

EGC - Float Glass Plant

InteA
AUTOMATION



Automation and Control System



EGC - Float Glass Plant

General

Modern technology, design and equipment applied in Egyptian glass company - Float glass plant, resulted in modern and efficient plant and its high quality products. Energy saving and environmental protection is integrated in the system at all levels. Plant capacity is over 340 MT float glass per day. Plant produces various types of float glass, depending on selected automatic batch recipe for additives.



EGC - Float Glass Plant

Batch Plant



Batch plant: Main silo and weighing building

Batch plant performance is vital for overall plant capacity:

- capacity: 400 MT / 16 h
- cullet content: 15-40 %
- glass from batch: 340 MT
- yield: 83 %
- batch required: 410 MT
- batch size: 2600 kg (dry)
- Mixing cycle time: 180 s
- total cycle time: 360 s
- cycles per hour: 10



Batch plant:
Additives silos and scales



Batch plant:
Mixers

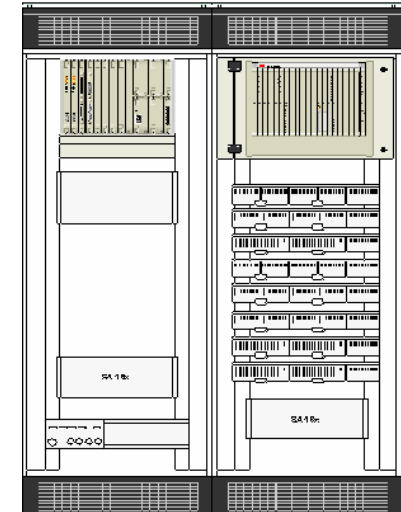
EGC - Float Glass Plant

Automation and Control System

Equipment

Production process in “Egyptian Glass Company” Float glass plant is monitored and controlled by ABB Advant products family equipment. “EGC” utilises the following:

- Process controllers - AdvantController 450 (3 units)
- Process controllers - AdvantController 110 (3 units)
- Operator stations - AdvantStation 515 OS - (5 units)
- Information Management Station - AdvantStation515 IMS - (1 unit)
- Control network MasterBus 300, Plant Network TCP/IP, AdvantFieldBus 100 etc.
- Event/alarm printers, hardcopy printers and report printers.



Controller cabinet



AC 450



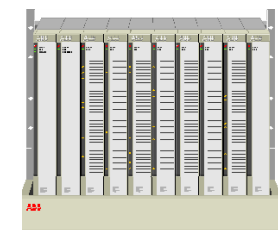
AS 500OS



Hardcopy



AS 500IMS



AC 110

EGC - Float Glass Plant

Automation and Control System



AUTOMATION

Scope

Entire process, from sand screening and dolomite/limestone crushing to glass cutting, is controlled by process controllers and runs fully automatic. Each part of the process can be controlled and monitored from any operator station.



Batch plant detail



Dolomite & limestone crushing and ensiling

Features

Production process control includes features like: batch recipe management, various reports, trends, batch tracking, long-term data storage, etc...in other words, everything required for quality assurance as defined in ISO 9000.



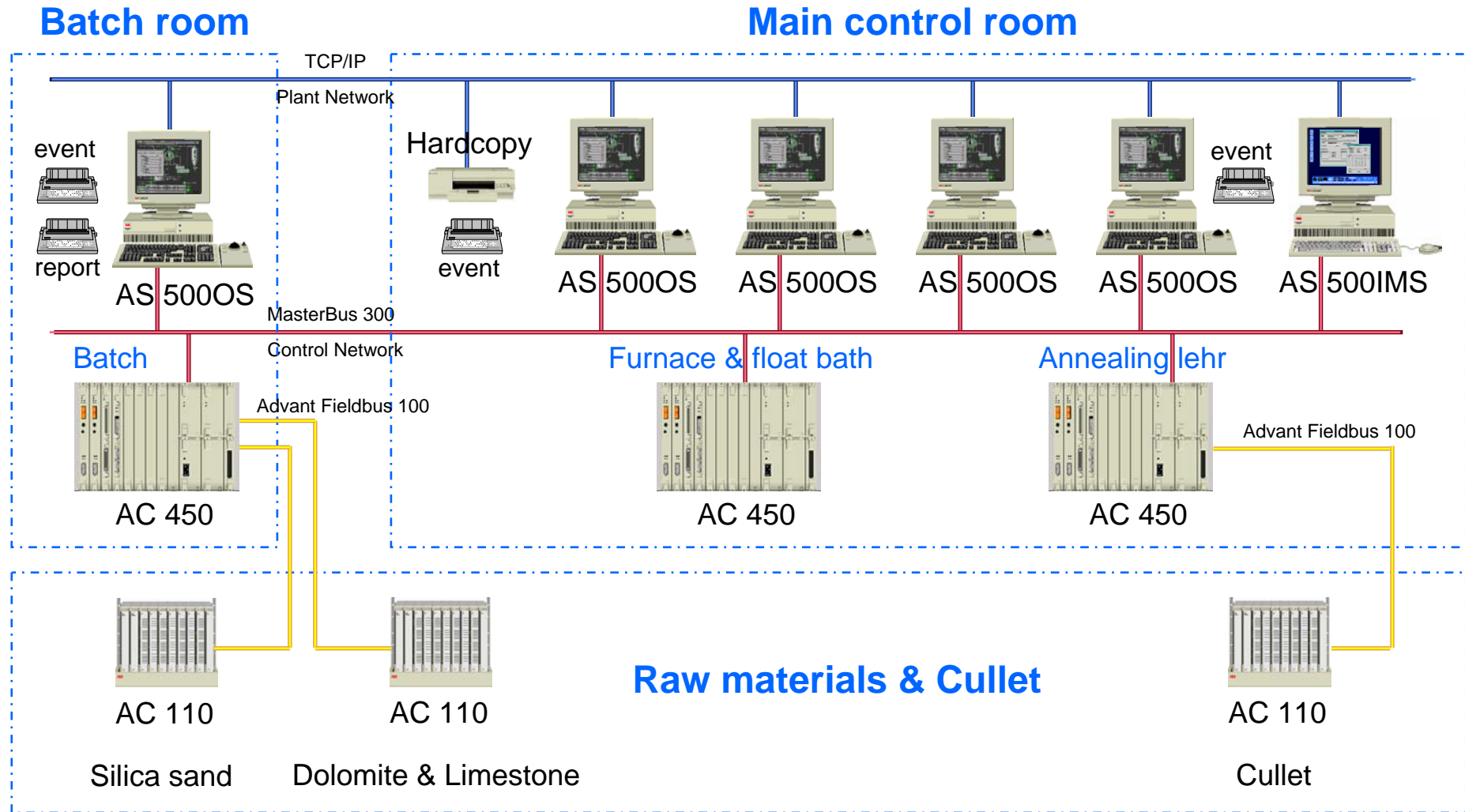
Batch conveyer stretching to furnace hall

EGC - Float Glass Plant



Control System Configuration

AUTOMATION



OS_BATCH 1998-07-17 07:17 APC Login MAURIZIO

DISP365 BM_WORKING SCREEN

WEIGHING: **Alarm** FURNACE CONVOY: **Alarm** CYCLE no: **4000** RECIPE NO. **10** RECIPE **RECIPE 10** Timer **465**

AUTO WEIGH.START **ENABLED**

MATERIAL	Formula	Dyn. set	Weight	In scales	Tolerance	Preset	Flying	Zero span	Charge	Live Bottom (s)	Hopp. Vibrators (s)	Cumulative Error Kg
	Kg	Kg	Kg	Kg	+/- Kg	Kg	Kg	+/- Kg	Kg	OFF ON	OFF ON	
SAND	S01	1521	1522	1521	2							-1.0
SODA ASH		475.6	476.1	475.3	1.5							0.0
DOLOMITE		412.8	411.9	411.6	1.5							1.6
FELDSPAR		59.3	59.3	59.0	0.6							0.1
LIMESTONE		112.6	113.0	112.7	0.6							0.1
SALT CAKE		17.68	17.71	17.70	0.20							0.13
CARBON		0.000	0.000	0.000	0.010							0.000
SODIUM		0.00	0.00	0.00	70.10							0.00
IRON OXYDE		1.29	1.31	0.00	13.84							-0.01
COBALT		0.000	0.000	0.000	0.002							0.000
SELENIUM		0.000	0.000	0.000	0.004							0.000

UNACCEPTABLE ACCEPT **OFF** 0

WATER 103.5 0.0 102.9 MX01 5.0 4.0 Cumul. Error Kg

CULLET S11 715 719 714 1915 10.0 8.0 1700 -1.0

MX01 0 0 20.0 100.0

MX02 304 2415 30.0 100.0

ACCEPT **OFF** BATCHES TO GO: 6

MASTER TIMERS (s):

	SET	REAL
Load Scales	150	150
Unload Scales	120	120
Spraying Delay	55	0
Pure Mixing	180	0
Unload Mixer	60	14
Load F. Hopper	200	0

D1 REPORT1 D2 REPORT2 D3 REPORT3 D4 REPORT4 D5 RECIPES

D6 BATCH CONTROL D7 WEIGHING D8 FURN. HOPP. D9 ENSILING D10 PLANT PARAM

EGC



Operator screen example:

“Working screen” shows active batch recipe, main parameters and actual process values.

“DISP354...” is presented as an overlap (floating) display, showing motors, scales, measured values, equipment status etc.

Operator’s orders are issued from the screen/keyboard e.g.: to start/stop the batch plant (i.e. weighing process) operator merely acts on “WEIGH.START” screen push-button (presented at the top of screen).

EGC - Float Glass Plant

INTEA Contribution

Scope - general

- application analysis
- level 1 software (signals database & type circuits)
- specific batch concept design
- level 2 software (logic & sequences)
batch and process control programming
- customising operator stations
- process displays design
- design of batch plant simulation
- factory acceptance tests with the client
- commissioning
- start-up
- training

Scope - sections

Intea was responsible for:

- sand screening and ensiling (1 x AdvantController 110)
- dolomite & limestone crushing & ensiling (1 x AC110)
- cullet storage (1 x AdvantController 110)
- batch plant control (1 x AdvantController 450 + AS500OS)

Duration

In the period January - August 1998, 3 Intea's engineers worked on the project for 5 months including programming and FAT in Italy.

Results

INTEA's work was recognized, by ABB project leader and end-user EGC, as outstanding and highly professional.

Post start-up activities

Since the start-up, INTEA received 5 orders to implement various DCS extensions and modifications.

Present situation

Years after the start-up, glass quality is still excellent and batch plant works perfectly. End-user is completely satisfied with plant performance.