How to renew on-board sensors and video surveillance-digital signage devices on the Moscow Metro through modular solutions
AT A GLANCE

**WHO**
Leading company in development, production and integration of electronic systems for specialized purposes Metro and Railways

**WHERE**
Russian Federation

**WHAT**
Finding a modular solution to fulfill several requirements by the customer for his newest Metro Passenger Information System for the Moscow Metro

**WHY SECO**
SECO was able to quickly supply both ARM and X86 solutions, built according to Railway Regulations, including LINUX BSP

**WHEN**
from Q3 2016
Customer’s background

WHO
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WHERE
Russian Federation
Customer’s background

- Digital information and AD systems for passengers
- Emergency communication systems
- Train drivers control panels
- Specialized bench equipment

WHO
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WHERE
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Finding a modular solution to fulfill several requirements by the customer for his newest Metro Passenger Information System for the Moscow Metro.

**WHAT**

A modular solution that should combine low power ARM and x86 with good graphics performance at one platform.

**RAILWAY REGULATIONS COMPLIANCE**

Modules had to be produced with PCB and conformal coating with possibility to work in Harsh Railway environment (-40°C ÷ +85°C temp. range) and applied according to railway regulations.

**LONG TERM AVAILABILITY**

The customer had to find standard modular solutions that guarantee 10+ years of lifetime and 30+ years of maintainability of the produced Metro Passengers information and Security System.

**COST EFFECTIVENESS**

The customer had to find standard modular solutions that guarantee 10+ years of lifetime and 30+ years of maintainability of the produced Metro Passengers information and Security System.
WHY SECO

SECO was able to quickly supply both ARM and X86 Qseven® modules, including LINUX BSP.

SECO value proposition
Qseven® & µQseven standard modules

Qseven® based on Intel® Atom™ E3800 and Celeron® families SoC, cost-effective and mobile-oriented version with eMMC and Camera Interface

µQseven with NXP i.MX6 Processor

Mobile-oriented with eMMC and Camera Interface

- eMMC drive on-board
- Available in Industrial temperature range
- Low power solution
- Camera Interface
- Integrated 64-bit memory controller

Optimal balance of performance and size

- Based on the ARM® Cortex™-A9 i.MX6 SoC, a fully scalable solution from a high performance Quad Core CPU to an energy-efficient and cost-effective Solo Core solution
- OpenGL / ES 2.0 3D Graphics and up to 3 independent displays
- A flexible solution, suitable for high end, multi display solutions as well as energy-saving smart portable devices
SECO value proposition

- PCB ISOLA PCL370HR
  Isola offers certified laminate systems according to standards set forth by the International Union of Railways and its member organizations.

- Conformal coating Novec 3M EGC-1700

WHY SECO

SECO was able to quickly supply both ARM and X86 Qseven® modules, according to railway regulations.

Isola 370HR
High Performance Laminate and Prepreg

PCB ISOLA PCL370HR
Isola offers certified laminate systems according to standards set forth by the International Union of Railways and its member organizations.

Conformal coating Novec 3M EGC-1700
**End product highlights**

**WHY SECO**
Customer equipped the new Moscow Train with several devices based on SECO modules for different purposes. Some of them are related with information system and data exchange between all cars and head car and can’t be seen, but other ones you can see everyday.

**Information Ticker**

**Information Table** for a News line and AD

**Interactive Navigation System with PCAP**
that help the passengers to find the shortest root to destination in the biggest Metro of Europe
Customer equipped the new Moscow Train with several devices based on SECO modules for different purposes. Some of them are related with information system and data exchange between all cars and head car and can’t be seen, but other ones you can see everyday.
when
from Q3 2016

resuming solution implementation

- Analysis of SECO Qseven product range
- Extremely fast samples supply
- Analysis of feedback and definition of end configuration in close contact with customer
- Prototyping (by Customer) and fast Pilot Batch
- Validation (by Customer)
- Mass Production

from Q3 2016
ABOUT SECO
SECO GROUP: a technology REFERENCE PARTNER

- **Turnover**: 50+ mil.
- **People**: 250+
- **Branch offices**: 6
- **39 years of experience in the embedded field**
- **In-house production**
- **Ability to anticipate the market with the most innovative solutions**
- **Worldwide presence**
- **Ability to adapt to continuous changes dictated by technological progress**

**Key Points**:
- SECO GROUP is a technology REFERENCE PARTNER.
- They have a worldwide presence.
- They have the ability to anticipate the market with the most innovative solutions.
- They have over 39 years of experience in the embedded field.
- They have 50+ million in turnover and 250+ people.
- They have 6 branch offices.
Know-How
Made in Italy

Design
Extensive experience in Micro Computer design, both Hardware and Software-wise

Manufacturing
In-house manufacturing. Lean Manufacturing employed to reduce waste and accelerate the time to market

Systems
Design and integration of Micro Computers with video interfaces and mechanical design

Standard Products
- Modular Solutions
  - Qseven®
  - COM Express™
  - SMARC
  - ETX®/XTX
- Single Board Computers
  - Embedded NUC™
  - Pico-ITX

Semi-Custom Solutions
- Custom Carrier Boards + Modular Solutions
- Modular HMI & Boxed Solutions

Full-Custom Solutions
End-to-End “Tailored” Solutions:
Full support from the concept development to the complete system solution
APPLICATION DOMAINS

IIoT/M2M  IoT  Visual Computing
Automotive  Robotics  Avionics & drones
Domotics  POS/Vending/ Digital Signage  Infotainment Systems
Biomedical/ Medical Devices  Industrial Automation

SECO boards are embedded in many everyday objects around us...

Ultrasound  Electrical charging station
Infotainment System  CAT
Tapis roulant  Ticket-stamping machine

Among the customers: Barco, Cimbali, Enel, Esaote, Haas, Instrumentation Laboratory, L3, System, Technogym, Vimar
SECO operates worldwide with offices in Germany, USA, India and Taiwan and relies on an international distribution network of local and regional partners such as Computer Controls.

Offering comprehensive products and services portfolio tailored to needs of each market, Computers Controls is a competent partner directly on site for Poland, Switzerland and the whole East Europe.
Thank you for your attention