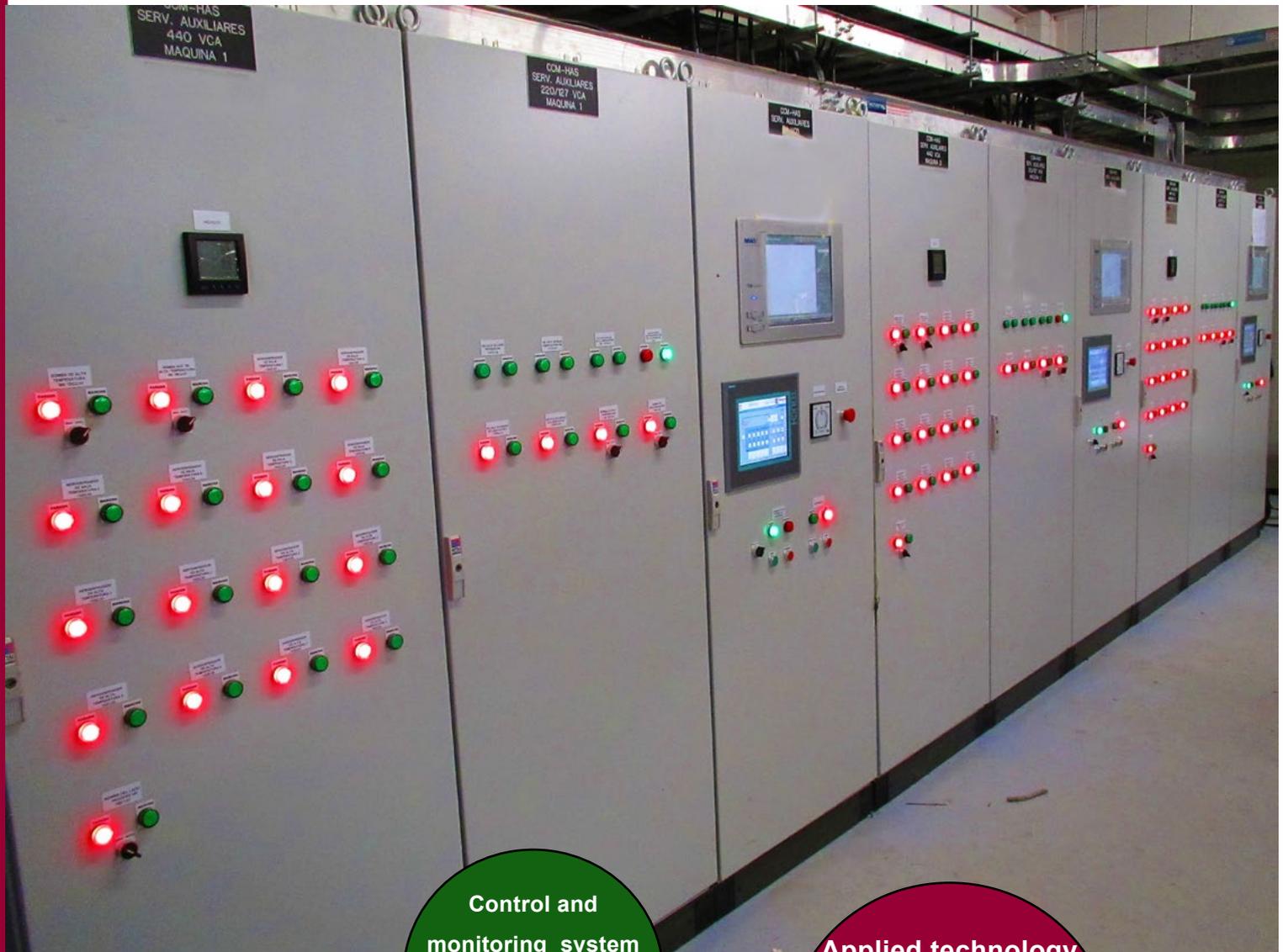


Global Denim Cogeneration Plant (Mexico)

- 6 gas gensets, 4.375 kVA each one, and 26.250 kVA total power.

Global Denim, s.a. de c.v., was founded as a family company with more than 45 years of experience in the textile market, dealing with the import and distribution of fabrics, mostly denim. Global Denim is a versatile factory dedicated to the manufacturing and sale of fabric within an integral process that includes Spinning, Dyeing, Weaving and Finishing. Moreover, it stands at the forefront of technology, guaranteeing variety and quality in all of products, located in San Esteban Naucálpan (México).

Genelek Sistemas has developed the control system and monitoring of the cogeneration plant with 6 gas engines 4375 kVA in parallel with mains. The system controls the auxiliaries and the process of hot water as well.

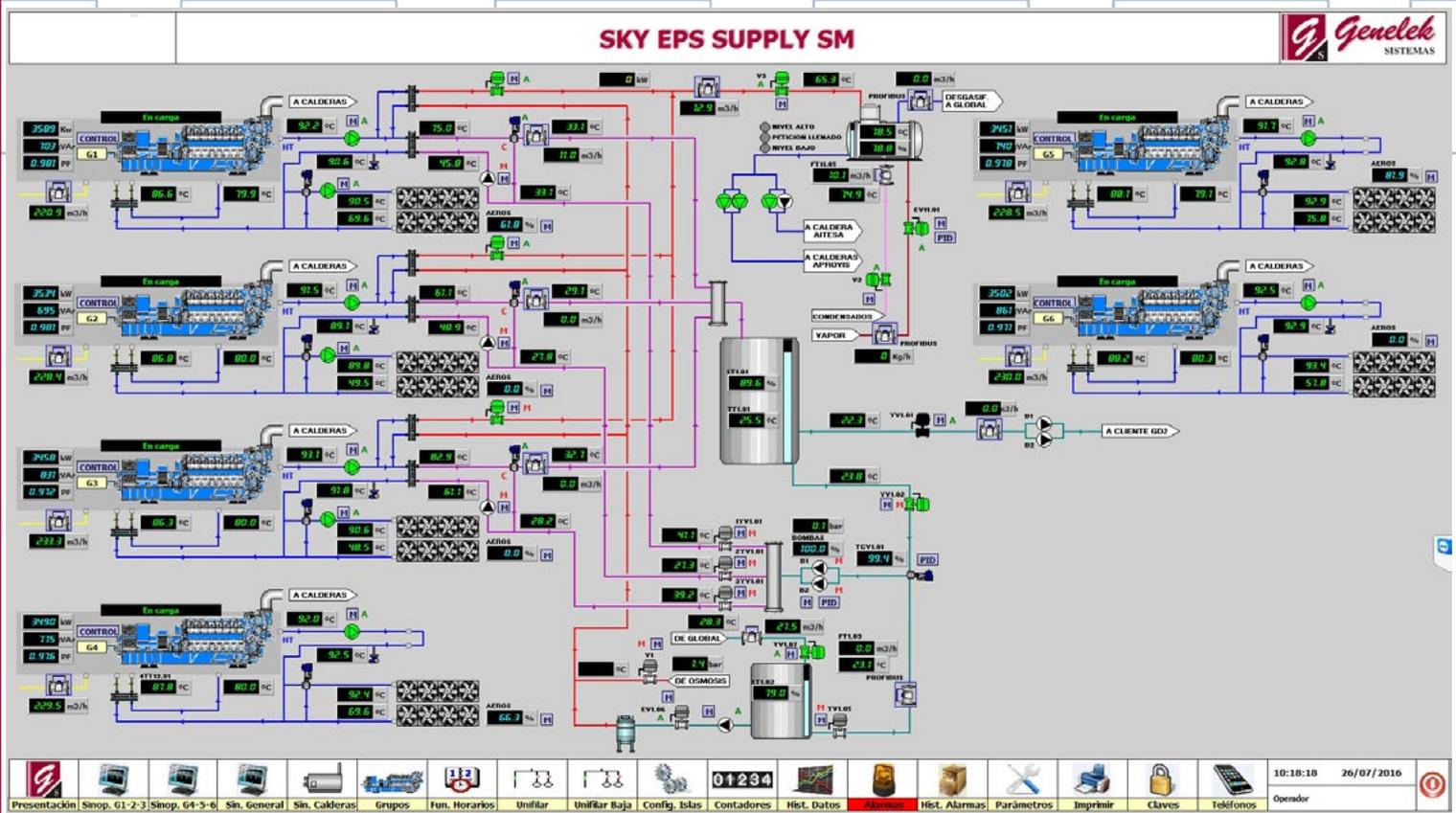


Control and monitoring system applied to the Textil Sector

Applied technology

One workstation with Intouch and with one historical data and alamsr.

Global Denim Cogeneration Plant (Mexico)



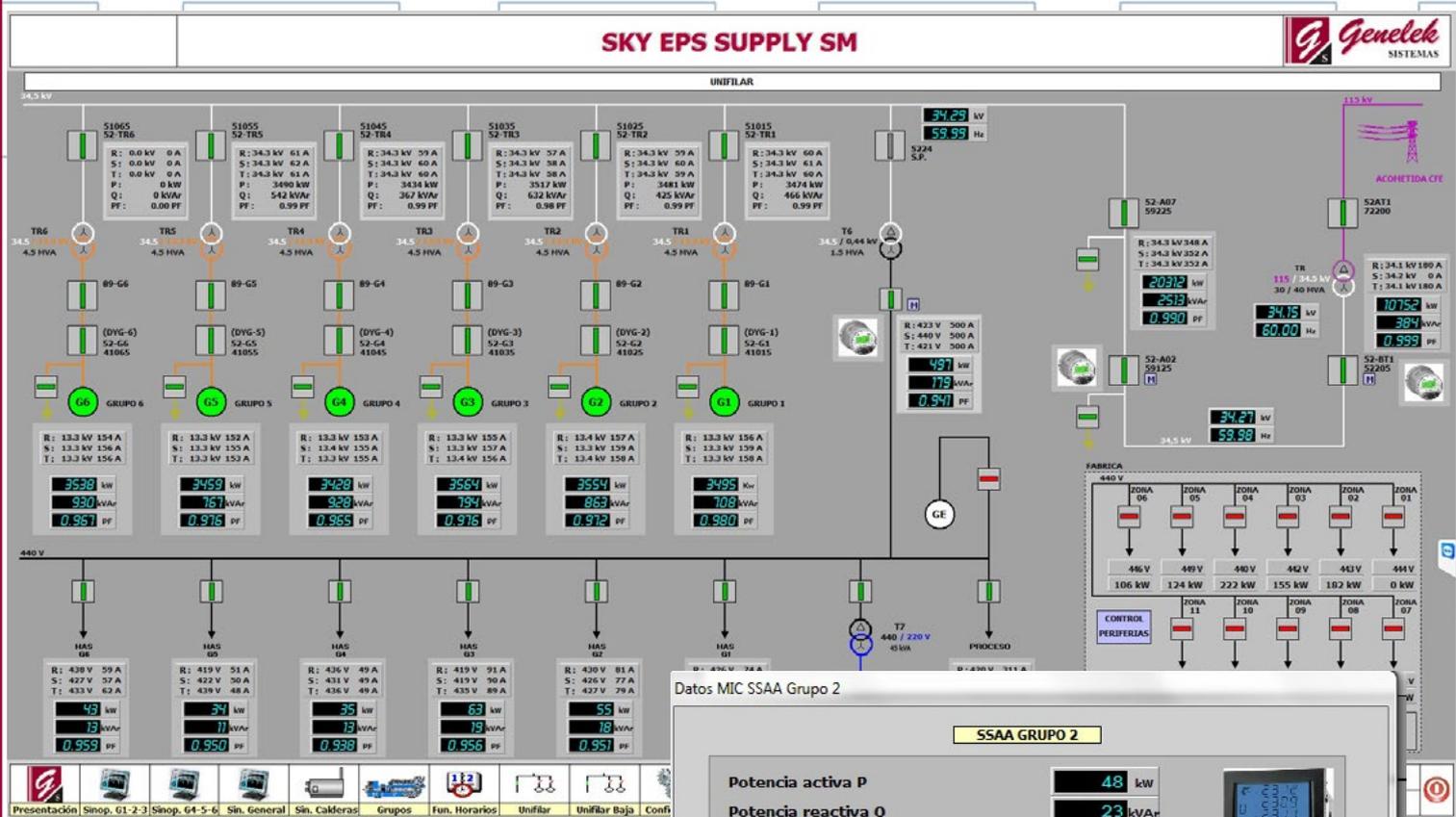
Developed Application

The developed system for monitoring and control is based on the S7-300 PLC, and the control includes the system of the engines, the process and other plant systems.

- Control of the 6 generators (HAS), and the control of the auxiliaries is performed.
- The control and coordination of heat recovery equipment, and the generation of hot water and steam is made.
- It communicates with electrical protection of the groups, energy meters and steam boilers.
- It coordinates the start and stop of the six groups according to the need of thermal – and electric power demand.
- Control of the power factor of the generator at the interconnection point.
- Communication with the TEM, the analog variables and alarms.
- Monitoring, control and data acquisition with Wonderware InTouch Software, which includes a historical data for reports, alarm management, ...



Global Denim Cogeneration Plant (Mexico)



SCADA System Platform

The control and monitoring system of this plant is built on Wonderware System Platform based on Achestra Wonderware technology.

They have two communication servers and the communication with the PLC and the data acquisition is done through Industrial Application Server.

Monitoring and Control

The control and monitoring system allows:

- Acquisition of field signals
- Control of the equipment
- Control Valves and dampers
- Synoptic Control Panel
- Start/Stop based on a time schedule
- Spare parts management
- Motor starting in rotation
- Control algorithms
- PID control
- Control and management of the energy consumption

Global Denim Cogeneration Plant (Mexico)

Data Analysis

The application provides a centralized data analysis tool that allows:

- Display and trend of the data and variables of the activities involved in the process.
- Manage efficiently the critical alarms of the process.
- Ability to generate reports based on Excel.
- Calculate the thermal energy billing and generate the necessary reports.

Reporte mensual datos cogeneración GlobalEnergy									
Periodo Seleccionado (desde Scada)		- Desde:	25/07/2016			- Hasta:	26/07/2016		
	TOTALES	MOTOR 1	MOTOR 2	MOTOR 3	MOTOR 4	MOTOR 5	MOTOR 6		
CANTADORES ELECTRICOS									
Horas Totales del Periodo	144	24	24	24	24	24	24		
Horas Paros Programados	0								
Horas Paros NO Programados	0	0	0	0	0	0	0		
Horas Disponibles	144	24	24	24	24	24	24		
Horas de Funcionamiento	144	24	24	24	24	24	24		
% de Aprovechamiento	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	ION, sin Servicios
	PLC								Propios
Energia Total Generada (kWh)	499.614	84.028	84.005	81.631	82.997	83.373	83.580	484.291	491.890
- Energia Generada P. Punta (kWh)	41.955	7.017	7.000	6.977	6.963	7.003	6.995	40.703	
- Energia Generada P. Intermedio (kWh)	352.692	59.466	59.504	57.134	58.626	58.864	59.098	341.696	Diferencia
- Energia Generada P. Base (kWh)	104.967	17.545	17.501	17.520	17.408	17.506	17.487	101.892	1.570%
Generación Promedio por hora motor (kW)	3.415,90								
Potencia al 100% eficiencia máximo output	21.000	3.500	3.500	3.500	3.500	3.500	3.500		
Potencia Promedio Generada	20.817	3.501	3.500	3.401	3.458	3.474	3.483		
% de Eficiencia (kWh)	99,13%	100,03%	100,01%	97,18%	98,81%	99,25%	99,50%		

SKY EPS SUPPLY SM									
Desde: 00:00		Hasta: 00:00		25/07/2016		26/07/2016		CANTADORES	
		GRUPOS 1-2		GRUPO 3-4		GRUPO 5-6		RED (PLC)	
		Desde	Hasta	Parcial	Total	Desde	Hasta	Parcial	Total
Energia activa Grupo 1 Periodo Punta (kWh)		2927499	2934428	7017	2934406	27442	27711	69	27711
Energia activa Grupo 1 Periodo Intermedio (kWh)		18998004	18957476	59466	18975144	189995	190614	619	190793
Energia activa Grupo 1 Periodo Base (kWh)		10864516	10888961	17545	10877633	104424	104593	189	104760
Energia activa Grupo 1 Total (kWh)		32647229	32771954	84827	32809372	463222	464479	857	464831
Energia reactiva Ind. Grupo 1 Periodo Punta (kVArh)		596227	697894	1577	697894	11005	11029	24	11029
Energia reactiva Ind. Grupo 1 Periodo Intermedio (kVArh)		4973950	4947279	13320	4919182	73460	73664	204	73227
Energia reactiva Ind. Grupo 1 Periodo Base (kVArh)		2577398	2501441	4067	2581621	61787	61645	58	61786
Energia reactiva Ind. Grupo 1 Total (kVArh)		7947535	7866515	18964	7875297	148554	149240	287	148933
Energia reactiva Cap. Grupo 1 Periodo Punta (kVArh)		0	0	0	0	0	0	0	0
Energia reactiva Cap. Grupo 1 Periodo Intermedio (kVArh)		0	0	0	0	0	0	0	0
Energia reactiva Cap. Grupo 1 Periodo Base (kVArh)		0	0	0	0	0	0	0	0
Energia reactiva Cap. Grupo 1 Total (kVArh)		0	0	0	0	0	0	0	0
Volúmenes de gas consumido (Btu)		3433811,8	3449229,8	5417,3	3453523,3				
Volúmenes de gas consumido (corregido) (Btu)		11348918,0	11389963,0	2096,0	11398989,0				
PCI Gas		10,85 (kWh/therm)				Rendimiento eléctrico Grupo 1		39,9 %	
		Desde	Hasta	Parcial	Total	Desde	Hasta	Parcial	Total
Energia activa Grupo 2 Periodo Punta (kWh)		2724167	2581142	7000	2811147	28443	28555	112	28555
Energia activa Grupo 2 Periodo Intermedio (kWh)		16724940	16784445	59505	16803072	246936	241916	980	242188
Energia activa Grupo 2 Periodo Base (kWh)		9539742	9557243	17561	9574264	133352	133411	259	133666
Energia activa Grupo 2 Total (kWh)		28984849	28742830	84025	28978963	645427	648088	1351	647736
Energia reactiva Ind. Grupo 2 Periodo Punta (kVArh)		597203	599080	1577	599080	14880	14917	37	14917
Energia reactiva Ind. Grupo 2 Periodo Intermedio (kVArh)		3942242	3939559	13327	3941097	96386	96796	120	96797
Energia reactiva Ind. Grupo 2 Periodo Base (kVArh)		2103397	2101291	4064	2101851	51781	51867	86	51952
Energia reactiva Ind. Grupo 2 Total (kVArh)		6709331	6722928	18967	6723871	254986	254530	443	254796
Energia reactiva Cap. Grupo 2 Periodo Punta (kVArh)		0	0	0	0	0	0	0	0
Energia reactiva Cap. Grupo 2 Periodo Intermedio (kVArh)		0	0	0	0	0	0	0	0
Energia reactiva Cap. Grupo 2 Periodo Base (kVArh)		0	0	0	0	0	0	0	0
Energia reactiva Cap. Grupo 2 Total (kVArh)		0	0	0	0	0	0	0	0
Volúmenes de gas consumido (Btu)		3175376,8	3189921,3	5965,3	3187387,6				
Volúmenes de gas consumido (corregido) (Btu)		10718297,0	10739926,0	21623,0	10749171,0				
PCI Gas		10,85 (kWh/therm)				Rendimiento eléctrico Grupo 2		38,7 %	