Tesat-Spacecom EEE Parts Strategy in a Global Environment

Martin Veith

MEWS 2013
Overview

- Tesat-Spacecom Company Overview
- Tesat EEE Parts Supply: Challenges
- Tesat EEE Parts Approach
- Benefits for Parts Agent Customers
Tesat-Spacecom as a Global Equipment Supplier: Portfolio

### Key Figures

<table>
<thead>
<tr>
<th>Location</th>
<th>Backnang, Germany</th>
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<tbody>
<tr>
<td>Core Business</td>
<td>Spacecom Satellite Payload Equipment &amp; Subsystems</td>
</tr>
<tr>
<td>Employees 2012</td>
<td>1300</td>
</tr>
<tr>
<td>Turnover 2012</td>
<td>300 Mio Euro</td>
</tr>
<tr>
<td>Equipment Capacity</td>
<td>Up to 1500 Units per Year</td>
</tr>
<tr>
<td>Programs</td>
<td>Up to 75 per year</td>
</tr>
<tr>
<td>Homepage</td>
<td><a href="http://www.tesat.de">www.tesat.de</a></td>
</tr>
</tbody>
</table>

### Tesat Company Sectors

- Amplifier Products
- Passive Microwave Products
- Datalink Products
- Laser Products
- Communication Payloads
- Parts Agent
Tesat-Spacecom as a Global Equipment Supplier: Globalisation

**Europe**
- Thales Electron Devices
- Astrium
- ESA, DLR
- BMVg
- OHB System
- ThalesAlenia

**USA/Canada**
- Space Systems Loral
- NGAS
- Orbital
- Lockheed Martin
- MDA
- Boeing Space Systems
- JPL / NASA

**Asia/Russia**
- GASCOM
- CAST
- ISRO
- NTS, Sumitomo
- MELCO
- Synertech

**Tesat Equipment**
- MPM (EPC + LCAMP)

**Turnover by Region**

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EEE Parts Supply: Tesat Specific Challenges

International Customer Base

- Variety of Requirements and Standards (ESCC/MIL/JAXA,..)
- Standard design should be usable for all customers worldwide

High volume production = high volume parts need

- Capacity of suppliers limiting factor
- Problems have severe impact

Short lead time of equipment

- Parts needed „from stock“
- Quality levels to comply with all potential customers
Tesat EEE Parts Approach - Overview
Tesat EEE Parts Approach - Standardisation

Strictly limiting the number of different EEE components minimises technical risks as well as allows to efficiently organise the supply chain.

Tesat Preferred Parts List (TPPL):
The TPPL is a selection of EEE parts from QPL (ESCC, MIL QPL, ..) as well as not qualified parts tailored to Tesat equipment need. Equipment designs shall only use components listed in the Tesat PPL. Any use of parts not listed in PPL requires justification and release.

Internal Parts Control Board
Decides on use of parts not listed in PPL as well as the maintenance of the TPPL.
Tesat EEE Parts Approach – Sources Development

Single sources, sources with limited capacity or sources subject to restrictions are a major risk especially for the schedule.

Tesat actively develops and participates in the development of parts sources:

### International
- USA: Encourage MIL qualification, use parts in TPPL
- Japan, others:
  - Parts in TPPL
  - Encourage EPPL listing

### Europe
- Encourage and support qualifications
- ECI (European Components Initiative)

### Germany
- Encourage and support DLR qualifications
- Qualify parts from Tesat production
Tesat EEE Parts Approach – Sources Development

Examples:

- MosFETs: Japan, Europe
- Diodes: USA, Europe
- Capacitors, Resistors: USA, Europe, Asia
- ICs: Europe
- Crystal Oscillators: Europe
- Connectors: Europe

Schedule for introduction: 3 to 5 years!
Tesat EEE Parts Approach – Quality Management

Manufacturer Survey:
Extensive Audit of up to 70 key suppliers (together with Astrium)

Source Inspection
by Tesat Residents for key suppliers: shipped parts are ready to use at Tesat

Manufacturer Assessment:
For all suppliers based on delivery performance
Tesat EEE Parts Approach – Problem Management

- Alerts management system
- Astrium problem awareness system
- Dedicated „tiger teams“ for major issues
Tesat EEE Parts Approach – EEE Supply Chain

- Project Specific Procurement
- Advanced Procurement
- Supply Model
Tesat EEE Parts Approach – Advanced Procurement

Applied for all advance procurements

Tesat Internal EEE Procurement Level

Designed to fulfil as far as possible the EEE requirements of all customers

EEE Requirements Customer/Project 1

EEE Requirements Customer/Project 2

EEE Requirements Customer/Project X
Tesat EEE Parts Approach – EEE Supply Model

EEE Parts Supply Model

**SUPPLIER**

- Manufacturing, Screening & Testing at Supplier
- Buffer Stock at Supplier
  - X months Supply

**TESAT-SPACECOM**

- Buffer Stock at Tesat
  - Y months Supply
  - Use in Tesat Equipment

- Ordering:
  - every tbd months
- Delivery:
  - every tbd months
- FSI Inspection:
  - every tbd months
- Reporting:
  - monthly

- Quantity in manufacturing & buffer stock at the supplier covered by open orders from Tesat

- QCI Testing

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<tr>
<th>Assembly</th>
<th>Screening</th>
<th>Buffer Stocks (Supplier)</th>
<th>Buffer Stocks (Tesat)</th>
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<tbody>
<tr>
<td>Pre-Cap</td>
<td>FSI &amp; DPA</td>
<td></td>
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Benefit for Parts Agent Customers

- Efficient and on time procurement
- Attractive schedule and commercial conditions
- Internal Standardisation
- EEE Parts Supply Chain
- EEE sources development
- Handling of problems and alerts
- Quality management
- Risk minimisation
- Alternative solutions
- Efficient handling and quality assurance

Efficient and on time procurement

Attractive schedule and commercial conditions

Internal Standardisation

EEE Parts Supply Chain

EEE sources development

Handling of problems and alerts

Quality management

Risk minimisation

Alternative solutions

Efficient handling and quality assurance
Thank you for your attention!

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