



S.T.A. EXECUTIVE S.a.s.

(Soluzioni Tecnologiche Avanzate) – di Bonamico Maurizio & C.

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S.T.A. EXECUTIVE

is operating since 1995 on Electric and Automation of Industrial Process.

In particular, the first Electrical Arc Furnace – Submerged Arc was in 2006

This has been the first of several furnaces projects for Powder, Silicium, Silicon Metal and RockWool productions.

For all these Projects we have supplied as “turn-key” the electric boards and panel and Automation Control: Hardware and Software.

We also commissioned each Line. In many cases, we did the erection supervision (Erectors by Client-End User and our supervisor to follow and help on all erection jobs). Engineering (as Electrical Diagrams, cable List) is completely developed by our personnel.

Software to control the Furnace and all the programs as well as the HMI panels is totally designed by us and during all these years ,step by step we can optimise functionality and increase reliability to have now a complete set of tested packages for all furnaces with Submerged Arc Process.

We have supplied also Systems able to work at maximum Transformer Capacity so that it could be reasonable to sustain to have now a robust professional experience on this matter.

For Supervision Systems based on PC and mainly dedicated to handle the Process Recipes we also have our Package. It is based on technological approach of the process data with special tools to facilitate the creation of new recipe and to make simplest as possible the use by Operators. Automatic procedure to convert the current machine set up into achievable recipe as well as Coil or batch reporting system are the basic functions of Supervisor.

Many Clients are also connected through Remote Tele service with us and it is other additional service that can be useful to help maintenance electricians on troubleshooting. Due to this facility is faster to make assistance in any place of the world. In fact, our system are installed in several different Countries how our Reference List shows it.

Recently we have also improved the system interface in order to monitor the Line also through the Mobile Phone using dedicated Application tool

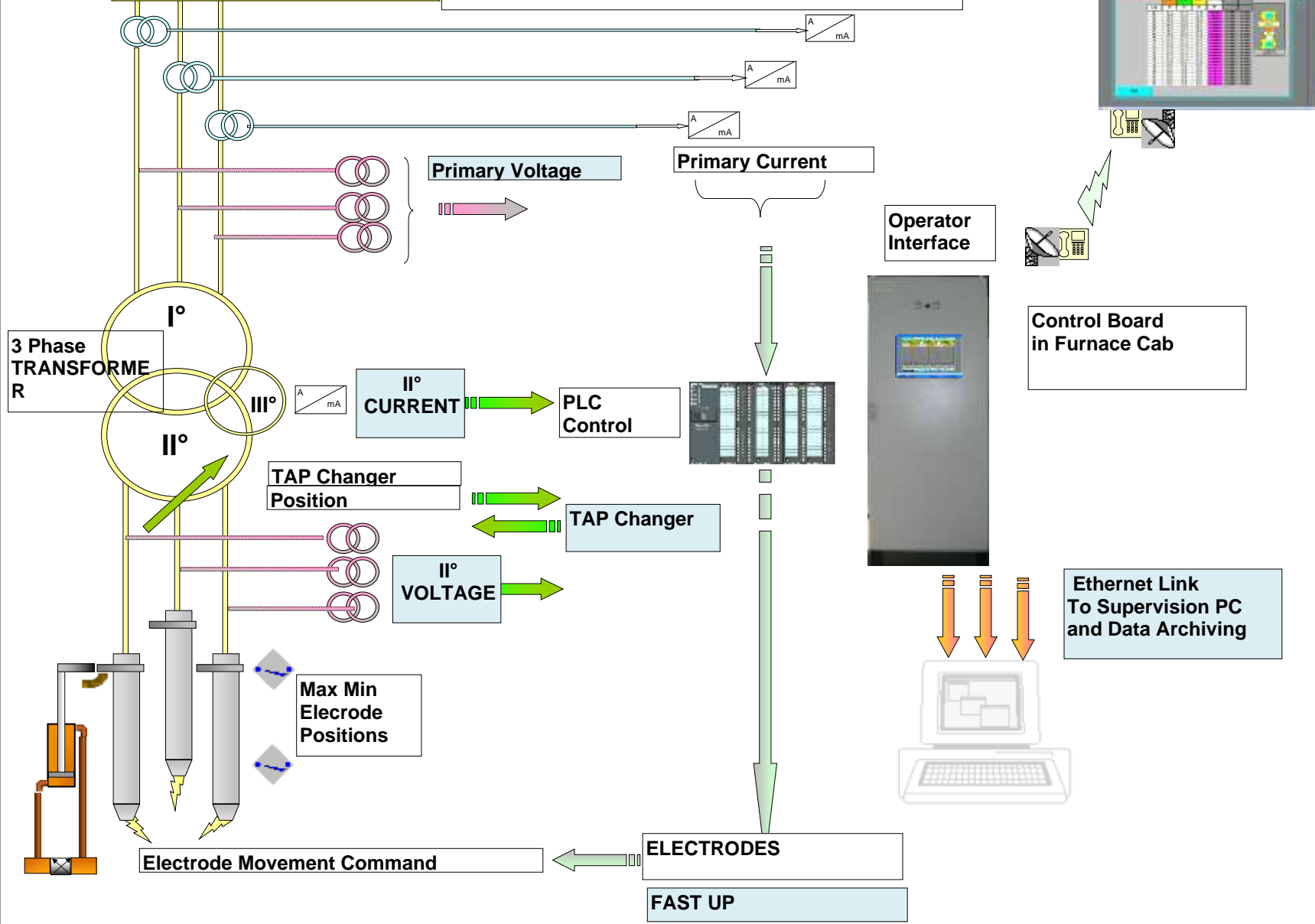
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For Control Systems (PLC-HMI) our common solution is based on Siemens S7 platform and Operator Panels (now we are working both with Classic and with TIA platform). Furthermore, we had also experience with Rockwell and Telemecanique. All programs are our design, commented in English as well as the Operator Panels (HMI) are working on Multi language platform and easy to translate (if not yet) onto End User Language Chinese Included.



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SAF SUBMERGED ARC FURNACE



Remote Technological Overview



LANGUAGES

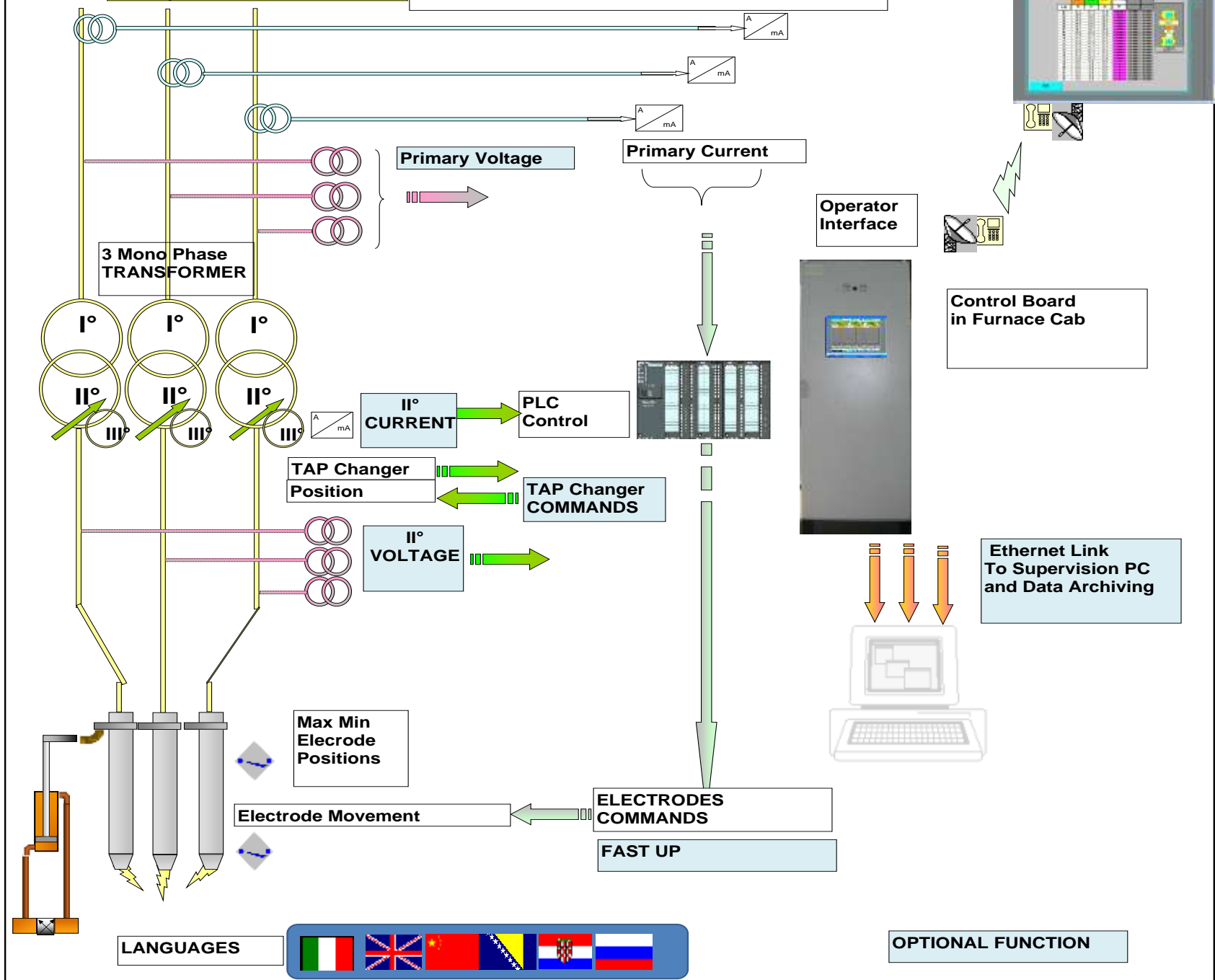


OPTIONAL FUNCTION



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SAF SUBMERGED ARC FURNACE ELECTRODE CONTROL



Remote Technological Overview



Operator Interface



Control Board in Furnace Cab

Ethernet Link To Supervision PC and Data Archiving



LANGUAGES



OPTIONAL FUNCTION



CLIENT SIDE

PRIMARY SIDE

Q_REA BOARD SIDE

PRIMARY CURRENT
Current Transformer
Phase 1
Phase 2
Phase 3

or
NTWK

Current Transducer
Active Current
Phase 1
Phase 2
Phase 3

4-20mA
Analog Input Signal



OR

Primary Current
Current Measure
4-20mA
0-20mA
0-10V

or
NTWK

Terminal Strip
ANALOG INPUT

Configuration and
tuning adapting Signal

MAIN CIRCUIT BREAKER
Contact CB CLOSED
Potential Free Contact

or
NTWK

Terminal Strip
DIGITAL INPUT

Condition required to
enable Automatic
Control

OPTION *
EXTERNAL ALARM

or
NTWK

Terminal Strip
DIGITAL INPUT

External disabling
when present

OPTION *
PRIMARY VOLTAGE

or
NTWK

Terminal Strip
ANALOG INPUT

Model Control
Monitoring Voltage

* used if external control disable is used
Potential Free Contact

* Normally used when networked
not appreciable benefit
Only analog signal input Available
0-20mA/4-20mA/0-10V

SECONDARY SIDE

TAP CHANGER POSITION
1-XX (max 31)
Bit to Bit
OR
BCD
+ TAP CHANGER RUN Status

or
NTWK

Terminal Strip
DIGITAL INPUT

Actual Nominal
Voltage at II°

OPTION**
Secondary Voltage
Voltage Transformer
Phase 1
Phase 2
Phase 3
.../100 oV
OR
Voltage Transducers

or
NTWK

Terminal Strip
ANALOG INPUT

Actual Measured
Voltage at II°

OPTION *
Secondary Current
Current Transformer
Phase 1
Phase 2
Phase 3
.../1 A or .../5A
OR
Current Transducers

or
NTWK

Terminal Strip
ANALOG INPUT

Actual Measured
Current at II°

* used for Control if available. Deviation
between Nominal Voltage Curve Vs
Secondary Voltage
If not Available Model calculate this value
with good accuracy from Transformer
secondary Curve from Tap Changer position.
Additional Tuning are possible on start up to

* used for Control if
available. Deviation between
Primary Vs Secondary
Currents under control
If not Available Model
calculate this value with
good accuracy

ELECTRODE CONTROL

POWER SUPPLY ELECTRODE
110 VAC/ OR 230VAC/ OR 24DC

or
NTWK

Terminal Strip
POWER

INDIVIDUAL PROTECTION
MONITORING OF

ELECTRODE SELECTOR
SWITCHES (3)
AUTOMATIC Status
Potential Free Contact

or
NTWK

Terminal Strip
DIGITAL INPUT

TYPE OF CONTROL

ELECTRODE LOCAL COMMANDS
UP(3)/DWN (3) Status
Potential Free Contact
N.O.

or
NTWK

Terminal Strip
DIGITAL INPUT

MONITORING AND
DIAGNOSTIC

ELECTRODE LIMIT SWITCH
MINIMUM-MAXIMUM POSITIONS (2)
Status
Potential Free Contact

or
NTWK

Terminal Strip
DIGITAL INPUT

INTERLOCKS

PARALLEL CONNECTION TO
EXISTING SOLENOID VALVES

or
NTWK

Terminal Strip
DIGITAL OUTPUT

ELECTRODE
AUTOMATIC COMMANDS
UP(3) / DWN (3)
Parallel on
Existing Solenoid Valves

INDIVIDUAL PROTECTION
MONITORING OF
RELAY 's DIAGNOSTIC

PARALLEL CONNECTION TO
EXISTING SOLENOID VALVES

or
NTWK

Terminal Strip
DIGITAL OUTPUT

*OPTION
ELECTRODE
AUTOMATIC COMMANDS
FAST SPEED UP(3)

* used for Control
if available. In case of
overcurrent peaks



REFERENCE LIST FOR ELECTRICAL ARC FURNACES (SAF)- STA EXECUTIVE (Italy)

Updated at July 2014 Description	Furnace Main Data					Supply Description		Automation			
	Plant Location		End	Product	Power	Basic Supply	Additional Services	PLC	Operator Terminals	PC Supervision	Net works
	Country	Client	User	Type	kvA						
Three Phase Furnace-in progress	CHINA	STM-TECHNOLOGIES	- Uknowm-	RockWool	9000	Turn Key	Erection Supervision	Siemens	1		Profibus-Ethernet
3xMonophase Furnaces-In progress	Bosnia	STEELMIN	STEELMIN	SiMe	36000	Turn Key	Erection Supervision	Siemens	1	Interface	Profibus-Ethernet
Three Phase Furnace	CHINA	STM-TECHNOLOGIES	BSBM	RockWool	9000	Turn Key	Erection Supervision	Siemens	1	Interface	Profibus-Ethernet
Three Phase Furnace	Bosnia	BSI doo	BSI doo	Silicon Metal	10500	Turn Key	Erection Supervision-Remote Tele assistance	Siemens	4	Interface	Profibus-Ethernet
3xMonophase Furnaces	Bosnia	BSI doo	BSI doo	Silicium	10500	Turn Key	Erection Supervision Remote Tele assistance	Siemens	4	Interface	Profibus-Ethernet
3xMonophase Furnaces	Bosnia	BSI doo	BSI doo	Silicium /siMe	10500	Turn Key	Erection Supervision Remote Tele assistance	Siemens	4	Interface	Profibus-Ethernet
Three Phase Furnace	Italy	Tenova	Chimet	Powder	5000	Turn Key	Erection Supervision	Telemecanique	3	Interface	Ethernet
Three Phase Furnace	Italy	Metalleghes	Metalleghes	Si/Si Me -Quarz	8500	Turn Key	Erection Supervision	Telemecanique	3	Interface	Ethernet
2xMonophase Furnace	Italy	Metalleghes	Metalleghes	Si/Si Me -Quartz	8500	Turn Key	Erection Supervision	Telemecanique	3	Interface	Ethernet
2xMonophase Furnace	Italy	Metalleghes	Metalleghes	Si/Si Me -Quartz	8500	Turn Key	Erection Supervision	Telemecanique	3	Interface	Ethernet
Three Phase Furnace	Slovenja	Tenova	Abrasive Muta	Paper	25000	Turn Key	Erection Supervision	Siemens	5+1	Siemens Wincc	Profibus MPI
Three Phase Furnace	Italy	Tenova	Chimet	Powder	3500	Turn Key	Erection Supervision	Telemecanique	1		Ethernet