



Company Presentation – Repair Center
March 2025

Gruppo FOS

Gruppo FOS is an innovative company founded in 1999 in Genoa, with strong roots in Italy and a broad international perspective.

For over 20 years operates in the Information and Communication Technology sector.

Gruppo FOS is active in the design, development and marketing of **digital services and solutions for data management and protection that integrate software applications, hardware devices and network infrastructures.**



November 26th, 2019

FOS S.p.A. joined the «EGM Market» (Stock Exchange for SME)



The company is an innovative SME regularly registered on the business register: <http://startup.registroimprese.it>



The financial statement of the company is audited



Quality System UNI EN ISO 9001 Certification
ISO/IEC 27001 Certification (FOS S.p.A and T&G S.r.l.)



Associated with the Federation of Italian Companies for Aerospace, Defense and Security



EXPECTED PRO-FORMA
PRODUCTION VALUE:

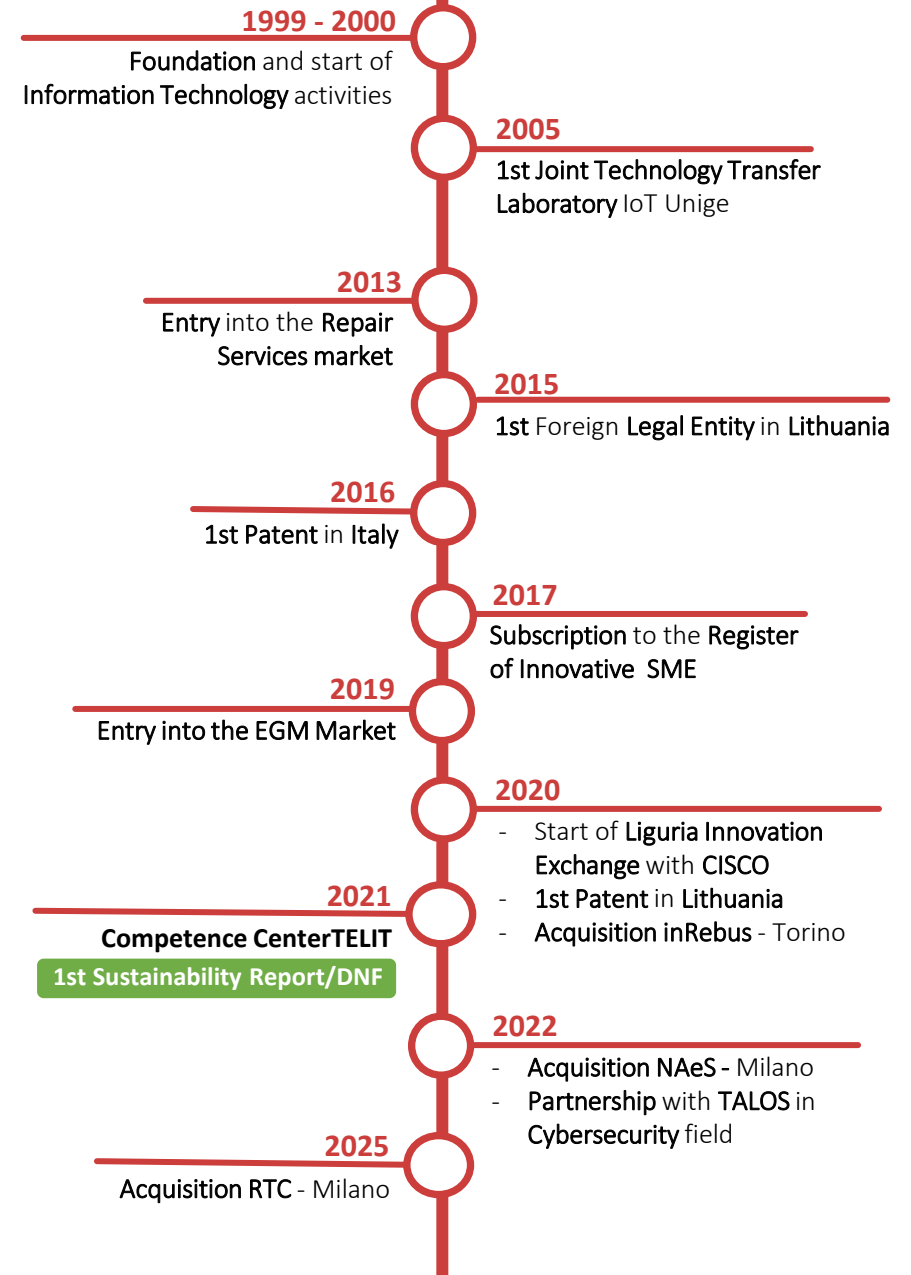
35 Millions of Euro



EMPLOYEES :

366

History and Organization Chart



Technology Sectors and Business Areas

INFORMATION TECHNOLOGY



- Development and maintenance of Applications
- Technological Skills
- Cyber Security
- Cloud computing
- Datacenter Orchestration & consolidation
- Digital Workspace Solutions

COMMUNICATION TECHNOLOGY



- Electronic Design
- Electronic Maintenance
- Repair Center & Commissioning

ENGINEERING & TECHNOLOGY TRANSFER



- Electronic design HW and SW
- IOT Solutions Virtua
- Reality and Augmented Reality
- Monitoring system
- Artificial Intelligence
- Engineering

AUTOMATION & SOLUTION



- HMI / SCADA
- Industrial Automation
- Asset Management

DIGITAL LEARNING



- Digital Academy
- Custom LMS
- Company Training Projects

DATA CENTER



- Networking and Unified Communication
- Passive Optical LAN
- Intelligent Building

IT MANAGEMENT



- IT infrastructure management
- Help desk e H24 support
- Consulting and Design
- IT Services Provision



COMMUNICATION TECHNOLOGY

GRUPPO FOS
soluzioni ad alta tecnologia

T&G



HISTORY:

The Repair Center is located in San Marco Evangelista – Caserta (20 Km far from Naples Airport) site where repair takes place. Repair activities are in place since 2013.

DIMENSIONS:

The Repair Center is large 1000 square meter, while the Office space is large 250 square meter.

REPAIR VOLUMES:

The Repair Center is sized to handle about 15.000 repairs a year. This type of activity, active since 2013, is supported by integrated logistics services.



CASERTA





TELECOMMUNICATIONS:

Core network (fixed, mobile), **Transport** network (wireline & wireless, electrical e optical) and **Access** network (wireline & wireless).

- **Core network:**
 - BSC;
 - RNC;
 - etc.
- **Transport network:**
 - *Wireline*: SDH, WDM, GigaEthernet, etc.
 - *Wireless*: Microwave.
- **Access network** (wireline e wireless):
 - *Wireline*: DSLAM, PDH Muxes, etc.
 - *Wireless*: Radio Base Station.
- **Power:**
 - *Energy Systems, Power Systems, DC/DC converters.*





RAILWAYS:

In the **Railways** sector, the Repair Center has the repair capacity in all relevant areas, in particular:

- Transmission equipment (copper/fiber/radio);
- Data processing equipment (mux, WS, PC, supervision & alarms systems);
- Routers/modems;
- Energy Systems.



BIOMEDICAL:

The Repair Center, in the **Biomedical** sector, has enlarged its repair capabilities, moving from peripheral devices (such as workstations, printers, storages, etc.) to the ones making part the *core* of the main diagnostic equipment (such as Ultrasounds and Magnetic Resonance Imaging systems).

In such field, the Repair Center has the competences and the tools to repair, sanitise and refurbish both electronic cards and mechanical parts constituting the core of the biomedical products, according to both functional and aesthetical quality standards.



SERVICES/GAMING:

In the **Services/Gaming** area, the Repair Center manages since several years the Maintenance of an installed base of approx. 11000 terminals for one of the major Players at national level.





SPECIAL CAPABILITIES:

The Repair Center is specialised in repairing the **100% of «obsolete» or «out-of-production» Spare Parts**, thanks its **Supply Chain capability** to make available all the necessary components; obviously, 100% repair of «obsolete» or «out-of-production» Spare Parts does not include Beyond Economical Repair items.

The company holds the ISO 9001 Certificate.

Supply of “Refurbished” equipment.

ADDED-VALUE CAPABILITIES:

The Repair Center guarantees:

- Capability to cope with volume increase and/or new technologies;
- Capability to handle technologies outside Telecommunication arena;
- Commissioning & De-commissioning of complete equipment;
- On-site intervention of specialized engineers;
- 3D printer for plastic items;
- 100% of safety procedures and tools.





T&G Repair Center has been chosen as **"best practice"** among those presented by SIIT (Ligurian Technological District on Integrated Intelligent Systems) for Italy as part of the European project **SMART CIRCUIT**, whose objective is to **promote the adoption of Circular Economy** in the of Central Europe manufacturing.

T&G is also virtuous in terms of the concept of environmental sustainability since, by significantly extending the equipment life cycle, the environmental impact is reduced and the disposal of this type of waste (e-waste) is mitigated.







- **Gruppo FOS (T&G)** provides Standard, Fast and Swap Repair services, by its Laboratory and the Swap Warehouse;
- **STANDARD REPAIR:** The average delivery time of the repairs takes place in a range of:
 - 20 calendar days for parts without BGA.
 - 25/30 calendar days for parts with BGA.
- **FAST REPAIR:** The average delivery time of the repairs takes place in a range of 3 -10 calendar days;
- **SWAP REPAIR:** The average delivery time of the repairs takes place in a range of 2 - 4 calendar days;
- **REVERSE ENGINEERING** of faulty spare parts (even in phase-out).

Repair Services Supply Chain



Test Bench
Design



Purchasing
Office



Assembly and
Repair



SWAP and Fast
Repair



Monitoring of Restored
Components



Packaging
and Shipping



SWAP & SPARE PARTS WAREHOUSE:

- Alu 16xx and 1850 TSS;
- Lucent 1675 & OLS;
- Ericsson – Marconi.
- ADVA

TOTAL OF SPARE PARTS:

8.500

The Company maintains a substantial inventory of spare parts to manage all repair business and ensure fast turnaround of boards.





On Time SLA: Average Items repaired on Time : $\geq 98\%$



TAT (Turn Around Time):

- **STANDARD REPAIR:** The average delivery time of the repairs takes place in a range of:
 - 20 calendar days for parts without BGA.
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- **FAST REPAIR:** The average delivery time of the repairs takes place in a range of 3 -10 calendar days;
- **SWAP REPAIR:** The average delivery time of the repairs takes place in a range of 2 - 4 calendar days;



Items not repaired in % on total items : $\leq 3\%$





For each request of repair, the **Repair Center** industrial process imposes to record:

1. Customer, Purchase Order, Customer shipping document («DDT»), technology, faulty spare part receiving date, Customer site where the faulty spare part is arriving from, condition of receiving packaging;
2. Part Number, Serial Number, Customer RMA, T&G RMA, T&G RMA creation date;
3. Description of spare part fault and solution;
4. Shipping date of the repaired (or new) spare part, site where the repaired spare part has to be shipped to, courier, tracking number, T&G shipping document («DDT»).

Such a structured approach guarantees the **traceability in each part of the process**.





The supply chain process is supported by an ad-hoc software platform able to handle all activities from material incoming to delivery.

This platform allows to monitor the processes and activities carried out by assuring the traceability of materials, measuring throughput time, generating Test Report, measuring service levels to provide our Customers with the required quality levels and compliance with delivery time



1. Test Bench Design



2. Purchasing Office



3. Assembly and Repair



4. SWAP and Fast Repair



5. Monitoring of Restored Components



6. Packaging and Shipping



CUSTOMER	COUNTRY	VENDOR	TECHNOLOGY	SLA	PRODUCT
WindTre	Italy	ALU	Wireline Transport (SDH, WDM, GE)	Standard Repair, Swap&Repair	ALU SDH 1641, 1651, 1661, 1650, 1660, 1662, 1670, 1678. 1850 TSS 320, 160, 100, 40, 5, 320H, 160H.
WindTre	Italy	ALU	Wireline Transport (SDH, WDM, GE)	Standard Repair, Swap&Repair	ALU WDM 1686, 1626, 1696, 1830 PSS 32.
WindTre	Italy	Ericsson-Marconi	Fixed Access (ULL, mux PDH)	Standard Repair, Swap&Repair	Marconi/Ericsson AXH & EDA (all families).
WindTre	Italy	Ericsson-Marconi	Wireline Transport (SDH, WDM, GE)	Standard Repair, Swap&Repair	Marconi/Ericsson MSH (all families), OMS (all families), SMA (all families).
WindTre	Italy	Ericsson-Marconi	Wireline Transport (SDH, WDM, GE)	Standard Repair, Swap&Repair	Marconi/Ericsson MHL3000.
WindTre	Italy	Nokia	Fixed Access (ULL, mux PDH)	Standard Repair	Nokia ISAM 73XX, Eksos e Dynanet.
WindTre	Italy	Nokia	Core network (fixed, mobile, data)	Standard Repair	Nokia Flexi BSC & RNC 2600 .
WindTre	Italy	SIEMENS-ITALTEL	Core network (fixed, mobile, data)	Standard Repair	Many models.
WindTre	Italy	TELLABS	Core network (fixed, mobile, data)	Standard Repair	Many models.
WindTre	Italy	ALU	Wireline Transport (SDH, WDM, GE)	Standard Repair, Swap&Repair	SDH 1664, WDM 1686WM-T, WDM 1696WM-O.
WindTre	Italy	ALU	(Mobile Access (BTS, node B)	Standard Repair	BSC, COMBINER900, MFS-A9130.
WindTre	Italy	ALU	Fixed Access (ULL, mux PDH)	Standard Repair, Swap&Repair	5450ISC/5420CTS, 8650SDM, ACME, ACME4500, ASAM, CONVEDIA, CROSS, ISAM, ISAM V, ISAM7360FX, LITESPAN ATM, LITESPAN IP, MGC8.
WindTre	Italy	ALU	Core network (fixed, mobile, data)	Standard Repair, Swap&Repair	S12/IRSU.
WindTre	Italy	Ericsson	(Mobile Access (BTS, node B)	Standard Repair	RBS2000.
WindTre	Italy	Ericsson	Core network (fixed, mobile, data)	Standard Repair	APT, APZ, AXE, CGSN R4 (G) MKIV, IOG11, IOG20, MSC-S R13.2 (CN-S V6.1).
WindTre	Italy	Nokia	(Mobile Access (BTS, node B)	Standard Repair	FLEXI2G, FLEXI3G.
WindTre	Italy	SIEMENS-ITALTEL	(Mobile Access (BTS, node B)	Standard Repair	BS241, BS82, NodeB.
WindTre	Italy	Nortel	Core network (fixed, mobile, data)	Swap&Repair	ATM/FR/X.25, PP15K, PP7K.
WindTre	Italy	HUAWEI	ULL	Standard Repair	
WindTre	Italy	HUAWEI	TRANSMISSION	Standard Repair	
WindTre	Italy	SEVERAL OEM (see PRODUCT)	Power	Standard Repair	3W POWER, ABLY, ADVANCED DEVICES, AEG POWER SOLUTIONS, ALCATEL, ASCOM ITALIA S.P.A., B.T.G. SPA, BRAGA MORO SIST. EN., CONVERT ITALIA SPA, DELTA ELETTRONICS, ELTEK, Emerson, Ericsson, ICET SPA, LAMBDA ENERGY SYSTEM, Nokia Siemens, OMICRON INDUSTRIALE, OSAE, Power-One, PROMEC ELETTRONICA, SAFT PW SYSTEMS SPA, SICON SRL, SIEMENS-ITALTEL, TECNOTRANS, TELETECNICA.
WindTre	Italy	ALU	Wireline Transport (ATM/IP) & Fixed Access (ULL, mux PDH)	Standard Repair	ALU Litespan 1540 family (ATM/IP) & ALU ISAM 73XX.
FASTWEB	Italy	Ericsson-Marconi	Fixed Access	Standard Repair	EDA2510-2530/AXH
FASTWEB	Italy	ADTRAN	Fixed Access	Standard Repair	HIX 5635, HIX 5300
FASTWEB	Italy	Ericsson-Marconi	Fixed Transport (SDH)	Standard Repair	OMSxx, MSH11CP
FASTWEB	Italy	ADVA	Fixed Transport (WDM)	Standard Repair	FSP 3000 R4, FSP 2000, FSP 1500
FASTWEB	Italy	NOKIA Alcatel	Fixed Access	Standard Repair	Alcatel ISAM 7302
FASTWEB	Italy	NOKIA Alcatel	Fixed Transport (SDH)	Standard Repair	OMSN 16xx (many models).
FASTWEB	Italy	Infinera (ex-Siemens)	Fixed Transport (WDM)	Standard Repair	HIT 7500 / 7300
FASTWEB	Italy	BRAGAMORO, SAFT	Power	Standard Repair	Many models.
VODAFONE ITALY	Italy	Ericsson-Marconi	Fixed Access	Standard Repair	EDA2510/AXH
VODAFONE ITALY	Italy	Ericsson-Marconi	Fixed Transport (SDH)	Standard Repair	MSHxx/SMAxx Many models.
Vodafone Italy through Sirti	Italy	Nokia, ALU	Fixed Access (ULL, mux PDH)	Standard Repair	Nokia EKSOs, ALU ISAM 73XX.
RETELIT (IRIDEOS)	Italy	Ericsson-Marconi	Fixed Transport (SDH)	Standard Repair	MSHxx/OMSxx Many models
RETELIT (IRIDEOS)	Italy	Ericsson-Marconi	Fixed Transport (WDM)	Standard Repair	SPO1410
RETELIT (IRIDEOS)	Italy	ALCATEL	Fixed Transport (SDH)	Standard Repair	Alcatel 16xx
RETELIT (IRIDEOS)	Italy	NORTEL	Fixed Transport (SDH)	Standard Repair	TN-16X, Optera family
RETELIT (IRIDEOS)	Italy	ALCATEL	Microwave	Standard Repair	9400 family, 9600 family
RETELIT (IRIDEOS)	Italy	SAF	Microwave	Standard Repair	Many models.
FIBERCOP (TELECOM ITALIA / TIM)	Italy	NOKIA Alcatel	Fixed ACCESS	Standard Repair	ISAM 7363 / 7356 / 7360 / 7367
FIBERCOP (TELECOM ITALIA / TIM)	Italy	NOKIA Alcatel	Fixed TRANSPORT (DWDM)	Standard Repair	1830 PSS, 1626LM, 1621 SLE
FIBERCOP (TELECOM ITALIA / TIM)	Italy	NOKIA Alcatel	Fixed TRANSPORT (SDH)	Standard Repair	1670SM
FIBERCOP (TELECOM ITALIA / TIM)	Italy	NOKIA Alcatel	Fixed TRANSPORT (MICROWAVE)	Standard Repair	MPR 9500



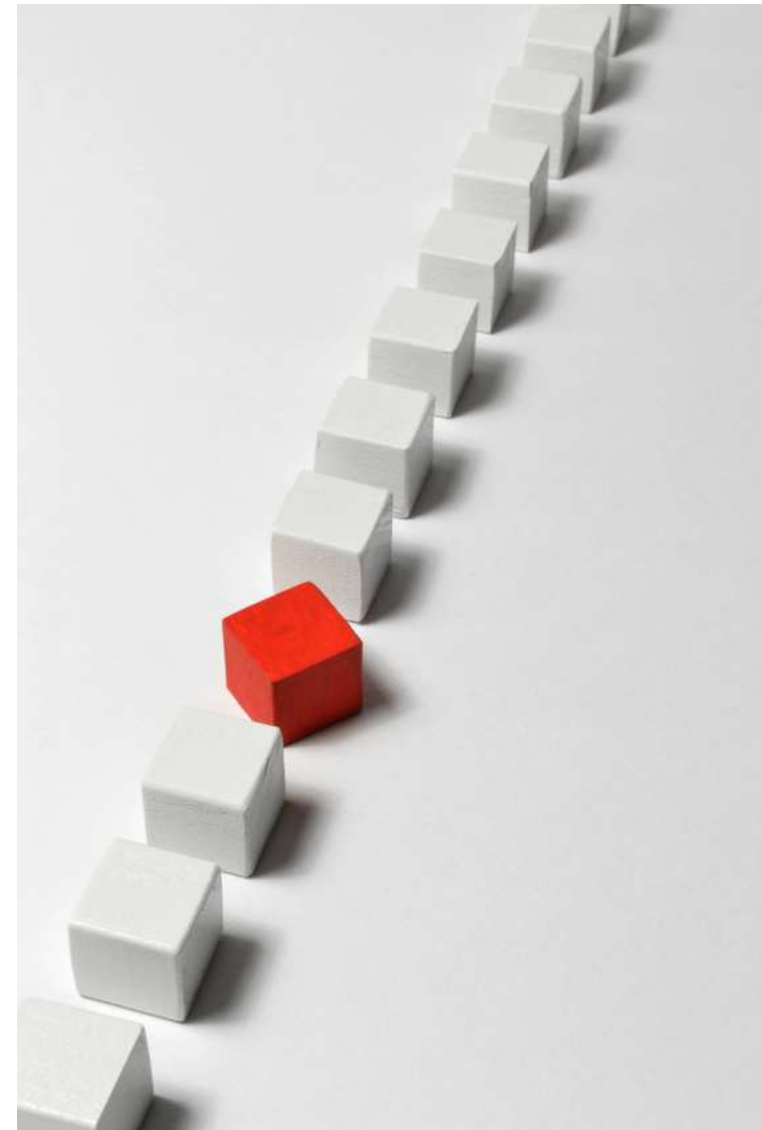
CUSTOMER	COUNTRY	VENDOR	TECHNOLOGY	SLA	PRODUCT
Various Partners	Italy	ALU	Microwave	Standard Repair	MW 9500 family, MW 9600 family.
Various Partners	Italy	Ericsson	Microwave	Standard Repair	Minilink family.
Various Partners	Germany	Ericsson-Marconi	Wireline Transport (SDH, WDM, GE)	Standard Repair	Marconi/Ericsson PLTx family.
Various Partners	Germany	Ericsson-Marconi	Wireline Transport (SDH, WDM, GE)	Standard Repair	Marconi/Ericsson SPOxx family.
Various Partners	UK	Nokia	(Mobile Access (BTS, node B)	Standard Repair	Flexi Lite BTS 2100, Flexi WCDMA
Various Partners	UK	CORNING	(Mobile Access (BTS, node B)	Standard Repair	Das Mobile Access 2000 System
Various Partners	Germany	HUAWEI	Fixed Access (ULL, mux PDH)	Standard Repair	HONET UA5000 DSLAM
Various Partners	Germany	Ericsson-Marconi	Fixed Access (ULL, mux PDH)	Standard Repair	DMP (UA ATM)
Various Partners	Germany	KEYMILE	Fixed Access (ULL, mux PDH)	Standard Repair	DSLAM
Various Partners	UK	Ericsson	Fixed Transport (SDH)	Standard Repair	OMS870 / AX9200
Telecom Italia Sparkle through Huawei	International Network	ALU	Wireline Transport (SDH, WDM, GE)	Standard Repair	Lucent SDH 1675 Extended Lambda, ALU WDM 1830 PSS 32, ALU SDH 1678, Lucent WDM OLS400G.
British Telekom (BT) through Brokers.	UK	Ericsson-Marconi	Wireline Transport (SDH, WDM, GE)	Standard Repair	Marconi/Ericsson MHL3000.
British Telekom (BT) through Brokers.	UK	Ericsson	GSM	Standard Repair	Ericsson KDUxxx.
Deutsche Telekom (DT) through Brokers.	Germany	Ericsson-Marconi	Wireline Transport (SDH, WDM, GE)	Standard Repair	Marconi/Ericsson MHL3000.
Deutsche Telekom (DT) through Brokers.	Germany	Ericsson	GSM	Standard Repair	Ericsson KDUxxx.
Telia	Lithuania	ALU	Fixed Access (ULL, mux PDH)	Standard Repair	Router & Switch (7450 & 7750).
Telia	Lithuania	Huawei	ALL technologies	Standard Repair	Any model.
Telia	Lithuania	Ericsson	ALL technologies	Standard Repair	Any model.
Nokia through Cordon	France	ALU	Wireline Transport (SDH, WDM, GE)	Standard Repair	1850 TSS (all families).
Telefonica	Spain	ALU	Wireline Transport (SDH, WDM, GE)	Standard Repair	ALU SDH 1660 & ALU WDM 1626.
Telefonica	Spain	LUCENT	Wireline Transport (SDH, WDM, GE)	Standard Repair	ADM16/1
Telefonica	Spain	Ericsson Marconi	Wireline Transport (SDH, WDM, GE)	Standard Repair	Marconi OMS1664
ERICSSON	IRELAND	Infinera/Coriant/Tellabs	Wireline Transport (SDH, WDM, GE)	Standard Repair	Tellabs Smart Edge 8600 Family.
ERICSSON	Greece	Infinera/Coriant/Tellabs	Wireline Transport (SDH, WDM, GE)	Standard Repair	Tellabs Smart Edge 8600 Family.
BALKANTEL	Bulgaria	ALCATEL	Microwave	Standard Repair	Many models.
CTDI	Gemany, Spain, UK, Poland, Italy	HUAWEI, ERICSSON, ADVA, NOKIA/ALCATEL	Transport, Microwave, Fixed Access	Standard Repair	Ericsson Minilink, ADVA WDM, Huawei (OPTX 6100, OPTX OSN 8800, OPTX OSN 1900, etc.)
GSM Systems	AFRICA	ERICSSON	Core network (fixed, mobile, data)	Standard Repair	BSC
HITACHI RAIL (ex Ansaldo STS)	Italy	Cabur, Delta, Talis, Emerson, ecc.	Power for Railway Application	Standard Repair	Many models.
HITACHI RAIL (ex Ansaldo STS)	Italy	CISCO / RAD	Routers / Modem for Railway Application	Standard Repair	Many models.
HITACHI RAIL (ex Ansaldo STS)	Italy	IT	Workstation (Windows/Linux) for Railway Application	Standard Repair	Many models.
Rete Ferroviaria Italiana - Liguria	Italy	Alstom, Selta, TTC-Marconi, Cisco, RAD	Railway Application	Standard Repair	Many models.
Rete Ferroviaria Italiana - Piemonte	Italy	Siemens Dispatcher	Railway Application	Standard Repair	Many models.
Rete Ferroviaria Italiana - Toscana	Italy	Siemens FMUX, VMS-SAT, SELTA, IT (WS, PC)	Railway Application	Standard Repair	Many models.
Rete Ferroviaria Italiana - Emilia Romagna	Italy	Andrew/Mikom, Selta, Alstom	Railway Application	Standard Repair	Many models.
Rete Ferroviaria Italiana - Sicilia	Italy	ZEUS, Alstom, Telefin, ecc.	Railway Application	Standard Repair	Many models.
Rete Ferroviaria Italiana - Marche/Abruzzo	Italy	Andrew/Mikom, CISCO, Zeus/Systent, POWER, IT (WS, PC)	Railway Application	Standard Repair	Many models.
MERMECSTE	Italy	ACC System	Railway Application	Standard Repair	Many models.
ESAOTE	Italy		Biomedical products	Standard Repair	Many models.
LEONARDO (Business Unit Automation)	Italy		Postal Automation products	Standard Repair	Electronic boards for Postal Automation products.
RAI Way	Italy	Delta	Power	Standard Repair	Many models.
General Electric	Italy	IT	Workstations (Windows)	Standard Repair	Many models.
Eitowers	Italy	IT	Workstations (Windows)	Standard Repair	Many models.
"GAMING COMPANY"	Italy		"GAMING" TERMINALS	Standard Repair	

Why Gruppo FOS for Repair Services?



- Worldwide Purchase agreement for components;
- R&D services (cost reduction activities, obsolescence, etc.);
- Test Bench Design competence;
- SWAP and Fast Repair Handling;
- Tracking of repair Items on dedicated platform;
- On Time SLA;
- Logistic Services integrated with Repair;
- High flexibility to cope with fluctuating repair volumes and technologies;

**TOP PERFORMANCE AND QUALITY AT THE
LOWEST COST**





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