
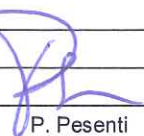
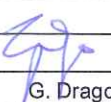




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Tipo doc. doc. type  <b>TR</b>	Emittente issued by  <b>PRS</b>	Edizione in lingua language  <b>ENG</b>	Derivato da derived from  <b>NEW</b>			Rev. rev.	
Commessa job no.  <b>2053</b>		Progetto project  <b>JT-60SA</b>		Cliente client  <b>ENEA C.R. Frascati</b>			

Rev. rev.	Motivo Revisione Reason for revision							

									
0			A. Capurro	P. Pesenti	G. Drago	F. Terzi		P. Pesenti	17/09/13
Rev rev.	St. st.	Sc. sc.	Preparato prepared	Controllato checked	Verificato checked	Verificato checked	Verificato checked	Approvato approved	Data date

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ANNEX:  
Report MA132802

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## Report of the JT-60SA casing mock-up welding

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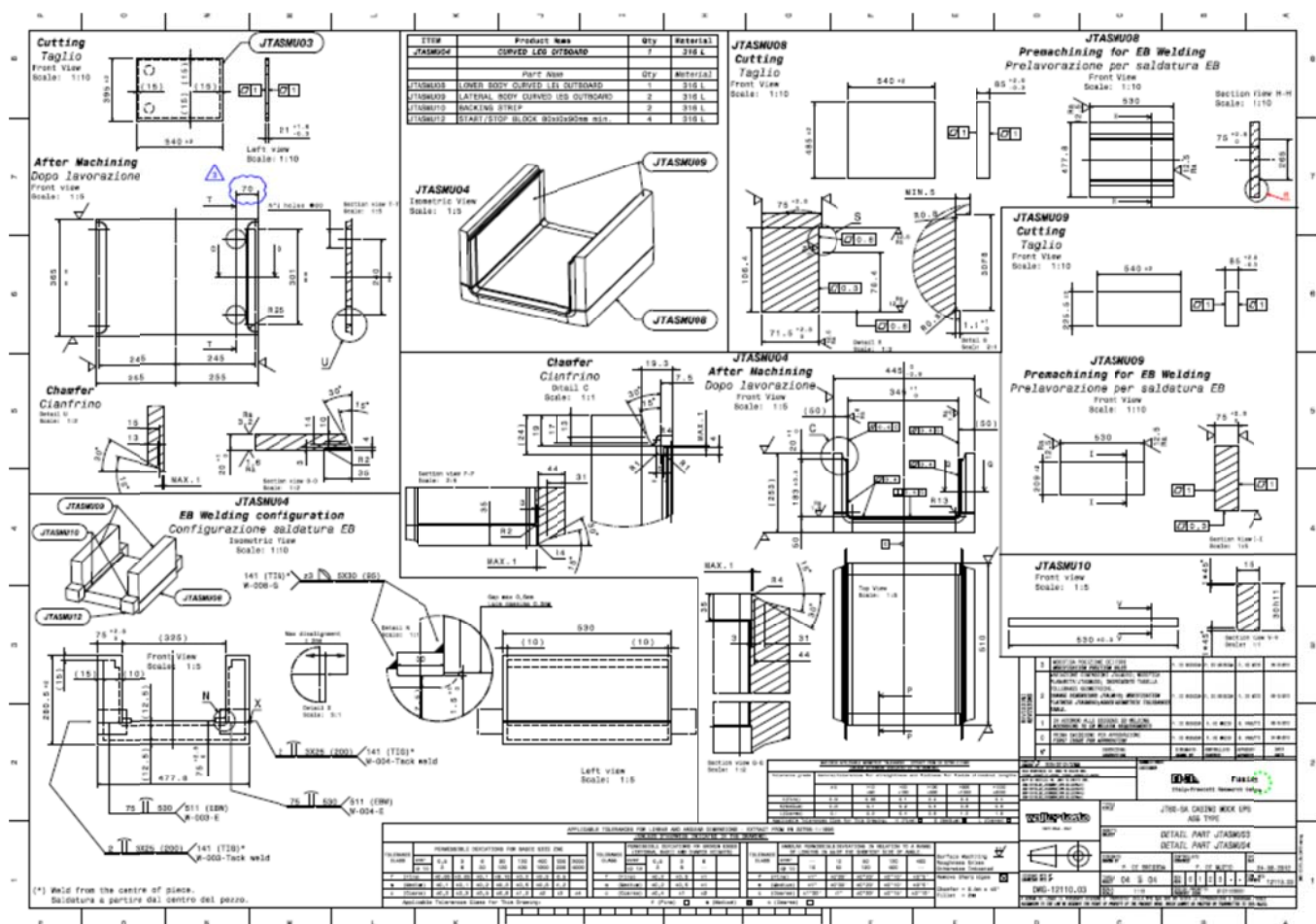
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## 1. INTRODUCTION

In the frame of the JT-60SA Project two casing mock-ups have been provided by ENEA to ASG for case welding and coil embedding trials. This report describes the assembly and welding of the first JT-60SA casing mock-up, shown in Picture 1. The measurements performed for evaluating the mock-up welding distortions are also included.



Picture 1

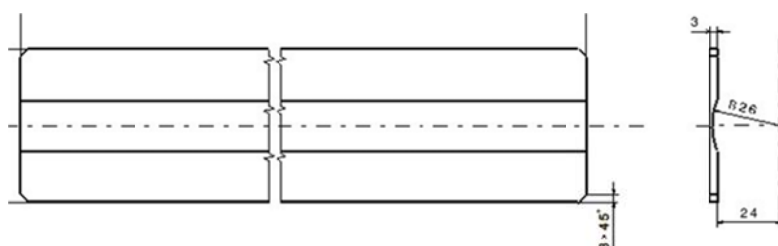
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## 2. ASSEMBLY SEQUENCE

The first activity was the positioning of the two halves of the case mock-up in horizontal position and the insertion of the foreseen backing strip inside of them, as shown in Picture 2. The backing strip was performed by ASG, machining the slot on a plate as shown in picture 3 and then bending it.



Picture 2

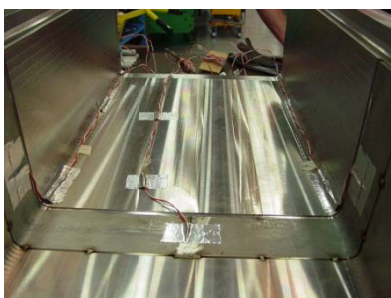


Picture 3

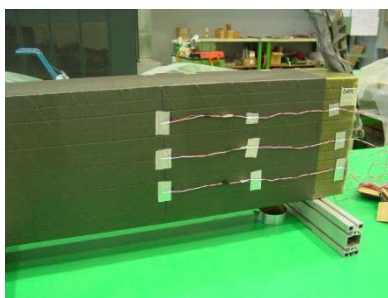
In order to get sufficient coupling precision it was decided to split the backing strip in 2 L-shaped halves, to fix them with clamps inside of the case slot, to assess that the gap between the strip and the case was close to 0 and to tack weld (GTAW tack weld, 10mm long, pitch 50mm) them on one half case.

Finally the two L strips were transversally GTAW welded in the mid of the case. Such assembly requires high precision due to the fact that the scope is to keep inert backing gas shielding all along the case transverse; excessive gap risks to generate shielding gas losses and consequent oxidation at the weld root.

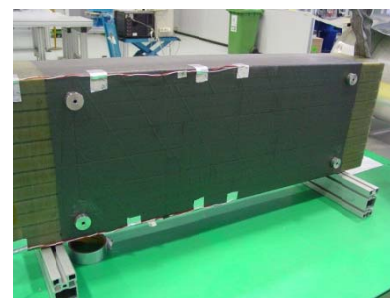
A first set of thermocouples was placed in contact with the backing strip, whereas a second set was placed on the impregnated beam that simulated the coil (see Pictures 4, 5, 6).



Picture 4



Picture 5



Picture 6

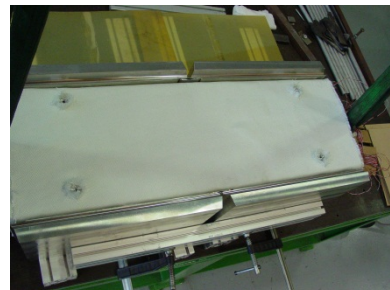
The beam was then wrapped with glass sheets and inserted into the half cases assembly.



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Picture 7



Picture 8

The first activity was the positioning of the two half cases mock-up on the clamping structure constituted by beams, brackets and locking bolts.

One of the test aim was to simulate the welding conditions foreseen on the Production Coil Cases. For this reason the samples have been positioned in vertical and clamped in an external rigid structure for simulating the constrains that the assembly tool will generate on the coil.



Picture 9



Picture 10



Picture 11

The case cover was not inserted at this stage (as foreseen in the production cycle); a provisional protection was placed on the impregnated beam. The case has been provided with several targets for the laser dimensional measurements as visible in Picture 9 and 10 and, after assembly completion and before starting of the welding activity, a reference mapping of the mock-up has been performed (Picture 11).

A check of the Magnetic permeability of the case mockup have been performed using an ASG a Foerster Magnetoscope Mod 1.069+permeability gauge mod 309 and the following values have been measured:

<u>Measuring Point</u>	<u>Permeabilità/Permeability (<math>\mu</math>) (min-max)</u>	<u>Val Rif/Ref. Value</u>	<u>Note</u>
Upper half case (short sides)	1.20-1.35	not defined	
Upper half case (long side)	1.10-1.16	not defined	
Lower half case (short sides)	1.20-1.35	not defined	
Lower half case (long side)	1.15-1.21	not defined	

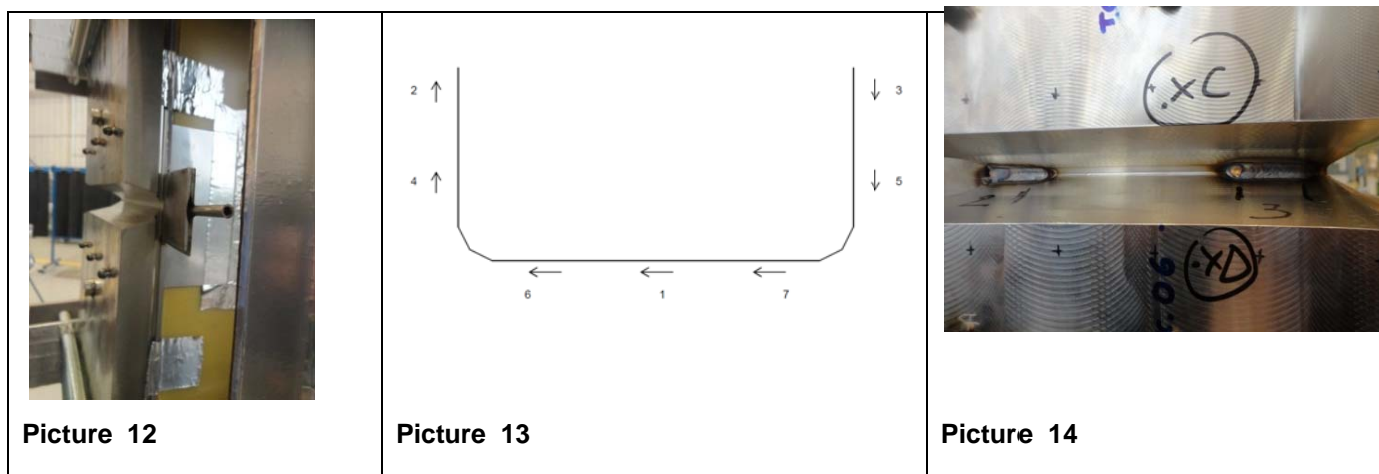
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### 3. WELDING OF THE TRANSVERSE JOINT

In order to avoid risks of coil damage, to have run-in and run out plates for welding and to properly flow the weld backing, the two additional plates shown in Picture11 have been added at both ends of the transverse joint.

Proper working of the backing gas system has been assessed before starting the welding operation.

GTAW Tack welds (30mm long, 125A) at joint root have been performed according to the sequence in Picture 13 and as shown in Picture 14.



The Welding Procedure Specification ASG 15/13, in Picture 15, has been adopted for the transverse welding of the case. Simultaneous welding of the GTAW first pass was adopted on the 2 short sides of the case and along the case corners according to the sequence reported in Picture 16 and as shown in Picture 17.

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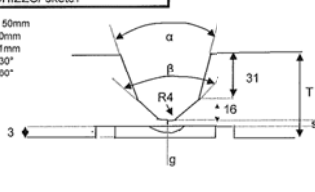
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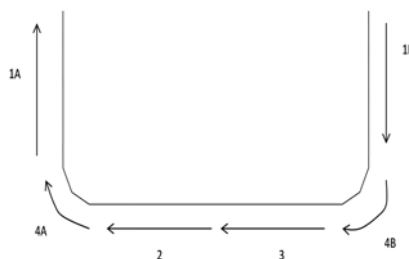
Identificativo Contratto ENEA  
ENEA Contractual ID no.

**RT-JT60TF-ASG-15049**

		SPECIFICA PROCEDIMENTO DI SALDATURA SECONDO ASME IX Welding Procedure Specification According to ASME Code Sect. IX		WPS ASG 15/13 PQR GD0020/13 Foglio 1/2
PROCEDIMENTO QUALIFICATO CON CERTIFICATO IIS CERT N° GD0020/13 Supporting PQR No				
DATA 2/07/2013 Date				
PROCEDIMENTO DI SALDATURA GTAW+GMAW Welding Process				
TIPO/Type MANUAL/SEMI-AUTOMATIC				
GIUNTI/Joints (QW 402)		SCHIZZO/sketch		
TIPO DI GIUNTO testa a testa piena penetrazione Joint design Butt weld full penetration				
SOSTEGNO/Backing NO Backing		MATERIALE DI SOSTEGNO N.A. Backing material		
ALTRI/Others Backing strip for backing gas distribution only. No backing strip fusion or weld metal support function is foreseen				
MATERIALE BASE/Base metals (QW 403)				
P.No 8 Group N 1 con lo II		P.No 8 Group A 1		
TIPO/Type ASTM A240 316L		ASTM A240 316L		
CAMPO DI SPESSORI: MATER. BASE: IN CIANFRINO I 47 mm D'ANGOLO Fillet N.A. Thickness Range Base metal Groove		DEPOSITO DI SALDATURA: per TIG (GTAW) 6 mm Deposited weld metal per MAG (GMAW) 41 mm per AS (SAW) N.A.		
GAMMA DIAM. TUBI: N.A. Pipe Dia. Range		IN CIANFRINO N.A. D'ANGOLO N.A. Fillet		
MATERIALI D'APPORTO/Filler Metals				
TIG (GTAW) F.No 6 A.No (See NOTE 1) No. SFA 5.9 AWS 5.9 No FR 317L MOD Diametro Vergella Size of welding rod 1,6 mm Trade Name BOHLER ASN5-IG		TIG (GTAW) F.No 6 A.No (See NOTE 1) No. SFA 5.9 AWS No ER 317L MOD Diametro Vergella Size of welding rod 2,4mm Trade Name BOHLER ASN5-IG		MAG (GMAW) F.No 6 A.No (See NOTE 2) No. SFA 5.9 AWS No ER 317L MOD Diametro Vergella Size of welding rod 1,2mm Trade Name BOHLER ASN5-IG (SI)
NOTE 1 BOHLER ASN5-IG C Si Mn P S Cr Ni No N Cu <0.01 0,4 5,1 0.01 <0.01 18,7 17,0 40 0.15 <0.1				
NOTE 2 BOHLER ASN5-IG (SI) C Si Mn P S Cr Ni No N Cu <0.01 0,4 5,1 0.01 <0.01 18,7 17,0 40 0.15 <0.1				

Picture 15

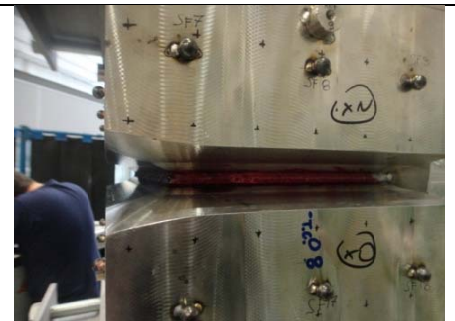
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POSIZIONI/Positions (QW 405)				
IN CIANFRINO/Groove 2G		TRATTAMENTO TERMICO/Post weld heat treatment (QW407)		
IN ANGOLO/Fillet N.A.		TEMPERATURA TEMPO DI REGIME salita discesa		
PROGRESS. DI SALD./Welding Progression		GRADIENTE ALTRI/Others		
RIM/Upwards DISCEND./Down		GAS (QW408)		
PRERISCALDO/Preheat (QW408)		TEMPERATURA Min. 20 °C		
INTERPASS 80 °C		GAS DI PROTEZ. GTAW Ar GMAW Mixture Ar-He-CO2 Shielding Gas COMPOS. PERC.(%) GTAW Ar99.995%/GMAW Ar 81-He 11-CO2 1% PORTATA/Flow Rate GTAW 9l/min GMAW 16l/min		
DURATA PRERISCALDO Preheat Maintenance OTHER: Temp. tra i tratti di sald. Inter-run temperature 20 °C		PROTEZ. AL ROVESCIO ARGON 12-14 l/min Gas Backing NO		
CARATTERI ELETTRICI/Electrical Characteristics (QW409)				
PASSATE Weld Passes	PROCESSED Processes	MATER. D'APPORTO Filler metals	CORRENTE Current	POLARITA' Electrode Polarity
1 GTAW 1,6 2-6 GTAW 2,4 7-n GMAW 1,2	1,6 2,4 1,2	ASN5-IG ASN5-IG (SI) ASN5-IG (SI)	DC DC DC	(-) (-) (+)
DIAM. E TIPO DI TUNGSTENO/Tungsten Electrode Size and type AWS A5.12 EWth 2 diam. 2,4mm		TIPO DI TRASF. MAT. PER MAG/Mode of metal transfer for GMAW PULSED ARC		
VELOCITA' DEL FILO DI ALIMENTAZ./Electr. wire feed speed range 5,5-6,2 m/min		TECNICA/Technique (QW410)		
PASSATA STRETTA String Pass x LARGA Weave		DIAM. FORO UGELLO GAS GTAW 9mm Orifice or Gas Cup Size GMAW 15mm		
PULIZIA INIZIALE E TRA LE PASSATE Initial and Interpass Cleaning SPAZZOLATURA Brushing x MOLATURA Grinding x		OSCILLAZIONE Oscillation N.R. DISTANZA DELL'UGELLO DAL PEZZO N.R.		
METODO DI SOLCATURA AL ROVESCIO Method of Back Gouging MOLATURA Grinding N.R.		MARTELLATURA (Peening) N.R.		
PASSATA SINGOLA Single pass MULTIPLE Multiple x ELETTRODO SINGOLO Single electrode x MULTIPLO Multiple		APPORTO TERMICO/Heat input (KJ/mm) Weld passes 1 0.76-1.23 2-6 0.69-0.96 7-n 0.71-1.08		
DATA Date	PREPARATO prepared	CONTROLLATO checked	VERIFICATO checked	EMESSO issued
27/05/13	PRS	GQL	PRS	PRS



Picture 16



Picture 17



Picture 18

After the completion of the first GTAW pass, visual and dye penetrant test (Picture 18) have been performed without evidencing any relevant indications.



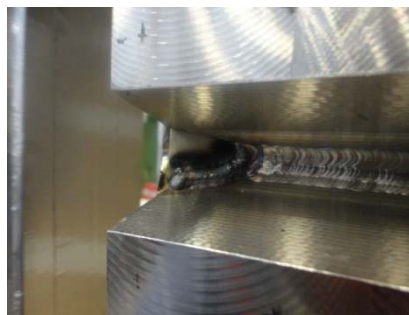
Titolo title  <b>Report of the JT-60SA casing mock-up welding</b>	Identificativo document no.  <b>700RM15049</b>	Rev. rev.  <b>0</b>	Pag. page  <b>8</b>	Di of  <b>16</b>
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A total of 3 GTAW layers (6 GTAW welding passes) were finally performed adopting the same sequence shown in Picture 16. A second dye penetrant test on the last GTAW weld layer has been performed without evidencing any relevant indications.

After completion of GTAW layers a sequence for completing the transverse weld in correspondence of the cross with the longitudinal chamfers was tested. In this area the root of the chamfer is missing as shown in Picture 19. In order to fill this area a ceramic support was placed inside of the groove and



Picture 19



Picture 20



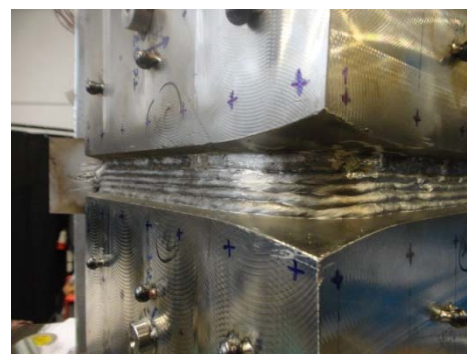
Picture 21

short, overlapped GTAW passes have been performed (Picture 20) up to the closure of the gap (Picture 21). Due to the complexity of this operation, ASG proposes to avoid it by introducing a thin shaped sheet inside of the groove, joining completely its perimeter to the case before depositing filling passes on it; this option was submitted to ENEA-F4E and is under evaluation. After completion of these welds layers at both extremities of the mock-up, grinding and cleaning of these areas have been performed. At the end of the layer deposit a run in-plate was placed, for the subsequent GMAW welding passes.

The GMAW filling passes have been performed in 3 different steps each, again starting from the simultaneous welding of the mock-up short sides. A final step was then performed on the long side. The adopted sequence is shown in Picture 22. All weld stop and starting point were grinded for removing potential welding defects. The stop and start position was properly scaled among the welding passes that form a weld layer, for simplifying the grinding of end of the weld step.



Picture 22

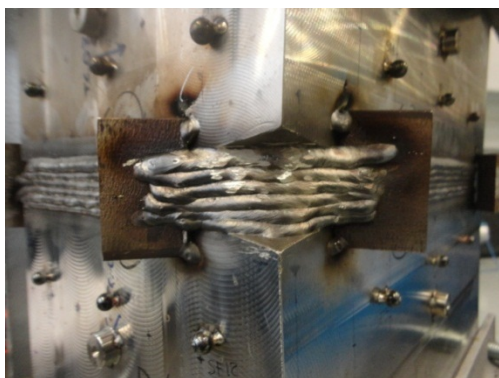


Picture 23

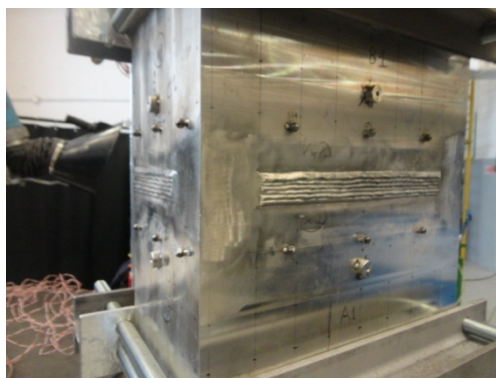


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After 11 welding layers, the transverse chamfer was filled with the exception of the two corners. It was decided to introduce new run-in and run-out plates fixed on the chamfer, as shown in Picture 24, for continuing the GMAW filling passes. When the corners were almost filled, the run-in and run-out plates have been removed and the corner completed by GTAW. At the end the corner surfaces were flushed, with the final result shown in Picture 25. A final dye penetrant test did not evidence any relevant indications all along the complete transverse weld.



**Picture 24**



**Picture 25**

The transverse weld thermal impact on the coil was fully recorded by means of 8 thermocouples placed as shown in Picture 26.

Picture 27 and 28 show the temperature graphs recorded during the welding activity; maximum temperature of 130°C was detected behind the backing strip while the impregnation beam reached a maximum temperature of about 80°C.

At the end of the welding activities (including the longitudinal welds described in the next chapter) the impregnation beam was extracted to be used for an embedding test. No damage, burning or colouring of the glass sheets wrapped around the impregnation beam was detected, as additional confirmation that critical temperatures were not reached during welding

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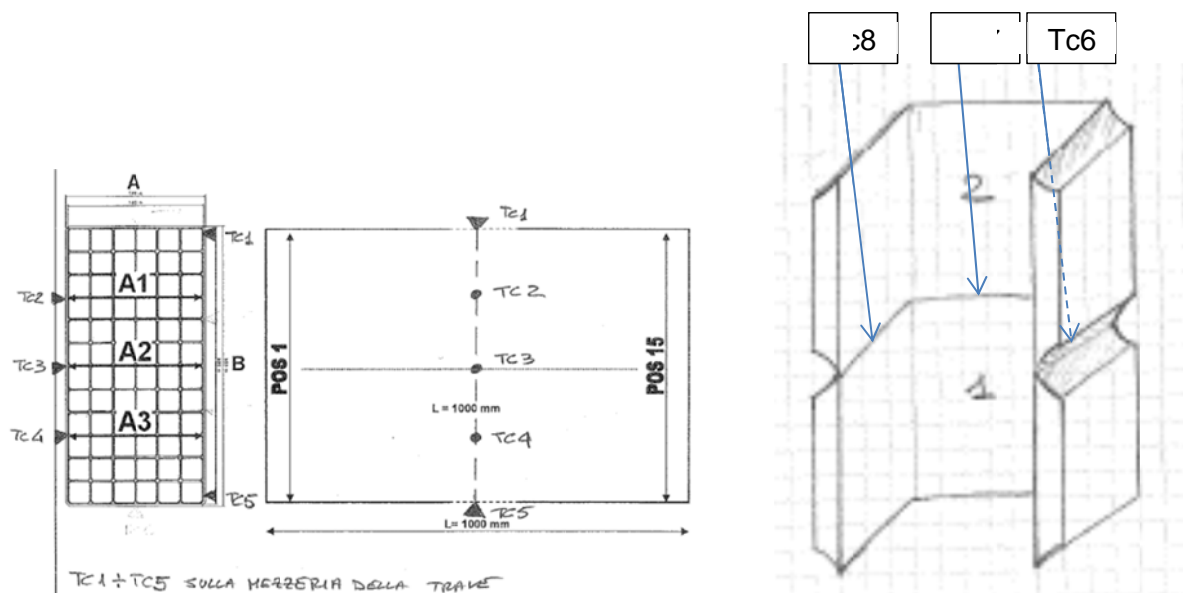
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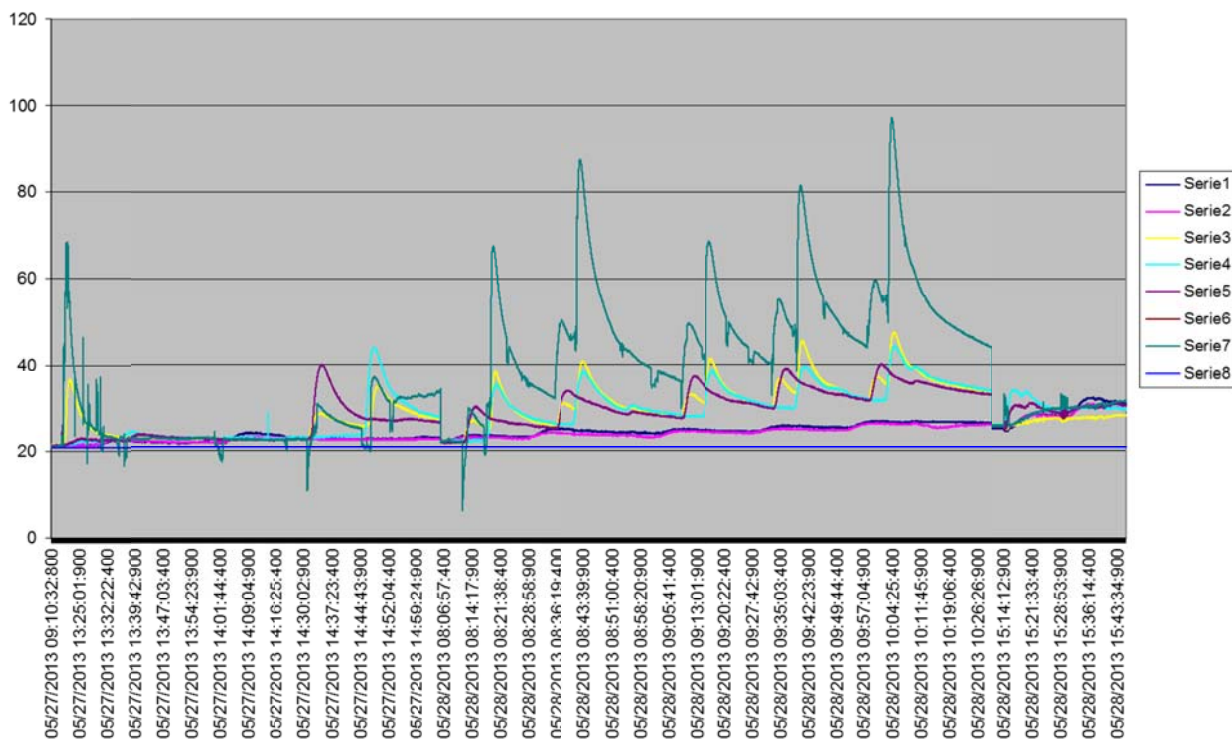
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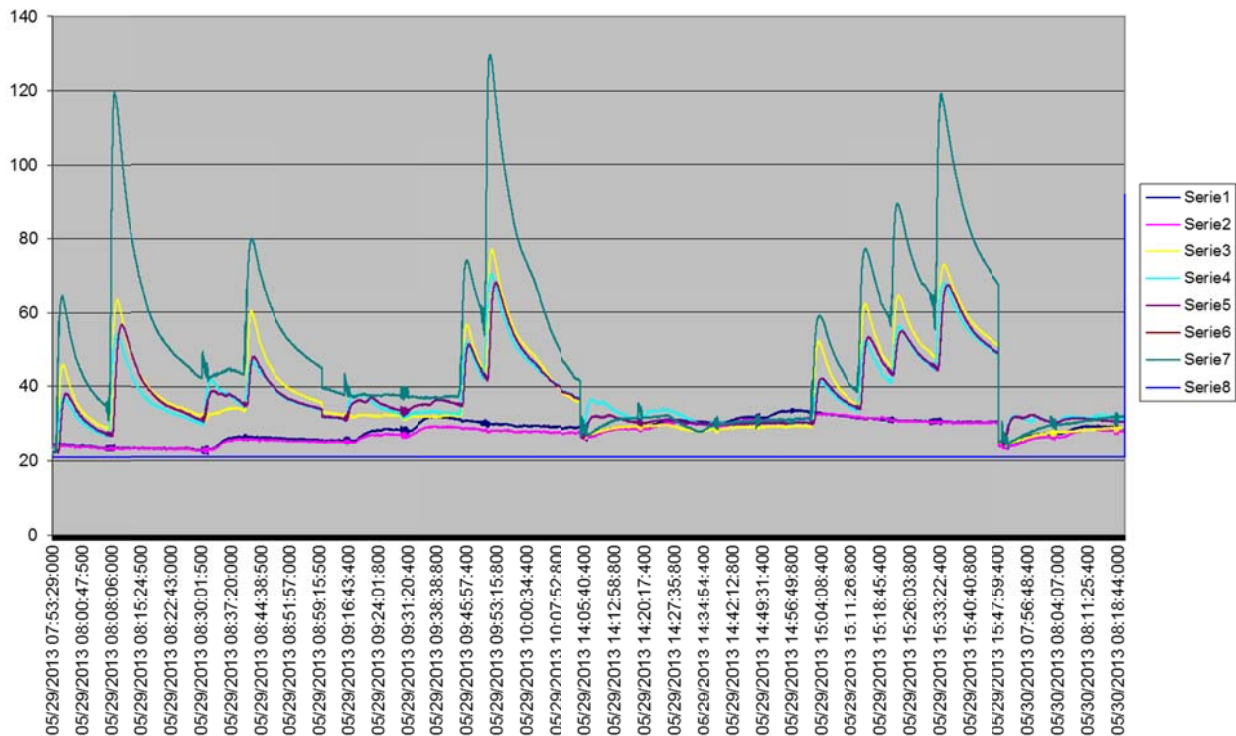


Picture 26



Picture 27

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Picture 28

## 4. DIMENSIONAL SURVEY

It was foreseen to perform a geometrical survey, in different stages, of the transverse and longitudinal welds completion. The following steps were envisaged:

During transverse weld:

- Dimensional survey after assembly, before transverse welding
- Dimensional survey after GTAW root pass
- Dimensional survey after third GTAW layer (6 GTAW passes, 6mm thk.)
- Dimensional survey after second GMAW layer ( 6+15mm thk.)
- Dimensional survey after fifth GMAW layer ( 6+30mm thk.)
- Dimensional survey at the welding completion (6+41mm thk.)

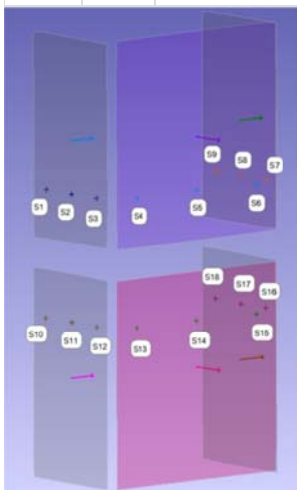
During longitudinal welds:

- Dimensional survey after assembly and tack welding of the covers
- Dimensional survey after GTAW root pass
- Dimensional survey after second GTAW layer
- Dimensional survey after second GMAW layer (mid of GMAW layer deposited)
- Dimensional survey at the longitudinal welds completion

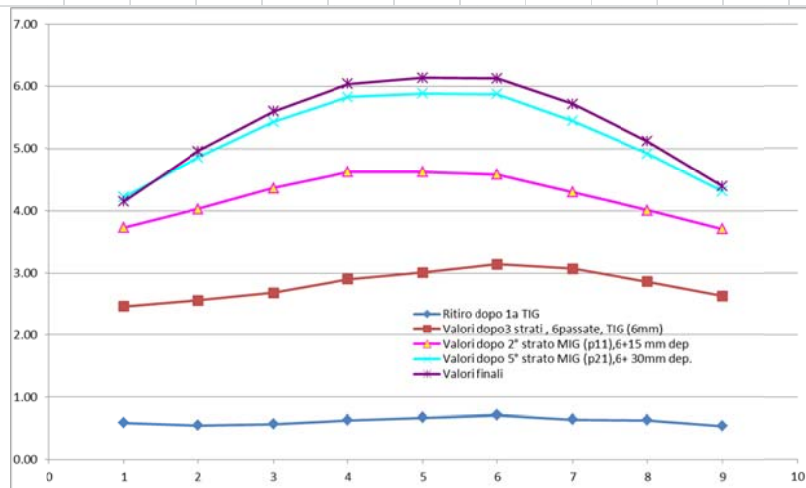
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The complete set of the performed laser measurements is in the Annexed Report MA132802. Additionally, Picture 29 summarizes the variations detected by a caliper on the distance among some reference spheres that were fixed on the mock-up during the transverse joint welding

			VERTICALE									ORIZZ. ALTO			ORIZZ. BASSO		
			S1-S10	S2-S11	S3-S12	S4-S13	S5-S14	S6-S15	S7-S16	S8-S17	S9-S18	S1-S3	S4-S6	S7-S9	S10-S12	S13-S15	S16-S18
27/05/2013	Rif. 1	Valori iniziali (prima della sald.)	148.41	147.75	147.87	149.21	149.86	147.50	151.38	151.82	147.86	185.80	244.80	176.27	184.93	244.52	179.27
27/05/2013	Rif. 2	Valori dopo 1a passata TIG	147.82	147.20	147.30	148.58	149.19	146.79	150.74	151.19	147.32	186.16	244.75	176.29	185.27	244.79	179.30
	Rif. 1-Rif. 2	Ritiro dopo 1a TIG	0.59	0.55	0.57	0.63	0.67	0.71	0.64	0.63	0.54	-0.36	0.05	-0.02	-0.34	-0.27	-0.03
28/05/2013	Rif. 3	Valori dopo3 strati , 6passate, TIG (6mm)	145.95	145.19	145.19	146.31	146.85	144.36	148.31	148.96	145.23	185.71	244.85	176.31	184.83	244.80	179.22
	Rif. 2-Rif. 3		1.87	2.01	2.11	2.27	2.34	2.43	2.43	2.23	2.09	0.45	-0.10	-0.02	0.44	-0.01	0.08
	Rif. 1-Rif. 3	Ritiro dopo TIG	2.46	2.56	2.68	2.90	3.01	3.14	3.07	2.86	2.63	0.09	-0.05	-0.04	0.10	-0.28	0.05
29/05/2013	Rif. 4	Valori dopo 2° strato MIG (p11), 6+15 mm dep	144.68	143.72	143.50	144.58	145.23	142.91	147.08	147.81	144.15	185.78	245.04	176.33	184.95	244.61	179.35
	Rif 3-Rif 4		1.27	1.47	1.69	1.73	1.62	1.45	1.23	1.15	1.08	-0.07	-0.19	-0.02	-0.12	0.19	-0.13
	Rif 1-Rif 4		3.73	4.03	4.37	4.63	4.63	4.59	4.30	4.01	3.71	0.02	-0.24	-0.06	-0.02	-0.09	-0.08
30/05/2013	Rif. 5	Valori dopo 5° strato MIG (p21), 6+30mm dep.	144.19	142.89	142.44	143.38	143.97	141.62	145.93	146.90	143.54	185.61	244.79	176.25	184.68	244.69	179.35
	Rif 4-Rif 5		0.49	0.83	1.06	1.20	1.26	1.29	1.15	0.91	0.61	0.17	0.25	0.08	0.27	-0.08	0.00
	Rif 1-Rif 5		4.22	4.86	5.43	5.83	5.89	5.88	5.45	4.92	4.32	0.19	0.01	0.02	0.25	-0.17	-0.08
03/06/2013	Rif. 6	Valori finali	144.26	142.79	142.27	143.17	143.72	141.37	145.66	146.70	143.46	185.70	244.73	176.18	184.58	244.67	178.95
	Rif 5-Rif 6		-0.07	0.10	0.17	0.21	0.25	0.25	0.27	0.20	0.08	-0.09	0.06	0.07	0.10	0.02	0.40
	Rif 1-Rif 6		4.15	4.96	5.60	6.04	6.14	6.13	5.72	5.12	4.40	0.10	0.07	0.09	0.35	-0.15	0.32



Picture 29

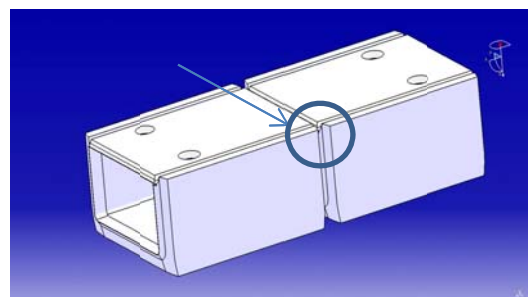


Following the analysis of these measurements, a total 5 mm extra-length on each transversal joint of the case is deemed as the minimum value to avoid the interference between case and coil, due to the welding shrinkage.

## 5. LONGITUDINAL WELD OF THE COVERS CASE

After completion of the transverse joint, the mock-up has been 90° rotated and placed with the longitudinal chamfer in frontal position. The provided mock-up cover was divided in two identical parts.

Assembling these covers, the joint between them will result exactly in correspondence of the transverse joint, generating a cross between 3



Picture 30



Titolo title  <b>Report of the JT-60SA casing mock-up welding</b>	Identificativo document no.  <b>700RM15049</b>	Rev. rev.  <b>0</b>	Pag. page  <b>13</b>	Di of  <b>16</b>
	Identificativo Contratto ENEA ENEA Contractual ID no.  <b>RT-JT60TF-ASG-15049</b>			

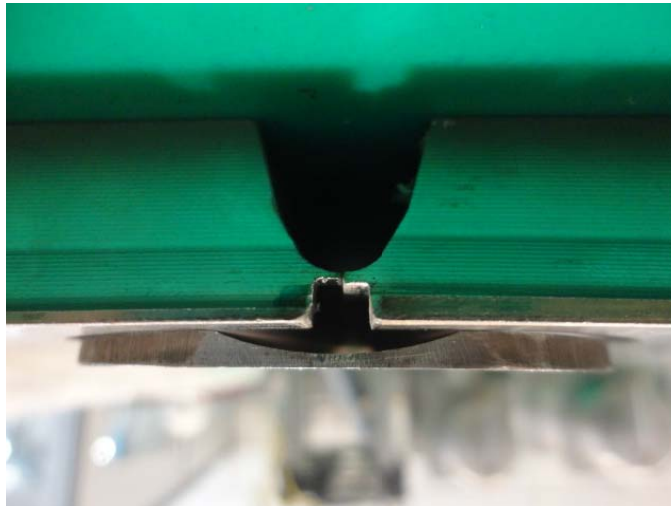
different welds (transverse weld, longitudinal of the covers, vertical weld between the covers) as shown in Picture 30.

For the production cases it has already been decided to shift the joint between the covers in order to avoid this triple cross. In order to simulate this geometry one of the half cover was reduced in length and the vertical joint between covers consequently moved about 100mm in respect of the transverse one.

This modification caused the impossibility to put backing gas in the plate behind the covers joint. For this reason a breakage of the wall of the slot present at the back of covers was performed both sides (see Pictures 31 and 32) and the backing strip spot welded to one cover. In this way the channel was connected to the longitudinal channels present on the case allowing backing gas protection of all welds



**Picture 31**

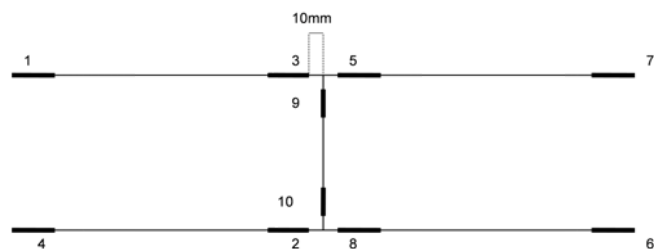


**Picture 32**

The covers were preliminary tack welded to the case by keeping pressure on them with the same stiffening tool used for the transverse weld (see picture 33). The tack welding sequence was as shown in Picture 34, performing 8 GTAW tack welds, 50mm long each, in the longitudinal chamfers and 2 tack welds, 30mm each, in the vertical joint.



**Picture 33**



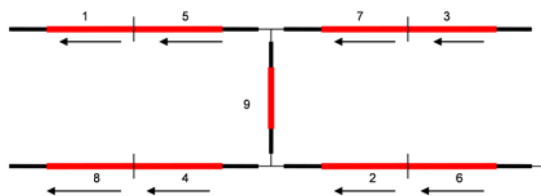
**Picture 34**

**Picture 36**

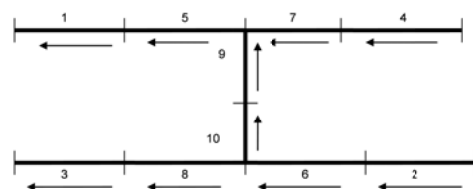
Titolo title	Identificativo document no.	Rev. rev.	Pag. page	Di of
	700RM15049			
Report of the JT-60SA casing mock-up welding	Identificativo Contratto ENEA ENEA Contractual ID no.	0	15	16
	RT-JT60TF-ASG-15049			

In order to avoid to have different welding deposit thicknesses, in correspondence of the welding cross, that should generate problems at the start/end of the welding run, it was decided to fill uniformly the different joints, completing the same welding layer for all the joints, before performing the next.

The first GTAW pass was performed according to the sequence shown in Picture 37. The backing gas protection was performed by inserting a 6x1mm pipe alternatively inside the channels present behind each joint. For this reason the cross area was left unwelded up to the completion of the entire GTAW root pass



Picture 37

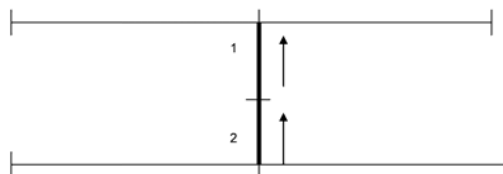


Picture 38

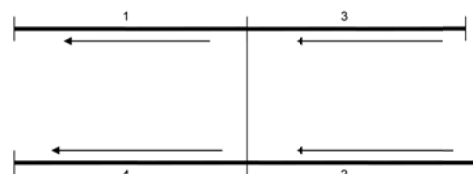
Then, the two cross and the wall breakage in correspondence of the vertical joint were closed by a GTAW pass, performed in longitudinal direction and with backing gas shielding in the longitudinal channel.

The second GTAW layer (2 passes) was then performed according to the sequence in Picture 38.

The longitudinal welds were be filled then with GMAW passes, while the joint between covers was completed by GTAW. The adopted sequences are shown in Picture 39 (GTAW) and 40 (GMAW).



Picture 39



Picture 40

In order to keep the weld deposit thickness uniform in all the chamfers, 5 filling GTAW passes were performed first on the vertical joint and after 2 filling GMAW passes were performed on the longitudinal ones. Following this approach, additional 2 GTAW on the vertical joint with 3 GMAW on the longitudinal and finally 7 GTAW on vertical and 3 GMAW passes were done for completing these welds.

Intermediate and final results are shown in Pictures 41, 42, 43, 44, 45.

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	Identificativo Contratto ENEA ENEA Contractual ID no.  <b>RT-JT60TF-ASG-15049</b>			



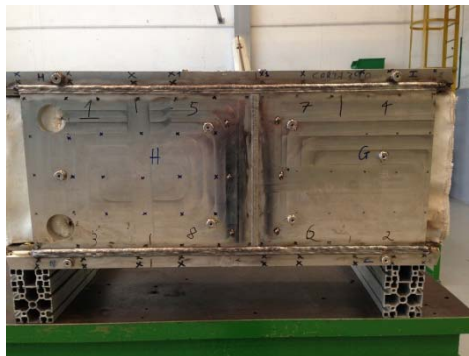
**Picture 41**



**Picture 42**



**Picture 43**



**Picture 44**




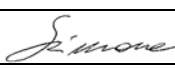
**Picture 45**

A final dye penetrant test has been performed without evidencing any defects.

The mock-up has been cut in two parts, allowing removing the backing strip behind the transverse weld and the vertical weld between covers. Full penetration and proper backing gas shielding have been detected at Visual Inspection

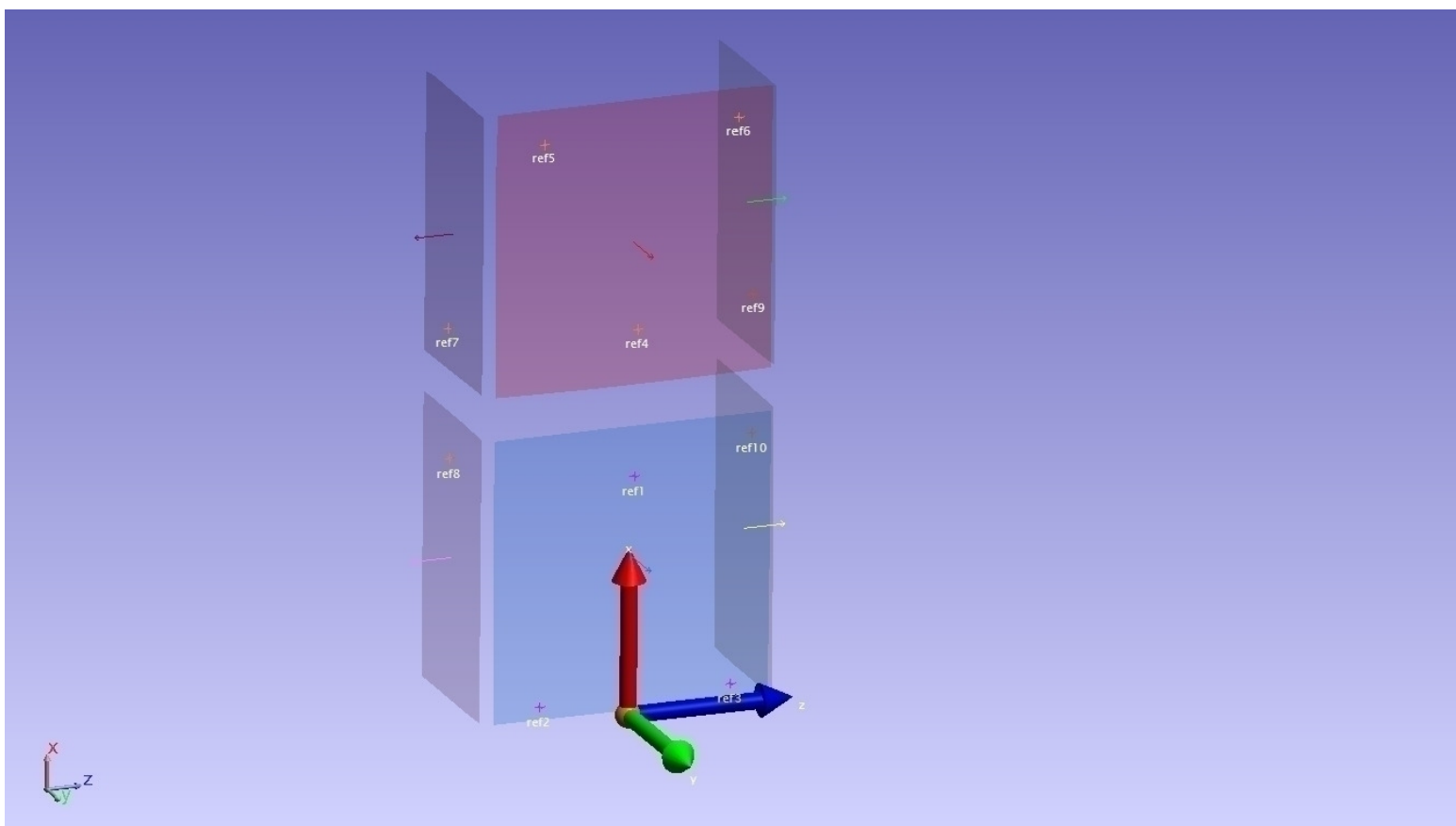
The welds have been grinded in order to get a flush surface and dispatched to an NDT Company for UT inspection. This activity includes also the development of a dedicated NDT procedure and preparation of appropriate calibration blocks and is ongoing.



		<b>RAPPORTO DI CONTROLLO</b> <i>Inspection Report</i>				<b>MA132802</b>	
		<input type="checkbox"/> IN APPROVVIGIONAMENTO <i>on purchasing</i>		<input checked="" type="checkbox"/> IN FABBRICAZIONE <i>on manufacturing</i>		Pag. 1 di 1	
COMMESSA/ Job <b>RS24 - 2053</b>	LOTTO/ Lot	COMPONENTE/ Item code	DISEGNO/ Drawing <b>DWG-12110.03</b> FG. 1 a 4	POS/ Item	REV./ Rev.	B.A.M./ Work note	
IMPIANTO plant <b>TFC FOR JT60SA</b>	CLIENTE / customer <b>ENEA – F4E</b>	PCF <b>QCP-JT60-ASG-90.12110.03</b>	REV. <b>0</b>	ITEM <b>2.3 - 3.3</b>			
SPECIFICA/ Specification <b>700RM14583</b>		REV./ Rev. <b>0</b>	STAMPIGLIATURE/ Stamps  <b>JTASMU01 JTASMU02</b> <b>JTASMU03-A JTASMU03-B</b> <b>JTASMU04-A JTASMU04-B</b>				
DESCRIZIONE PRODOTTO/ Item <b>Coil case mock-up</b>							
Strumentazione/ Instruments: Measuring Laser Tracker API R-20 Radian s.n. 60024							
<b>Esito/ Result:</b>	conforme/ conforming	<input type="checkbox"/>	non conforme/ non-conforming	<input type="checkbox"/>	RNC No. ....	N.A. n/a	<input checked="" type="checkbox"/>
COGNOME Name	A.Scimone						
FIRMA Signature							
DATA Date	08/07/13						
ENTE Department	ASG/GQL						

SALDATURA TRASVERSALE

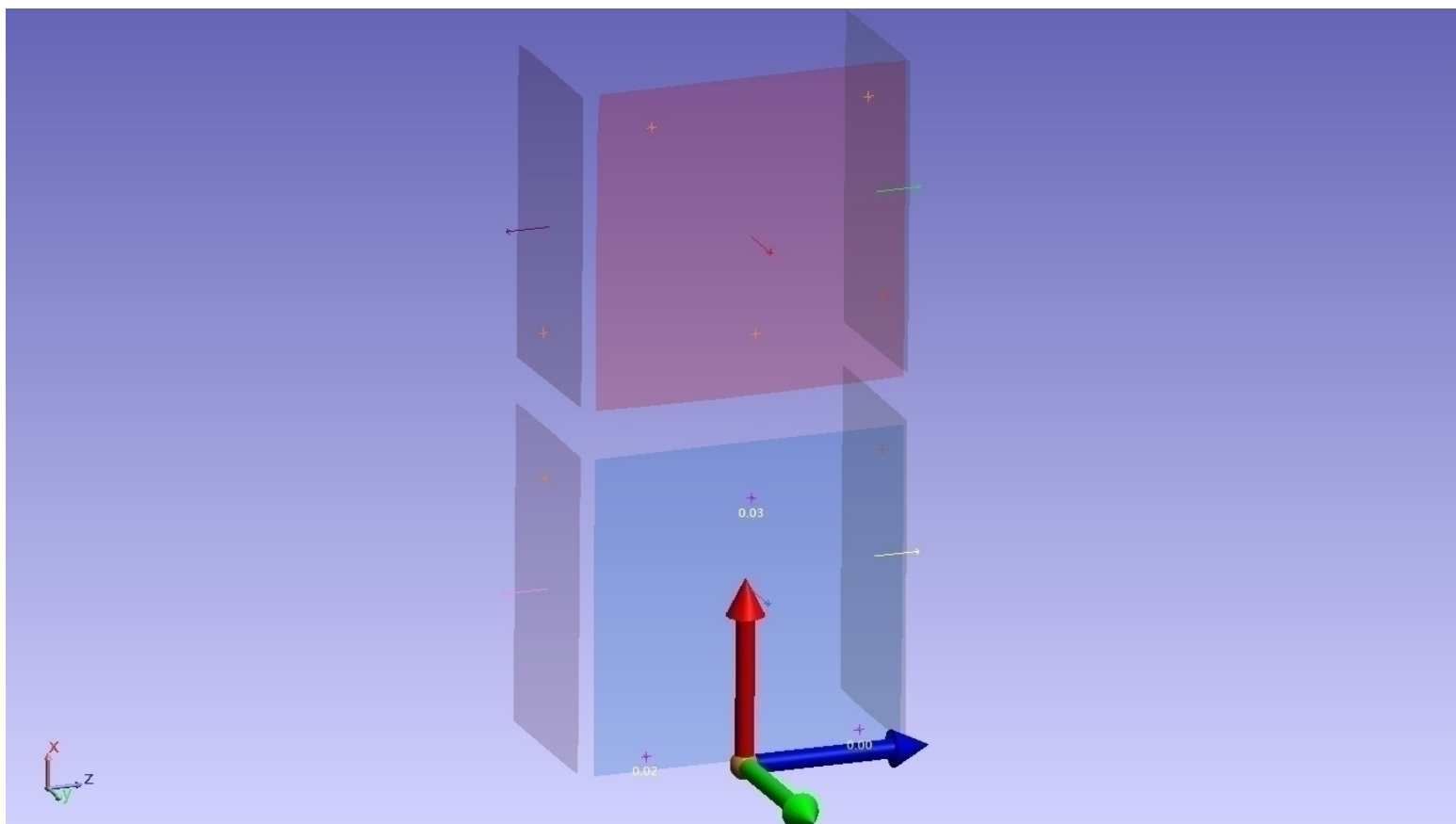
Nome riferimenti



Nota: Ad ogni controllo, l'allineamento del braccio veniva effettuato ai REF: 1, 2, 3

Il sistema di riferimento usato è sempre lo stesso per ogni controllo

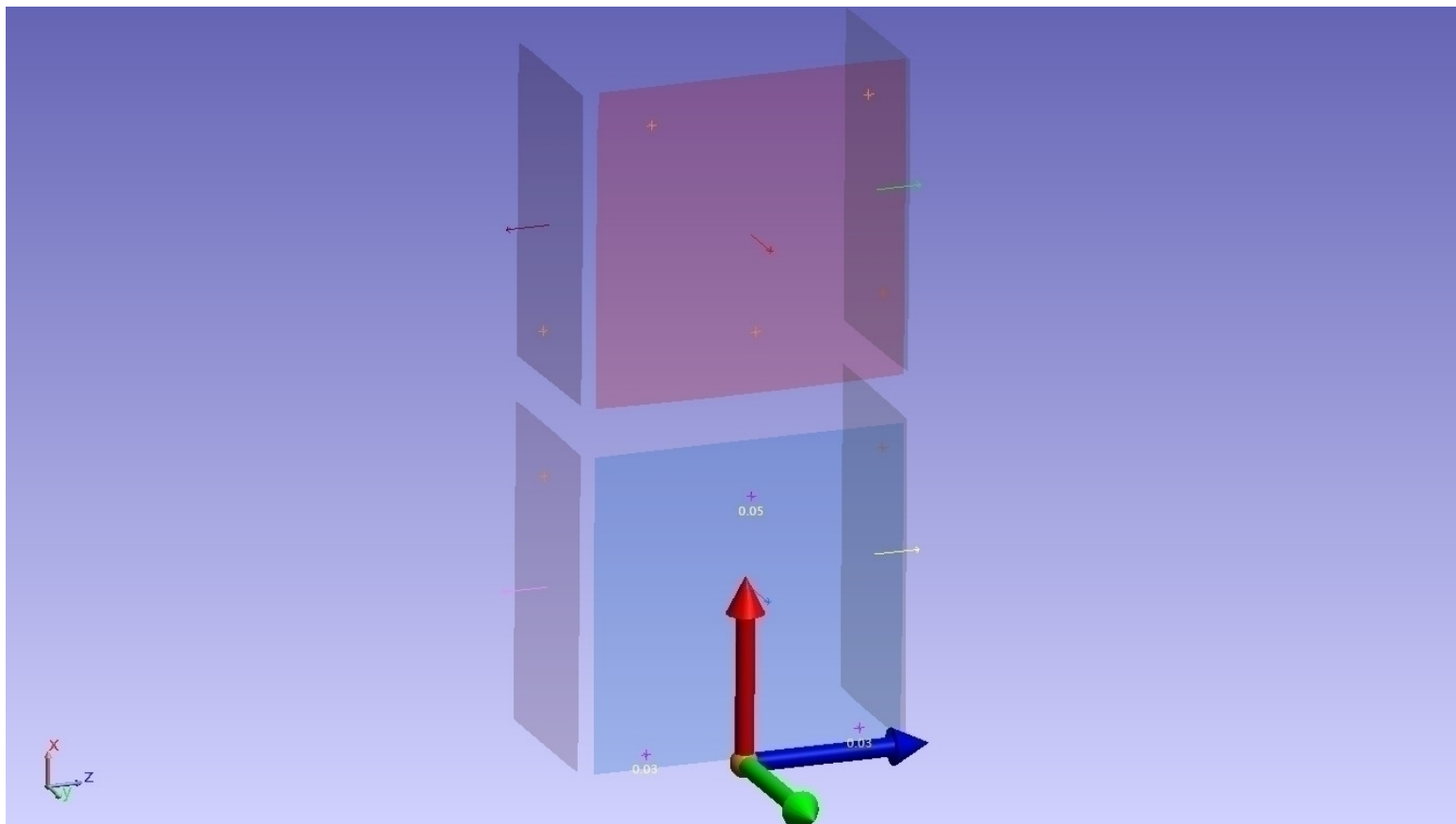
Scostamento REF 1, 2, 3 al 1° controllo (DOPO RADICI DI SALDATURA TIG)



All Vectors Summary: Vector Group 1° controllo 27/05/2013::Allineamento REF 1° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.02	-0.00	-0.01	0.00
Max	0.02	0.00	0.01	0.03
Average	-0.00	-0.00	0.00	0.02
StdDev from Avg	0.02	0.00	0.01	0.01
StdDev from Zero	0.02	0.00	0.01	0.02
RMS	0.02	0.00	0.01	0.02
Count	3			

Vector Group 1° controllo 27/05/2013::Allineamento REF 1° controllo				
Name	Delta			Mag
	dX	dY	dZ	Mag
ref1	0.02	0.00	0.01	0.03
ref2	-0.02	-0.00	-0.01	0.02
ref3	-0.00	-0.00	-0.00	0.00

Scostamento REF 1, 2, 3 al 2° controllo (DOPO N°3 PASSATE DI RIEMPIMENTO TIG)

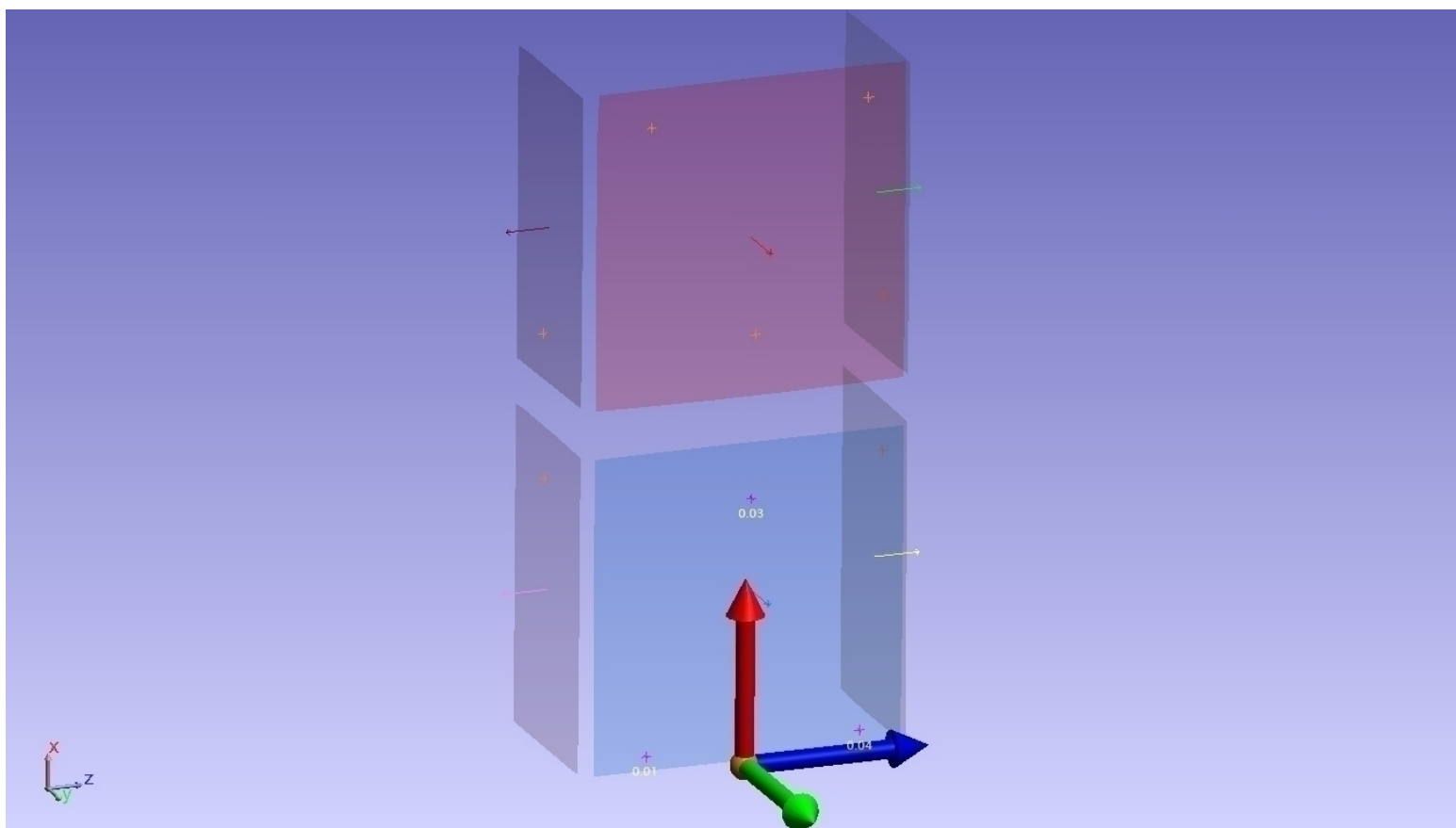


All Vectors Summary: Vector Group 2° controllo 28/05/2013::Allineamento REF 2° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.03	-0.00	-0.00	0.03
Max	0.05	0.00	0.01	0.05
Average	0.00	0.00	0.00	0.04
StdDev from Avg	0.05	0.00	0.01	0.01
StdDev from Zero	0.05	0.00	0.01	0.05
RMS	0.04	0.00	0.00	0.04
Count	3			

Vector Group 2° controllo 28/05/2013::Allineamento REF 2° controllo				
Name	Delta			
	dX	dY	dZ	Mag
ref1	0.05	0.00	-0.00	0.05
ref2	-0.03	-0.00	-0.00	0.03
ref3	-0.03	-0.00	0.01	0.03



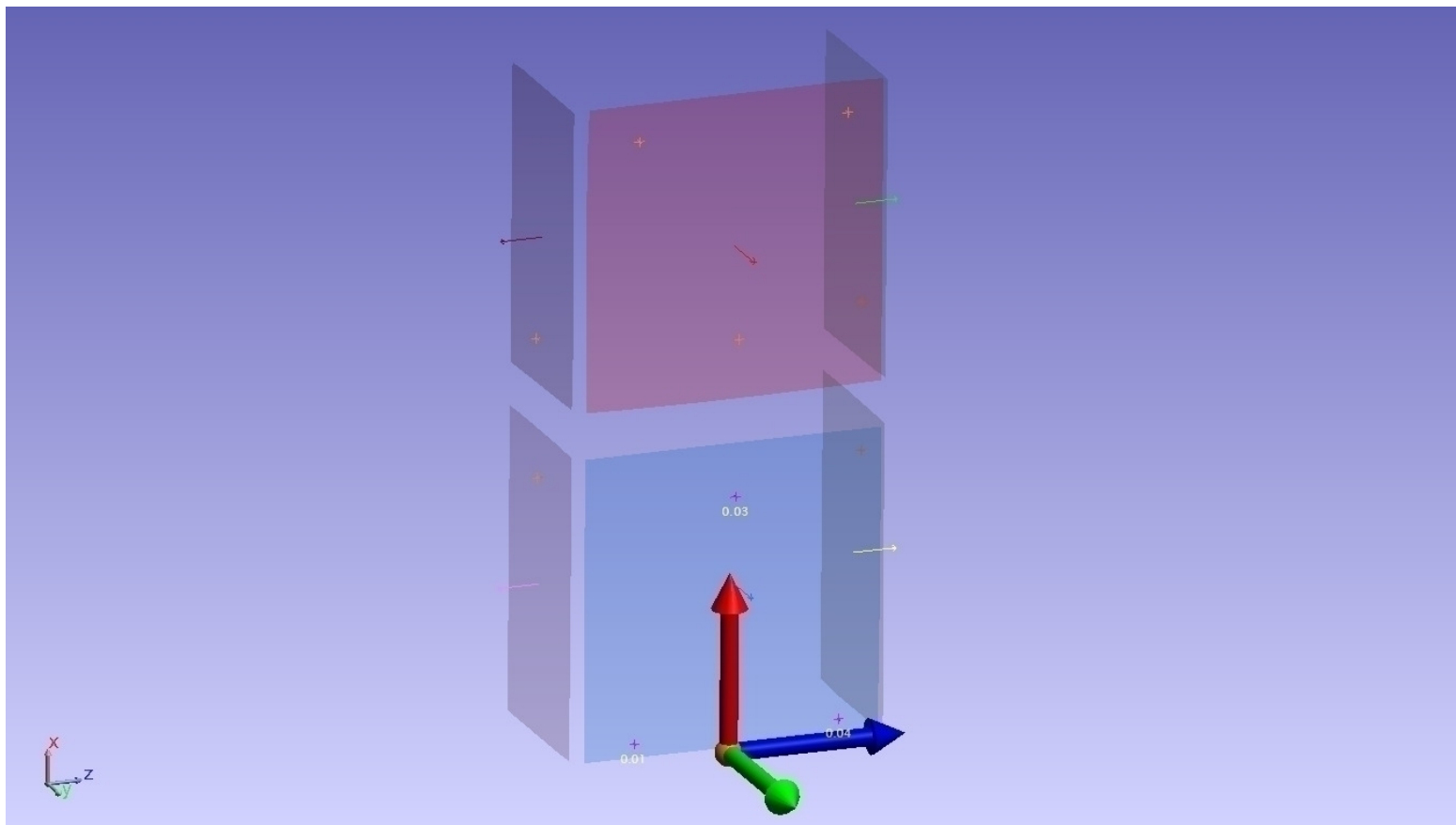
Scostamento REF 1, 2, 3 al 3° controllo (DOPO 1a PASSATA DI RIEMPIMENTO CIRCA 15 mm - FILO)



All Vectors Summary: Vector Group 3° controllo 29/05/2013::Allineamento REF 3° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.03	-0.00	-0.01	0.01
Max	0.03	0.00	0.02	0.04
Average	-0.00	0.00	-0.00	0.03
StdDev from Avg	0.03	0.00	0.02	0.02
StdDev from Zero	0.03	0.00	0.02	0.04
RMS	0.03	0.00	0.01	0.03
Count	3			

Vector Group 3° controllo 29/05/2013::Allineamento REF 3° controllo				
Name	Delta			
	dX	dY	dZ	Mag
ref1	0.03	0.00	-0.01	0.03
ref2	-0.00	0.00	-0.01	0.01
ref3	-0.03	-0.00	0.02	0.04

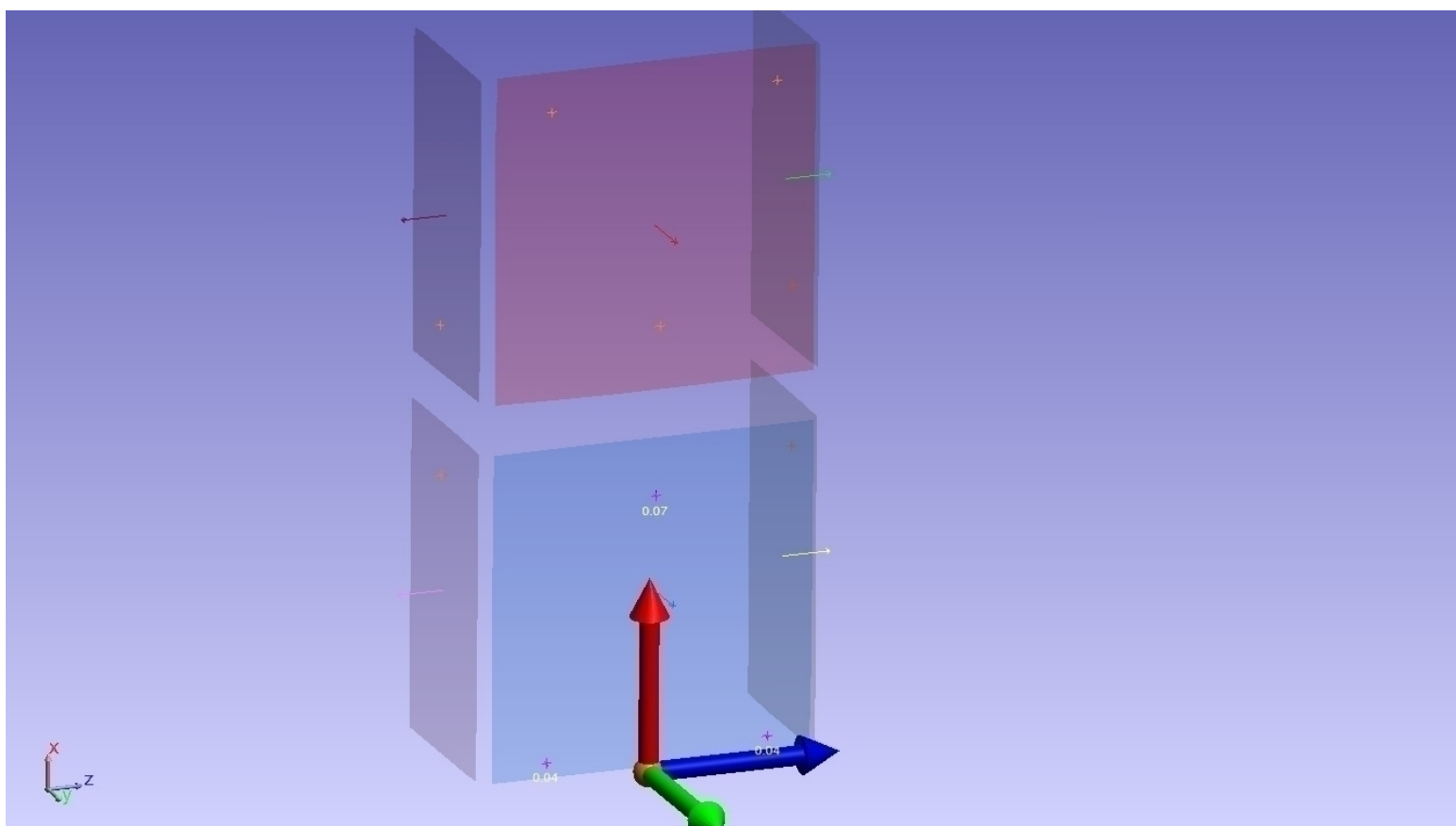
Scostamento REF 1, 2, 3 al 4° controllo (DOPO 2a PASSATA DI RIEMPIMENTO CIRCA 15 mm - FILO)






All Vectors Summary: Vector Group 4° controllo 30/05/2013::Allineamento REF 4° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.03	-0.00	-0.01	0.01
Max	0.03	0.00	0.02	0.04
Average	-0.00	0.00	-0.00	0.03
StdDev from Avg	0.03	0.00	0.02	0.02
StdDev from Zero	0.03	0.00	0.02	0.04
RMS	0.03	0.00	0.01	0.03
Count	3			

Vector Group 4° controllo 30/05/2013::Allineamento REF 4° controllo				
Name	Delta			
	dX	dY	dZ	Mag
ref1	0.03	0.00	-0.01	0.03
ref2	-0.00	0.00	-0.01	0.01
ref3	-0.03	-0.00	0.02	0.04

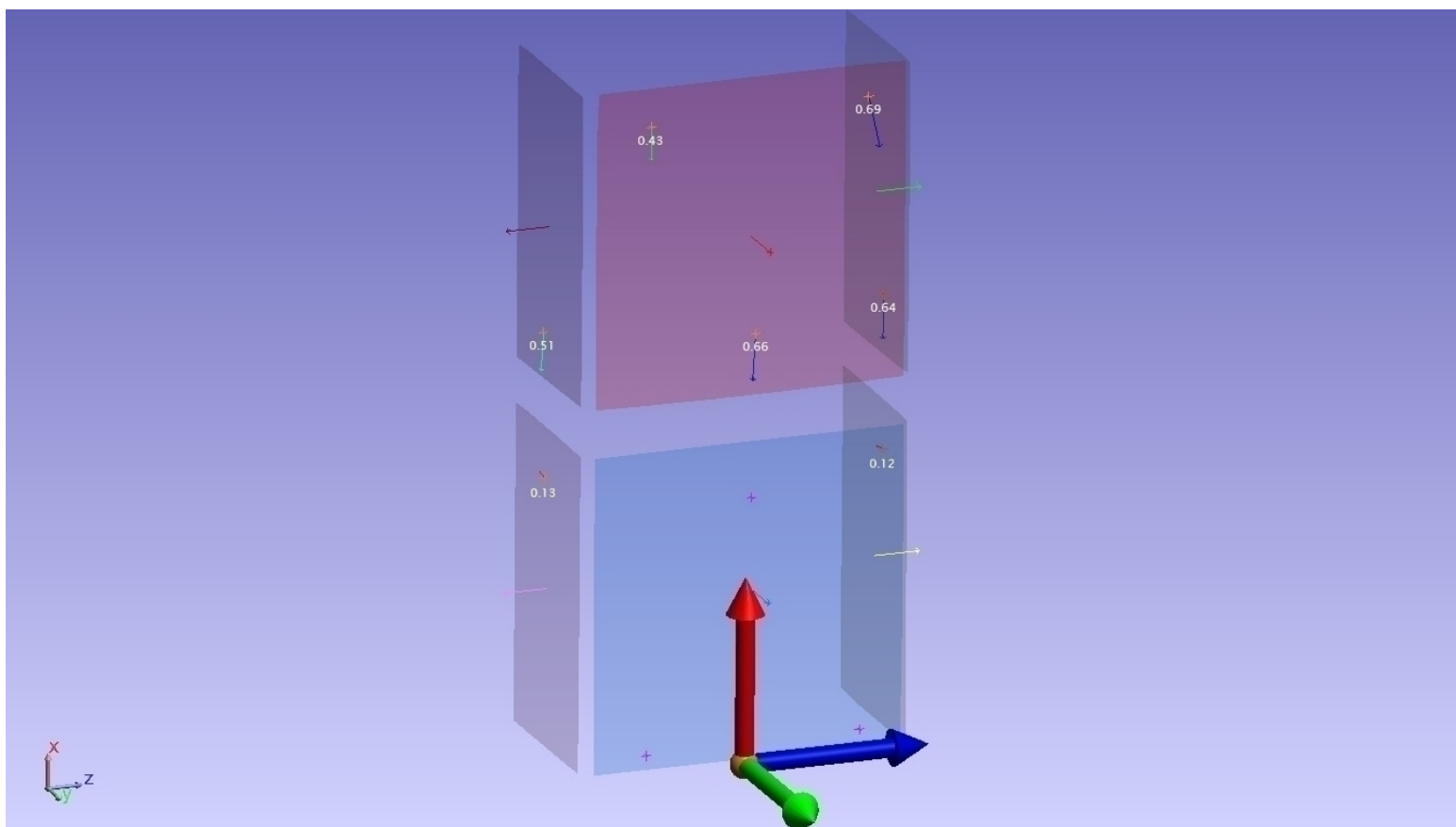
Scostamento REF 1, 2, 3 al 5° controllo (DOPO 3a PASSATA DI RIEMPIMENTO CIRCA 10 mm - FILO)



All Vectors Summary: Vector Group 5° controllo 03/06/2013::Allineamento REF 5° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.04	-0.00	-0.02	0.04
Max	0.07	0.00	0.02	0.07
Average	0.00	0.00	0.00	0.05
StdDev from Avg	0.06	0.00	0.02	0.02
StdDev from Zero	0.06	0.00	0.02	0.06
RMS	0.05	0.00	0.01	0.05
Count	3			

Vector Group 5° controllo 03/06/2013::Allineamento REF 5° controllo					
Name	Delta			Mag	
	dX	dY	dZ		
ref1	0.07	0.00	-0.00	0.07	
ref2	-0.04	-0.00	0.02	0.04	
ref3	-0.04	-0.00	-0.02	0.04	

Scostamento REF 4 ÷ REF 10 al 1° controllo (DOPO RADICI DI SALDATURA TIG)

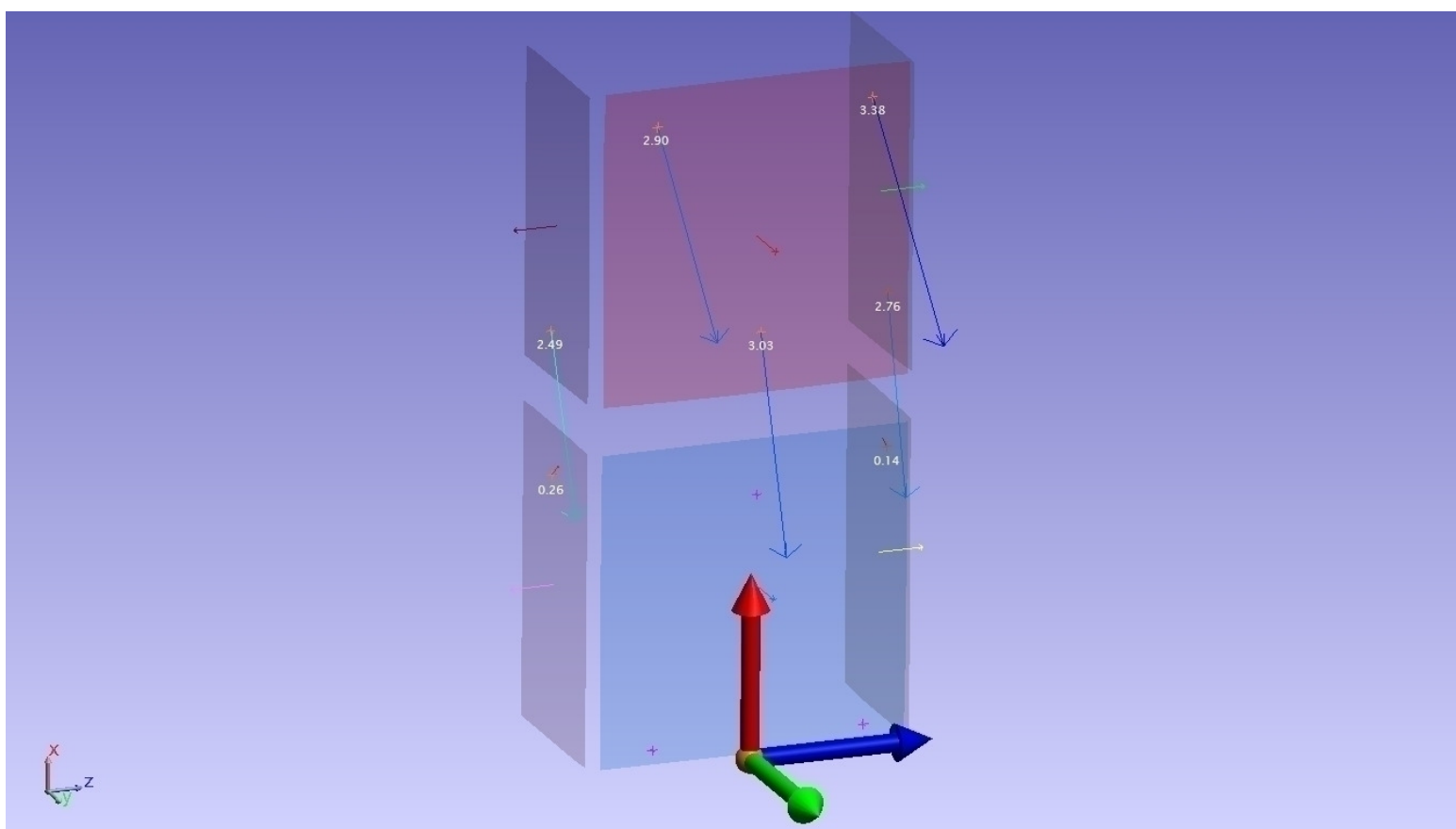


All Vectors Summary: Vector Group 1° controllo 27/05/2013::REF1-REF1				
Statistic	dX	dY	dZ	Mag
Min	-0.67	-0.11	-0.08	0.12
Max	0.10	0.11	0.12	0.69
Average	-0.39	0.01	-0.01	0.45
StdDev from Avg	0.32	0.08	0.07	0.24
StdDev from Zero	0.53	0.08	0.07	0.54
RMS	0.49	0.08	0.06	0.50
Count	7			

Vector Group					
1° controllo 27/05/2013::REF1-REF1					
Name	Delta				
	dX	dY	dZ	Mag	
ref4	-0.66	-0.05	-0.02	0.66	
ref5	-0.41	0.10	-0.03	0.43	
ref6	-0.67	0.11	0.12	0.69	
ref7	-0.50	0.05	-0.05	0.51	
ref8	0.10	0.02	-0.08	0.13	
ref9	-0.63	-0.06	0.02	0.64	
ref10	0.01	-0.11	-0.04	0.12	



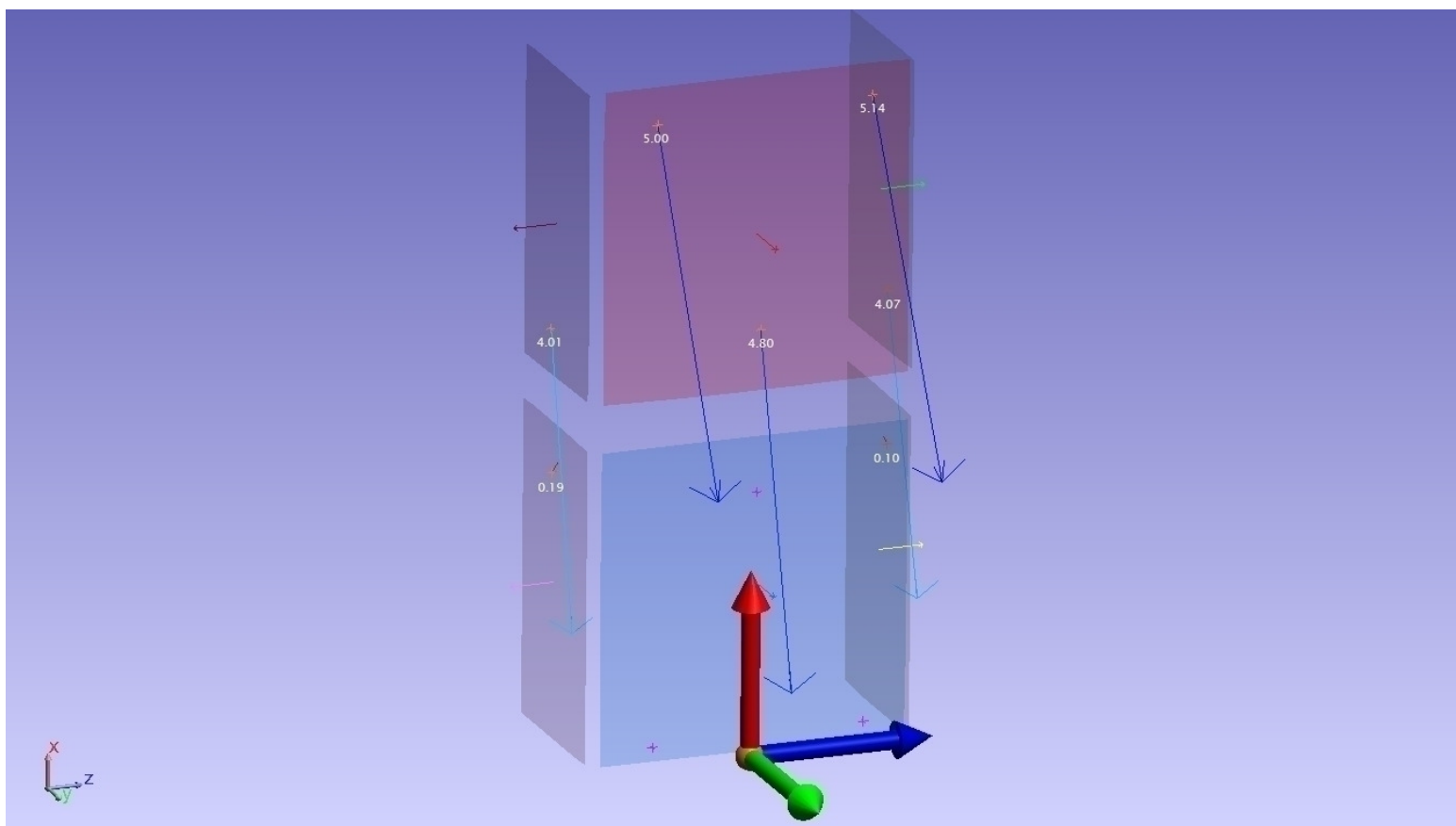
Scostamento REF 4 ÷ REF 10 al 2° controllo (DOPO N°3 PASSATE DI RIEMPIMENTO TIG)



All Vectors Summary: Vector Group 2° controllo 28/05/2013::REF1-REF1				
Statistic	dX	dY	dZ	Mag
Min	-3.13	-0.11	-0.02	0.14
Max	0.18	1.16	0.58	3.38
Average	-1.95	0.51	0.22	2.14
StdDev from Avg	1.44	0.48	0.21	1.35
StdDev from Zero	2.55	0.73	0.32	2.67
RMS	2.36	0.68	0.29	2.48
Count	7			

Vector Group 2° controllo 28/05/2013::REF1-REF1					
Name	Delta			Mag	
	dX	dY	dZ		
ref4	-2.99	0.40	0.23	3.03	+
ref5	-2.63	1.16	0.41	2.90	+
ref6	-3.13	1.13	0.58	3.38	+
ref7	-2.42	0.57	0.14	2.49	+
ref8	0.18	0.18	0.02	0.26	
ref9	-2.75	0.25	0.18	2.76	+
ref10	0.08	-0.11	-0.02	0.14	

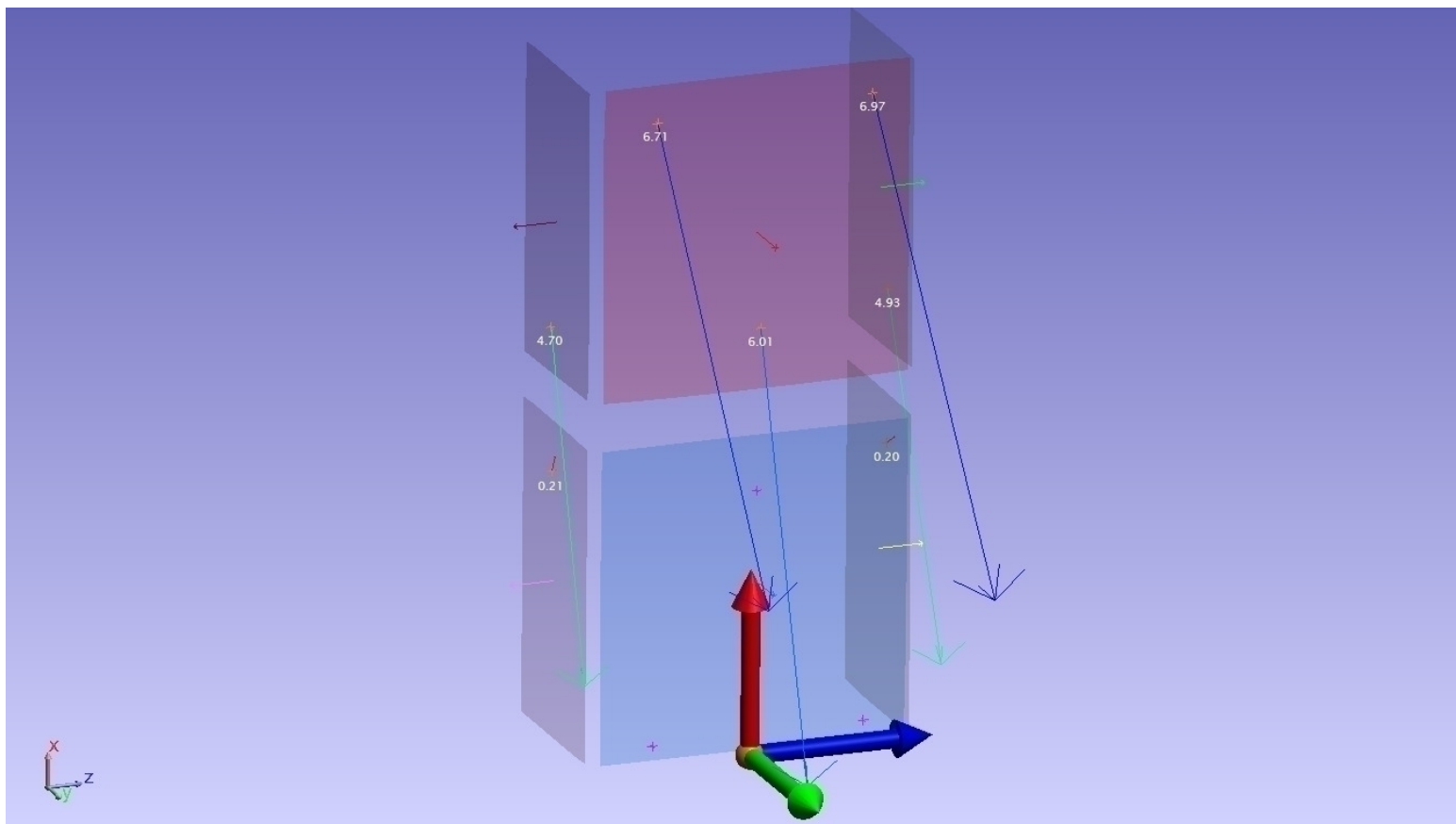
Scostamento REF 4 ÷ REF 10 al 3° controllo (DOPO 1a PASSATA DI RIEMPIMENTO CIRCA 15 mm - FILO)



All Vectors Summary: Vector Group 3° controllo 29/05/2013::REF1-REF1				
Statistic	dX	dY	dZ	Mag
Min	-4.70	-0.12	-0.03	0.10
Max	0.09	2.26	0.18	5.14
Average	-3.08	0.97	0.08	3.33
StdDev from Avg	2.18	0.95	0.08	2.22
StdDev from Zero	3.98	1.41	0.12	4.23
RMS	3.68	1.31	0.11	3.91
Count	7			

Vector Group 3° controllo 29/05/2013::REF1-REF1					
Name	Delta			Mag	
	dX	dY	dZ		
ref4	-4.70	0.93	0.11	4.80	+
ref5	-4.46	2.26	0.02	5.00	+
ref6	-4.66	2.16	0.18	5.14	+
ref7	-3.92	0.84	-0.00	4.01	+
ref8	0.08	-0.12	0.13	0.19	
ref9	-3.99	0.78	0.14	4.07	+
ref10	0.09	-0.04	-0.03	0.10	

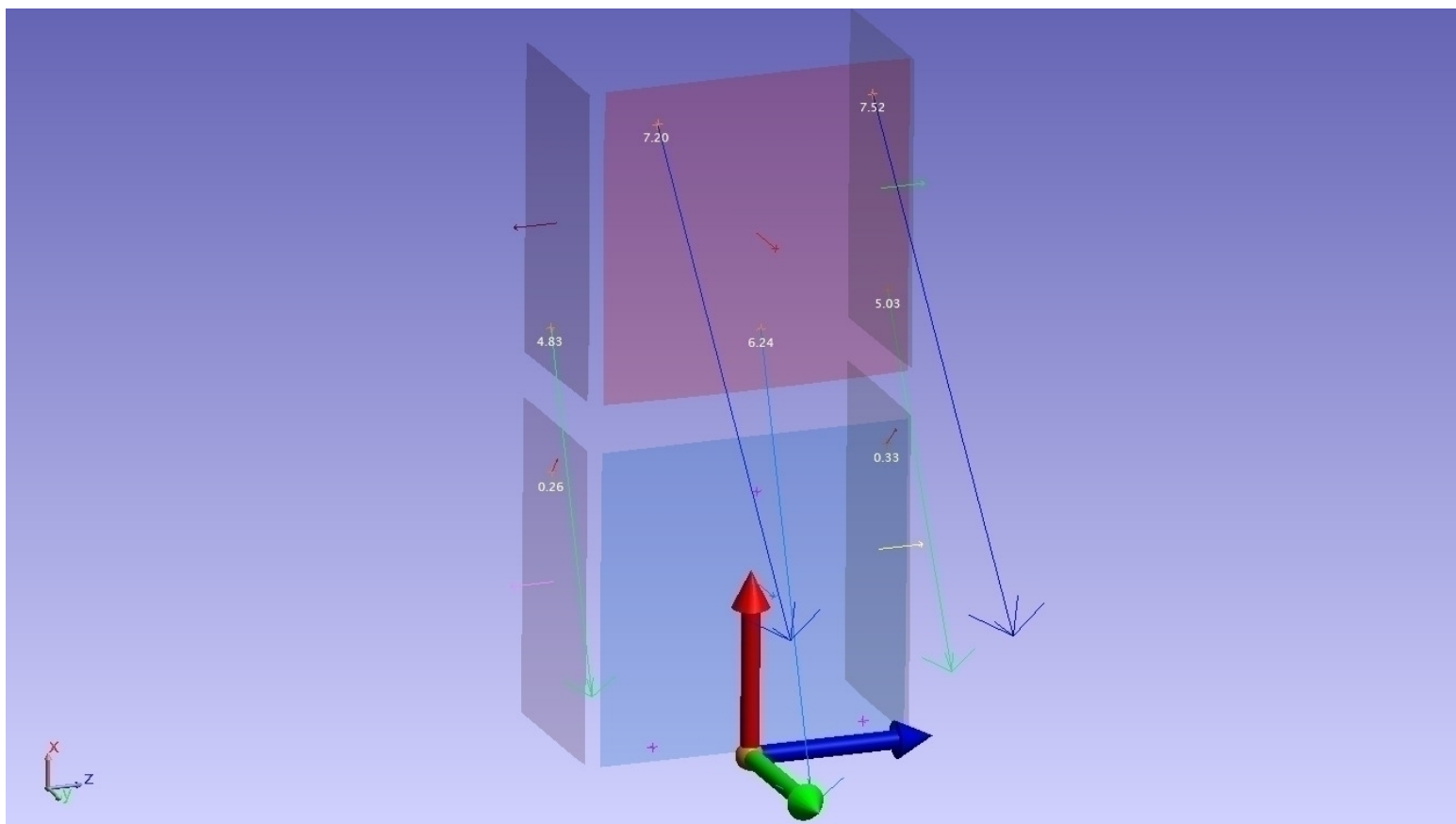
Scostamento REF 4 ÷ REF 10 al 4° controllo (DOPO 2a PASSATA DI RIEMPIMENTO CIRCA 15 mm - FILO)



All Vectors Summary: Vector Group 4° controllo 30/05/2013::REF1-REF1				
Statistic	dX	dY	dZ	Mag
Min	-5.82	0.03	-0.03	0.20
Max	0.20	3.94	0.25	6.97
Average	-3.70	1.77	0.11	4.25
StdDev from Avg	2.69	1.59	0.10	2.89
StdDev from Zero	4.82	2.48	0.15	5.42
RMS	4.46	2.30	0.14	5.02
Count	7			

Vector Group 4° controllo 30/05/2013::REF1-REF1					
Name	Delta			Mag	
	dX	dY	dZ		
ref4	-5.82	1.48	0.13	6.01	+
ref5	-5.48	3.88	0.11	6.71	+
ref6	-5.75	3.94	0.25	6.97	+
ref7	-4.49	1.38	-0.03	4.70	+
ref8	0.20	0.03	0.03	0.21	
ref9	-4.70	1.50	0.21	4.93	+
ref10	0.12	0.15	0.05	0.20	

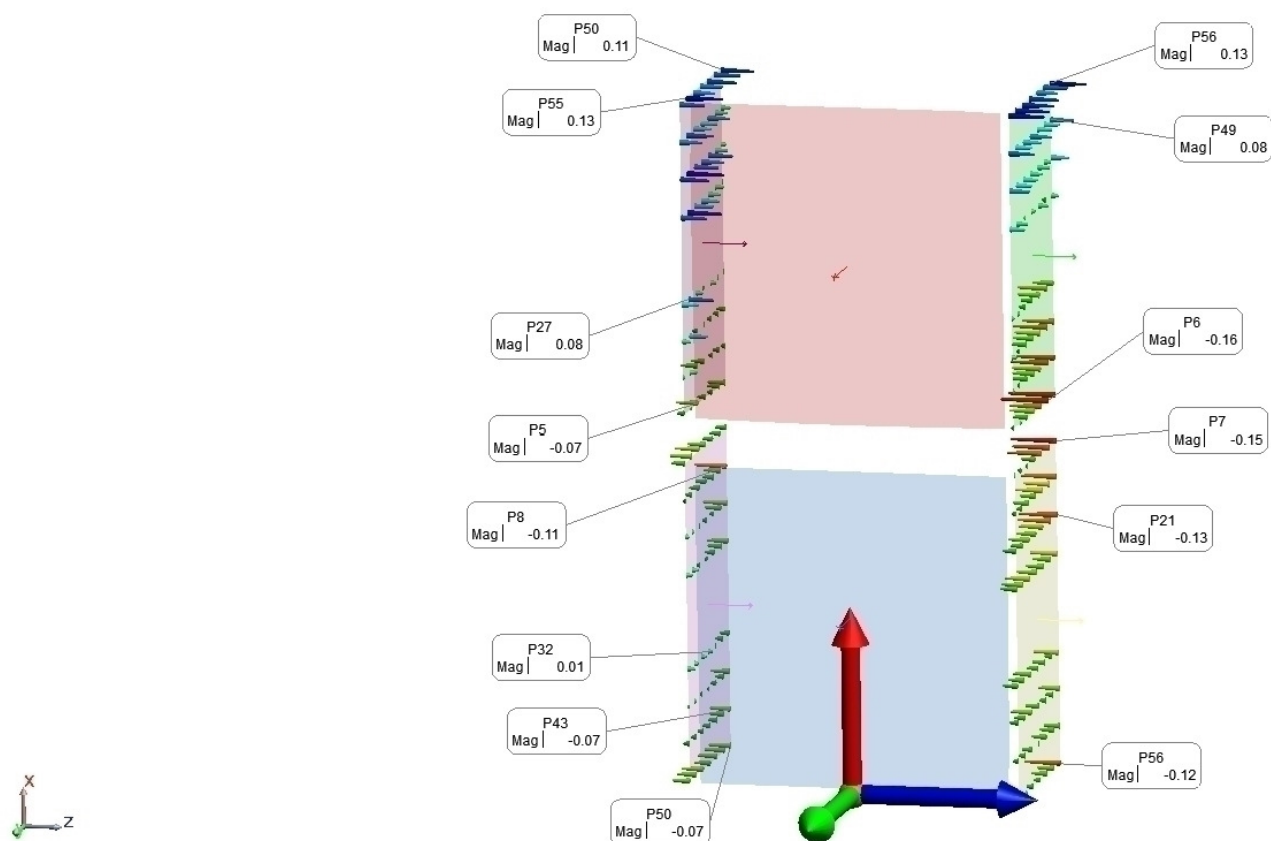
Scostamento REF 4 ÷ REF 10 al 5° controllo (DOPO 3a PASSATA DI RIEMPIMENTO CIRCA 10 mm - FILO)



All Vectors Summary: Vector Group 5° controllo 03/06/2013::REF1-REF1				
Statistic	dX	dY	dZ	Mag
Min	-6.07	0.15	-0.02	0.26
Max	0.25	4.43	0.32	7.52
Average	-3.81	2.00	0.15	4.49
StdDev from Avg	2.82	1.76	0.14	3.03
StdDev from Zero	4.99	2.79	0.21	5.72
RMS	4.62	2.58	0.20	5.30
Count	7			

Vector Group 5° controllo 03/06/2013::REF1-REF1					
Name	Delta			Mag	
	dX	dY	dZ		
ref4	-6.03	1.60	0.16	6.24	+
ref5	-5.73	4.36	0.24	7.20	+
ref6	-6.07	4.43	0.32	7.52	+
ref7	-4.54	1.63	-0.02	4.83	+
ref8	0.21	0.15	0.02	0.26	
ref9	-4.75	1.65	0.30	5.03	+
ref10	0.25	0.21	0.05	0.33	

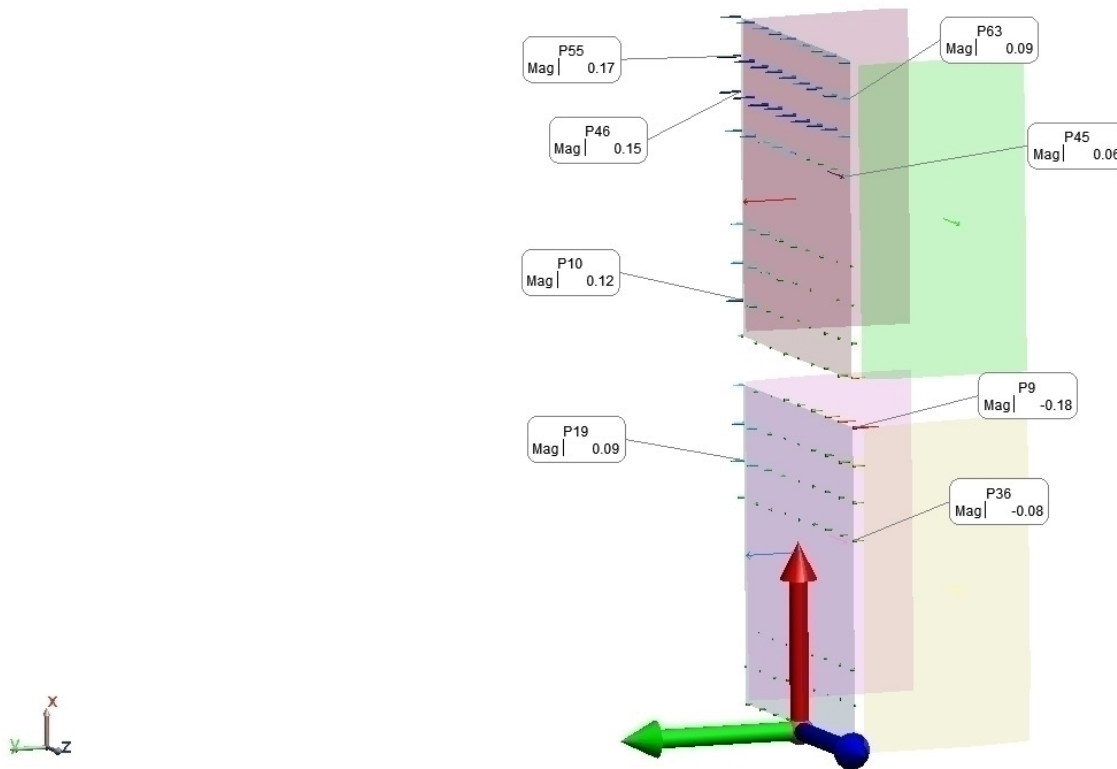
Scostamento Punti laterali al 1° controllo



All Vectors Summary: Vector Group				
1° controllo 27/05/2013::Scostamento Punti laterali al 1° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.00	-0.16	-0.16
Max	0.00	0.00	0.13	0.13
Average	0.00	0.00	-0.01	-0.01
StdDev from Avg	0.00	0.00	0.06	0.06
StdDev from Zero	0.00	0.00	0.06	0.06
RMS	0.00	0.00	0.06	0.06
Count	224			

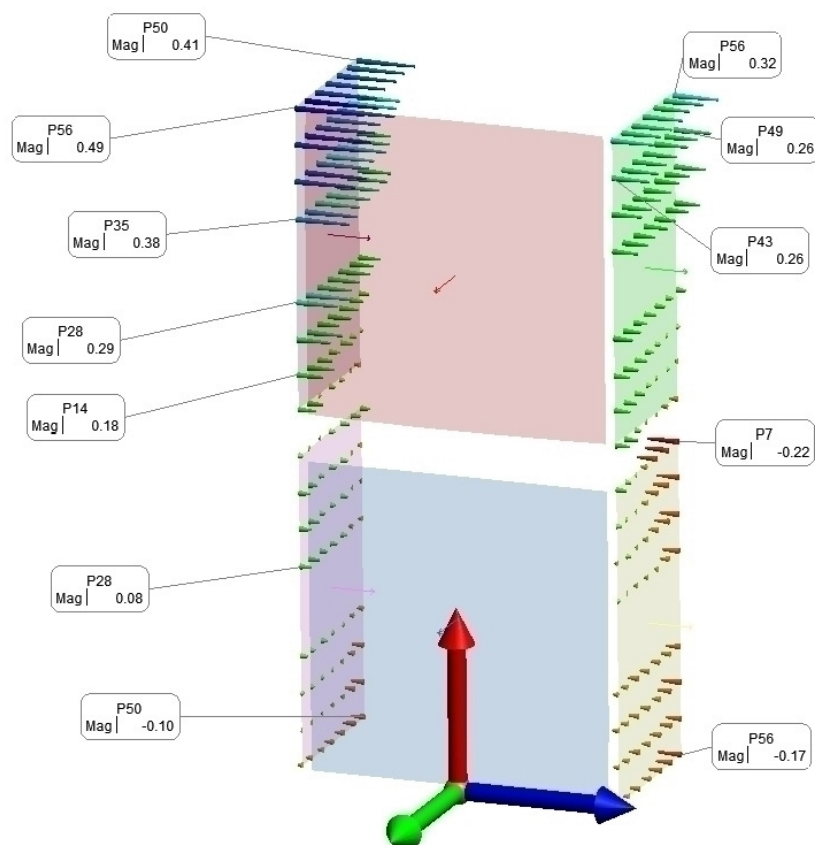


Scostamento Punti frontali al 1° controllo



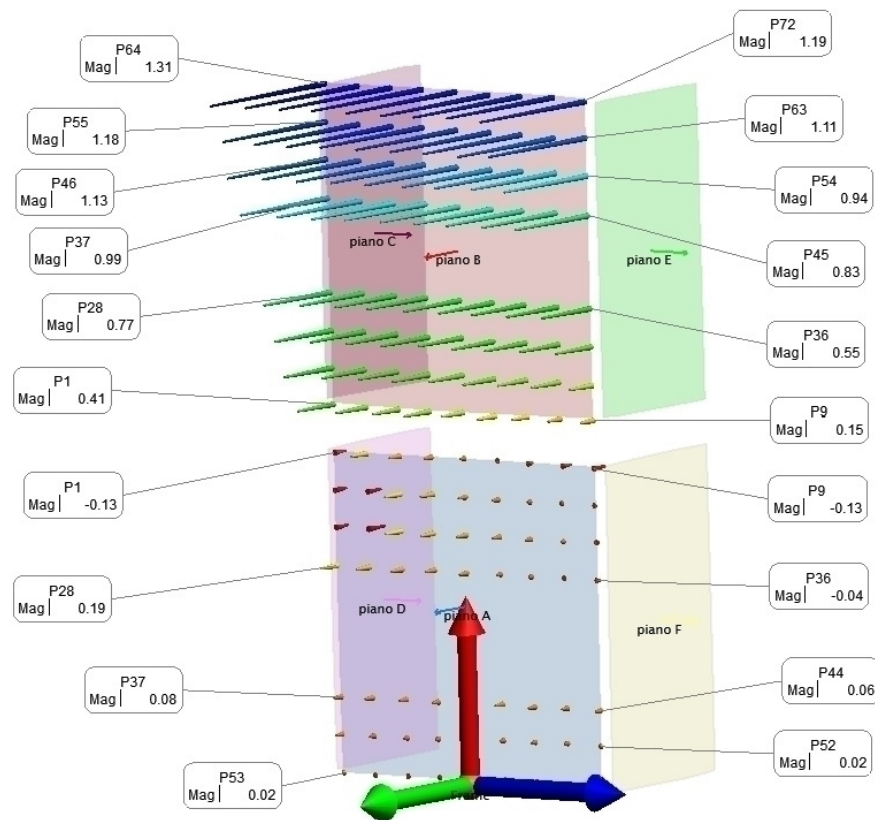
All Vectors Summary: Vector Group				
1° controllo 27/05/2013::Scostamento Punti frontali al 1° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.18	-0.00	-0.18
Max	0.00	0.17	0.00	0.17
Average	0.00	0.03	-0.00	0.03
StdDev from Avg	0.00	0.07	0.00	0.07
StdDev from Zero	0.00	0.07	0.00	0.07
RMS	0.00	0.07	0.00	0.07
Count	132			

Scostamento Punti laterali al 2° controllo



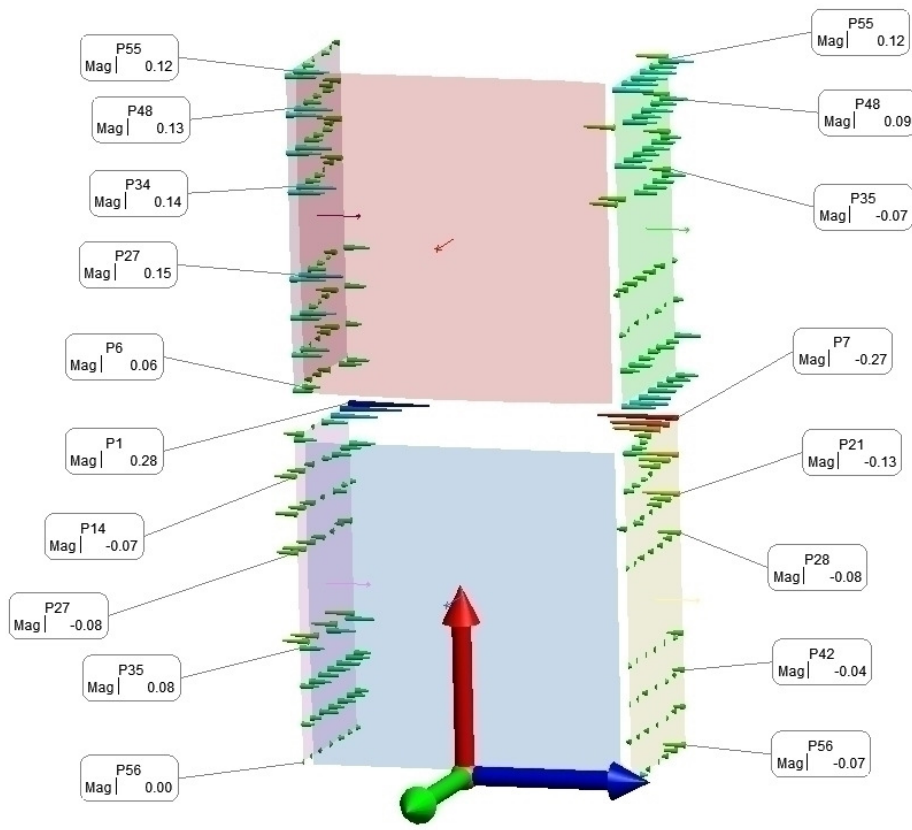
All Vectors Summary: Vector Group				
2° controllo 28/05/2013::Scostamento Punti laterali al 2° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.00	-0.22	-0.22
Max	0.00	0.00	0.52	0.52
Average	0.00	-0.00	0.08	0.08
StdDev from Avg	0.00	0.00	0.15	0.15
StdDev from Zero	0.00	0.00	0.17	0.17
RMS	0.00	0.00	0.17	0.17
Count	224			

Scostamento Punti frontali al 2° controllo



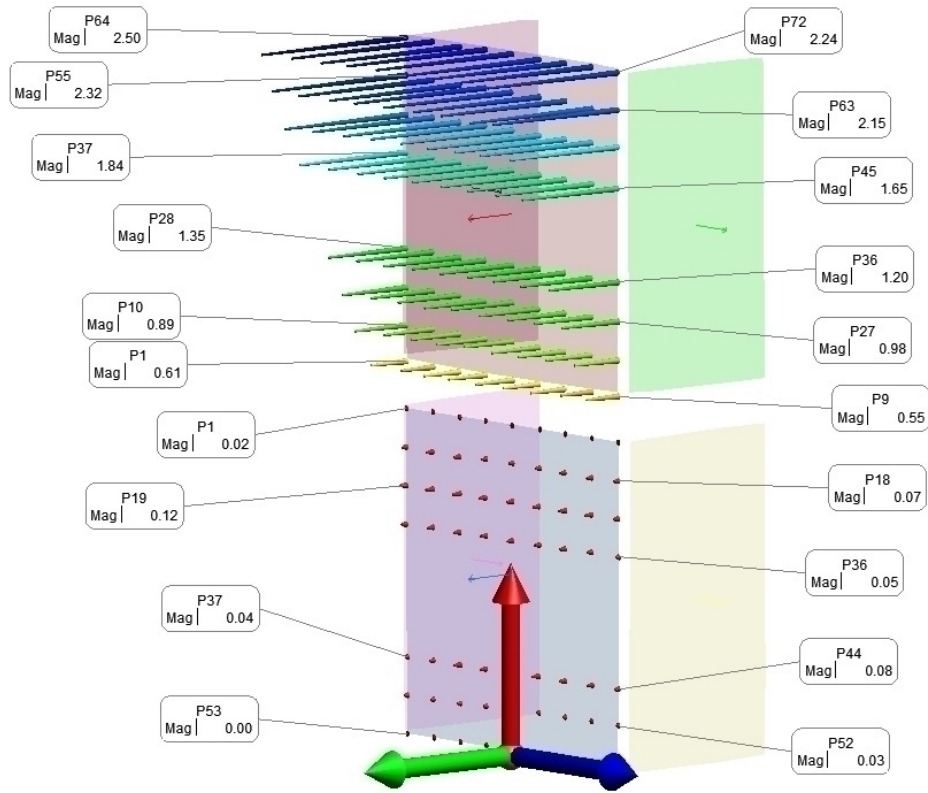
All Vectors Summary: Vector Group				
2° controllo 28/05/2013::Scostamento Punti frontali al 2° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.19	-0.00	-0.19
Max	0.00	1.31	0.00	1.31
Average	0.00	0.44	-0.00	0.44
StdDev from Avg	0.00	0.45	0.00	0.45
StdDev from Zero	0.00	0.63	0.00	0.63
RMS	0.00	0.63	0.00	0.63
Count	132			

Scostamento Punti laterali al 3° controllo



All Vectors Summary: Vector Group				
3° controllo 29/05/2013::Scostamento Punti laterali al 3° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.00	-0.27	-0.27
Max	0.00	0.00	0.28	0.28
Average	0.00	-0.00	0.02	0.02
StdDev from Avg	0.00	0.00	0.07	0.07
StdDev from Zero	0.00	0.00	0.07	0.07
RMS	0.00	0.00	0.07	0.07
Count	224			

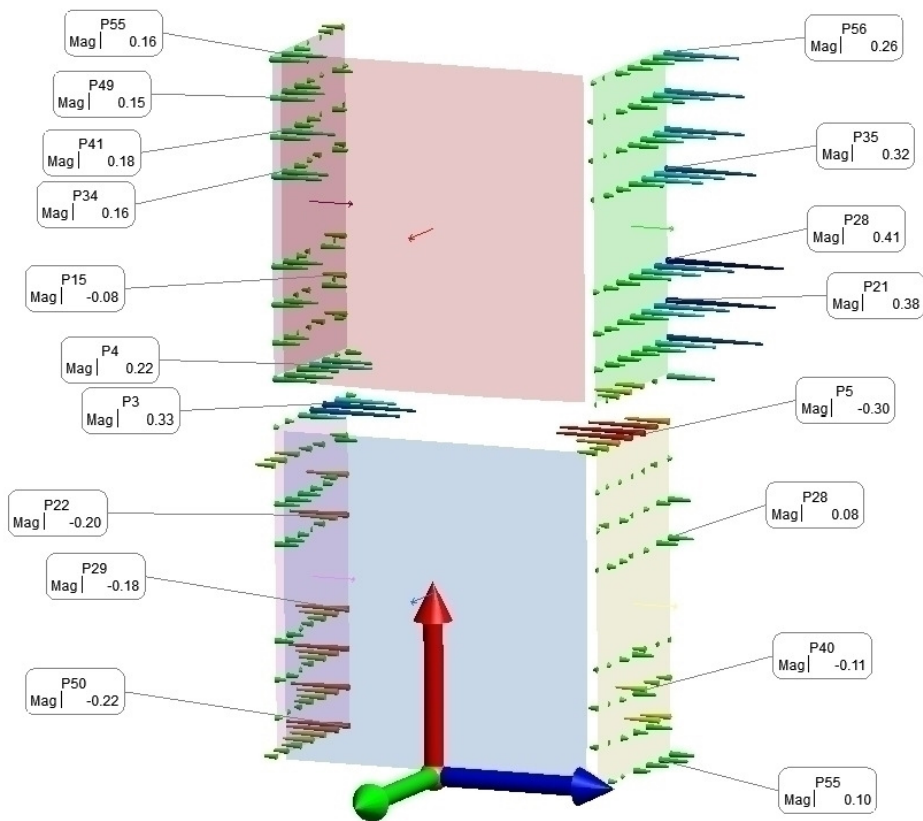
Scostamento Punti frontali al 3° controllo



All Vectors Summary: Vector Group				
3° controllo 29/05/2013::Scostamento Punti frontali al 3° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.02	-0.00	-0.02
Max	0.00	2.50	0.00	2.50
Average	0.00	0.84	-0.00	0.84
StdDev from Avg	0.00	0.85	0.00	0.85
StdDev from Zero	0.00	1.20	0.00	1.20
RMS	0.00	1.20	0.00	1.20
Count	132			

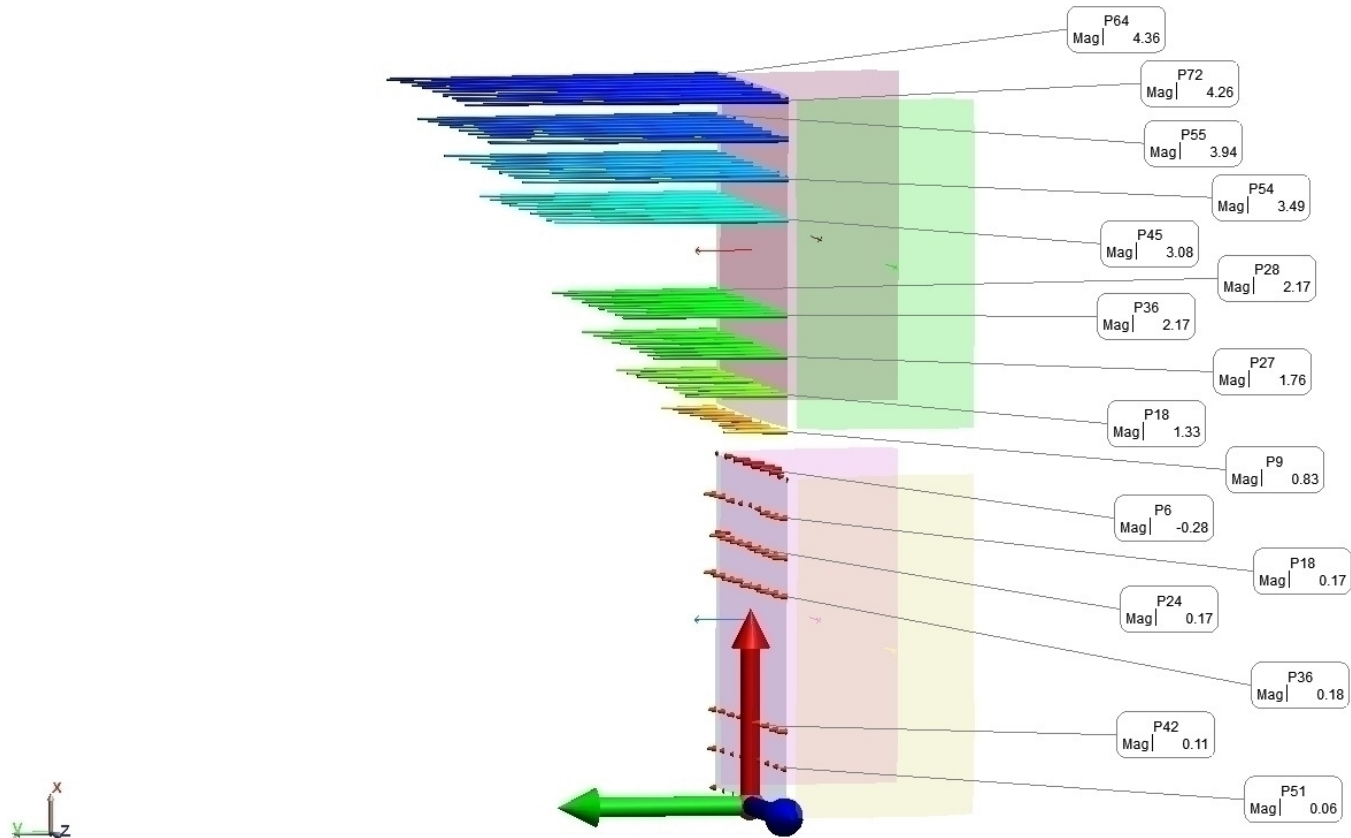


Scostamento Punti laterali al 4° controllo



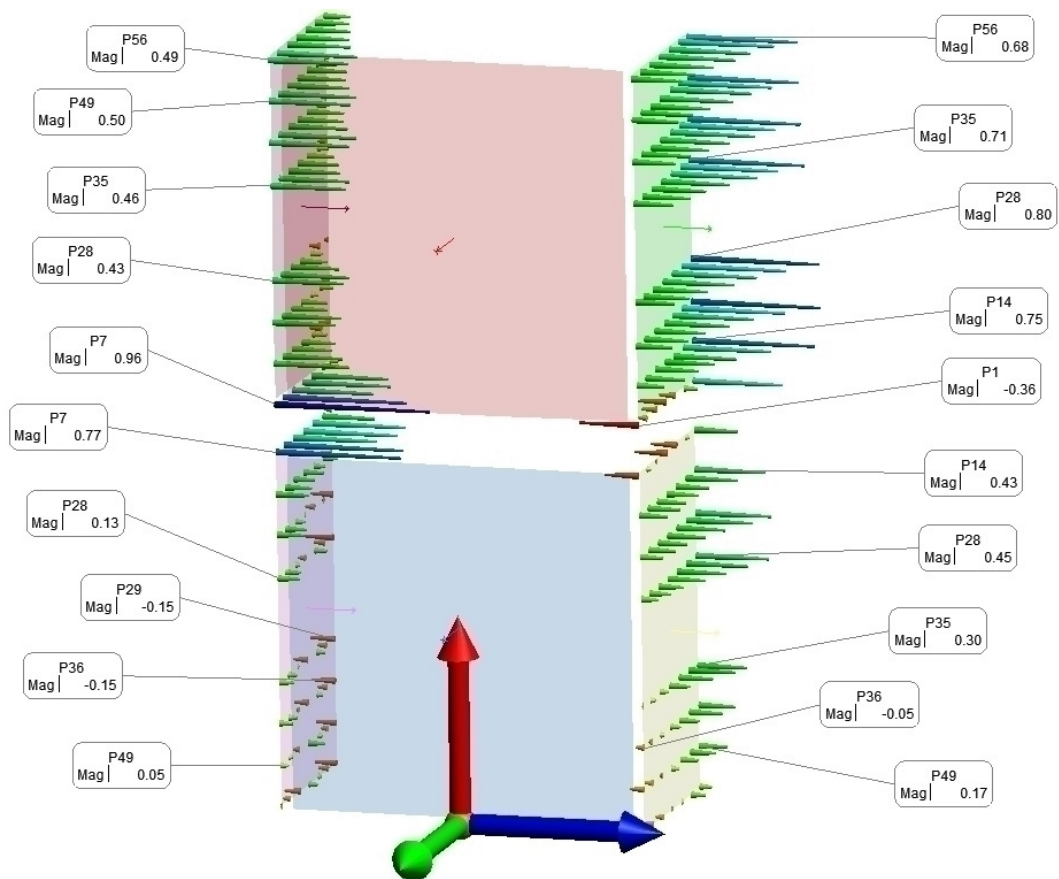
All Vectors Summary: Vector Group				
4° controllo 30/05/2013::Scostamento Punti laterali al 4° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.00	-0.30	-0.30
Max	0.00	0.00	0.41	0.41
Average	-0.00	-0.00	0.03	0.03
StdDev from Avg	0.00	0.00	0.11	0.11
StdDev from Zero	0.00	0.00	0.12	0.12
RMS	0.00	0.00	0.12	0.12
Count	224			

Scostamento Punti frontali al 4° controllo



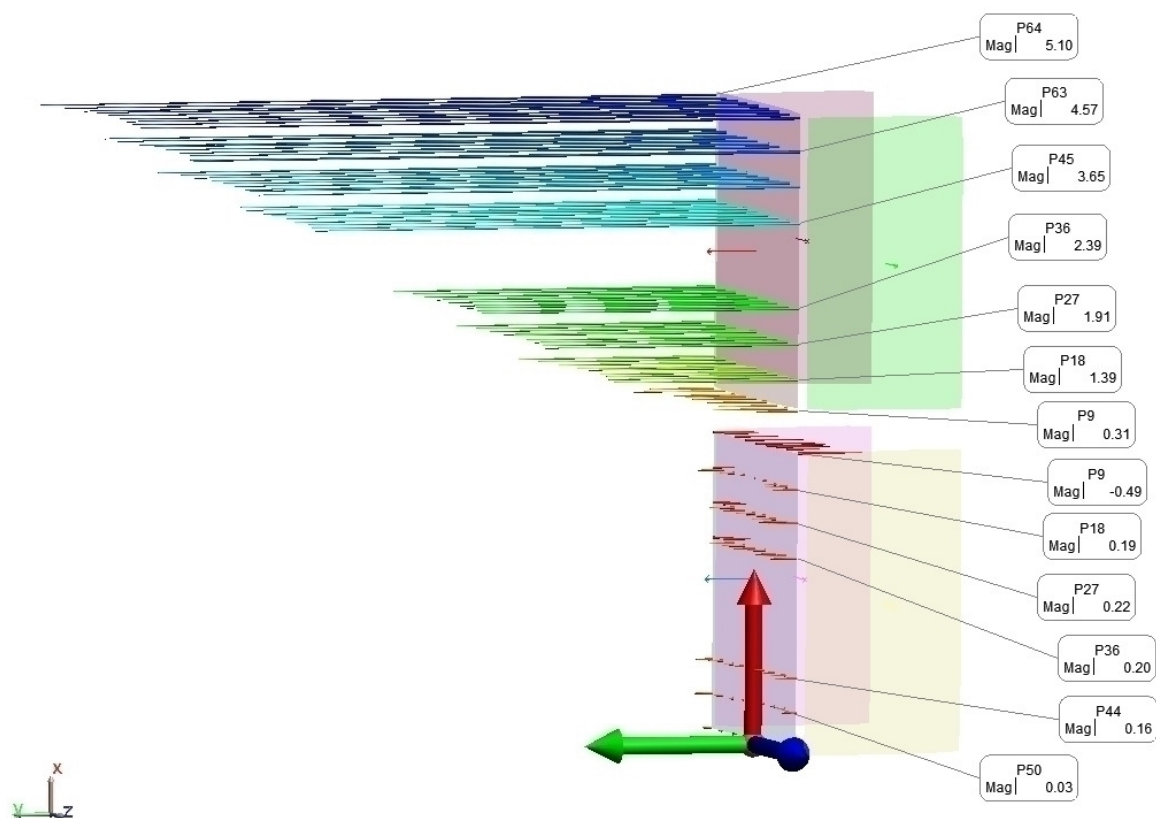
All Vectors Summary: Vector Group				
4° controllo 30/05/2013::Scostamento Punti frontali al 4° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.31	-0.00	-0.31
Max	0.00	4.36	0.00	4.36
Average	0.00	1.43	-0.00	1.43
StdDev from Avg	0.00	1.55	0.00	1.55
StdDev from Zero	0.00	2.11	0.00	2.11
RMS	0.00	2.10	0.00	2.10
Count	132			

Scostamento Punti laterali al 5° controllo



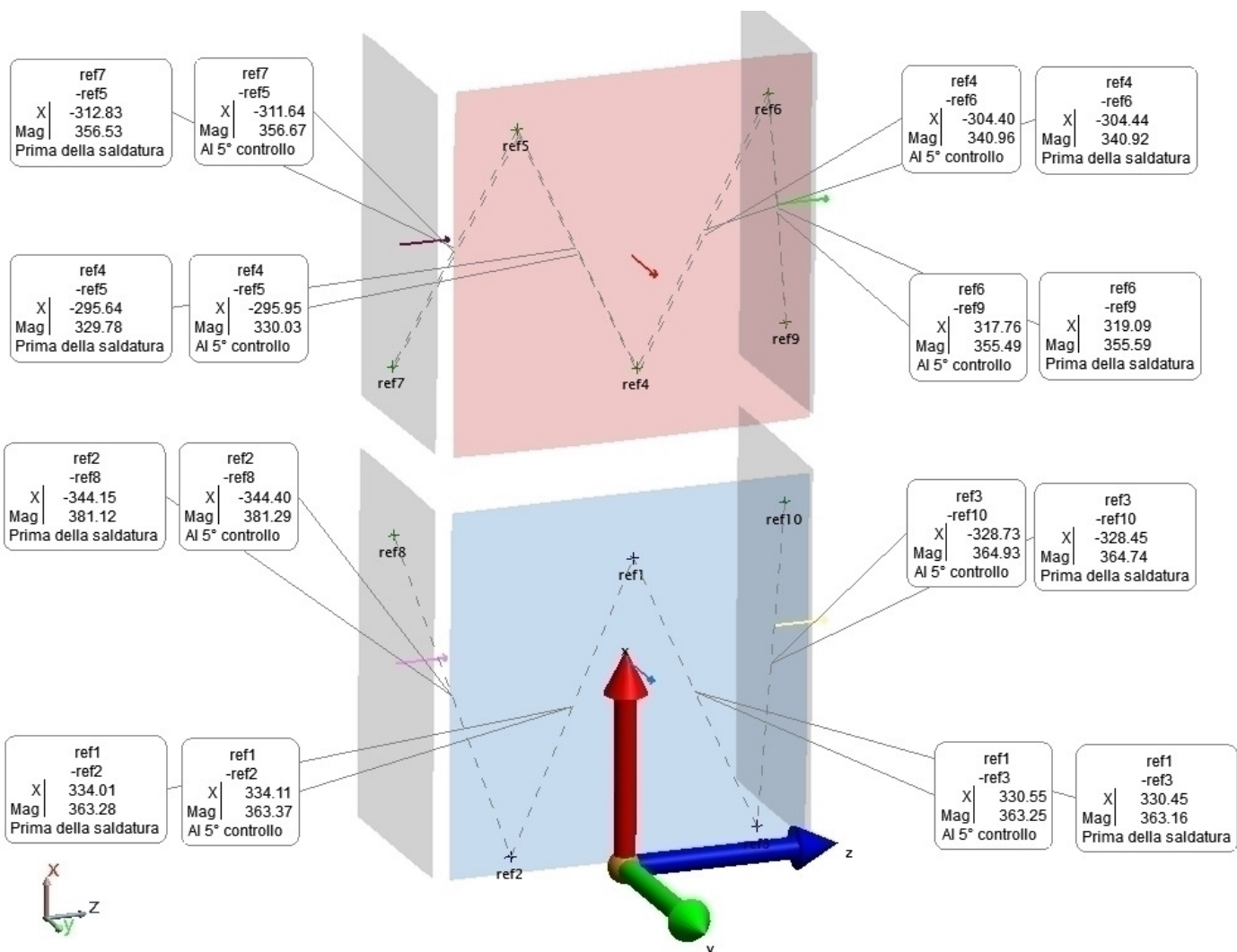
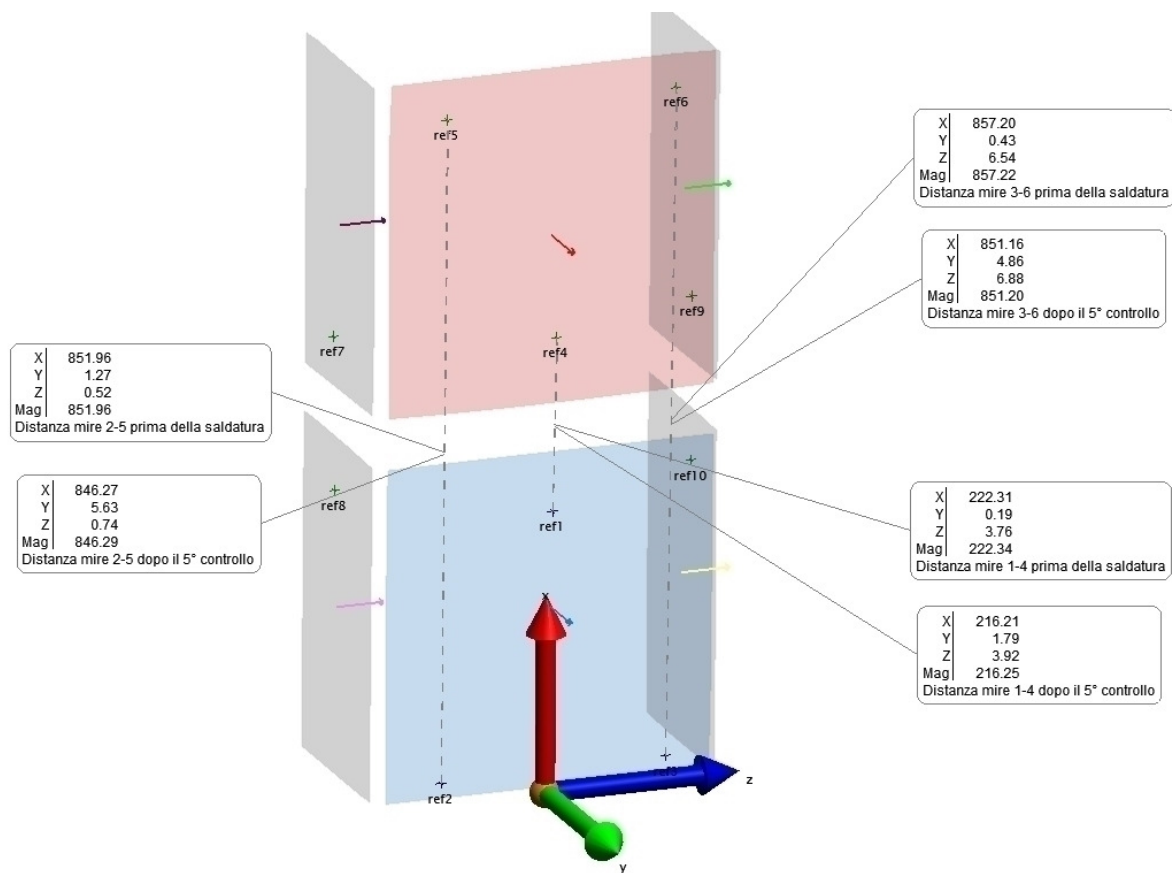
All Vectors Summary: Vector Group				
5° controllo 03/06/2013::Scostamento Punti laterali al 5° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.00	-0.36	-0.36
Max	0.00	0.00	0.96	0.96
Average	0.00	-0.00	0.21	0.21
StdDev from Avg	0.00	0.00	0.24	0.24
StdDev from Zero	0.00	0.00	0.32	0.32
RMS	0.00	0.00	0.32	0.32
Count	224			

Scostamento Punti frontali al 5° controllo



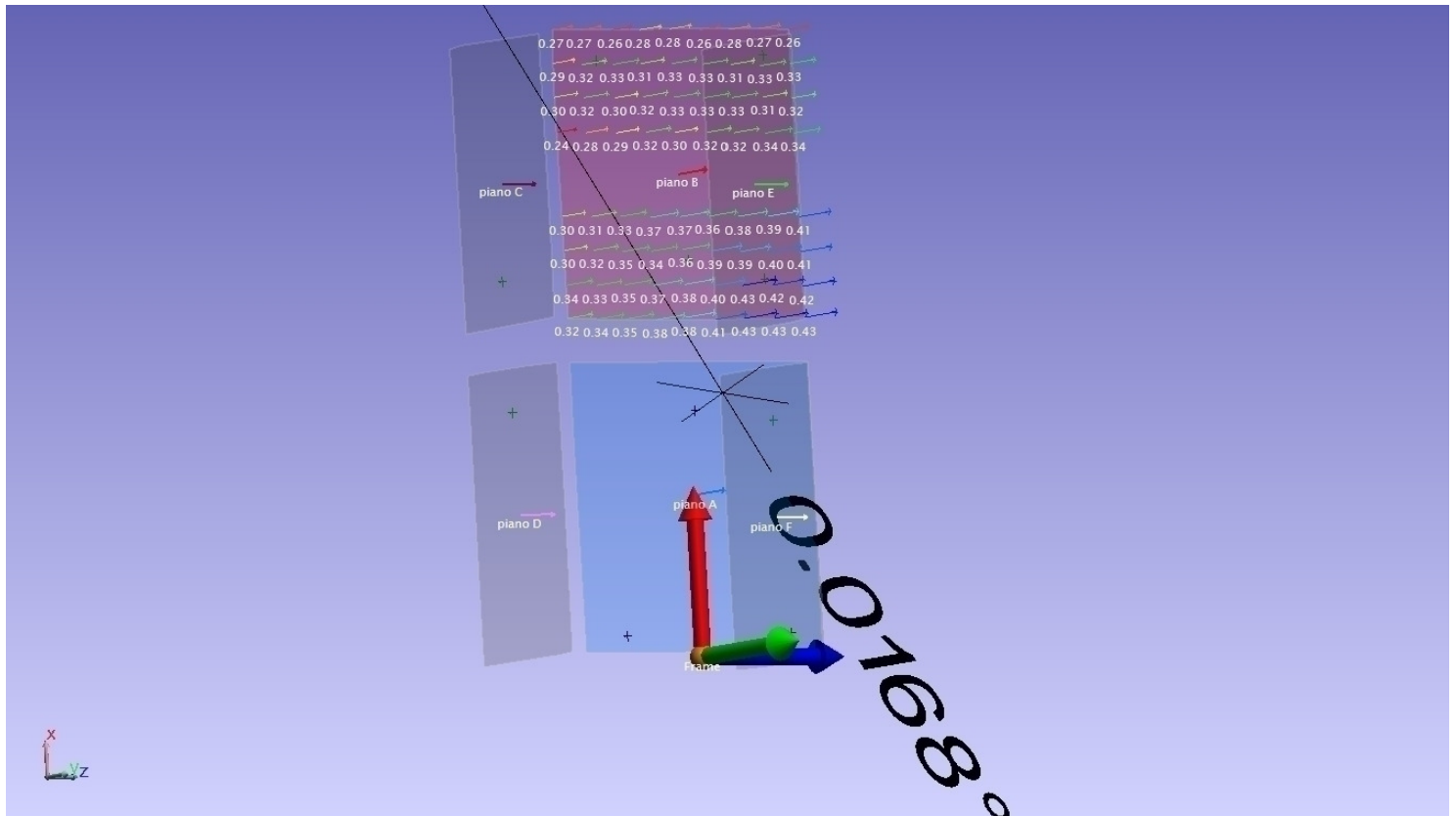
All Vectors Summary: Vector Group				
5° controllo 03/06/2013::Scostamento Punti frontali al 5° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.49	-0.00	-0.49
Max	0.00	5.10	0.00	5.10
Average	0.00	1.58	-0.00	1.58
StdDev from Avg	0.00	1.84	0.00	1.84
StdDev from Zero	0.00	2.43	0.00	2.43
RMS	0.00	2.42	0.00	2.42
Count	132			

Distanze REF (1÷10) prima della saldatura e al 5° controllo

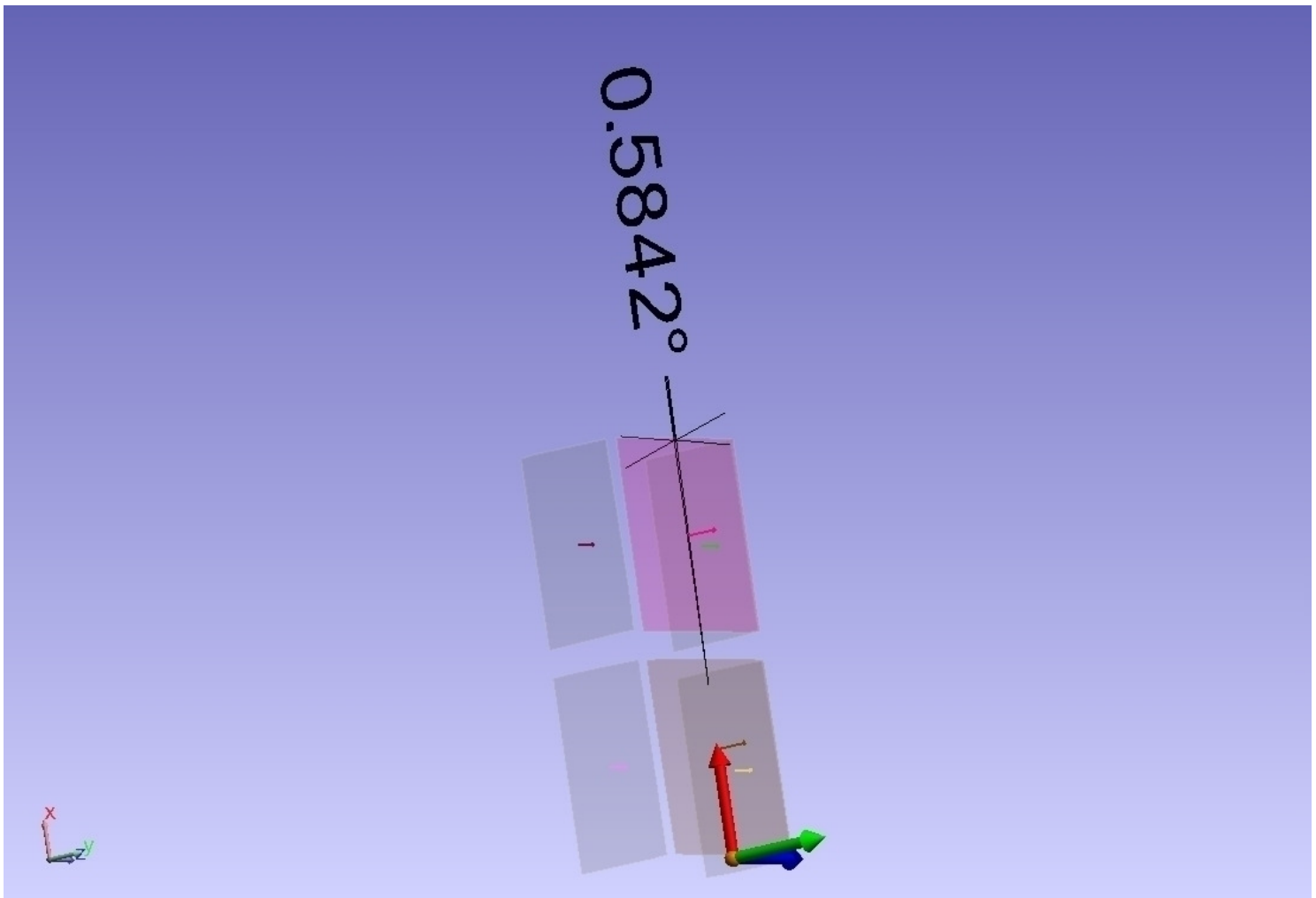




Prima della saldatura: Punti B (Sup.) rispetto Piano A (Inf.) --- Angolo tra Piano A (Inf.) e Piano B (Sup.)

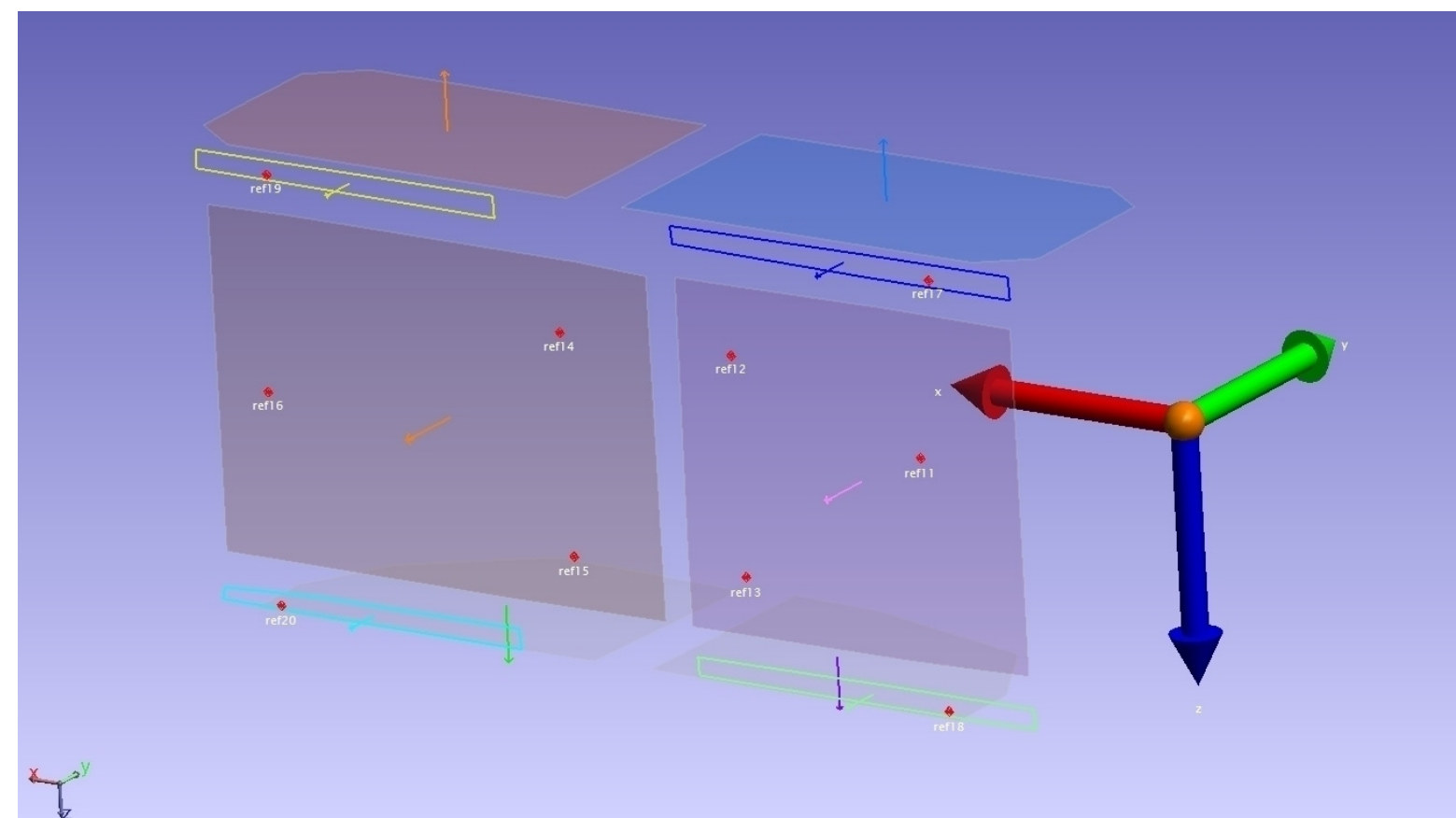
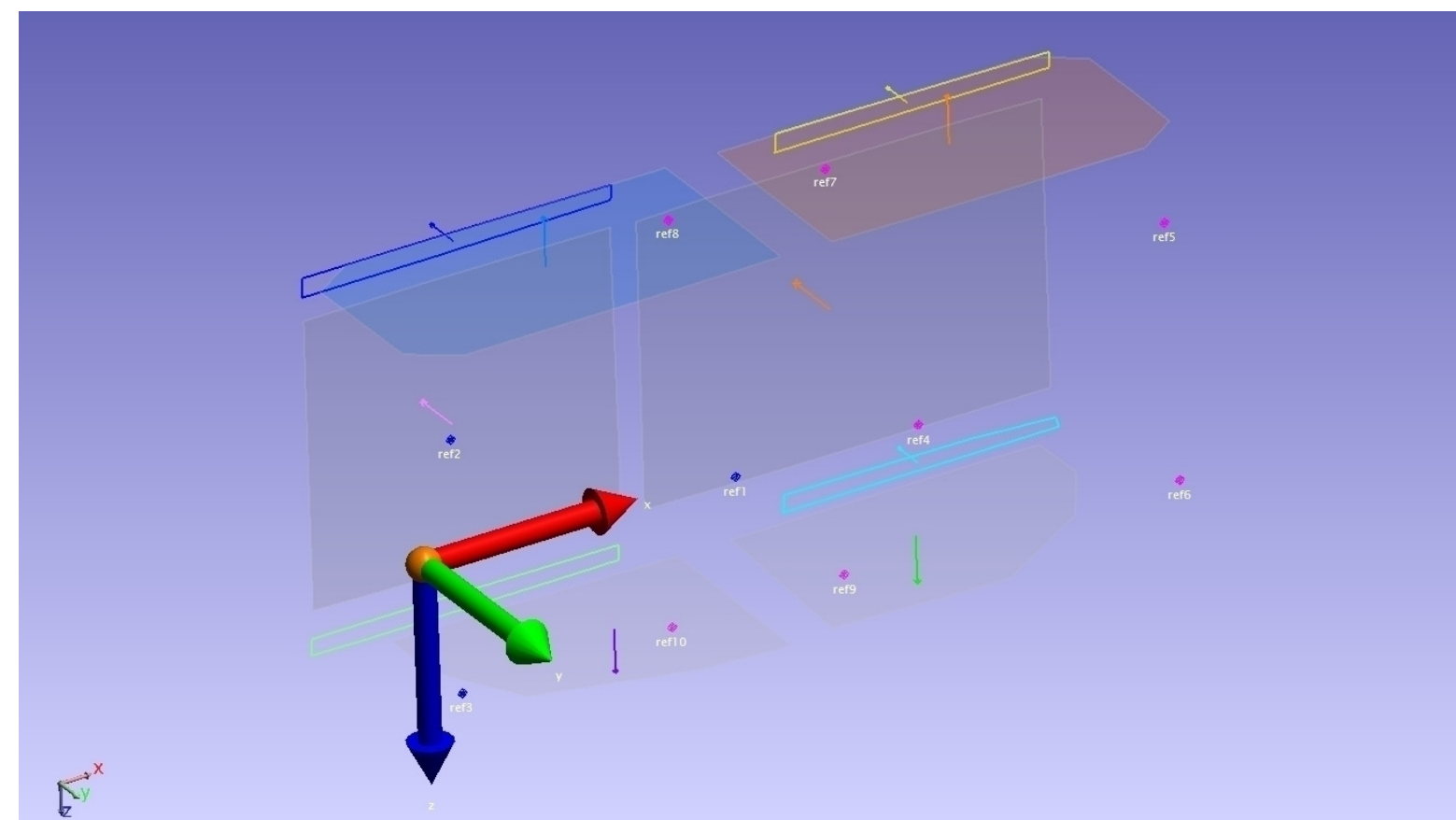


Dopo saldatura: Angolo tra Piano A (Inf.) e Piano B (Sup.)



## SALDATURA LONGITUDINALE

### Nomi riferimenti



SCOSTAMENTO REF 1,2,3 AD OGNI ALLINEAMENTO

All Vectors Summary: Vector Group 7° controllo 07/06/2013 coperchi::Allineamento REF 7° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.07	-0.00	-0.04	0.04
Max	0.04	0.00	0.03	0.07
Average	-0.00	0.00	0.00	0.06
StdDev from Avg	0.06	0.00	0.03	0.02
StdDev from Zero	0.06	0.00	0.03	0.07
RMS	0.05	0.00	0.03	0.06
Count	3			

Vector Group					
7° controllo 07/06/2013 coperchi::Allineamento REF 7° controllo					
Name	Delta				
	dX	dY	dZ	Mag	
ref1	-0.07	-0.00	0.01	0.07	
ref2	0.03	0.00	0.03	0.04	
ref3	0.04	0.00	-0.04	0.06	

All Vectors Summary: Vector Group 8° controllo 10/06/2013 coperchi::Allineamento REF 8° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.09	-0.00	-0.09	0.09
Max	0.06	0.00	0.08	0.11
Average	-0.00	0.00	0.00	0.09
StdDev from Avg	0.08	0.00	0.09	0.01
StdDev from Zero	0.08	0.00	0.09	0.12
RMS	0.06	0.00	0.07	0.10
Count	3			

Vector Group					
8° controllo 10/06/2013 coperchi::Allineamento REF 8° controllo					
Name	Delta				
	dX	dY	dZ	Mag	
ref1	-0.09	-0.00	0.01	0.09	
ref2	0.03	-0.00	0.08	0.09	
ref3	0.06	0.00	-0.09	0.11	

All Vectors Summary: Vector Group 9° controllo 10/06/2013 coperchi::Allineamento REF 9° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.08	-0.00	-0.13	0.08
Max	0.07	0.00	0.15	0.16
Average	0.00	0.00	0.00	0.13
StdDev from Avg	0.07	0.00	0.14	0.04
StdDev from Zero	0.07	0.00	0.14	0.16
RMS	0.06	0.00	0.12	0.13
Count	3			

Vector Group					
9° controllo 10/06/2013 coperchi::Allineamento REF 9° controllo					
Name	Delta				
	dX	dY	dZ	Mag	
ref1	-0.08	-0.00	-0.02	0.08	
ref2	0.07	0.00	0.15	0.16	
ref3	0.01	0.00	-0.13	0.13	

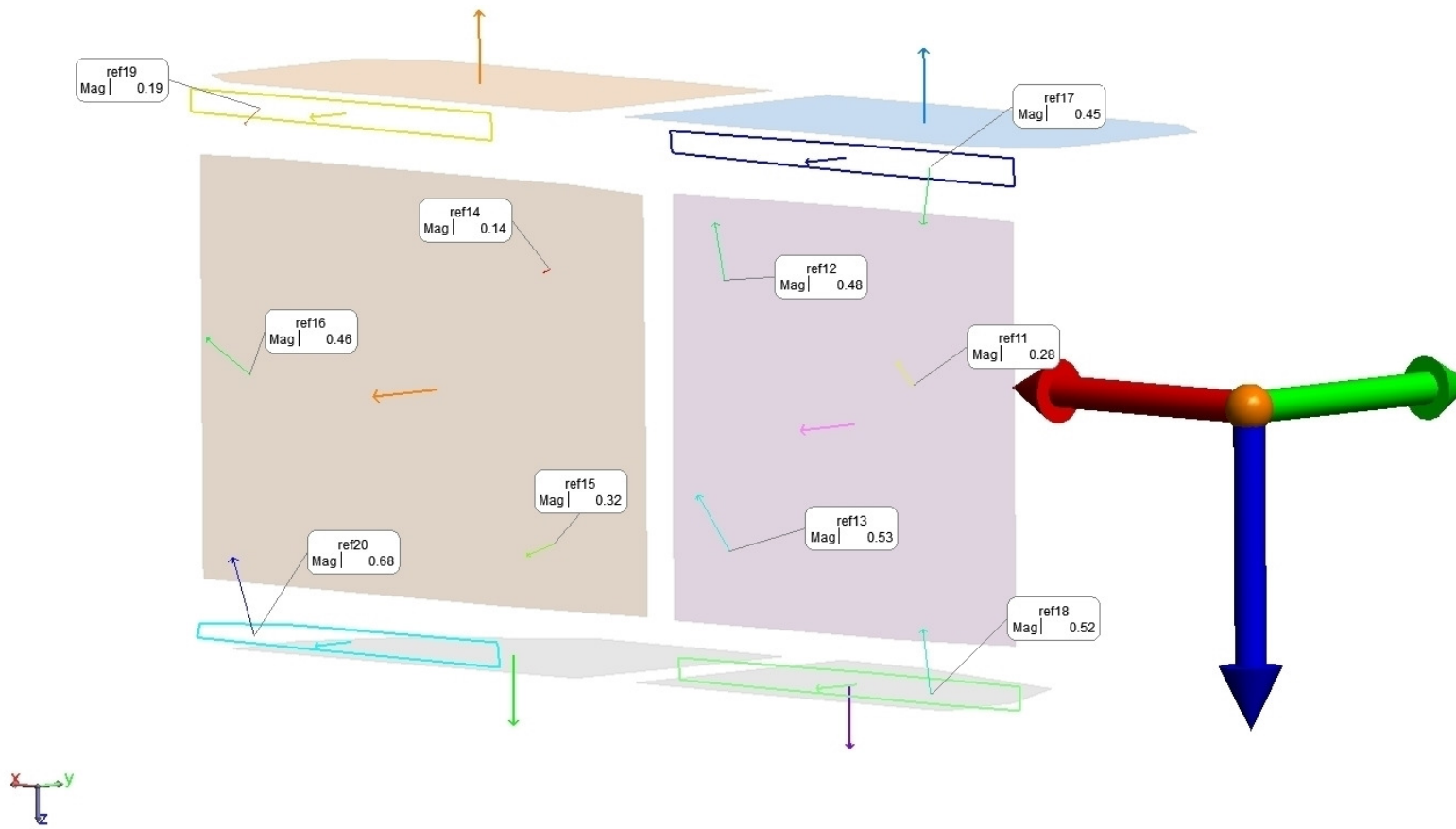
All Vectors Summary: Vector Group 10° controllo 11/06/2013 coperchi::Allineamento REF 10° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.10	-0.00	-0.24	0.10
Max	0.06	0.00	0.24	0.24
Average	0.00	0.00	0.00	0.19
StdDev from Avg	0.09	0.00	0.24	0.08
StdDev from Zero	0.09	0.00	0.24	0.25
RMS	0.07	0.00	0.19	0.21
Count	3			

Vector Group					
10° controllo 11/06/2013 coperchi::Allineamento REF 10° controllo					
Name	Delta				
	dX	dY	dZ	Mag	
ref1	-0.10	-0.00	-0.00	0.10	
ref2	0.06	-0.00	0.24	0.24	
ref3	0.05	0.00	-0.24	0.24	

All Vectors Summary: Vector Group 11° controllo 12/06/2013 coperchi::Allineamento REF 11° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.16	-0.00	-0.32	0.16
Max	0.08	0.00	0.31	0.33
Average	0.00	0.00	0.00	0.27
StdDev from Avg	0.14	0.00	0.32	0.10
StdDev from Zero	0.14	0.00	0.32	0.34
RMS	0.11	0.00	0.26	0.28
Count	3			

Vector Group					
11° controllo 12/06/2013 coperchi::Allineamento REF 11° controllo					
Name	Delta				
	dX	dY	dZ	Mag	
ref1	-0.16	-0.00	0.01	0.16	
ref2	0.07	-0.00	0.31	0.32	
ref3	0.08	0.00	-0.32	0.33	

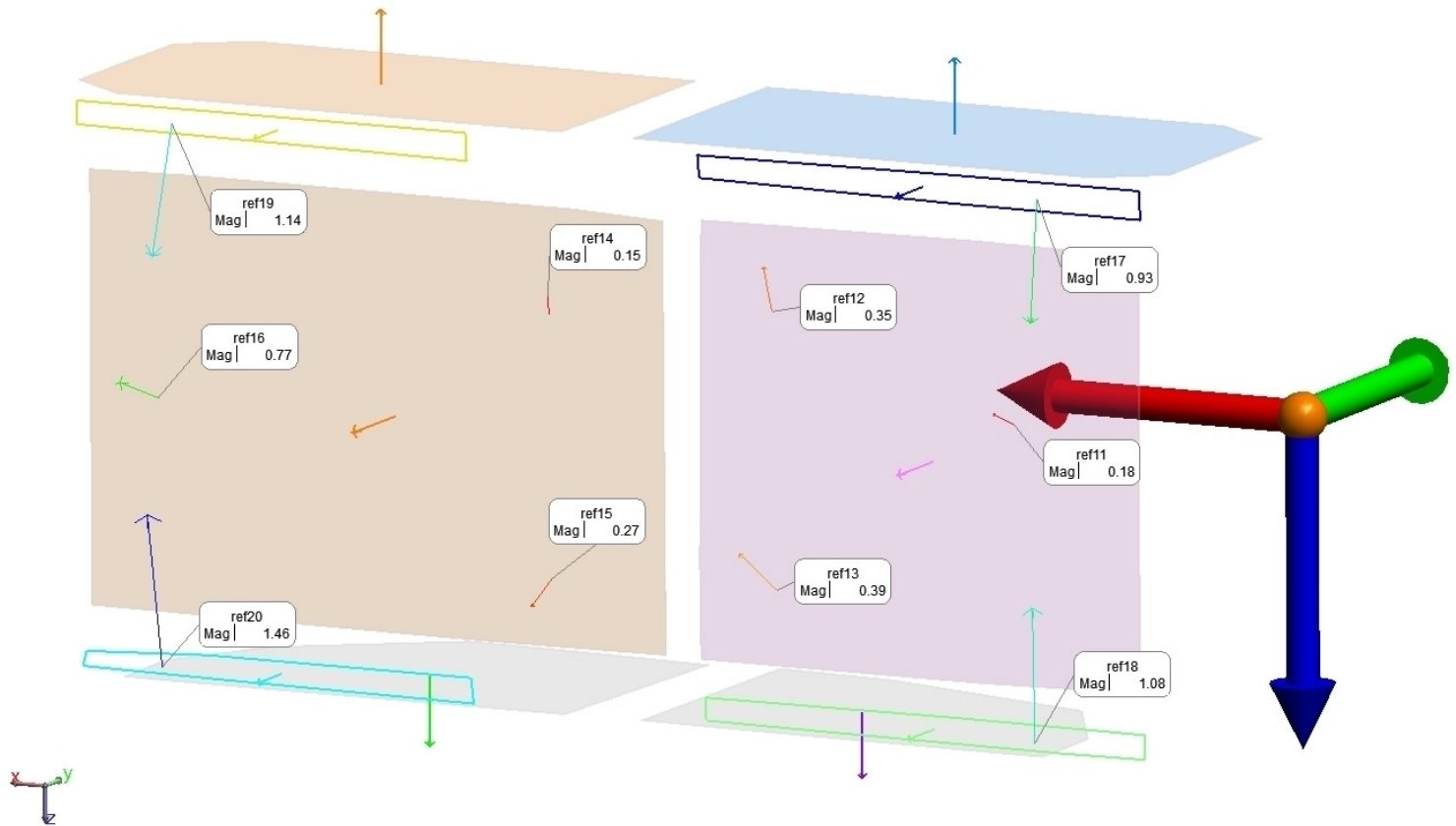
Scostamento REF11 ÷ REF20 al 7° controllo (PUNTATURA)



All Vectors Summary: Vector Group				
7° controllo 07/06/2013 coperchi::REF2-REF2 al 7° controllo				
Statistic	dX	dY	dZ	Mag
Min	0.01	-0.28	-0.64	0.14
Max	0.34	0.11	0.45	0.68
Average	0.15	-0.06	-0.18	0.41
StdDev from Avg	0.13	0.13	0.34	0.17
StdDev from Zero	0.20	0.14	0.39	0.46
RMS	0.19	0.14	0.37	0.44
Count	10			

Vector Group				
7° controllo 07/06/2013 coperchi::REF2-REF2 al 7° controllo				
Name	Delta			Mag
	dX	dY	dZ	Mag
ref11	0.22	0.06	-0.16	0.28
ref12	0.19	0.11	-0.43	0.48
ref13	0.34	0.01	-0.42	0.53
ref14	0.12	0.05	0.04	0.14
ref15	0.30	0.01	0.11	0.32
ref16	0.21	-0.28	-0.30	0.46
ref17	0.02	-0.06	0.45	0.45
ref18	0.02	-0.06	-0.52	0.52
ref19	0.02	-0.16	0.11	0.19
ref20	0.01	-0.23	-0.64	0.68

Scostamento REF11 ÷ REF20 all' 8° controllo (TERMINE 1a PASSATA TIG)

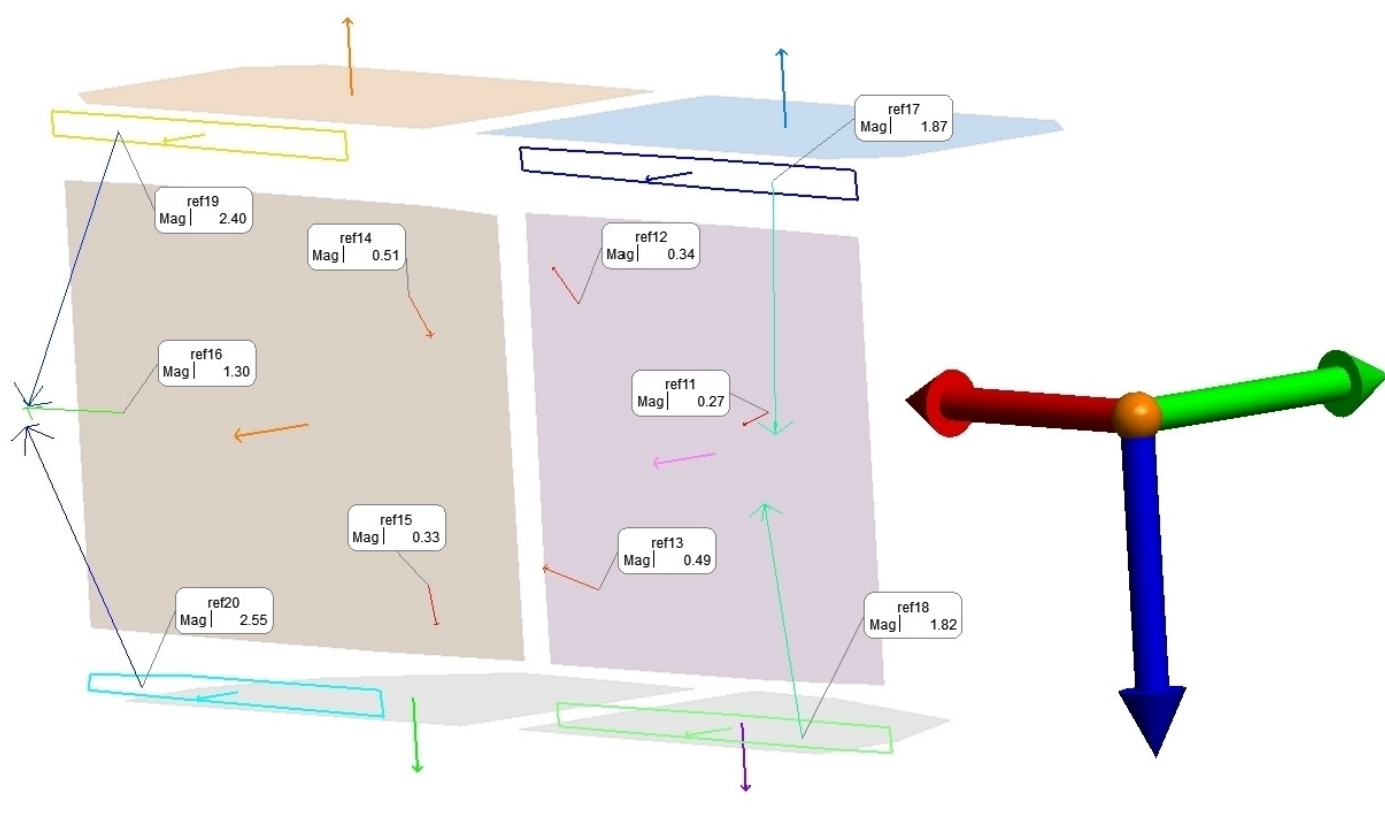


All Vectors Summary: Vector Group				
8° controllo 10/06/2013 coperchi::REF2-REF2 all'8° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.19	-0.73	-1.29	0.15
Max	0.27	-0.02	0.92	1.46
Average	0.01	-0.27	-0.12	0.67
StdDev from Avg	0.15	0.30	0.71	0.46
StdDev from Zero	0.15	0.41	0.72	0.85
RMS	0.14	0.39	0.69	0.80
Count	10			

Vector Group				
8° controllo 10/06/2013 coperchi::REF2-REF2 all'8° controllo				
Name	dX	dY	dZ	Mag
ref11	0.14	-0.07	-0.08	0.18
ref12	0.06	-0.02	-0.34	0.35
ref13	0.27	-0.09	-0.27	0.39
ref14	-0.05	-0.07	0.12	0.15
ref15	0.16	-0.02	0.22	0.27
ref16	-0.03	-0.73	-0.25	0.77
ref17	-0.02	-0.16	0.92	0.93
ref18	-0.06	-0.17	-1.06	1.08
ref19	-0.17	-0.71	0.87	1.14
ref20	-0.19	-0.65	-1.29	1.46



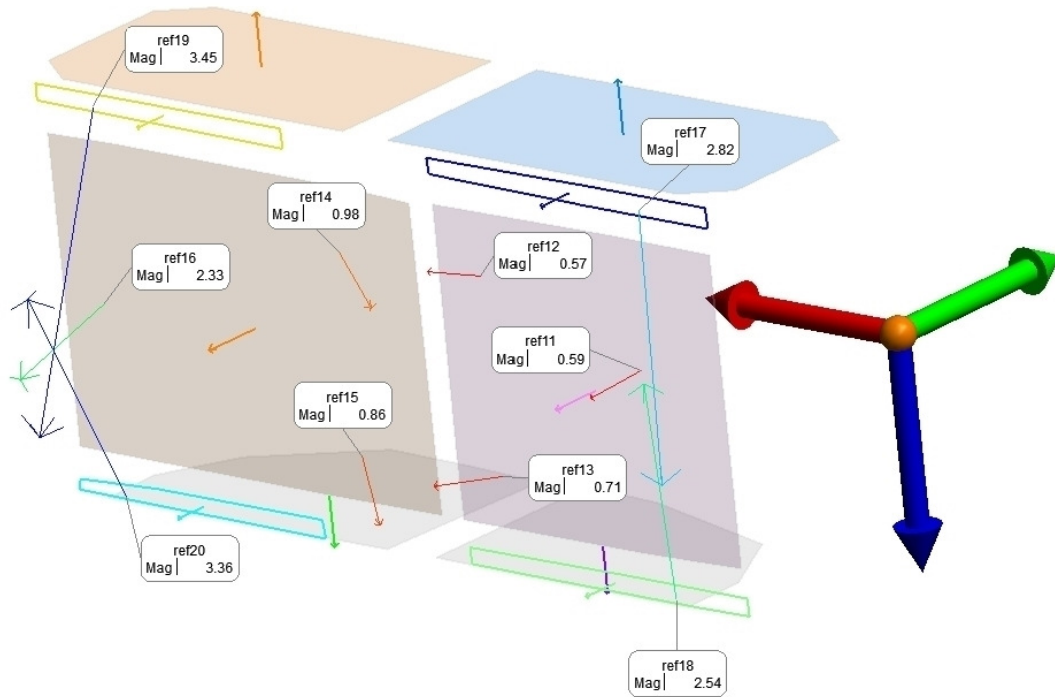
Scostamento REF11 ÷ REF20 al 9° controllo (TERMINE 2a PASSATA TIG)



All Vectors Summary: Vector Group				
9° controllo 10/06/2013 coperchi::REF2-REF2 al 9° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.46	-1.47	-2.13	0.27
Max	0.44	-0.03	1.85	2.55
Average	-0.11	-0.51	-0.03	1.19
StdDev from Avg	0.30	0.59	1.28	0.91
StdDev from Zero	0.33	0.80	1.28	1.55
RMS	0.31	0.76	1.22	1.47
Count	10			

Vector Group				
9° controllo 10/06/2013 coperchi::REF2-REF2 al 9° controllo				
Name	Delta			
	dX	dY	dZ	Mag
ref11	0.24	-0.03	0.10	0.27
ref12	0.17	-0.08	-0.28	0.34
ref13	0.44	-0.14	-0.16	0.49
ref14	-0.41	-0.17	0.25	0.51
ref15	-0.15	-0.08	0.28	0.33
ref16	-0.32	-1.25	-0.21	1.30
ref17	-0.13	-0.24	1.85	1.87
ref18	-0.09	-0.33	-1.79	1.82
ref19	-0.46	-1.47	1.84	2.40
ref20	-0.37	-1.34	-2.13	2.55

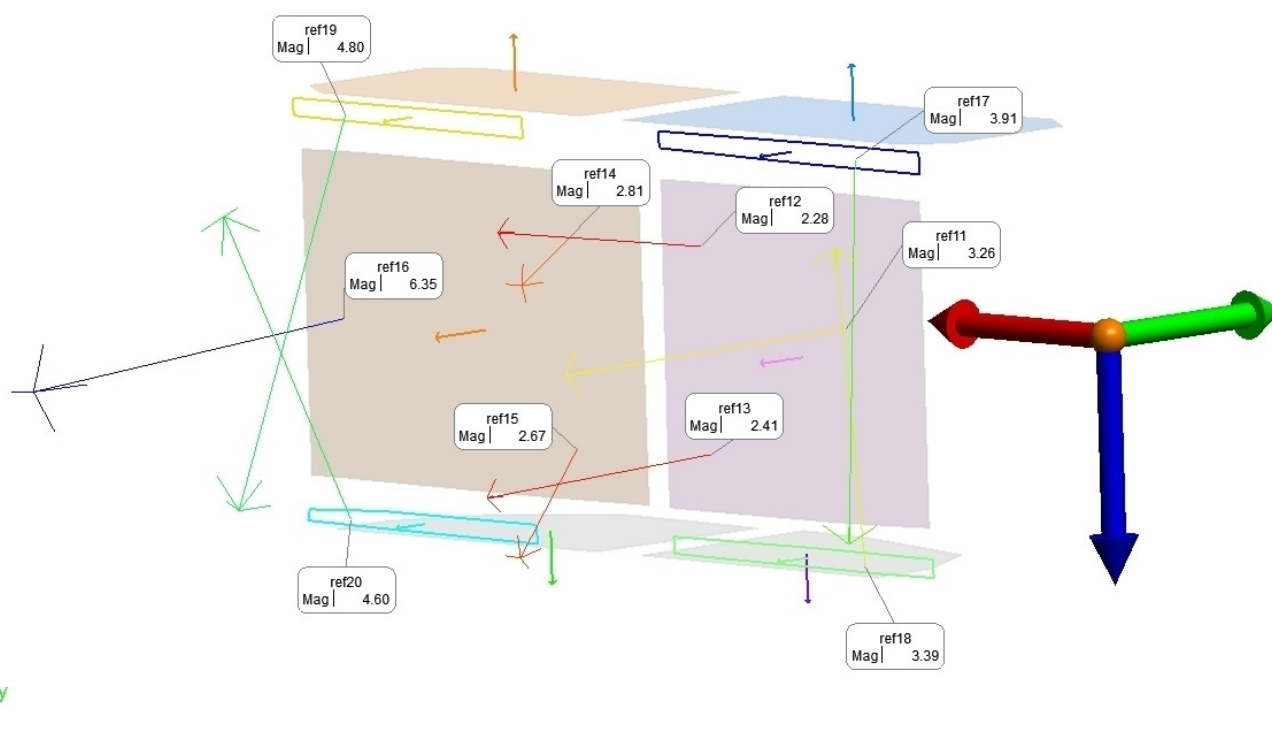
Scostamento REF11 ÷ REF20 al 10° controllo (META' SPESSORE A FILO)



All Vectors Summary: Vector Group				
10° controllo 11/06/2013 coperchi::REF2-REF2 al 10° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.79	-2.20	-2.77	0.57
Max	0.54	-0.30	2.80	3.45
Average	-0.24	-0.89	0.13	1.82
StdDev from Avg	0.49	0.77	1.82	1.19
StdDev from Zero	0.56	1.21	1.82	2.26
RMS	0.53	1.15	1.73	2.14
Count	10			

Vector Group				
10° controllo 11/06/2013 coperchi::REF2-REF2 al 10° controllo				
Name	Delta			
	dX	dY	dZ	Mag
ref11	0.42	-0.33	0.25	0.59
ref12	0.29	-0.46	-0.16	0.57
ref13	0.54	-0.45	0.04	0.71
ref14	-0.79	-0.49	0.31	0.98
ref15	-0.53	-0.44	0.51	0.86
ref16	-0.75	-2.20	-0.03	2.33
ref17	-0.21	-0.30	2.80	2.82
ref18	-0.26	-0.45	-2.48	2.54
ref19	-0.59	-1.96	2.78	3.45
ref20	-0.57	-1.81	-2.77	3.36

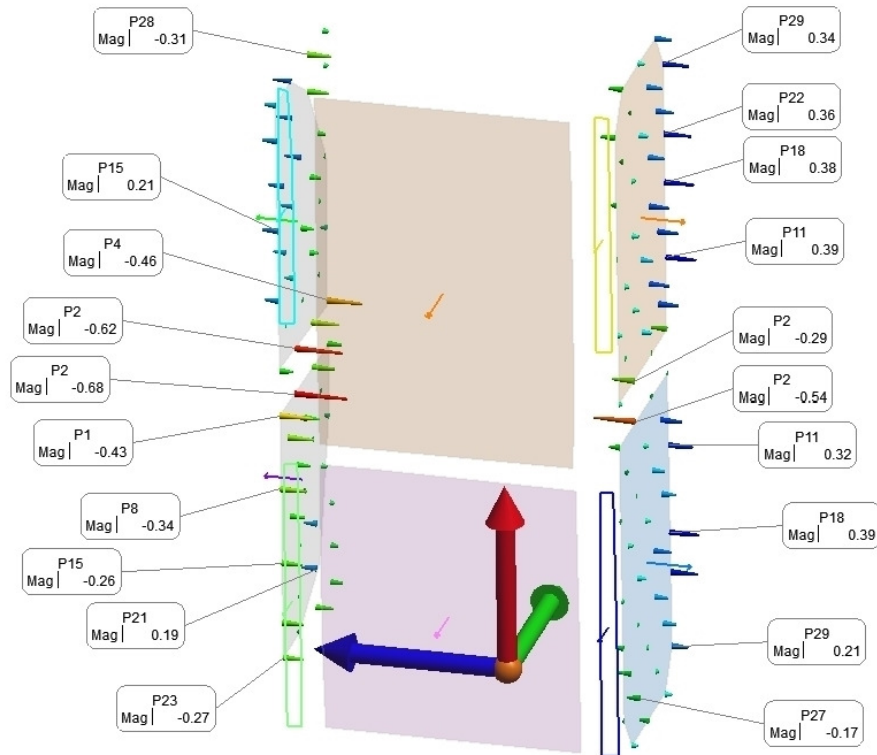
Scostamento REF11 ÷ REF20 al 11° controllo (TERMINE SPESSORE A FILO)



All Vectors Summary: Vector Group				
11° controllo 12/06/2013 coperchi::REF2-REF2 all'11° controllo				
Statistic	dX	dY	dZ	Mag
Min	-1.57	-6.15	-3.47	2.28
Max	1.11	-0.60	3.83	6.35
Average	-0.44	-2.50	0.18	3.65
StdDev from Avg	1.06	1.54	2.40	1.29
StdDev from Zero	1.16	3.05	2.41	4.05
RMS	1.10	2.89	2.28	3.85
Count	10			

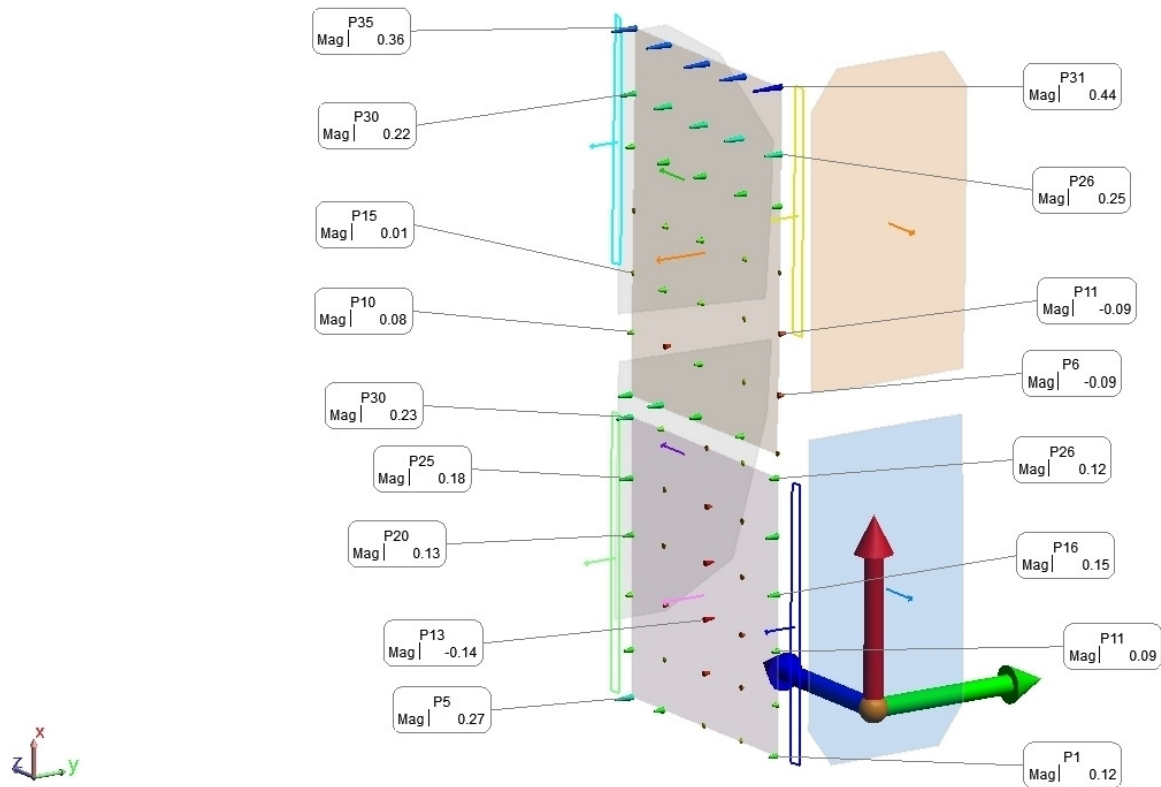
Vector Group					
11° controllo 12/06/2013 coperchi::REF2-REF2 all'11° controllo					
Name	Delta			Mag	
	dX	dY	dZ	Mag	
ref11	0.97	-3.11	0.21	3.26	+
ref12	0.83	-2.10	-0.31	2.28	+
ref13	1.11	-2.12	0.28	2.41	+
ref14	-1.57	-2.33	0.13	2.81	+
ref15	-1.29	-2.20	0.79	2.67	+
ref16	-1.56	-6.15	-0.02	6.35	+
ref17	-0.39	-0.65	3.83	3.91	+
ref18	-0.30	-0.60	-3.33	3.39	+
ref19	-1.13	-2.89	3.67	4.80	+
ref20	-1.06	-2.82	-3.47	4.60	+

## Scostamento Punti laterali al 7° controllo



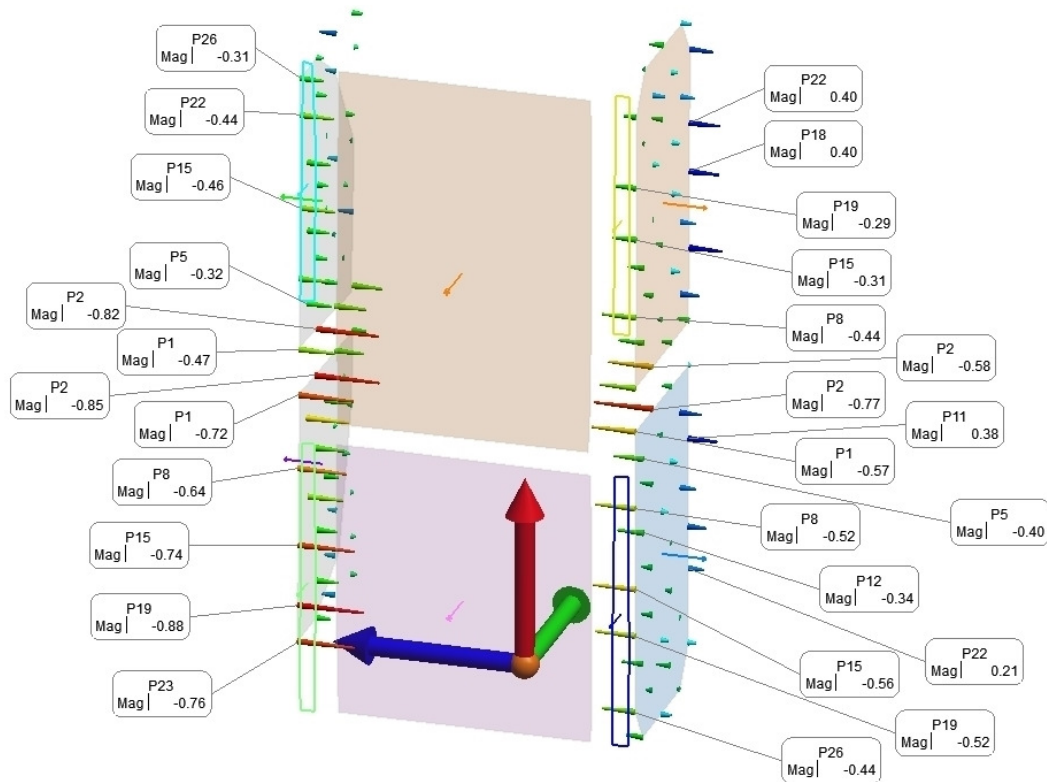
All Vectors Summary: Vector Group				
7° controllo 07/06/2013 coperchi::Scostamento Punti laterali al 7° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.00	-0.68	-0.68
Max	0.00	0.00	0.54	0.39
Average	0.00	0.00	-0.08	0.00
StdDev from Avg	0.00	0.00	0.20	0.21
StdDev from Zero	0.00	0.00	0.21	0.21
RMS	0.00	0.00	0.21	0.21
Count	119			

Scostamento Punti frontali al 7° controllo



All Vectors Summary: Vector Group				
7° controllo 07/06/2013 coperchi::Scostamento Punti frontali al 7° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.44	-0.00	-0.14
Max	0.00	0.14	0.00	0.44
Average	0.00	-0.09	-0.00	0.09
StdDev from Avg	0.00	0.13	0.00	0.13
StdDev from Zero	0.00	0.16	0.00	0.16
RMS	0.00	0.16	0.00	0.16
Count	65			

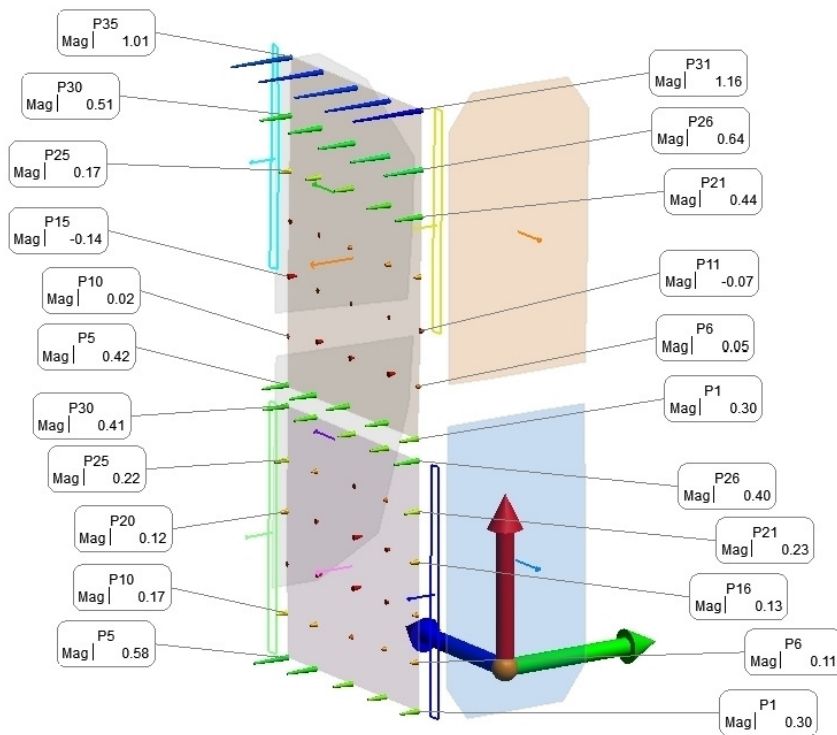
Scostamento Punti laterali al 8° controllo



All Vectors Summary: Vector Group				
8° controllo 10/06/2013 coperchi::Scostamento Punti laterali al 8° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.00	-0.88	-0.88
Max	0.00	0.00	0.77	0.43
Average	-0.00	-0.00	-0.07	-0.14
StdDev from Avg	0.00	0.00	0.31	0.29
StdDev from Zero	0.00	0.00	0.32	0.32
RMS	0.00	0.00	0.32	0.32
Count	119			

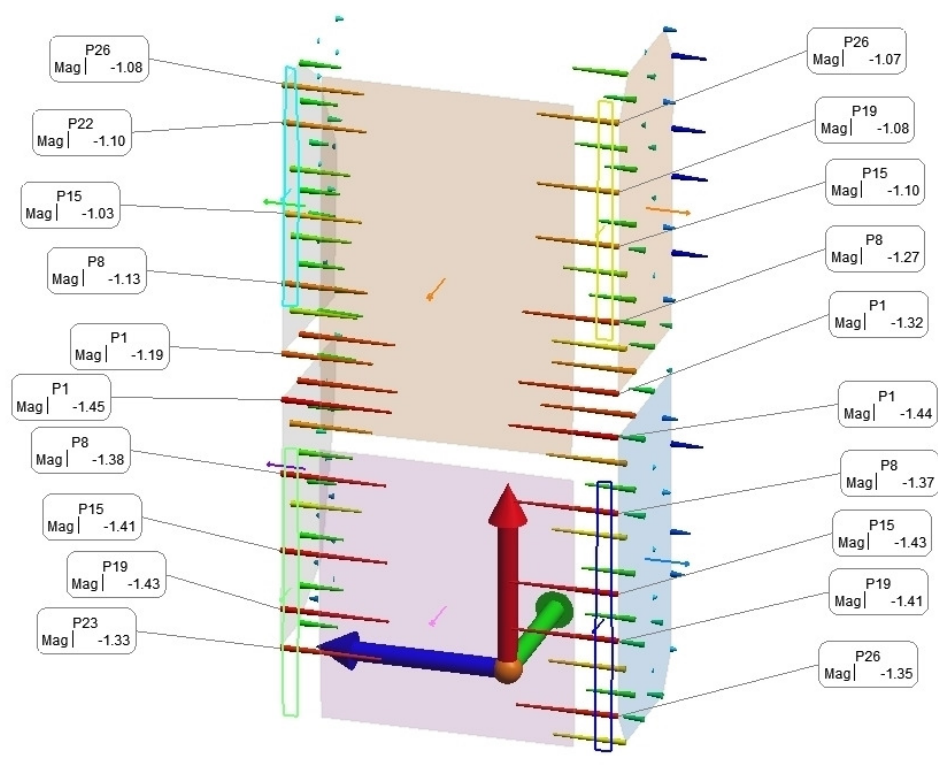


Scostamento Punti frontali al 8° controllo



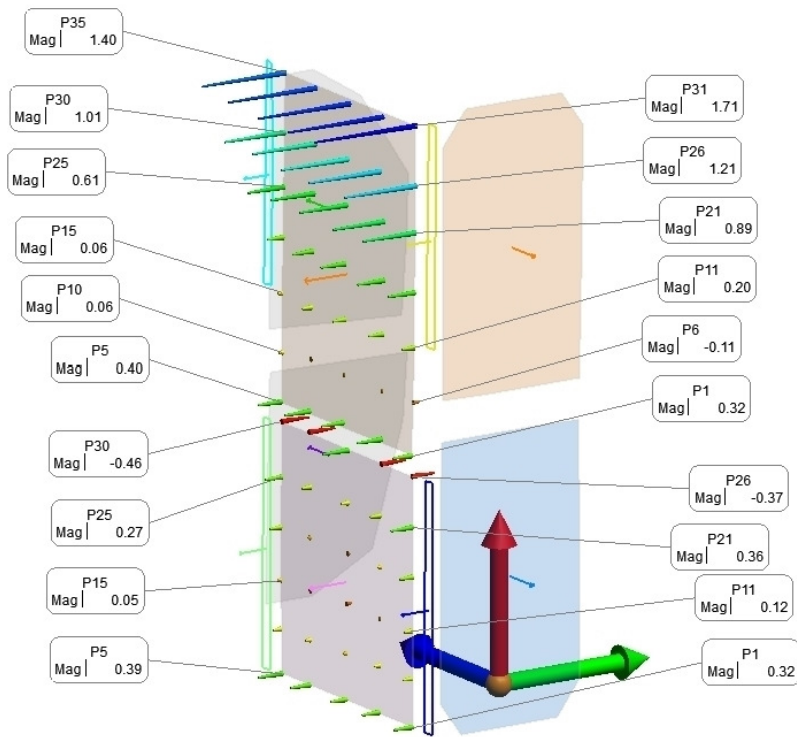
All Vectors Summary: Vector Group				
8° controllo 10/06/2013 coperchi::Scostamento Punti frontrali al 8° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-1.16	-0.00	-0.14
Max	0.01	0.14	0.00	1.16
Average	0.00	-0.25	-0.00	0.25
StdDev from Avg	0.00	0.32	0.00	0.32
StdDev from Zero	0.00	0.41	0.00	0.41
RMS	0.00	0.40	0.00	0.40
Count	65			

Scostamento Punti laterali al 9° controllo



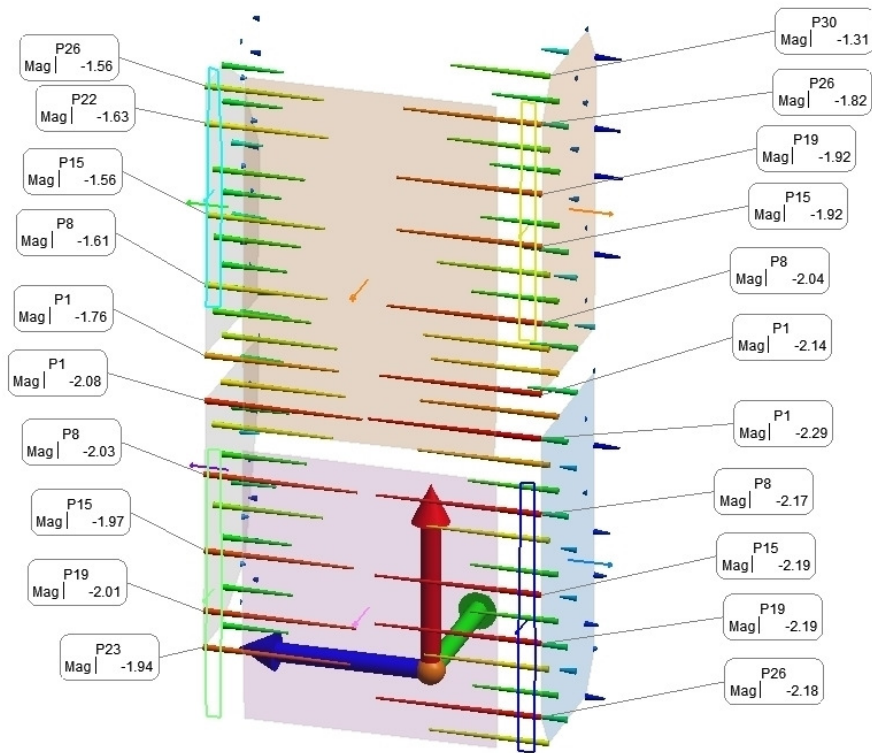
All Vectors Summary: Vector Group				
9° controllo 10/06/2013 coperchi::Scostamento Punti laterali al 9° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.00	-1.45	-1.45
Max	0.00	0.00	1.44	0.47
Average	-0.00	-0.00	-0.01	-0.46
StdDev from Avg	0.00	0.00	0.70	0.53
StdDev from Zero	0.00	0.00	0.70	0.70
RMS	0.00	0.00	0.70	0.70
Count	119			

Scostamento Punti frontali al 9° controllo



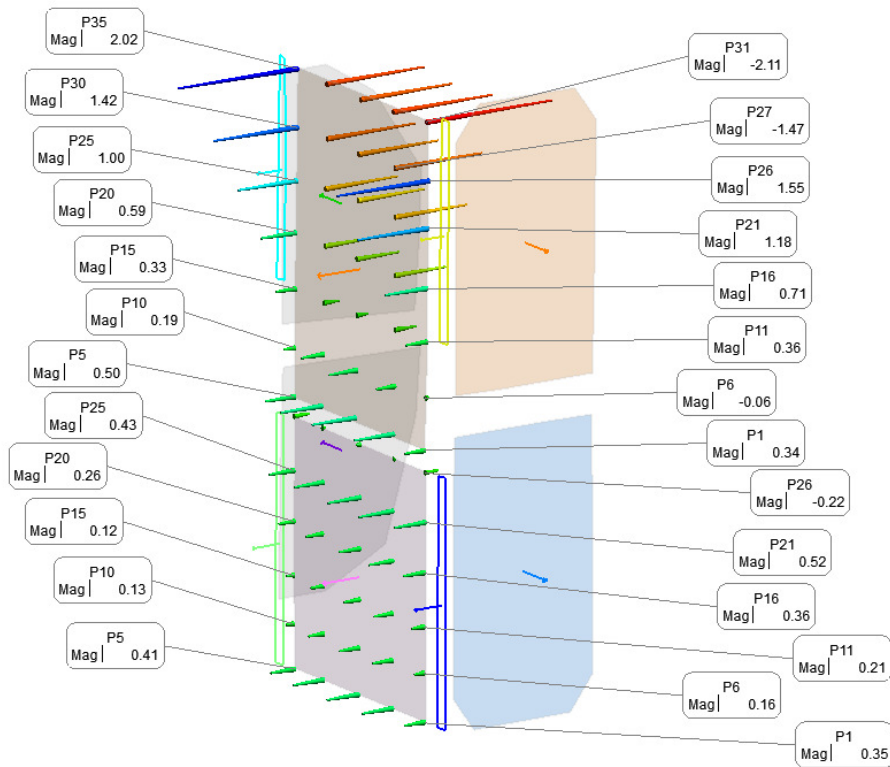
All Vectors Summary: Vector Group				
9° controllo 10/06/2013 coperchi::Scostamento Punti frontrali al 9° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.01	-1.71	-0.00	-0.46
Max	0.02	0.46	0.00	1.71
Average	0.00	-0.37	-0.00	0.37
StdDev from Avg	0.01	0.50	0.00	0.50
StdDev from Zero	0.01	0.62	0.00	0.62
RMS	0.01	0.62	0.00	0.62
Count	65			

Scostamento Punti laterali al 10° controllo



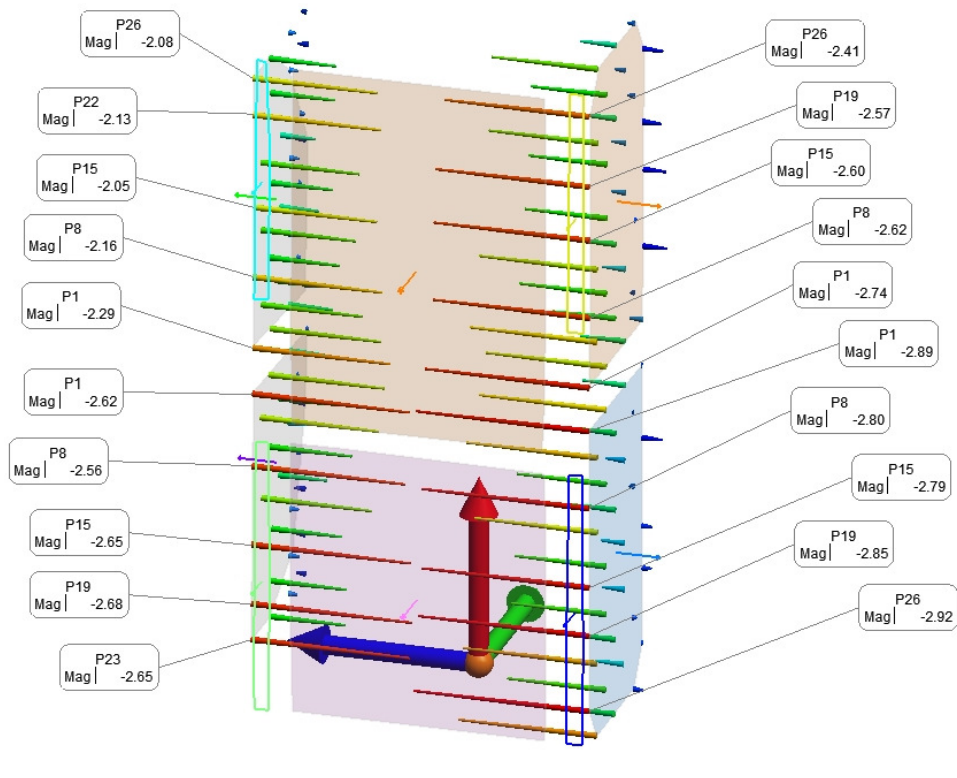
All Vectors Summary: Vector Group				
10° controllo 11/06/2013 coperchi::Scostamento Punti laterali al 10° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.01	-2.08	-2.29
Max	0.00	0.00	2.29	0.36
Average	-0.00	-0.00	0.10	-0.76
StdDev from Avg	0.00	0.00	1.09	0.78
StdDev from Zero	0.00	0.00	1.09	1.09
RMS	0.00	0.00	1.09	1.09
Count	119			

Scostamento Punti frontali al 10° controllo



All Vectors Summary: Vector Group				
10° controllo 11/06/2013 coperchi::Scostamento Punti frontali al 10° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-2.02	-0.00	-2.11
Max	0.02	2.11	0.00	2.02
Average	0.00	-0.06	-0.00	0.06
StdDev from Avg	0.00	0.82	0.00	0.82
StdDev from Zero	0.01	0.82	0.00	0.82
RMS	0.01	0.81	0.00	0.81
Count	65			

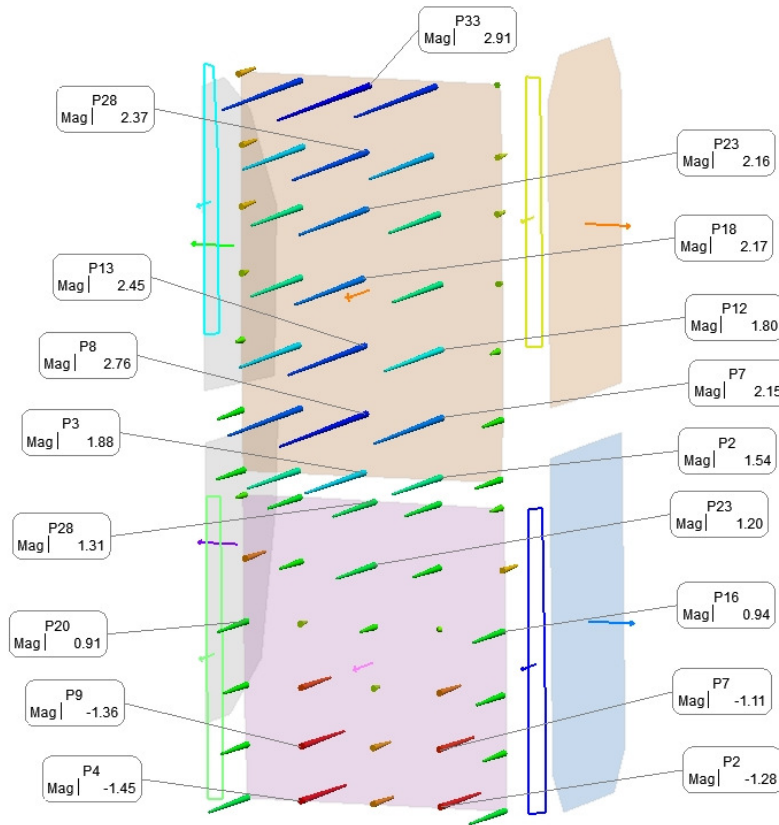
Scostamento Punti laterali al 11° controllo



All Vectors Summary: Vector Group				
11° controllo 12/06/2013 coperchi::Scostamento Punti laterali al 11° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.00	-0.01	-2.68	-2.92
Max	0.00	0.00	2.92	0.40
Average	-0.00	-0.00	0.15	-1.01
StdDev from Avg	0.00	0.00	1.42	1.00
StdDev from Zero	0.00	0.00	1.42	1.42
RMS	0.00	0.00	1.42	1.42
Count	119			

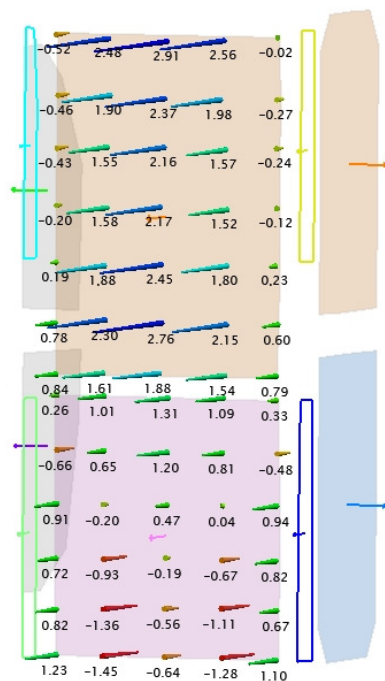


Scostamento Punti frontali al 11° controllo



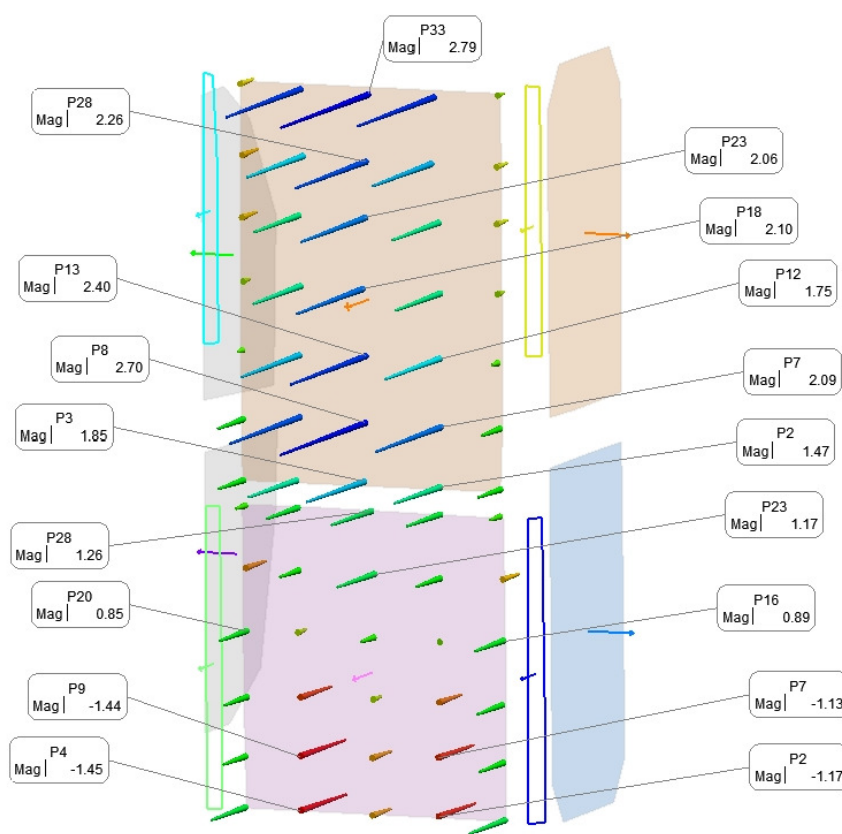
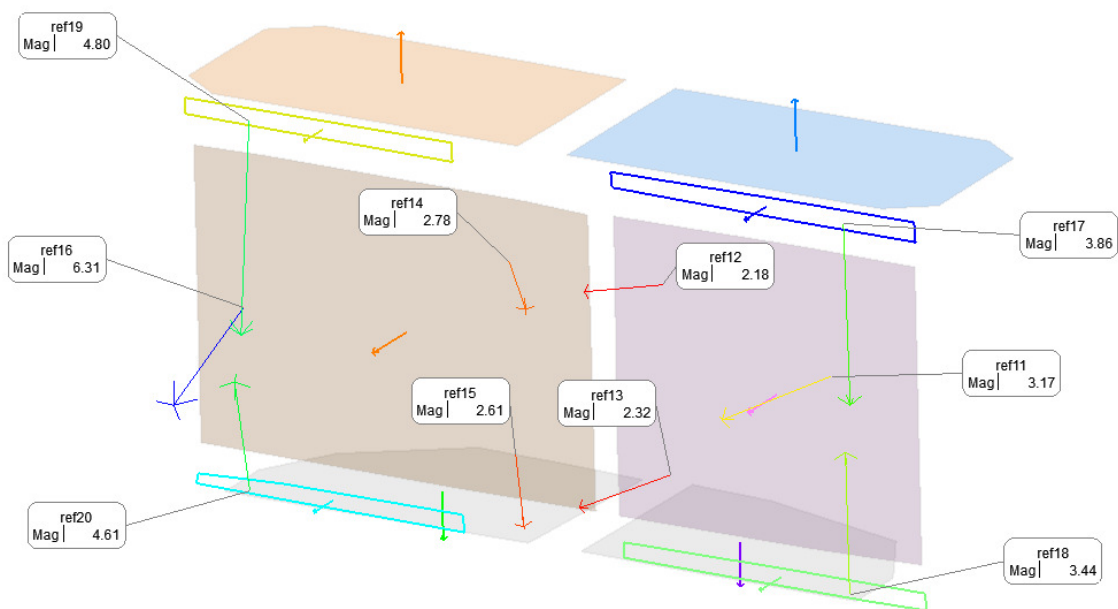
All Vectors Summary: Vector Group				
11° controllo 12/06/2013 coperchi::Scostamento Punti frontali al 11° controllo				
Statistic	dX	dY	dZ	Mag
Min	-0.02	-2.91	-0.00	-1.45
Max	0.02	1.45	0.00	2.91
Average	0.00	-0.76	-0.00	0.76
StdDev from Avg	0.01	1.13	0.00	1.13
StdDev from Zero	0.01	1.36	0.00	1.36
RMS	0.01	1.35	0.00	1.35
Count	65			

Scostamento Punti frontali al 11° controllo



Scostamento REF11 ÷ REF20 al 12° controllo (senza trave all'interno)

Non si rileva scostamento apprezzabile rispetto al controllo precedente (con trave all'interno)



Distanze REF (11+20) prima della saldatura dei coperchi e al 11° controllo

