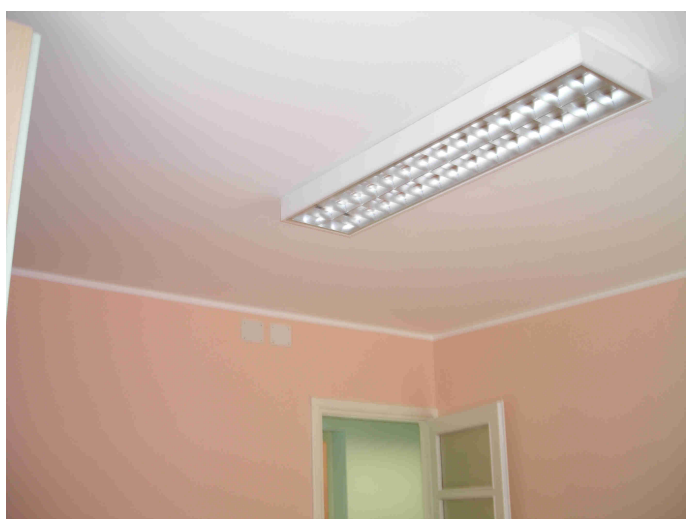


Termovisione impianto GiacoKlima

Soffitto radiante GKCS

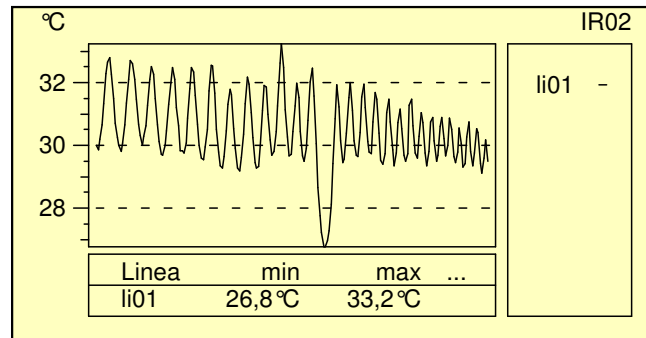
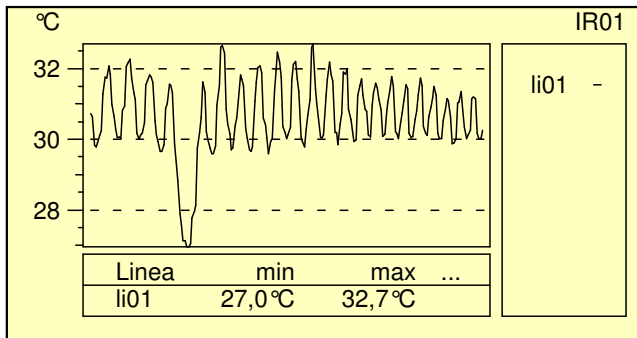
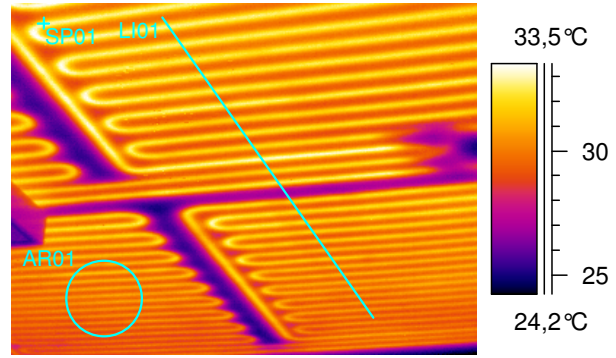
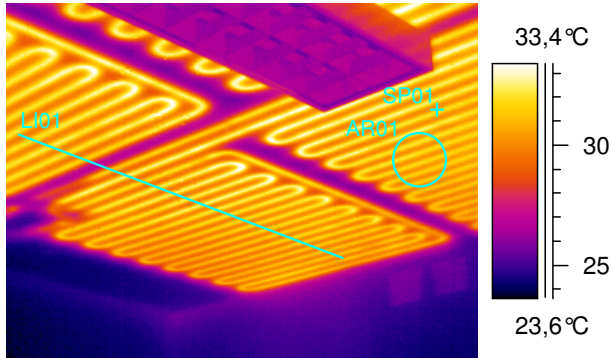
ASTON - Stradotto



Alberto Montibelli

Termovisione effettuata il 23 Febbraio 2010 con ThermaCAM di FLIR Systems AB.

Immagini 1 (a sx.) e 2 (a dx.)



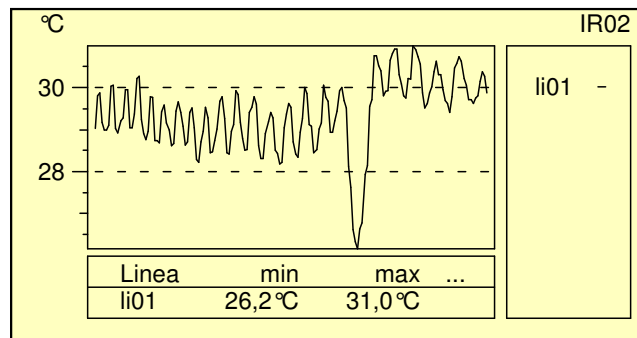
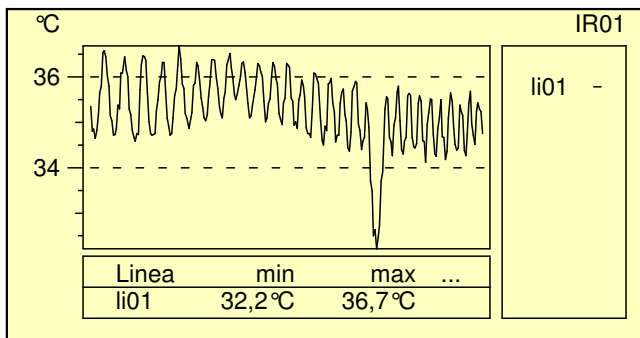
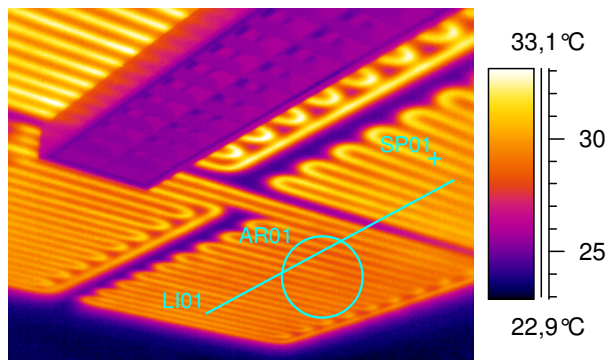
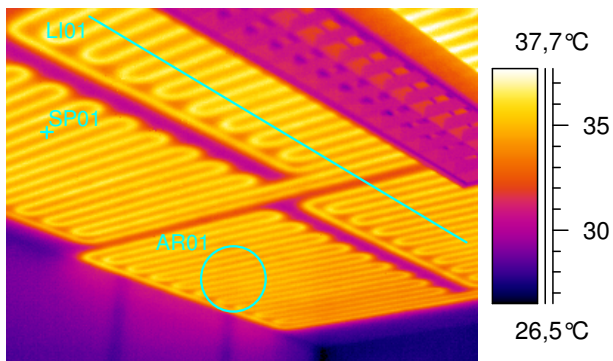
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	30,9°C
LI01 : max	32,7°C
LI01 : min	27,0°C
AR01 : max	32,7°C
AR01 : min	29,9°C
AR01 : media	31,0°C
AR01: devst	0,6°C

Definizione	Valore
SP01	32,6°C
LI01 : max	33,2°C
LI01 : min	26,8°C
AR01 : max	31,6°C
AR01 : min	28,6°C
AR01 : media	30,0°C
AR01: devst	0,6°C

Immagini 3 (a sx.) e 4 (a dx.)



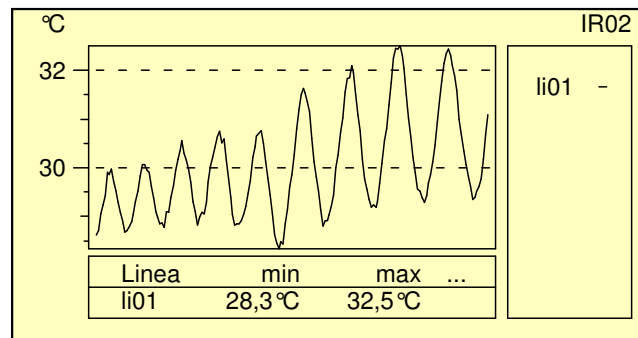
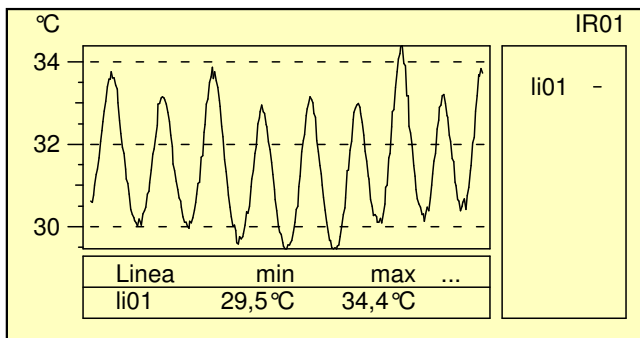
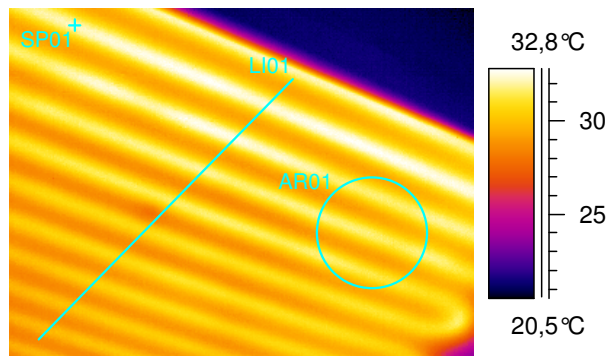
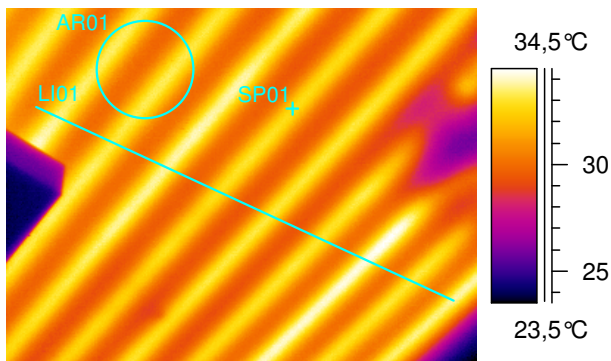
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	35,8°C
LI01 : max	36,7°C
LI01 : min	32,2°C
AR01 : max	35,7°C
AR01 : min	32,6°C
AR01 : media	34,9°C
AR01: devst	0,4°C

Definizione	Valore
SP01	30,3°C
LI01 : max	31,0°C
LI01 : min	26,2°C
AR01 : max	30,1°C
AR01 : min	28,0°C
AR01 : media	29,0°C
AR01: devst	0,4°C

Immagini 5 (a sx.) e 6 (a dx.)



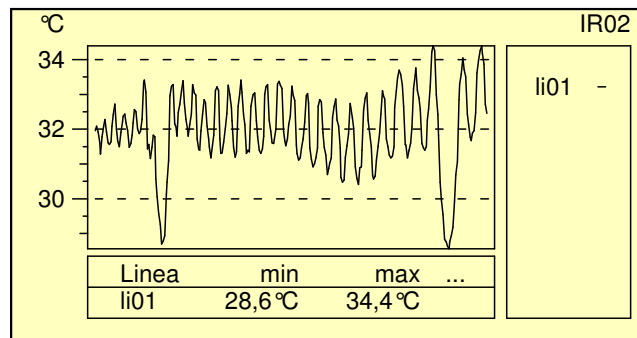
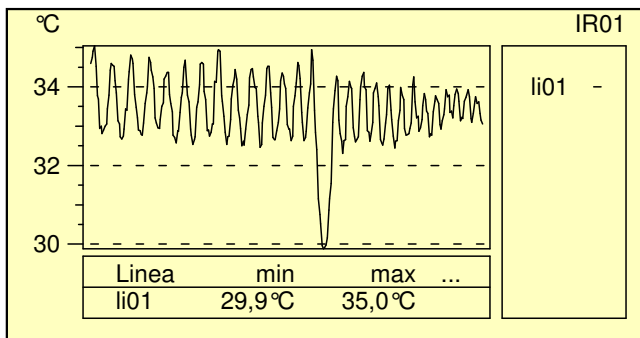
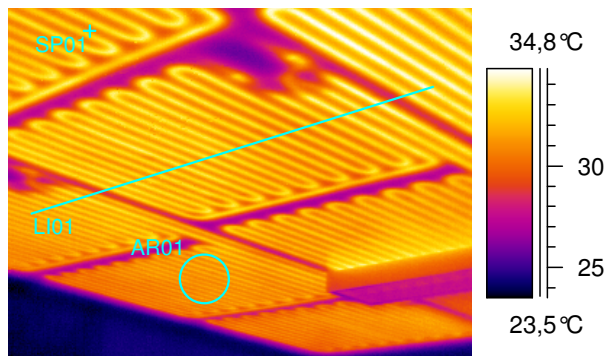
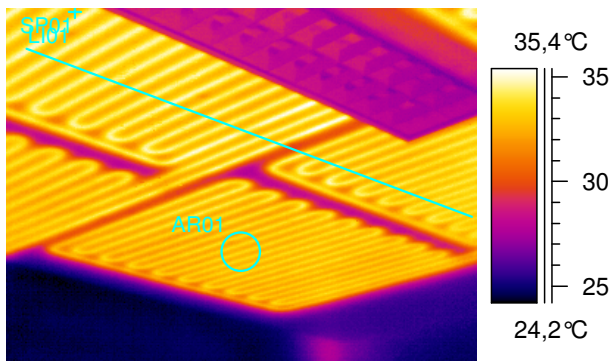
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	32,8°C
LI01 : max	34,4°C
LI01 : min	29,5°C
AR01 : max	33,7°C
AR01 : min	29,7°C
AR01 : media	31,6°C
AR01: devst	1,2°C

Definizione	Valore
SP01	32,3°C
LI01 : max	32,5°C
LI01 : min	28,3°C
AR01 : max	32,1°C
AR01 : min	29,0°C
AR01 : media	30,5°C
AR01: devst	0,8°C

Immagini 7 (a sx.) e 8 (a dx.)



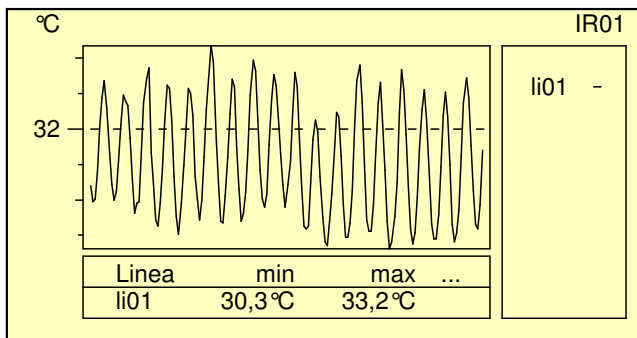
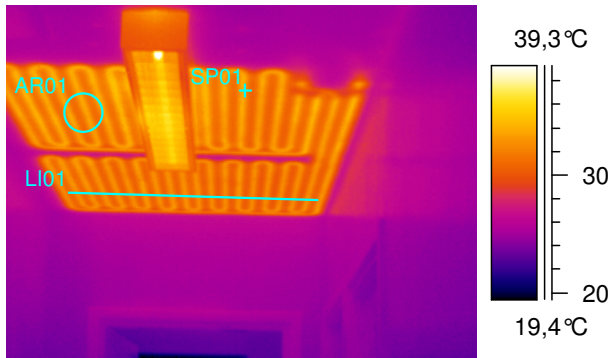
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	32,9°C
LI01 : max	35,0°C
LI01 : min	29,9°C
AR01 : max	33,7°C
AR01 : min	32,0°C
AR01 : media	33,0°C
AR01: devst	0,4°C

Definizione	Valore
SP01	31,1°C
LI01 : max	34,4°C
LI01 : min	28,6°C
AR01 : max	32,3°C
AR01 : min	30,4°C
AR01 : media	31,2°C
AR01: devst	0,4°C

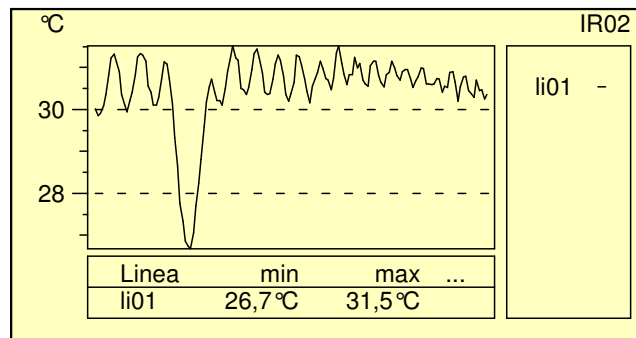
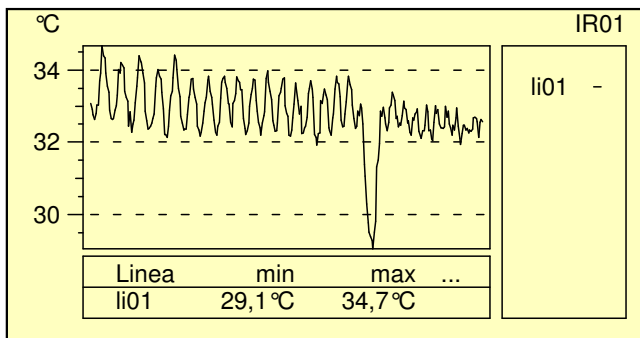
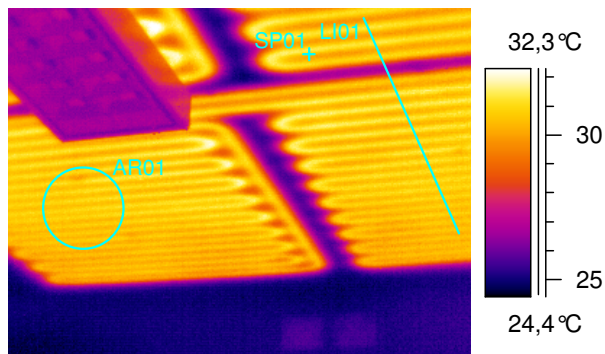
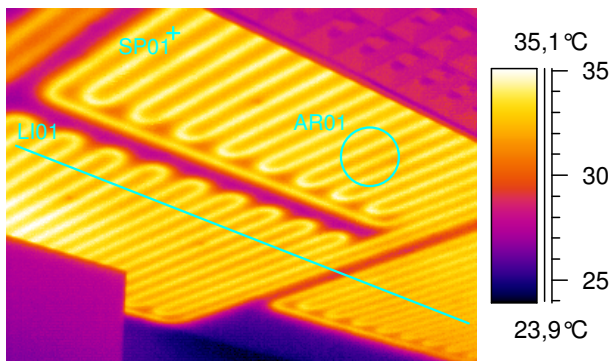
Immagine 9 (a sx.)



Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	33,1°C
LI01 : max	33,2°C
LI01 : min	30,3°C
AR01 : max	34,0°C
AR01 : min	30,8°C
AR01 : media	32,3°C
AR01: devst	0,9°C

Immagini 10 (a sx.) e 11 (a dx.)



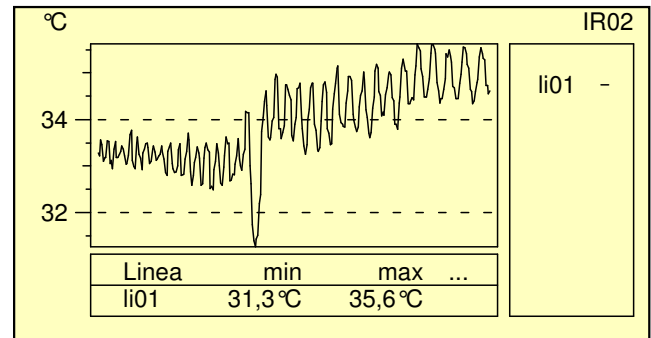
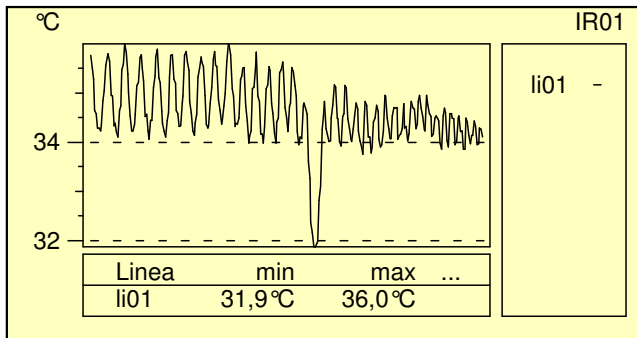
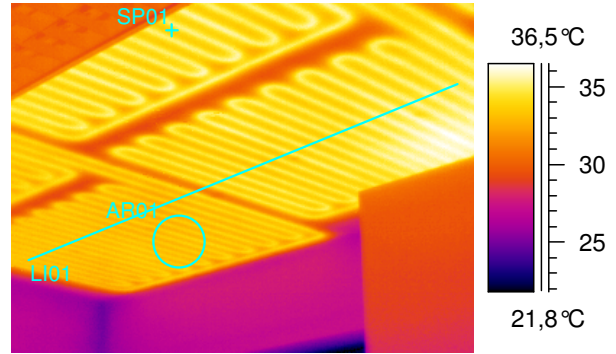
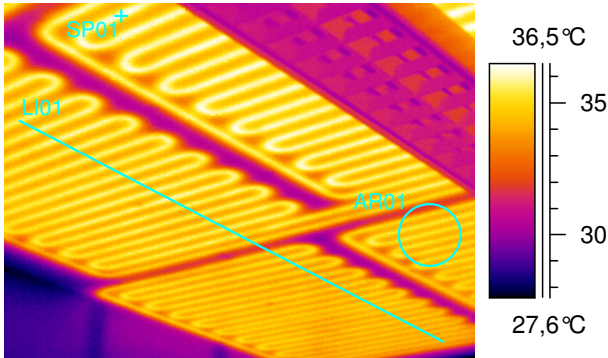
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	33,5°C
LI01 : max	34,7°C
LI01 : min	29,1°C
AR01 : max	34,5°C
AR01 : min	31,7°C
AR01 : media	33,1°C
AR01: devst	0,6°C

Definizione	Valore
SP01	30,7°C
LI01 : max	31,5°C
LI01 : min	26,7°C
AR01 : max	31,4°C
AR01 : min	29,7°C
AR01 : media	30,7°C
AR01: devst	0,3°C

Immagini 12 (a sx.) e 13 (a dx.)



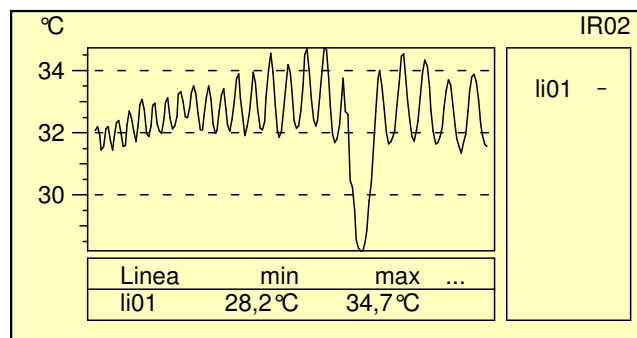
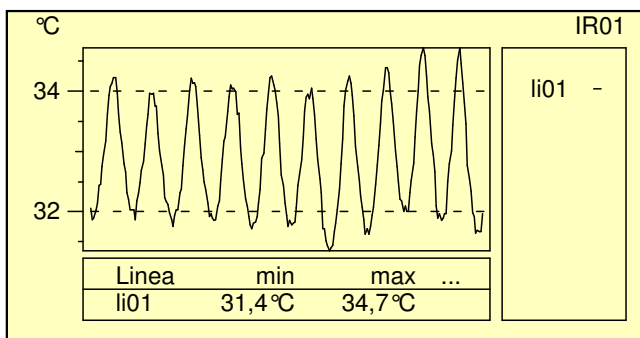
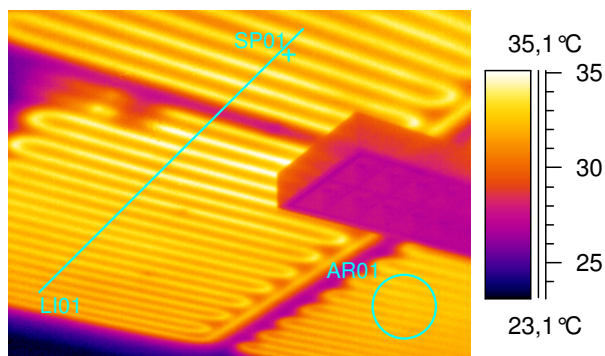
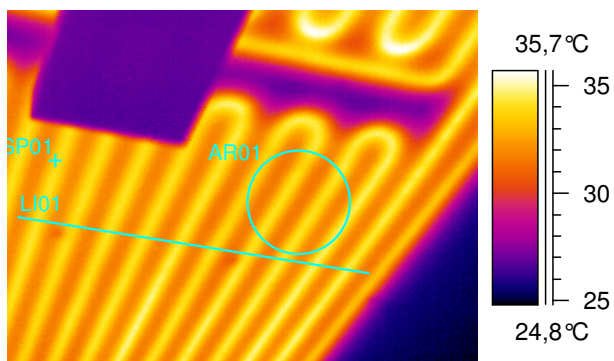
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	36,3°C
LI01 : max	36,0°C
LI01 : min	31,9°C
AR01 : max	35,6°C
AR01 : min	31,6°C
AR01 : media	34,5°C
AR01: devst	0,8°C

Definizione	Valore
SP01	34,0°C
LI01 : max	35,6°C
LI01 : min	31,3°C
AR01 : max	34,0°C
AR01 : min	32,6°C
AR01 : media	33,2°C
AR01: devst	0,3°C

Immagini 14 (a sx.) e 15 (a dx.)



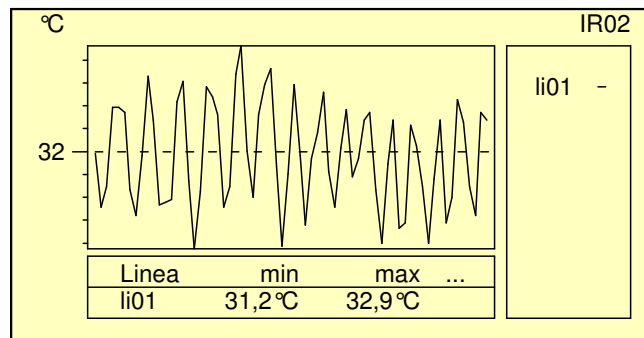
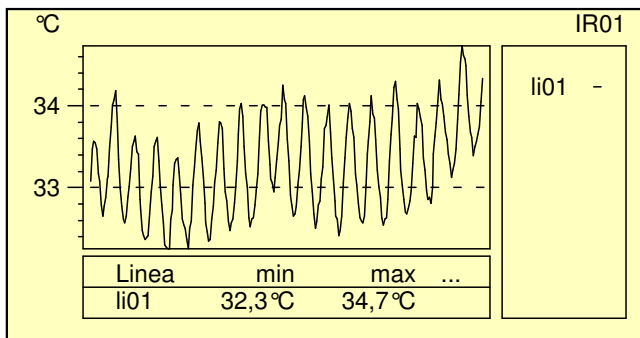
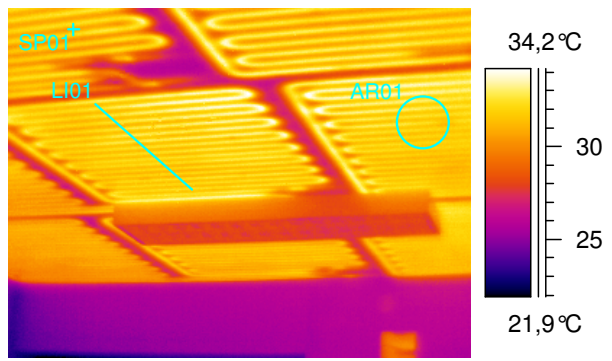
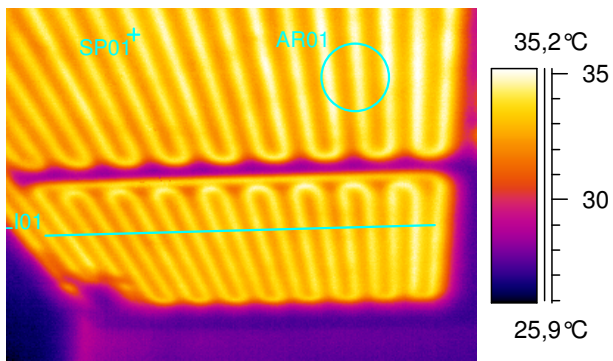
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	33,7°C
LI01 : max	34,7°C
LI01 : min	31,4°C
AR01 : max	34,8°C
AR01 : min	31,4°C
AR01 : media	32,8°C
AR01: devst	0,9°C

Definizione	Valore
SP01	33,0°C
LI01 : max	34,7°C
LI01 : min	28,2°C
AR01 : max	33,2°C
AR01 : min	31,6°C
AR01 : media	32,4°C
AR01: devst	0,3°C

Immagini 16 (a sx.) e 17 (a dx.)



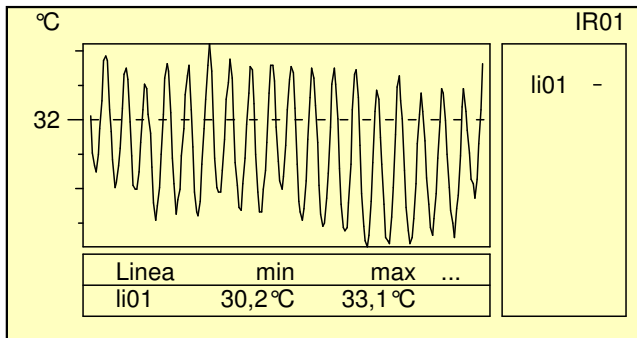
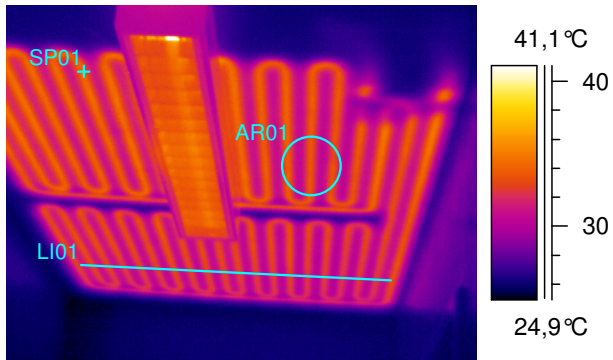
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	34,3°C
LI01 : max	34,7°C
LI01 : min	32,3°C
AR01 : max	35,2°C
AR01 : min	32,5°C
AR01 : media	33,7°C
AR01: devst	0,8°C

Definizione	Valore
SP01	30,6°C
LI01 : max	32,9°C
LI01 : min	31,2°C
AR01 : max	33,2°C
AR01 : min	31,2°C
AR01 : media	32,0°C
AR01: devst	0,4°C

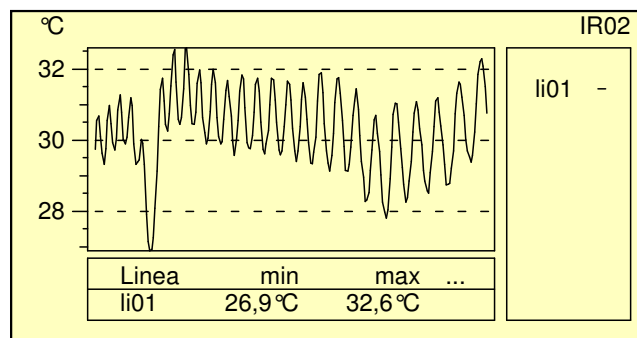
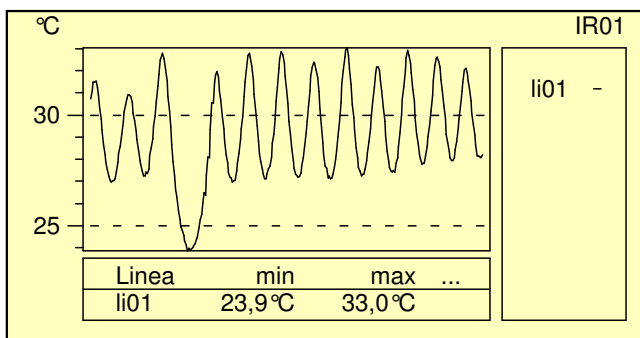
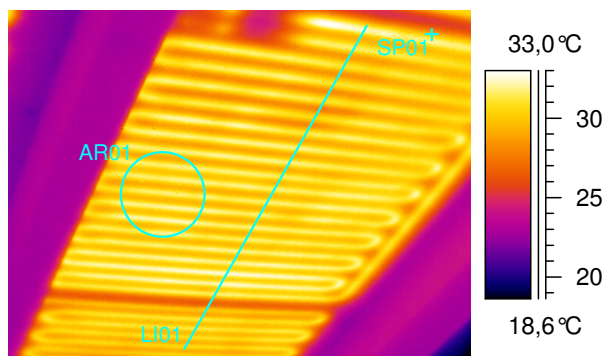
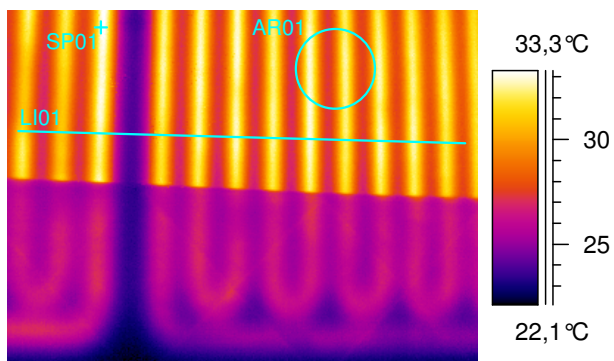
Immagine 18



Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	33,8°C
LI01 : max	33,1°C
LI01 : min	30,2°C
AR01 : max	34,1°C
AR01 : min	30,4°C
AR01 : media	32,0°C
AR01: devst	1,1°C

Immagini sottotetto



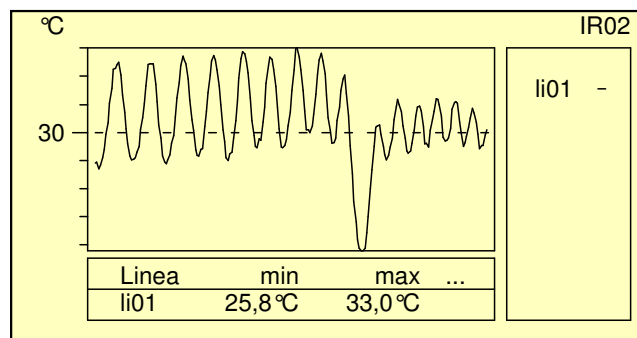
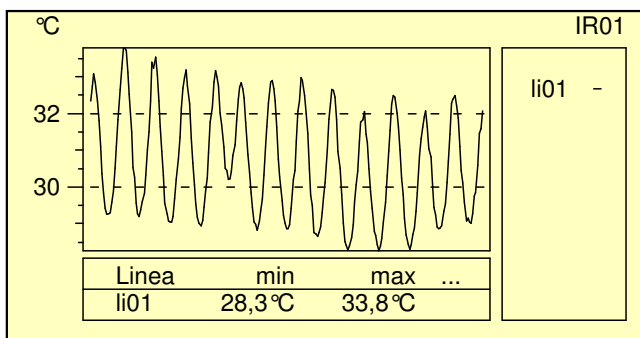
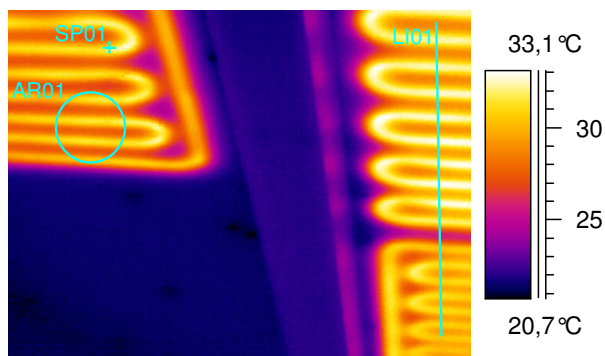
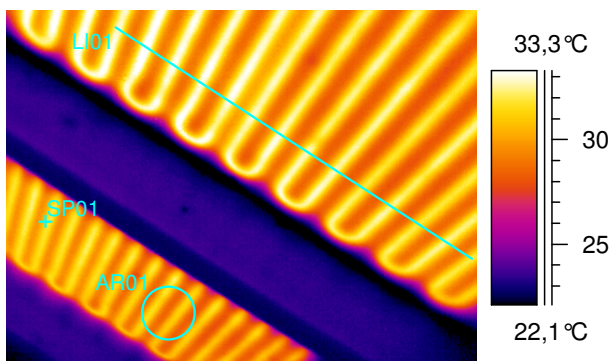
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	32,9°C
LI01 : max	33,0°C
LI01 : min	23,9°C
AR01 : max	33,1°C
AR01 : min	27,2°C
AR01 : media	29,8°C
AR01: devst	1,8°C

Definizione	Valore
SP01	29,4°C
LI01 : max	32,6°C
LI01 : min	26,9°C
AR01 : max	32,6°C
AR01 : min	28,8°C
AR01 : media	30,7°C
AR01: devst	0,9°C

Immagini sottotetto



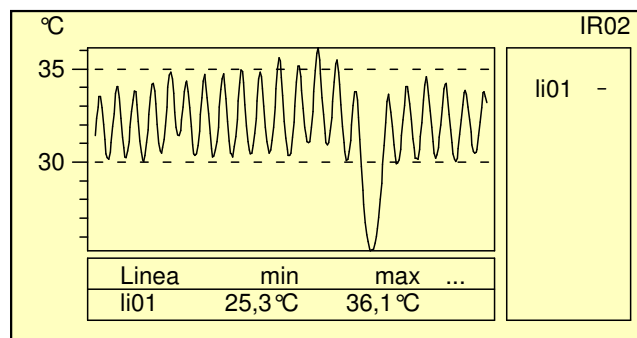
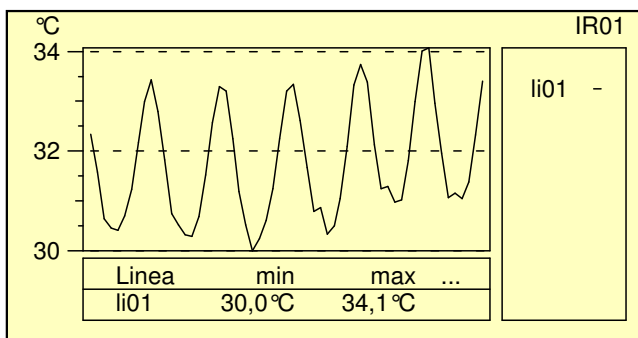
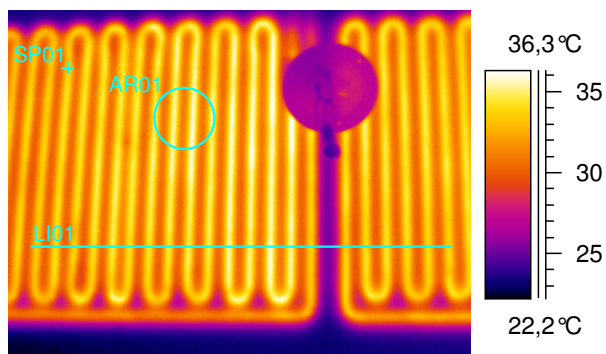
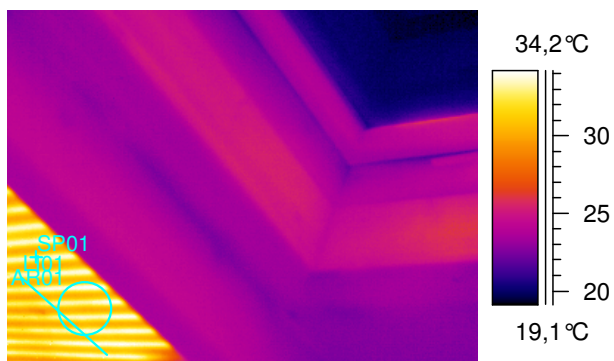
Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	31,2°C
LI01 : max	33,8°C
LI01 : min	28,3°C
AR01 : max	32,0°C
AR01 : min	28,1°C
AR01 : media	29,8°C
AR01: devst	1,0°C

Definizione	Valore
SP01	31,3°C
LI01 : max	33,0°C
LI01 : min	25,8°C
AR01 : max	32,1°C
AR01 : min	27,3°C
AR01 : media	29,4°C
AR01: devst	1,4°C

Immagini sottotetto



Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Parametri oggetto	Valore
Emissività	0,90
Distanza oggetto	2,0 m

Definizione	Valore
SP01	33,3°C
LI01 : max	34,1°C
LI01 : min	30,0°C
AR01 : max	34,4°C
AR01 : min	30,1°C
AR01 : media	32,0°C
AR01: devst	1,2°C

Definizione	Valore
SP01	33,7°C
LI01 : max	36,1°C
LI01 : min	25,3°C
AR01 : max	36,1°C
AR01 : min	30,6°C
AR01 : media	33,0°C
AR01: devst	1,7°C

Conclusioni

L'impianto è stato sottoposto a termovisione durante il funzionamento in riscaldamento. La temperatura esterna è variata tra i 6°C e i 10°C: in queste condizioni la temperatura di mandata al soffitto radiante è variata secondo la curva climatica impostata, questo spiega i differenti livelli di temperatura superficiale che emergono dalle immagini termiche.

Nella presente relazione le immagini termiche sono contraddistinte da un numero che compare anche sulla planimetria allegata: in questo modo si identifica con facilità la porzione di soffitto radiante a cui esse si riferiscono.

In tutti gli ambienti la termovisione ha dato eccellente responso: la nitidezza delle immagini è significativa della buona circolazione dell'acqua e del raggiungimento del regime termico in tutti pannelli radianti. Questa tesi è confermata dal profilo della temperatura superficiale riportato nei diagrammi che corredano le immagini.

Per quanto riguarda il sistema di termoregolazione BUS, questo funziona correttamente ed è stata accertata la comunicazione di ciascun dispositivo in campo con il master.