

Control systems for SRTF equipment (Agni)

Customer is a pioneer in the Global Semiconductor Domain.

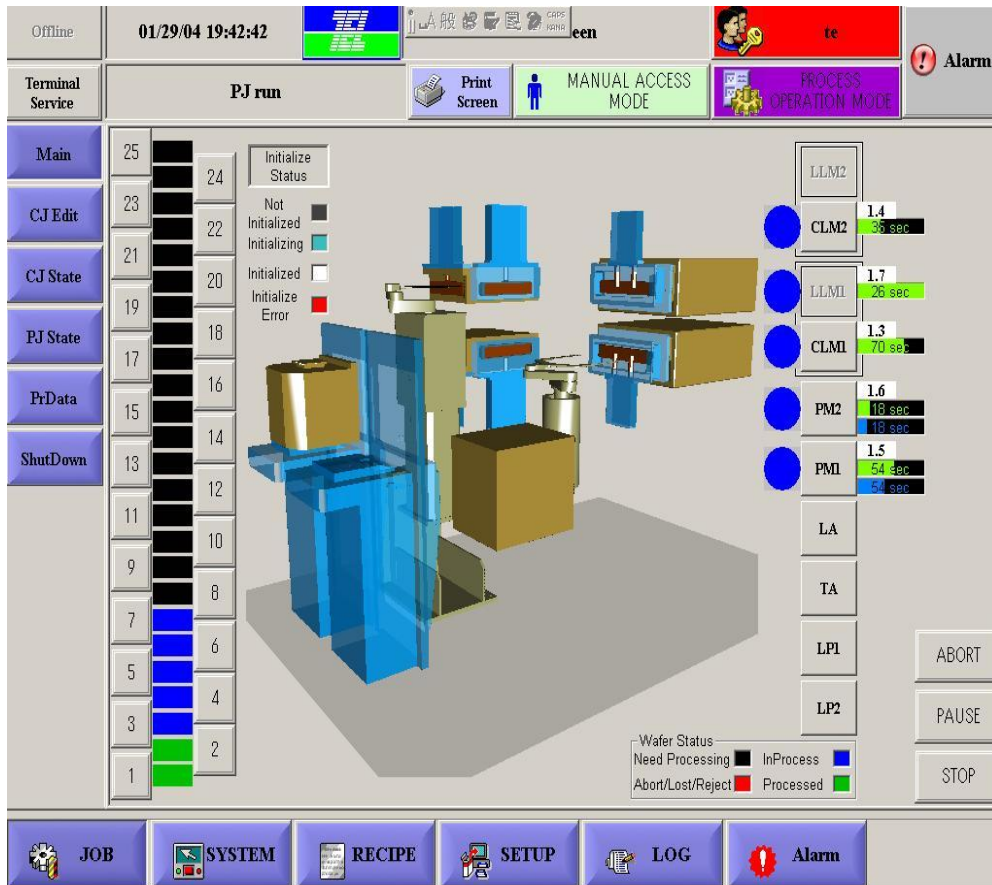
Business Objective

The scenario demanded a comprehensive system for Control of 3 axis robot, Mass flow controllers (MFC), Temperature controllers, Pressure controllers, Stepper motors, Fluid flow controllers, Vacuum pump and other hardware devices associated with the **200mm and 300mm SRTF** (Single Wafer Rapid Thermal processing Furnaces) machines. The control system had to include systems for monitoring Analog and Digital data from various sensors and transducers, algorithms for scheduling of process, implementation of Semiconductor Equipment Communication standards (SECS), Devicenet, RS232 & TCP IP based communication interfaces, SEMI standards for interfacing with AMHS, Load Ports and Carrier Management standard.

System Overview

The software developed by Ushus Technologies comprised of modules for control of 3 axes Robot. This includes, teaching for robot positions, storing Robot positions, setting the Robot parameters & reading the Robot coordinate data and issuing commands to the robot using an RS-232 based serial link to the Robot. It can control and monitor the temperature controllers, mass flow controllers, Automatic pressure controllers, valves, pressure sensors and other IO devices, which are connected using Devicenet. Devicenet is a technology, based on CAN (Controller area networks), used for communications between the main controller and these sub controllers. The wafer-scheduling algorithm controls the routing of the wafers from the FOUP/ Cassette to Load lock, process chambers and cooling chambers and back to the FOUP.

SEMI standards E-4 (SECS I), E-5 (SECS II), E-30 (GEM) and E-39 (OSS) are implemented in this system. The system also implements Carrier Management (E-87), Control Job Management (E-94), Substrate Tracking (E-90), Process Job Management (E-40) and Event Reporting (E-53). ADO, which is a COM based technology for database management, makes it possible for the system to connect to any type of database from text files to ODBC databases. The database is used to configure the I/O's and other hardware configuration parameters, which makes it possible for the software framework to be hardware independent to a large extent and can be modified to suit different kinds of hardware networks.



The database is also used for non-volatile storage of process parameters, recipe parameters, reports, event report linkages and other non volatile storage requirements as specified in the Semi standards.