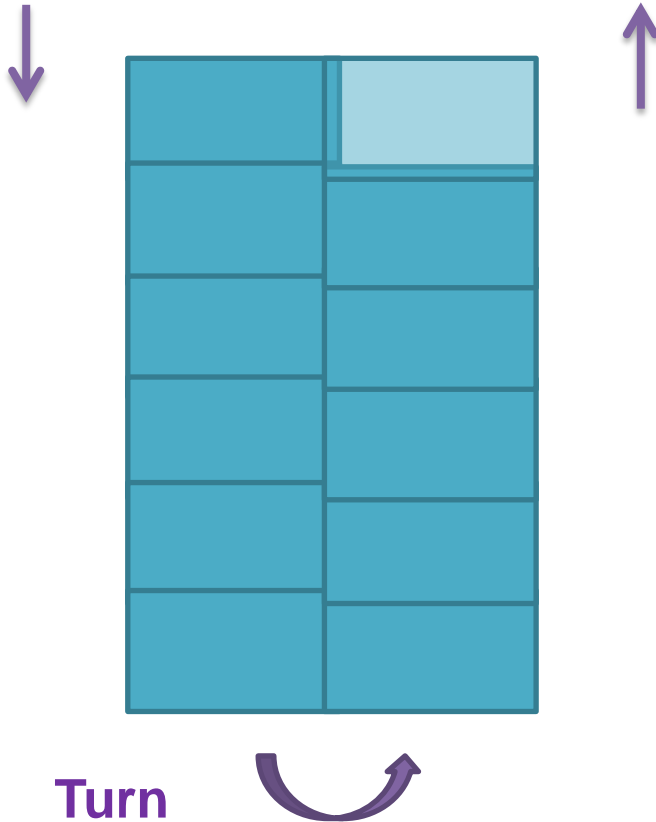
First Line / Second Line



Problems:

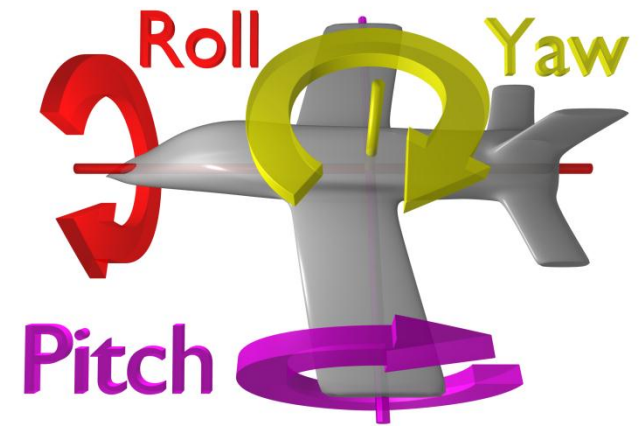
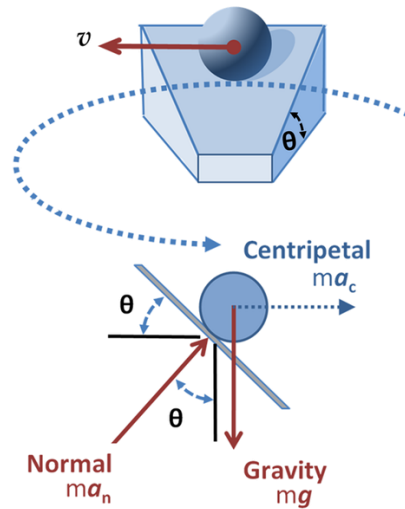
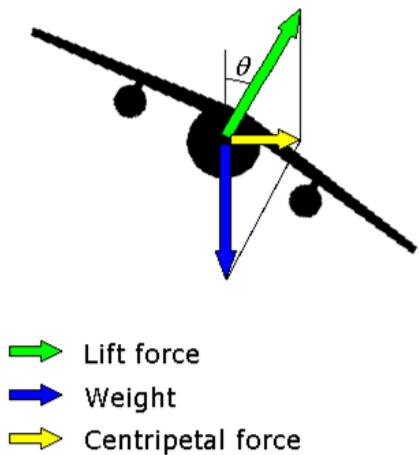
- ▲ Potential Source of Error: Lack of adjacent overlap could cause data “holiday” (missing data)
→ Flying with large overlap to avoid data holidays costs time and money
- ▲ Acquisition of smeared images causes post-processing issues
- ▲ Ranging Errors for LIDAR’s because of Aircraft Pitch movement

First Line / Second Line



Benefits:

- ▲ Overlap can be reduced to 10% (or even less) / tremendous reduction of Time and Money!
- ▲ Turbulences of AC are stabilized / risk of data gaps is highly reduced
- ▲ Pitch compensation increases ranging accuracy of LIDAR's
- ▲ Smearing of images is highly reduced



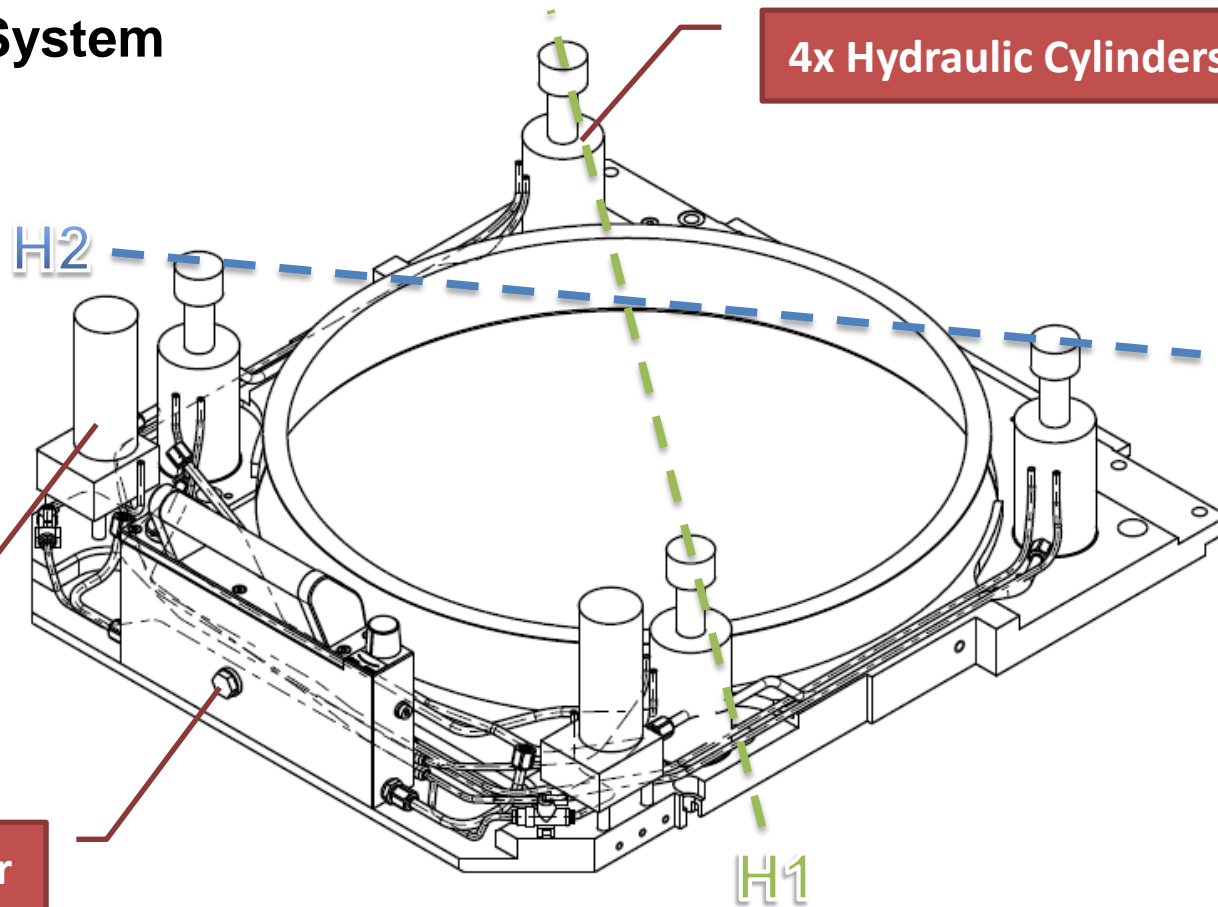
- ▲ **Problem: simple mechanical inertia system non-applicable**
- ▲ **Reason: lateral and circular accelerations**
- ▲ **Solution: active Gyro compensated Stabilization System**

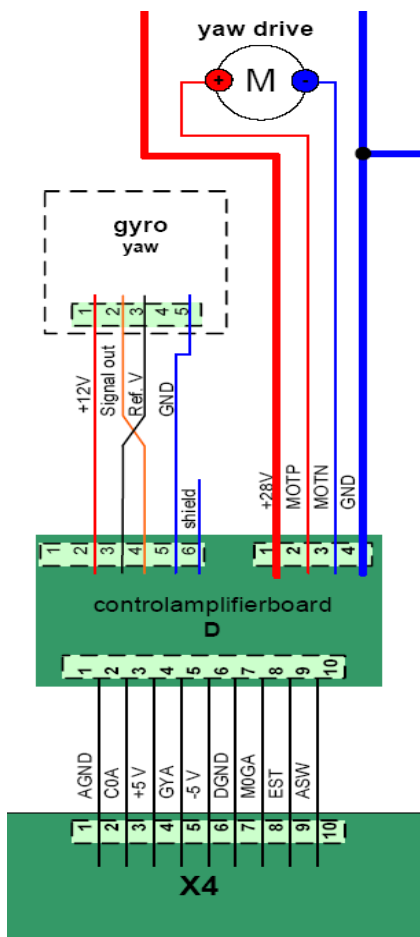
Hydraulic Gimbal System



Gear Pump

Fluid Reservoir





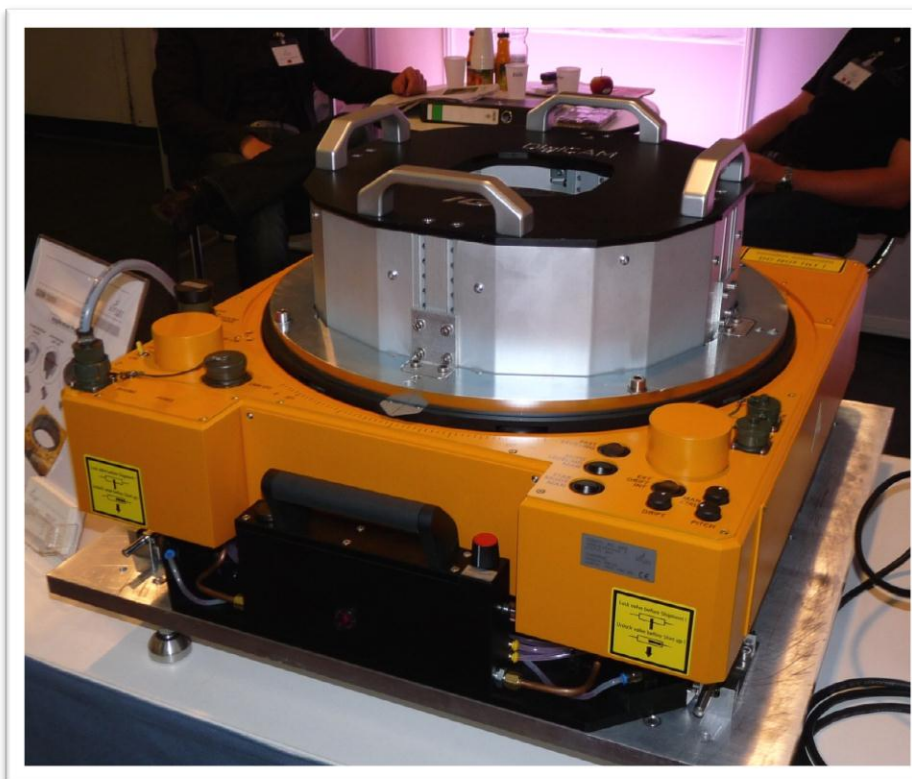
- ▲ High Dynamic Analog control loop based on usage of Gyroscopes
Gyroscopes measure angular velocity (rate sensors) to control the current of the Servo Pump Motors.
- ▲ Attitude Backup Control (Roll/Pitch) based on inclinometer (or external IMU)
The Inclinometer measures the roll and pitch angles. A corrective signal is generated by μ C to compensate the bias drift of the gyros.
- ▲ Desired Heading for Drift (Yaw) by operator internal or external potentiometer, or serial via Mount-Interface.



- ▲ **GSM 3000 with Microsoft Vexcel UltraCam and Applanix POS FMS**



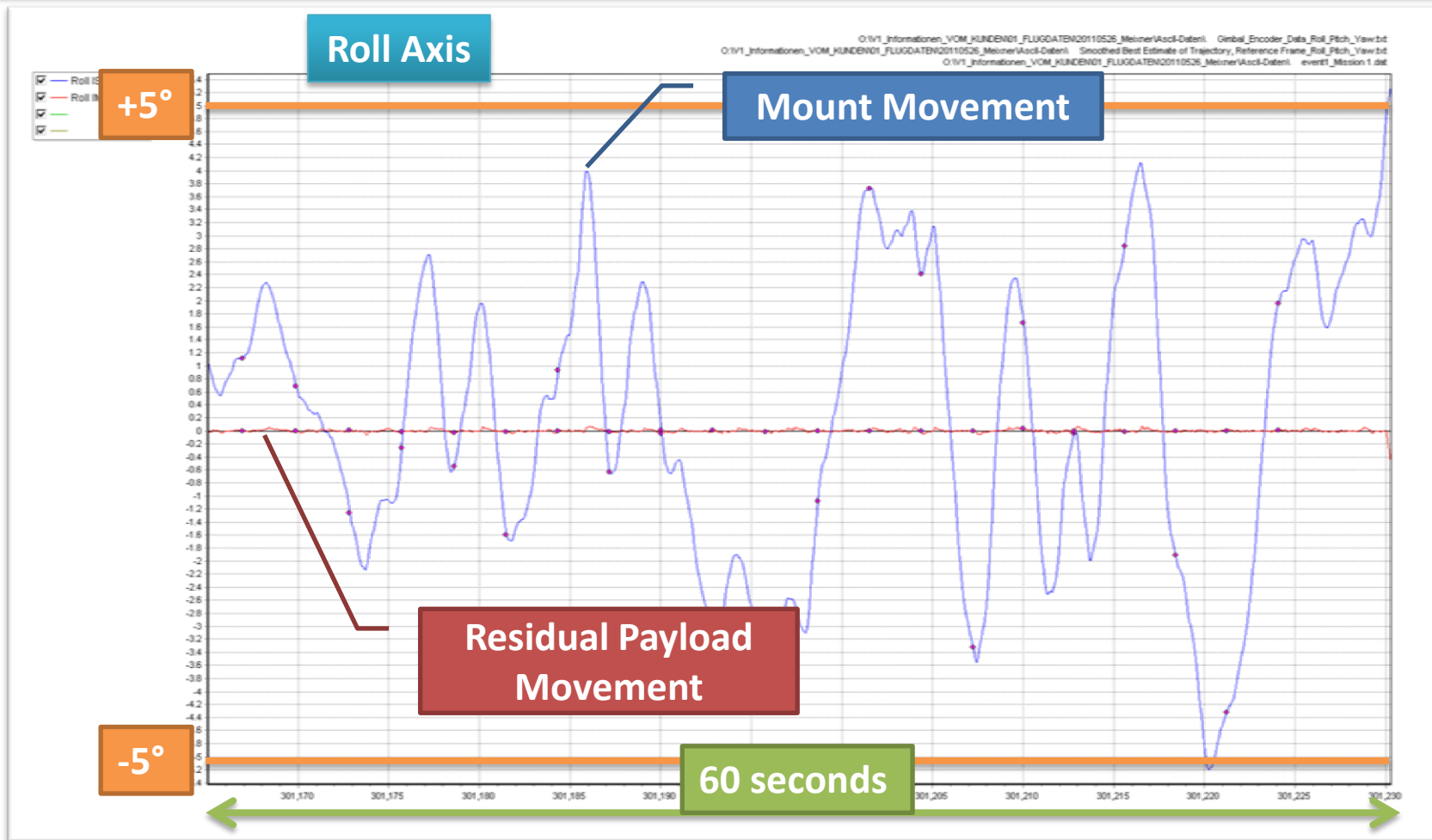
▲ GSM 3000 with Optech ALTM LiDAR and Applanix POS FMS



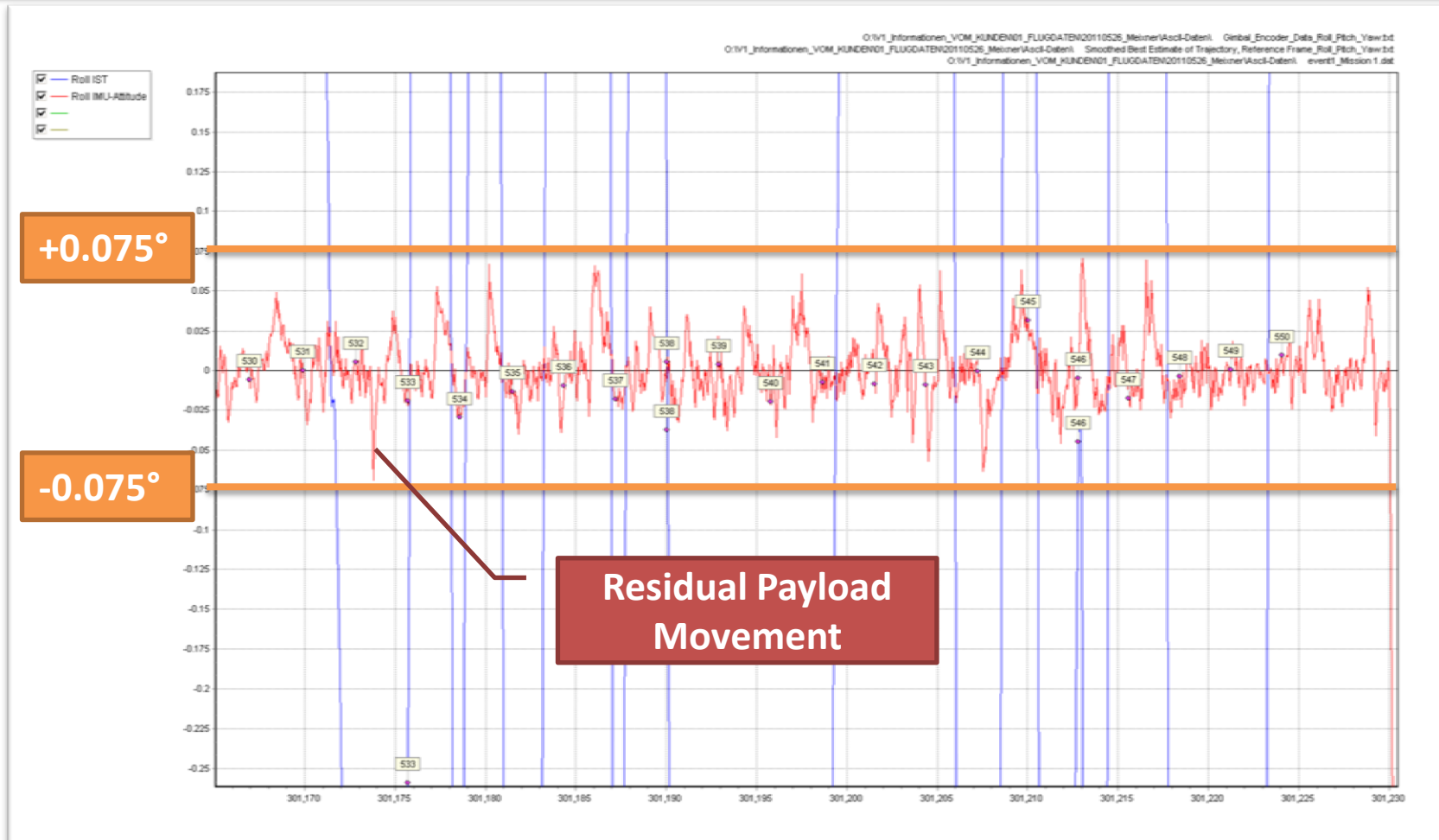
▲ GSM 3000 with IGI FMS and IGI Camera system

- ▲ Usage with large Airborne Cameras, Scanners or LiDAR's
- ▲ Specially designed for Large and Heavy Payloads
- ▲ Most accurate and fastest system in its class
- ▲ Compatible with any FMS
- ▲ Vibration Isolation System can be easily adapted to specific weights
- ▲ OEM partner of the most famous Camera, LiDAR and FMS systems
- ▲ Reliable and fast Service Team in case of Malfunctions
- ▲ Sold over 215 times in all continents World Wide

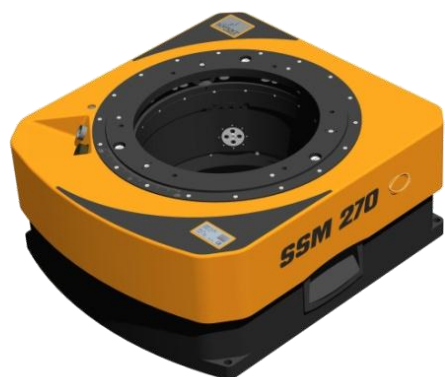
GSM 3000 – Stabilization Accuracy



GSM 3000 – Stabilization Accuracy

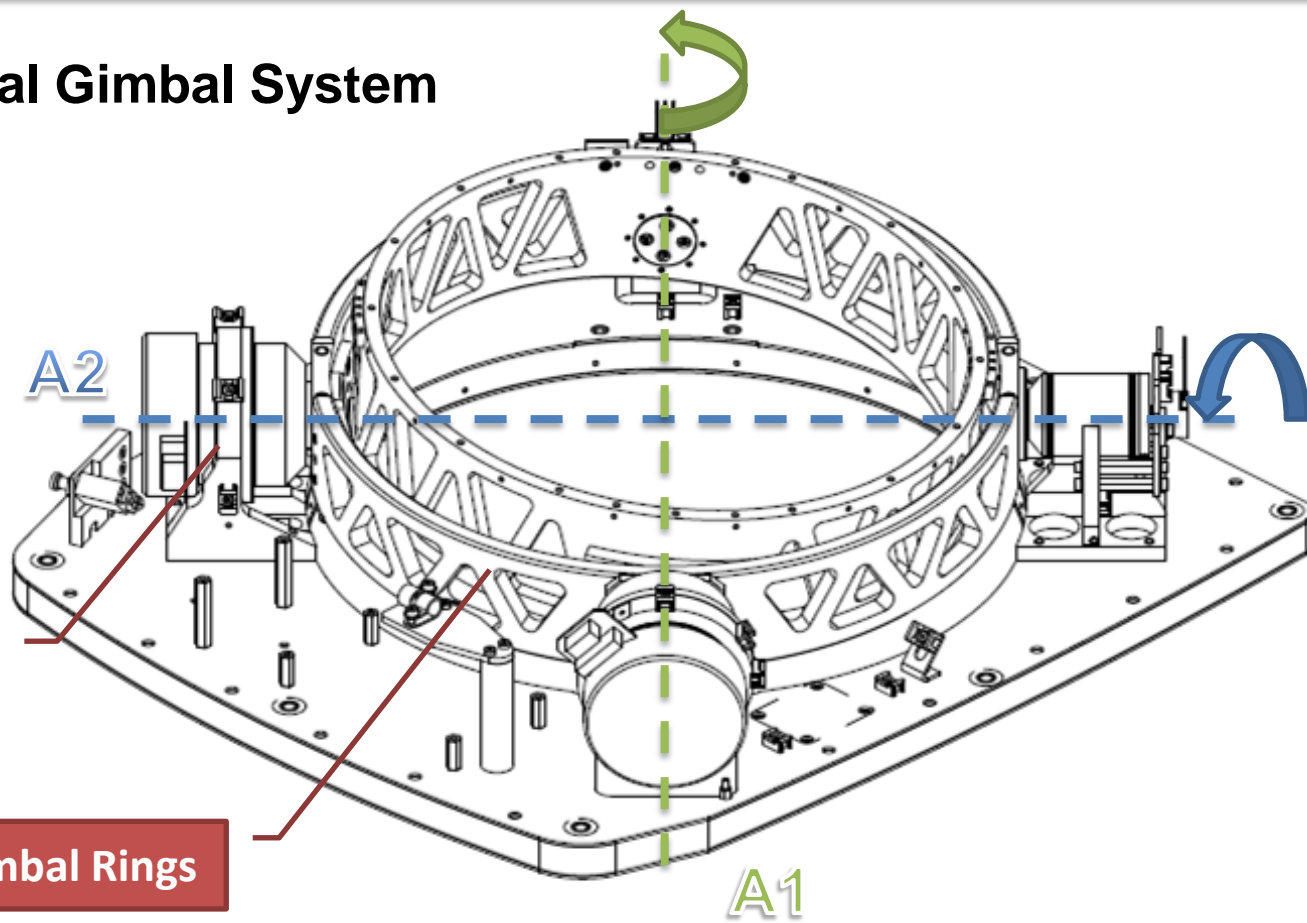


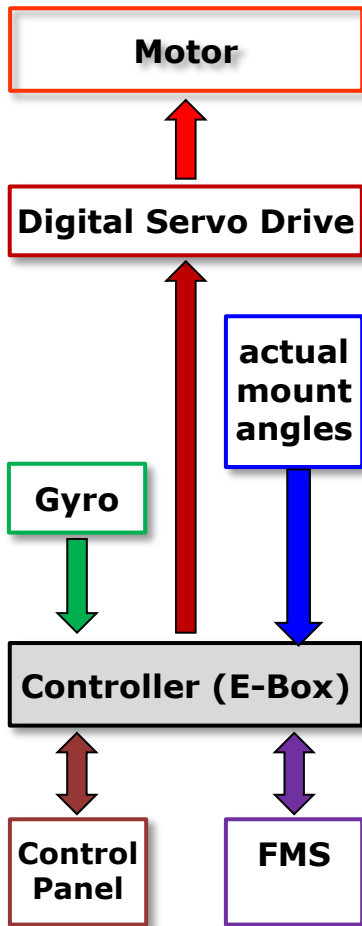
▲ Electro-Mechanical Gimbal System



Motor Gear
Combination

Gimbal Rings





- ▲ High Dynamic Digital control loop based on usage of Gyroscopes
Gyroscopes measure angular velocity (rate sensors) to control the motors.
- ▲ Attitude Backup Control (Roll/Pitch) based on inclinometer (or external IMU)
The Inclinometer measures the roll and pitch angles. A corrective signal is generated by the controller to compensate the bias drift of the gyros.
- ▲ Desired Heading for Drift (Yaw) by operator, internal or external potentiometer, or serial via Mount-Interface.

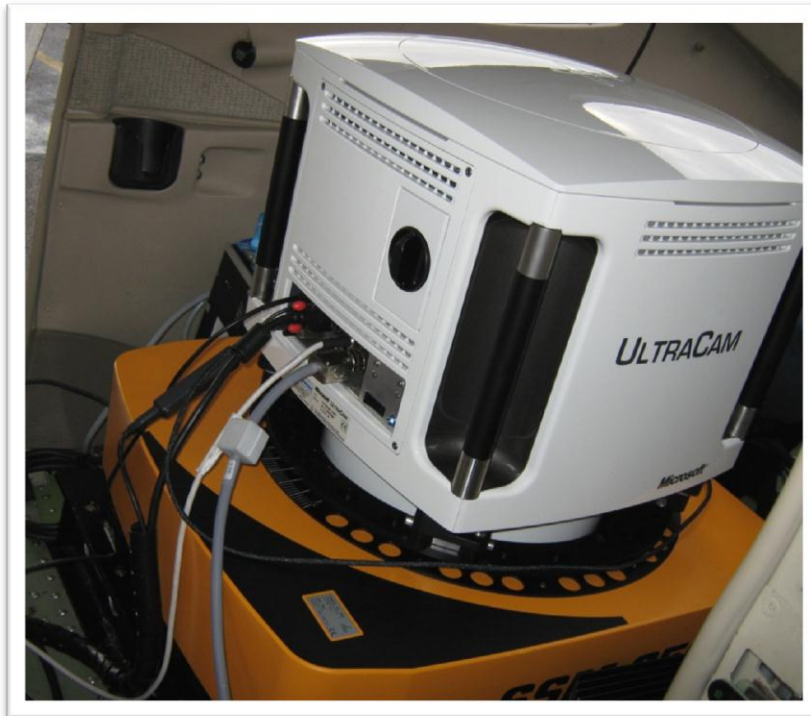
SSM Series – Usage



▲ **SSM 270 with Applanix SingleCam System and Applanix POS FMS**

▲ **UltraMount SSM 350 with Electronic Box and Control Panel**

SSM Series – Usage



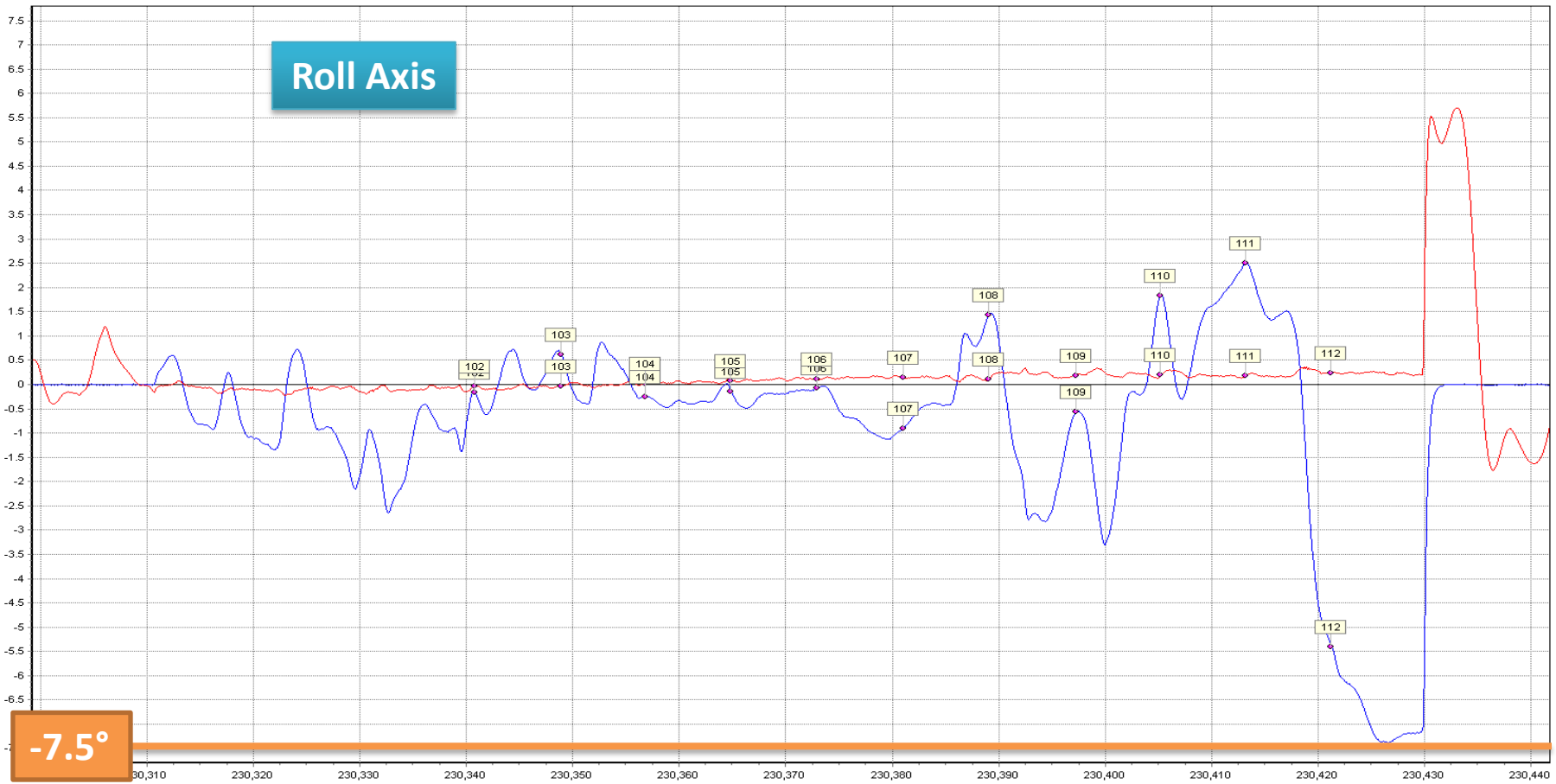
▲ **SSM 350 with Vexcel UltraCam LP and Applanix POS FMS**



▲ **SSM 270 with Applanix DualCam System and Applanix POS FMS**

- ▲ Built to compensate Large Movements (small Aircrafts & Helicopters)
- ▲ Fast and reliable system → designed for harsh environments
- ▲ Digital system which can be easily adjusted → changing the Mount movement range is no problem
- ▲ Lightweight Systems which are less than 30kg
- ▲ Compatible with any FMS
- ▲ Vibration Isolation System can be easily adjusted
- ▲ Customer specific designs are easy possible → paint job, movement range, usable diameter etc. can be adapted

* Gimbal Encoder Data.bt * Smoothed Best Estimate of Trajectory, Reference Frame.bt * event1_Mission 1.dat



SSM 350 at work



New Developments – CSM 130

Dimensions:
300 x 275 x 125 mm

Movement Area:
± 15° (Horizon)
± 35° (Yaw)

Weight:
less than 7kg

**Installation in Ultra
Lights or Drones!**

Leica RCD30



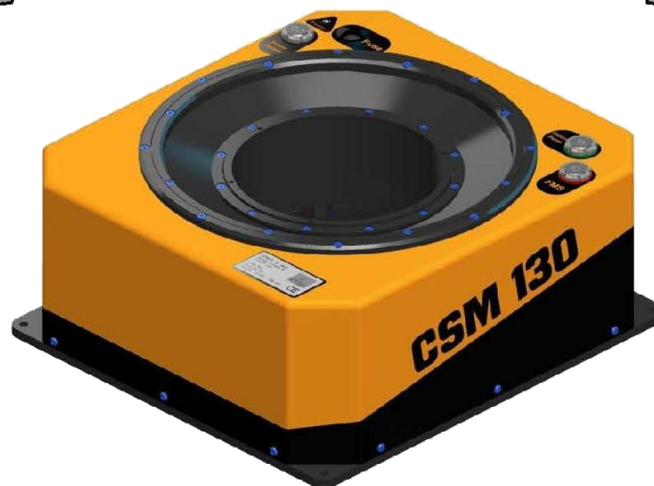
IGI DigiCAM



PHASE ONE iXA



Optech CS Series



- ▲ **Small / Medium Format Sensor Systems get more powerful**
⇒ **Stabilization still required but Mount Systems need to be smaller and cheaper**
- ▲ **Development and Importance of Drones increases**
⇒ **Suitable Stabilization Systems need to be developed**
- ▲ **Pointing ability will important for Drone configurations**
⇒ **Stabilization Mounts can be used for pointing applications**
- ▲ **Modular Stabilization devices gain importance in the future**
⇒ **customization of each Stabilization Mount needs to be possible to suit customer specific requirements**

Partner Companies





Фотоника

Научно-производственная компания



- ▲ Official Distributor of SOMAG AG Jena products in Russian Territory located in St. Petersburg
- ▲ Technical Support and Import to the Russian Territory
- ▲ Contact Information: info@npk-fotonica.ru
Tel.: +7(812)715-26-55

Thank you for your Attention

any Questions?

