



25th
birthday is coming



TELECOM CASE STUDIES EXPERIENCE COUNTS

3G and 4G Wireless Network

SOLUTION: Small and highly efficient outdoor power supply system with forced ventilation

THE CASE

The biggest mobile operator in Bulgaria, owned by Telecom Austria Group, aimed to improve its 3G network coverage and to install 4G equipment for test purposes. During the first phase of the project around 25 sites had to be deployed. 3G and 4G equipment was delivered from Ericsson.

THE CHALLENGE

The operator' goal was to improve and to tighten the network coverage. Different site locations with the respective mounting options had to be considered – walls, towers, poles etc. An outdoor power cabinet solution that allows fast and easy “anywhere installation” was required. Another important point was the cost efficiency.

THE SOLUTION

The IPS engineering team developed an IP54 outdoor cabinet with special mounting kit which allows all possible options for mounting and installation – on walls, towers poles etc. The outdoor solution offers highest cost efficiency, small dimensions and light weight. High temperature batteries operating up to +55°C were used. Forced ventilation guaranteed max $\Delta t \leq 5^\circ\text{C}$. For the cold period an integrated heater, developed from IPS, secures the perfect operating conditions in the inside space of the cabinet.

THE IPS CONFIGURATION

IPS LiRack cabinet with fans and heater :: DC power system R-Force ML3000 :: Customized PDU :: Battery 48V/80Ah :: 8U free space

THE RESULTS

138 sites have been installed since the project started. The systems behavior was perfect. The system design did allow “anywhere installation” and contributed to a fast and low cost network coverage improvement and new deployment.



WiMAX + LTE Wireless Network

SOLUTION: Outdoor power supply system with A/C

THE CASE

The wireless operator's goal was to cover the largest cities in Bulgaria with the first and fastest WiMAX network in Europe and later to extend it with LTE. During the first phase of the project around 100 sites had to be deployed. WiMAX equipment was delivered from Samsung, LTE equipment – from NSN.

THE CHALLENGE

Bulgaria is a country with extreme air temperatures during the summer and winter period reaching +44°C and - 25°C and frequent power outages. The operator was looking for highly reliable modular outdoor solution allowing fast and easy installation as well as securing safe environment for the battery and telecom equipment with constant temperature of 22°C.

THE SOLUTION

A special modular IP65 outdoor cabinet was developed. IPS engineers succeeded to design an air conditioning module with cooling and heating function operating from -30°C up to +55°C. The modular chassis of the A/C module allows his mounting after the main cabinet body installation on site. An extra thermal isolation between the double walls increases additionally the level of security and protection in the inside of the IPS outdoor power cabinet.

THE IPS CONFIGURATION

IPS CoolRack cabinet with A/C :: DC power system R-Force ML4000 :: Customized PDU :: Battery 48V/150Ah :: 10U free space

THE RESULTS

546 sites have been installed since the project started. The lifetime of the batteries is expected to exceed twice the period requested initially by the client. Upgrades and maintenance is done fast and easy due to the front and rear door cabinet access.



Off-Grid LTE Wireless Network

SOLUTION: Hybrid Off-Grid power supply system for remote sites in harsh environment

THE CASE

A new wireless operator in Nigeria, founded from experienced telecommunication engineers, aimed to cover a big territory with an ultra-fast LTE network for data services and on a later basis to provide voice services as well. During the first test phase of the project 12 sites had to be installed.

THE CHALLENGE

All of the site locations are in a rural area and no electrification was available. The most important issue for the investor was the best OPEX optimization. Lowest possible maintenance cost was a must. On the other hand a challenge was the high ambient temperature in combination with an extremely high relative humidity (typical between 95% and 98%).

THE SOLUTION

An IP55 outdoor cabinet with double walls and special anti-corrosive coating was developed and manufactured. High temperature, multicycle batteries, especially developed for PV applications were installed. Forced ventilation guaranteed $\max \Delta t \leq 7^{\circ}\text{C}$. A 4 kWp PV system with polycrystalline modules were installed. The IPS site configuration was designed to secure 48h power autonomy due to the correct scaling of the PV system. A small 6 kVA diesel GenSet was installed on site. It is automatically controlled from the MCU of the IPS modular MMPT power system R-Force green. In case there is not enough sunshine in two following days and the battery is empty the diesel GenSet is started as a back-up to power the equipment and to charge the batteries.

THE IPS CONFIGURATION

IPS HiRack double cabinet:: DC power system R-Force green ML12000 :: PV system 4 kWp :: Battery 48V/380Ah :: 12U free space

THE RESULTS

39 sites have been installed since the project started. The LTE sites show great behavior and autonomy. OPEX costs are nearly zero.



Telecom & Fire Recognition System :: Hybrid Off-Grid :: PV + Grid

SOLUTION: Off-Grid power supply system for automatic forest fire recognition + telecom system

THE CASE

An automatic system for fire recognition, video surveillance and communication in the forest had to be powered only by PV energy.

THE CHALLENGE

The system had to be built in a green protected forest area. No construction works for power lines or use of diesel generators were allowed. The tower was equipped with thermo vision cameras, motorized HD cameras, communication antennas, security systems and other electrical equipment. All the electrical equipment was needed to be used 24/7/365, non-stop.

THE SOLUTION

IPS designed and built the integrated system and installed an off-grid outdoor system Exeron CM. During the day the generated power from the PV modules is used for powering the load and charging the batteries. Evenings or at days without enough sunshine the load is powered from the energy stored in the battery. The battery was designed for a long back-up time.

THE IPS CONFIGURATION

Exeron CM system :: 2 x 2 kWp MPPT charge controllers SML2000 :: PV system 4 kWp polycrystalline :: 500 VA max. output power, 1-phase :: Battery 48V/190Ah

THE RESULTS

The system works stable during all seasons as expected.



Data Center

SOLUTION: DC back-up power solution for data center

THE CASE

The biggest mobile and fixed line telecommunication operator in Serbia started a project for a new local data center. IPS has been contracted for the delivery and installation of the DC back-up power system.

THE SOLUTION

IPS designed and delivered the modular DC power system R-Force CML46000. The rectifier system had to supply 32 kW high priority load and to secure a 100% back-up power for 2 hours in case of power outage.

THE CONFIGURATION

DC power system R-Force CML46000: 19" indoor cabinet, 23 x ML2000 rectifier modules (23 x 2000 W), MCU with SNMP monitoring and control functions, Customized PDU, Battery 48V/2400Ah;





IPS