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Kongsberg Spacetec AS
www.spacetec.no

NewsLetter

this issue

Events 2013

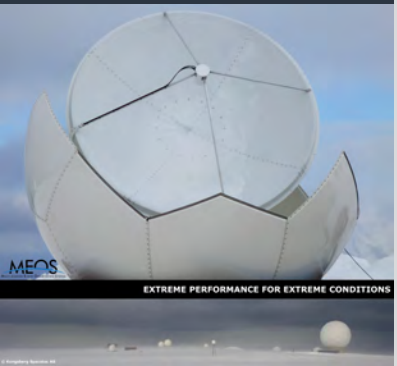
8 - 12 April 2013
NOAA 2013 Direct Readout, GOES/POES and GOES-R/ JPSS Users, Maryland USA
http://satelliteconferences.noaa.gov/2013/

17 - 19 April 2013
International Forum "Integrated Geospatial Solutions - the Future of Information Technologies", Moscow, Russia
http://www.sovzondconference.ru/2013/eng/

16 - 20 September 2013
2013 EUMETSAT Conference, Vienna, Austria
http://www.sovzondconference.ru/2013/eng/

15 - 17 October 2013
Meteorological Technology World EXPO 2013, Brussels, Belgium
http://http://www.meteorologicaltechnologyworldexpo.com/

For meeting and appointments during the events, e-mail us on marketing@spacetec.no



MEOS™ Capture to the ESA Landsat Data Continuity Mission PDGS

Kongsberg Spacetec was awarded a contract to deliver an Acquisition System to the European Space Agency (ESA) for the Landsat Data Continuity Mission (LDCM), as a sub-contractor for Logica UK. The Landsat Data Continuity Mission is the latest evolution of the Landsat Programme, a series of satellites used to gather Earth resource data. The initiative is a joint venture between the U.S. Geological Survey (USGS) and the National Aeronautics and Space Administration (NASA).

This contract covers activities for the ESA Landsat Data Continuity Mission Payload Data Ground Segment (PDGS) evolution project, which has the scope to implement the ground segment for ESA LDCM operations services as NASA/USGS International Cooperator.

LDCM Acquisition system is based on Kongsberg Spacetec COTS product MEOS™ Capture HRDFEP. This is Kongsberg Spacetec's High Rate Demodulator and Front-End Processing system.

The LDCM Acquisition System is handling LDCM data from the X-band Antenna subsystem to generation of LDCM Level-0. The Level-0 processor is implemented for the LDCM mission and integrated into the MEOS™ HRDFEP. In addition, the Acquisition System will generate LDCM Mission Data according to the USGS data format specifications, as well as QuickLook imagery for visual quality checks. In the framework of the contract Kongsberg Spacetec will also support Logica/ESA in the validation and commissioning phase of the LDCM ground segment.

Landsat Data Continuity Mission

The Landsat Data Continuity Mission (LDCM) will continue to obtain valuable data and imagery to be used in agriculture, education, business, science, and government. The Landsat Program provides repetitive acquisition of high resolution multispectral data of the Earth's surface on a global basis. The data from the Landsat spacecraft constitute the longest record of the Earth's continental surfaces as seen from space. It is a record unmatched in quality, detail, coverage, and value.

The Landsat era that began in 1972 will carry on with the successful launch of the LDCM in February 2013. Global, synoptic, and repetitive coverage of the Earth's land surfaces will continue at a scale where natural and human-induced changes can be detected, differentiated, characterized, and monitored over time.

Landsat Data Continuity Mission is a partnership between NASA and the USGS. (U.S. Geological Survey)

Artist's rendition of the LDCM spacecraft in orbit (image credit: NASA, OSC)

METOP-B Launched

The second satellite in the EPS program was launched successfully from the Baikonour Cosmodrome 17 September 2012.

When the AVHRR instrument was turned on, our MEOS™ Polar System was ready to capture and process the downlinked data.

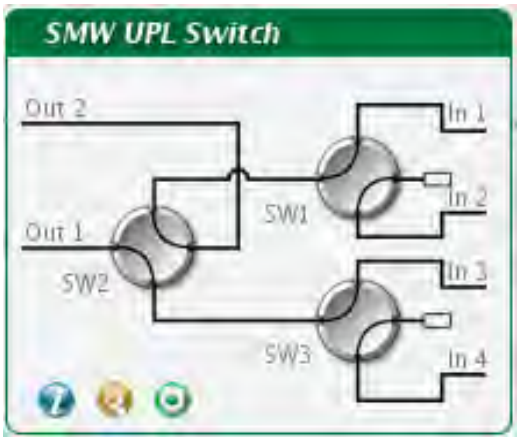
The first image received by our station in Tromsø, Norway covering Scandinavia and Central Europe is shown below.

AVHRR 3 channels composite acquired 22 September 2012 from 09:33 to 09:47.

Note:
The switching on of the instrument is clearly visible.

Saving cost in Ground Station operations using MEOS™ Control

A typical Ground Station has a number of different units used to acquire data from satellites. This includes antennas, demodulators, converters, switch matrices, etc. These units often provide capabilities for manual control and setup, as well as an interface for remote monitoring and control.



Instead of handling all these units individually, MEOS™ Control can integrate them into one overall and seamless system. This allows for efficient operations with minimal personnel, thus saving operational cost and improving availability.

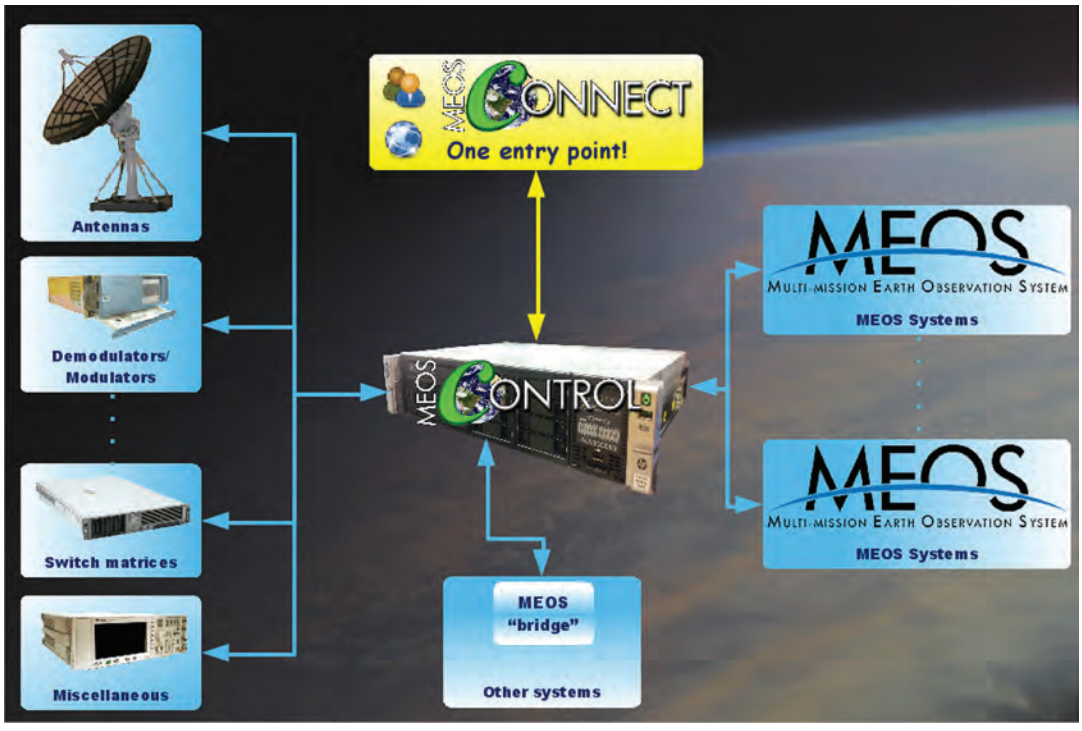
Control all equipment from one place

In addition to handling the connected equipment on an individual basis, MEOS™ Control can be preconfigured with a large number of different activities. When starting an activity, MEOS™ Control will automatically setup the needed equipment. Thus, complex setup scenarios can be achieved as a single command.

Activities can be scheduled immediately or ahead in time. In addition, MEOS™ Control can use its embedded orbit propagator for automatic scheduling based on selected missions.

Collect qualitative and quantitative statistics from all equipment

During operation, MEOS™ Control collects all available statistics from the connected equipment, and stores it in a database. These statistics are in addition provided in real-time through the MEOS™ Control external interface and in the embedded GUI. At the end of the activity, these statistics are summarized as post-pass reports in XML format, available through a web-browser or through file transfer.



Visualize activities and dataflow

All equipment is represented in the overall GUI view. This miniature view shows important parameters and status using color codes to easy identify situations in need for operator intervention. In addition, dataflow between equipment is visualized using colored arrows for easy verification of expected operational behavior.

Get alerted

MEOS™ Control monitors hardware resources such as fans, power supplies, temperatures, etc. in order to alert operators if needed.

Inspect historic data

Since MEOS™ Control stores all quality and quantity statistics from all the equipment, this information is available after activities are completed (by default 30 days of storage is provided). A special tool in the GUI is provided to browse such historic data, both as numeric values and as graphs. This makes it easy to inspect equipment behavior, even long after the activity took place.

Use the system both locally and remotely

The Java based MEOS™ Control GUI can be started from a web-browser, either locally or remotely over the network.

Interact with external systems

MEOS™ Control can either be operated stand alone or under control of an external monitor and control system. It features a common, socket based external interface using XML format, well suited for interfacing overall monitoring and control systems.

MEOS™ Control uses SuSe Linux Enterprise, SAS disks in RAID configuration for data storage, and delivered with dual power supplies.

MEOS™ Control and Capture to Kongsberg Satellite Services at Troll Station in Antarctica

Kongsberg Spacetec delivered MEOS™ Control and MEOS™ CAPTURE HRDFEP including backup capability to Kongsberg Satellite Services. The MEOS™ system was installed at the Troll Ground Station January 2013.

The MEOS™ Control system is the main control system for the TR3 antenna and subsystems at the station.

The MEOS™ Capture system comes with multimission support and fully integrated in MEOS™ Control.

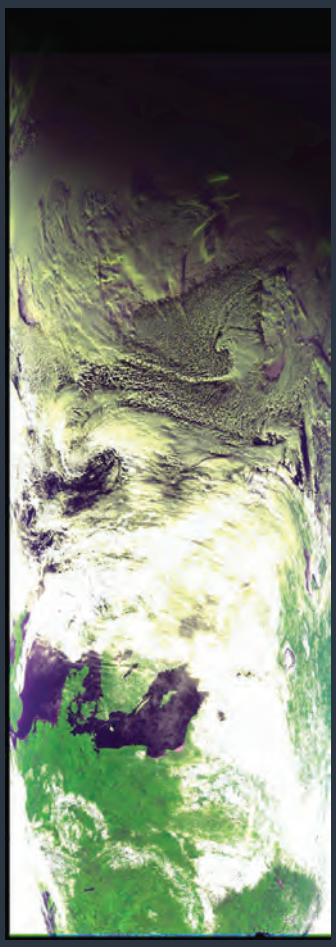
More than 25 years of satellite ground system experience is built into the design of the systems.

TrollSat in Antarctica
© Photo courtesy Kongsberg Satellite Services

NPP systems delivered

We have now completed the upgrade and delivery of 7 MEOS™ polar systems to customers in Europe and Asia to support NPP and also EOS, NOAA, FY3 and METOP.

This NPP picture of Norway, Sweden and Finland, February 29 2012 is made from VIIRS channels 5, 4 and 3 received by our NPP direct broadcast reference system in Tromsø.



Next NewsLetter

September 2013

KONGSBERG

Some new contracts

- ESA Sentinels DFEPs Front-End Processing System (DFEPs) to Sentinels Core Ground Stations - first four.
- ESA Telemetry Development of a telemetry receiver for the 26 GHz band. The receiver will represent the ground part of ESA's technology development to support data downlinks in this frequency band for future LEO (Low Earth Orbit) and geostationary missions.

For more details, please visit **www.spacetec.no**

MEOS™ Capture HRDFEP - Second Generation

Building on the success of the MEOS™ Capture HRDFEP, Kongsberg Spacetec is now developing the second generation of this complete solution for data capture and processing.

The second generation HRDFEP is being developed to take performance and functionality of the current version to even higher levels. Kongsberg Spacetec is also preparing for the migration from X-band to Ka-band data downlinks, giving special attention to Ka-band applications in the new HRDFEP: It is developed as part of the European General Support Technology Program (GSTP) , supported by the European Space Agency and the Norwegian Space Centre (NSC), to implement all requirements from ESA for the future Ka-band ground segment.

The HRDFEP G2 is being designed to provide robust, efficient data capture even at extremely high data rates. It maintains the existing HRDFEP's capabilities while adding functionality and improving performance:

- Full CCSDS AOS and SCCC standard compatibility
- Data rates from 200 kbps BPSK up to > 2 Gbps 64APSK
- Wide range of decoding options, including SCCC (Turbo), Low Density Parity Check (LDPC), Reed-Solomon, convolutional and Trellis codes
- Very high sensitivity, allowing operation at very low Signal to Noice Ratio (SNR)
- Variable Coding & Modulation (VCM) and Adaptive Coding & Modulation to provide Ka-band downlink robustness under varying atmospheric conditions
- Very low implementation losses (exact numbers will be released in a later issue)
- Space Link Extension (SLE) data transfer protocol support
- CCSDS File Delivery Protocol (CFDP) Grades 1-4 support
- Support for autonomous operations
- Data processing: Application Packet processing (Level 0), higher level processing (optional), real-time "quick look" data visualization
- User friendly, autonomous operations

Please refer to the current MEOS™ Capture HRDFEP datasheet for additional features.

MEOS™ Capture HRDFEP user interface

Kongsberg Spacetec AS
Prestvannveien 38 P.O.Box 6244 NO-9292 TROMSØ NORWAY Phone +47 77 66 08 00 Fax +47 77 65 58 59 e-mail: marketing@spacetec.no