

Data Collection and Maintenance

experience history

asja

ASJA AMBIENTE ITALIA SPA: THE NEW ENERGY

Asja, founded in 1995, has grown exponentially by developing specific competence to face all the problems connected with the production and management of energy from the renewable resources through design, realization and management of systems equipped with advanced technological solutions.

Asja designs, constructs and directly manages the systems of energy exploitation of biogas products due to the fermentation of organic matters of the urban wastes. They need big attention for the environmental compatibility at the design phase and for the mitigation of the effects during the realization and correct management of these systems. Asja is the leader in Italy in the electrical energy production from biogas generated from the solid urban wastes. It has constructed 22 biogas systems of energy exploitation of which 19 are actually in operation with a more than 42.000kW capacity. They are now realizing ulterior 4 systems for an annual estimated production of 180.000MWh. The managed systems have a very high coefficient of utilization corresponding to a functioning of more than 8.000 hours/years and a directly managed maintenance activity.



The needs of the Company and the collaboration with Inspiring

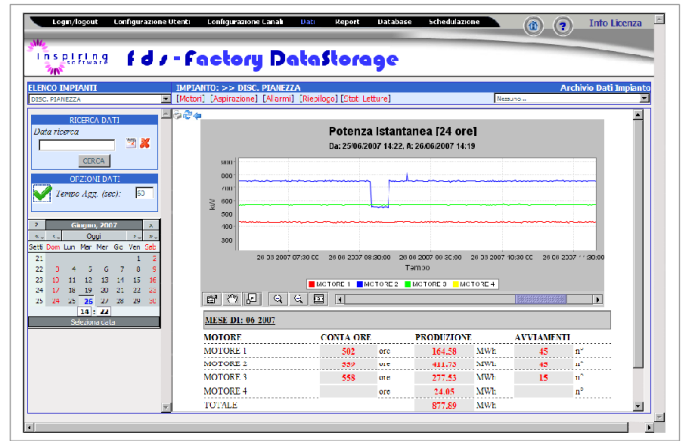
The crucial need of the company followed by its growth in activity and dislocation of the systems in the region was to offer a centralized system that would help keep under control the activity of every system/plant not only in terms of energy production, but also in frequency of registered alarms, executed maintenance activity etc. The first activity that is of interest is the activity of execution in primis and monitoring the data in real time has obtained little relevance. This is because, for the activities of maintenance, the presence of the workers on the plants is constant. The collected data must arrive to the site of Rivoli, but there were big problems concerning the communication between the devices that did not carry out transmission of data.

After a careful analysis of the market offerings, the company has selected the **FDS** solution of Inspiring Software which is the innovative module of MES for the data collection, visualization and archival at the pilot plant of Pianezza (TO). The first step of the project has been to create a network of communication between the infrastructures that make up the system: aspiration station, treatment, electro gene groups. The communication protocols of this machine are different, but the modularity that distinguishes **FDS** has let the data collection also between the non-homogeneous instruments. In this way, a link with the **FDS** server has been created in the same plant of Pianezza. Particular attention was paid to the data collection from the aspiration station and to the treatment which are of type analog and strictly tied to the chemical/physical characteristics of the biogas: the volume (in cubic meters) aspired by the line and the percent of chemical substance contained in the biogas (especially methane and oxygen). One aims at regulating the activity of the electro genes to improve the combustion and preserve the conditions of security. At this point, once the data are collected from the system, it was necessary to make them available at the central site. This problem was solved by installing an **FDS** server at the Rivoli site and the communication with the local server was enhanced thru a modem or ADSL connection. Thus, the collected, viewed and archived data of the system with predefined time intervals, are transmitted to the central server.

The results obtained until this moment by using the **FDS** software could be synthesized in the improvement on the failure interventions, as well as, thanks to the software, the alarms of the electro genes could be acquired.

This helped make interviews with the plant personnel and acquire these data, which were not meant to be acquired before 2006.

Besides, **FDS** is contributing significantly to the diffusion of maintenance culture by improving the know how of either the maintenance personnel or operators of the plant. The fact that **FDS** is realized with a web technology helps consult the data in real time and in a reciprocal way among these plants. This possibility is particularly interesting for some settings in the same zone and they benefit the work of the same operators who can monitor more events from a single place without having to move continuously.



A new step ahead: the Maintenance

The maintenance is a crucial activity in a sector such as this one and the essential need is to have an IT solution capable of managing all the maintenance activities either corrective or preventive/inspective. All the activities are in accordance with the norms and respecting the environment.

In May 2007, it is decided to go to a further step of the project, since there were the data available coming from the plants. In other words, data collection software **OTM** of Inspiring was linked which guaranteed the management and engineering of the

maintenance.

Stato	Codice	Descrizione	Tipo	Giacenza	In ordine	Unità di misura	Ubicazioni	Dettaglio	Elimina
	1900104	Elettrovalvola di sicurezza dh 150	Materiale di ricambio	2	0	Pezzi	Magazzino Ricambi Biogas Italia	Dettaglio	Elimina
	31U	Manutenzione motori	Materiale di ricambio	159	U	Pezzi	Magazzino Ricambi Biogas Italia	Dettaglio	Elimina
	390186CN	CINGHIA TRASMISSIONE COMPRESSORE	Materiale di ricambio	2	0	Pezzi	Magazzino Ricambi Biogas Italia	Dettaglio	Elimina
	6AN135	Batteria avviamento 12v 165Ah 1050A En	Materiale di ricambio	6	0	Pezzi	Magazzino Ricambi Biogas Italia	Dettaglio	Elimina
	DC64BION	Depuratore cat. DC64 biogas	Materiale di ricambio	-1	0	Pezzi	Magazzino Ricambi Biogas Italia	Dettaglio	Elimina
	PS 1216433A	FILTRO ARIA FIRIT7 11177	Materiale di ricambio	4	0	Pezzi	Magazzino Ricambi Biogas Italia	Dettaglio	Elimina
	ES.12199925	FILTRO ARIA DEUTZ 12052	Materiale di ricambio	4	0	Pezzi	Magazzino Ricambi Biogas Italia	Dettaglio	Elimina
	ES.238027	Filtro olio prelubrificante Jenbacher 30810	Materiale di ricambio	25	0	Pezzi	Magazzino Ricambi Biogas Italia	Dettaglio	Elimina

The maintenance plans of the electro gene groups, such as the ones for the turbo-aspirators, are exclusively of the type "cyclic preventive with a constant age". Thus the variables to taken into account are the hours of working. They are typical elements of a standard Maintenance Plan for an electro gene group and they are susceptible to modifications of system conditions and processes regarding the quality of biogas aspired by the waste exclusively. Consequently, the same maintenance frequencies are not observed on all systems due to the polluted biogas even though the standard is pretty emphasized. The implementation of **OTM** is still at initial phase, but some steps are already planned:

first phase of configuration with the definition of the tree structure, creation of cost centers and work standards, and a second phase of management with the module of "intervention request" and the accounting of the carried out activities. The purpose is to keep the intervention archival with the purpose of achieving a planned budget, calculating the KPIs and taking a series of improvement measures into reality to optimize the maintenance activities. In the upcoming future, Asja targets at reaching some key results with the complete integration of **FDS** and **OTM** such as: improvement of the programming of mid-long period of the "heavy maintenance" of the electro gene groups from the viewpoint of either resources or materials; archival of interventions and widespread diffusion of the maintenance culture; determination of performance index (KPI) and the use of them as a continuous improvement tool. This is not to be interpreted only by maintenance point of view, but also from the point of view of the production activities of Asja. This way one can benefit economies of scale derived from the development of systems (the hours of working of the electro gene groups are increased by 3% with respect to 2005.).



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