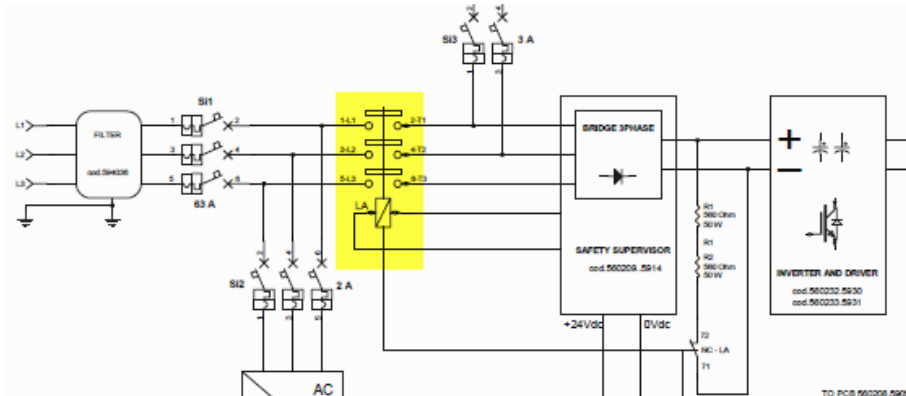




- Contactor LA is driven



- Doughterboard IR1110 start firing the thyristor for soft DCRail strtartup

After the DCRail is loaded the IR1110 chip, in case of one phase lost error, produces a pulse every 20ms (the missing phase sensed).

The Safety Supervisor microcontroller counts those pulse and after 5 time the pulse is produced it generates the error “174 SAFETY SUPERVISOR ERROR – 1PHL”.

So, Safety Supervisor will take 100ms to sense the error and open the mains contactor.

This interval (100ms) let short (less than 100ms) radiography lower than 30kW to be done using the energy stored in the DCRail and the power released in single phase.

In case the radiography power out higher than 30kW the DCRail discharge is faster than the frequency compensation of the converter controller, so the kV become half of the imposed kV.

In this case the main computer senses that kV are not in the 10% compliant interval and radiography is stopped before the Safety Supervisor board opens the mains contactor.

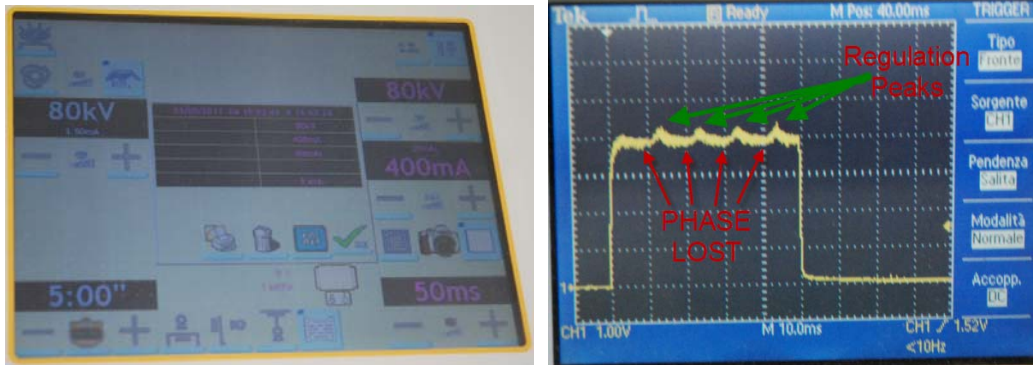
### Result:

Simulation of the single phase fault has been conducted in factory to face a problem faced in a small studio installation in which have been installed a threephase line power supply, but all the single phase users where not shared on the three phases but connected on a single phase too much loaded during high power exposure.

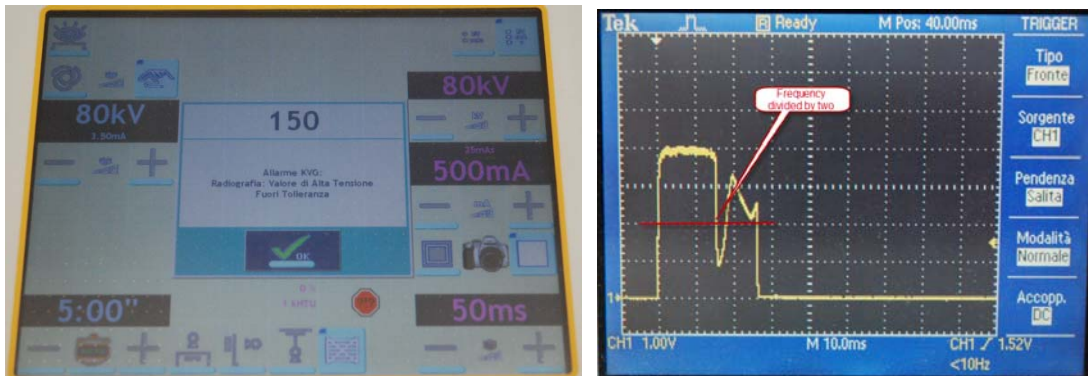


In those condition, radiography up to 32kW (80kV, 400mA, 50ms) look like diagram reported below:

DOCUMENTO		FOGLIO
NOMEFILE	CLASSE	2
EEN-036 V1 R1 ERROR 150.doc	13	4



When Power is higher the frequency required is higher than the maximum switching frequency allowed, and the bridge controller will divide by two the pulses. This will reduce to half the output voltage.



While temporary phase lost can be matter of mains power supply topology, a stable phase lost can be achieved for misalignment in IR1110 daughterboard during shipment.

In this way, good practice is to control the connection of the daughterboard:  
During installation process, before connecting the power line to generator

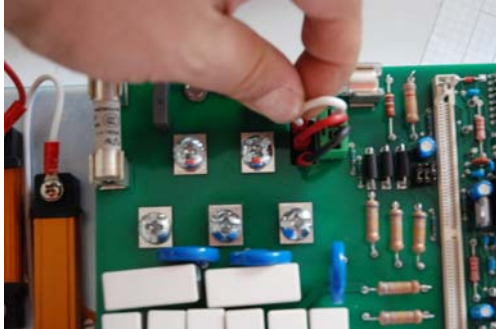
- remove the IR1110 daughterboard from Safety Supervisor board



opening

DOCUMENTO		FOGLIO
NOMEFILE	CLASSE	3 di
EEN-036 V1 R1 ERROR 150.doc	13	4

- Smoothly pull gates wire to check that are tied with strength



- Reinsert the IR1110 daughterboard paying attention to center the board



- Push the board inside the metallic clips



Note, also on MCU there is at least one daughterboard, do the same procedure also on MCU to be shure the daughterboards are rightly inserted after shipment.

DOCUMENTO		FOGLIO
NOMEFILE	CLASSE	4
EEN-036 V1 R1 ERROR 150.doc	13	di 4