



## Automated Glass Manufacturing Facility

Because ICP DAS is the premier source of embedded and automation controllers for Asia's top industrial manufacturers, it is no surprise that ICP supplies a number of facilities with turn key OEM solutions, for meet the ever changing needs of specific markets. One such example of ICP's flexibility as an OEM supplier for the world's top industrial companies happens to lie in a turn key solution ICP DAS offers to all of Asia's glass manufacturing facilities. By focusing on the specific facet of flat/bend glass tempering and grasping integral requirements for successful production, ICP DAS's system integration department has surmised a solution for the typical data acquisition and embedded control needs for large scale glass manufacturing facilities. The basic architecture of the system is comprised of the following;

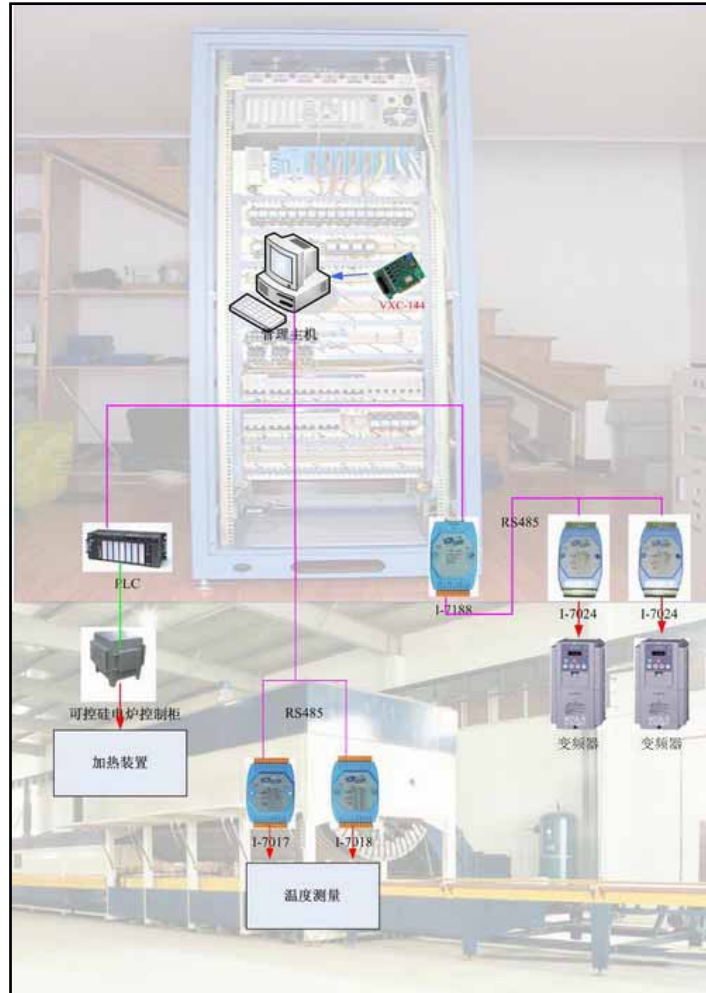
- I-8000 Rack Mount PLC
- I-7188 Embedded Controller
- I-7000 Distributed I/O (I-7017,I-7018,I-7024)

By creating a commercial off the shelf solution, ICP DAS effectively provides a reliable and tested control platform for tempered glass manufacturers to implement into their facilities at an extremely low cost! The solution ICP DAS provides to this particular consumer group is very unique, since it is flexible in meeting many control and data acquisition needs, in a very small, self contained package.

In regards to the system duties, each individual ICP DAS component is charged with a multitude of tasks, hence creating a high level of productivity over a very compact device network. The I-8000 controller functions as the "brain" of the operation, communicating with both the local area network of administrative IPCs, as well as the entire RS-485 network of embedded controllers. By functioning as a communication hub, as well as an industrial controller and data acquisition center, the I-8000 PLC functions as a multi-faceted entity in the installation. The I-7188 embedded controller is another flexible component in the installation, functioning primarily as an intelligent serial gateway, as well as a data acquisition hub for the various I-7000 distributed I/O modules included in the system.

### Hierarchy of system function:

- **I-8000:** Controls: furnace temperature, and exhaust blower operation. Monitors furnace temperature and blower speeds.
- **I-7188:** Controls "bend" heating point; for temper-bent panes. Functions as a serial to RS-485 communication gateway, as well as a secondary RS-485 bus for additional remote I/O capacity.
- **I-7000 (I-7017, I-7018, I-7024):** Monitors, and acquires data from furnace, blowers, and heating points.



### Key advantages of implementing the ICP DAS solution:

- Simple design & layout. Because of the limited number of modules needed to perform system control, little to no wiring is needed, and installation time is greatly reduced. Furthermore, ICP modules were capable of being mounted locally despite high temperatures, due to our standard  $-25^{\circ}\text{c} \sim 75^{\circ}\text{c}$  operating temperature range.
- System reliability and configurability is greatly increased. Because the I-7188 and I-8000 function redundantly, system load can be shared or carried out on one or both controllers in the event of the LAN or IPC crashing. This feature ensures that manufacturing will still be carried out in a precise and safe manner despite system failure!
- By meeting specific industrial needs, ICP DAS has provided a cost effective, quick start solution for any size glass tempering/manufacturing facility. By implementing commercial off-the shelf parts, plant managers can assure little to no down time, since parts are readily available through their local ICP DAS distributor!