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Case Study

Matosinhos Refinery of GALP Energia

Implementation of a wireless network infrastructure

"This kind of systems also allows supporting other types of real time applications such as video surveillance, voice over IP or even location."

Framework

The Galp Energia refining system is made up of the refineries at Sines and Matosinhos which together currently represent a crude refining capacity of 330,000 barrels per day, 20% of the Iberian refining capacity.

The Matosinhos refinery began operating in 1969 and it has currently an annual refining capacity of approximately 110 kbopd. It is a specialty refinery, producing a variety of derivatives or aromatic products, important raw materials for the chemical and petrochemical industry, and the production of plastic, textiles, fertilizers, rubber, paints and solvents.

The industrial complex of the Matosinhos refinery, located in North Portugal covers an approximate area or 400 hectares and is connected to the tanker terminal in the port of Leixões by several oil pipelines with an extension of around 2 km.

The Matosinhos refinery felt the need to, in real time, monitor the type and quantities of gases it releases into the atmosphere.

Given the restrictions in place to carry out excavations, setting up of a wireless network was the option chosen to implement the project.

"This solution brought about greater mobility on the refinery's internal network, eliminating such difficulties as access to all the Intranet and Internet by everyone in the refinery."

Challenge

The project involves several operating areas with diverse radio propagation environments, such as, areas with large amounts of metal, concrete, highly adverse weather conditions, proximity of the sea and the presence of several toxic gases.

The sensors were placed on top of the chimneys, which are around 100 m high. This type of technology proved to be the most adequate due to the mobility and flexibility it allows.

Therefore, a low message latency communication network has been planned and implemented, which is capable of standing a diversity of requirements presented by both the client and the environment.

This system type can also support other types of real time applications such as video surveillance, voice over IP or even location.

The solution

The project that was presented and installed comprehends unlicensed band wireless connections with bandwidths ranging from 12 Mbps to 36 Mbps meeting the raised needs.

This solution brought about greater mobility on the internal network of the refinery, eliminating such difficulties as access to all the Intranet and Internet by everyone in the refinery.

Due to the hostile, highly explosive environment found in this refinery, the solution that was implemented aims at complying with the ATEX certification regulations.

Therefore, the implemented system is able to guarantee all the information processing among the various areas of the refinery in the fastest, safest and most efficient way.

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Operational challenge

The assembly wasn't easy, because, due to posing an extremely high risk of explosion, all jobs require utmost safety regulations which must be met by the workers and which are checked by the safety teams of the refinery. There is a whole procedure of requirements and documentation which must be strictly followed.

Nearly all the difficulties found in this type of projects fall within the administrative department, as every morning and evening it is necessary to ask for permission to enter the workplace which leads to the waste of almost two hours' work.

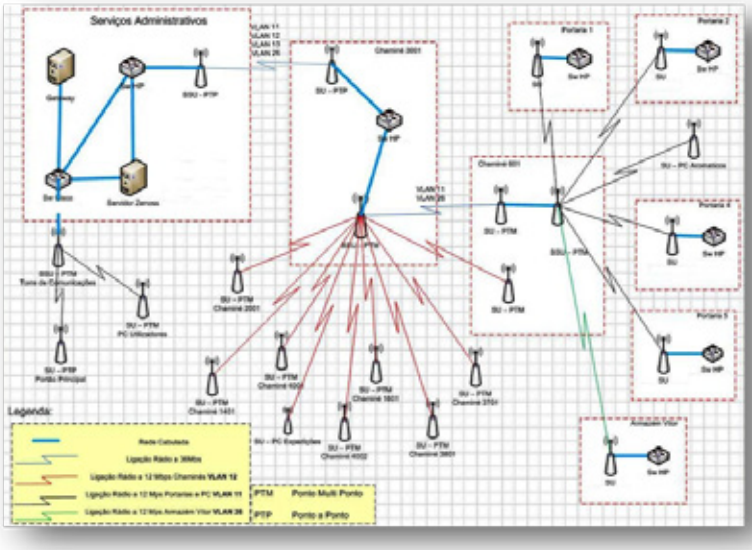
Critical Factors of Success

- Competitive investment costs;
- Speed of deployment ;
- Low operational costs;
- Shared voice and data networks;
- Full coverage of the Refinery;
- Maintenance included.

"Currently the refinery has full wireless coverage of the refining area, which allows GALP to have access to the corporate network anywhere in the refinery both for people and machinery/automation."

The project in figures

The Project comprises the installation of 23 radios strategically spread throughout the refinery using the 3 point-to-multipoints wireless link solution and one 12 and 36 Mbps point-to-point wireless link.



Final Remarks

GALP Energia is completely satisfied with the performance of the implemented network system and is analysing a proposal to extend the implemented network.

Currently the refining area of the refinery has full wireless coverage, which allows GALP to have access to the corporate network anywhere in the refinery both for people and machinery/automation

Thus, complex application scenarios, such as the above mentioned applications will possibly improve the operational efficiency by controlling and monitoring the various departments.

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About Wavecom:

Established in 2000, Wavecom is an engineering company with a strong component of integration and development which supports a portfolio of solutions in the fields of Wireless Networks and Unified Communication.

Wavecom is characterized by solid expertise, versatility and competence in the design and implementation of turnkey systems and applications, integrated and customized to the needs of each client.

The knowledge and experience accumulated over the years, due to the number and complexity of the implemented projects, strengthen the multidisciplinary experience of our technical staff, which represent the value of Wavecom and differentiate it in the market.

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