



# Final conference for LIFEZEROGWP project

22/06/2021



## Propane monobloc: lessons learnt from the field

*IVAR CS – Katerina Jandova*  
*INNOVA – Alberto Bodio*





GENERIAMO IDEE PER UN'ENERGIA SOSTENIBILE



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- MAIN RESULTS
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- SOME INTERESTING INSTALLATIONS



Autore/i – Affiliazione/i



GENERIAMO IDEE PER UN'ENERGIA SOSTENIBILE



## C4 – Before installation

- *To ensure the large-scale distribution of the DD-AC R290 product, it is crucial to perform a significant number of field-tests with the products installed in real life in the most diverse climatic conditions (summer and winter) and different types of installation.*
- *Steps before installation MAY-JUNE 2020:*
- *Contacting clients via our sales representatives*
- *Selection criteria – to cover the whole area of the countries, climatic zones, different installation places*
- *Translation of the documents (reports, manuals, contracts)*
- *Installation places inspection + signing the contracts with field-test users*



Autore/i – Affiliazione/i



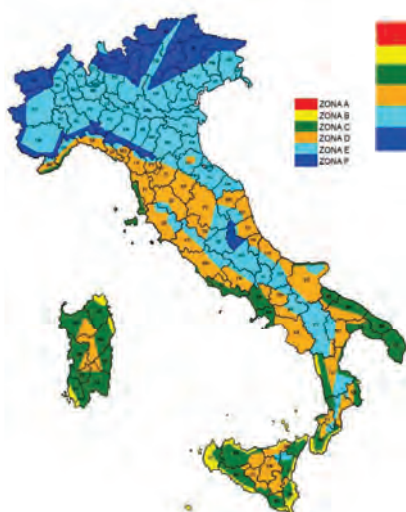
## C4 – Before installation

*Different installation types were used for selection of the Field-test-users:*

- To cover the whole area (different parts) of the Czech and Slovakian republic.
  - Acc. to the climatic zones (mainly due to altitude) and types of the environment (cities, villages).
  - Different types of buildings (family houses, offices, shops, pensions, restaurants, hairdresser's).
  - Different types of rooms (living room, bedroom, offices, terraces, shops, apartments, different room areas).
  - Different types of installations (with/without condensate drainage, low/high wall installations).
  - Different field-test users (with/without knowledge of the INNOVA products – 2.0 410A refrigerant)
- IN ORDER TO BE ABLE TO EVALUATE THE OPERATION OF THE UNIT IN DIFFERENT CONDITIONS – OBJECTIVE ANALYSIS



## C4 – Climatic zones Italy



- ZONE A: municipalities with degree-days below 600
- ZONE B: municipalities with degree-days between 601 and 900
- ZONE C: municipalities with degree-days between 901 and 1400
- ZONE D: municipalities with degree-days between 1401 and 2100
- ZONE E: municipalities with degree-days between 2101 and 3000
- ZONE F: municipalities with degree-days over 3001

*Analysis of the various climatic zones of the territory to identify :*

- Zones with low-degree-days: best candidates under extreme cooling operations
- Zone with an high index best candidates under extreme heating operations

*This approach was useful to align every installation and determinate unit's efficiency during seasonal changing in different enviroments.*

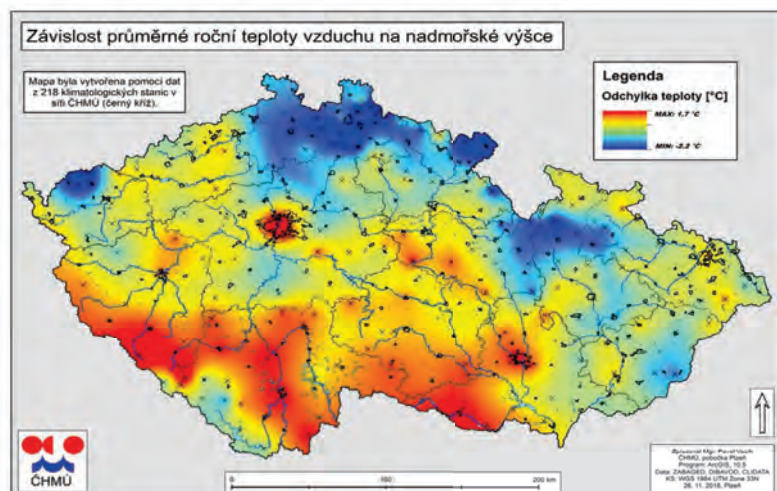




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## C4 – Climatic zones - Czech rep.



3 climatic zones:

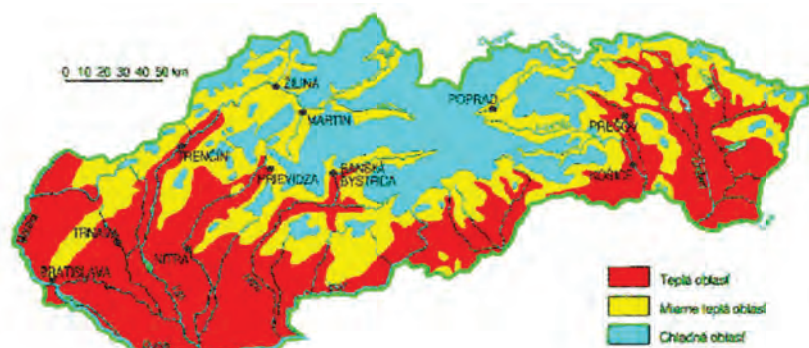
- ZONE A HOT
- ZONE B - AVERAGE
- ZONE C - COLD



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## C4 – Climatic zones - Slovakia



3 climatic zones:

- ZONE A – HOT
- ZONE B - AVERAGE
- ZONE C – COLD



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## C4 – Installation

- JULY/AUGUST 2020:
- After delivery of the units (delayed production) – distribution to the clients and installation (the last 2 units were installed in September 2020) –performed by our own service technicians to ensure perfect installation.
- The units were installed to cover the whole areas of the countries – different climatic zones.
- The total of 60 DD-AC R290 units were installed as field-tests devices, of which 28 in Italy, supervised by INNOVA, while the remaining 32 in the Czech Republic and Slovakia, supervised by IVAR CS.
- IMPORTANT: NO PROBLEMS AT ALL ARISED DURING THE INSTALLATION OF THE PROTOTYPES (NO REFRIGERANT LEAKAGE, OR NON-FUNCTIONAL UNITS)
- Connection to WIFI and pairing with application – here some units could not be paired – resolved later on after update of the app
- After the installation a first module was signed by the installers and the field test users, forwarding information and manuals



Autore/i – Affiliazione/i



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## C4 – Installations summary - Italy

QUANTITA'	RAZIONE SOCIALE	CAT ASSEGNATO	ZONA	LUOGO D'INSTALLAZIONE	MATRICOLA	CONNESSIONE WI-FI SUL SERVER	NOTE	NOTE 2	MODALITA' DI REGISTRAZIONE	1° QUESTIONARIO (DA NOVEMBRE)	2° QUESTIONARIO (DA APRILE)	CONSIGLI RICEVUTI
1	TAMBINI	NOVACOLD SERVICE SRL	TRENTINO (TN)	f	TAMBINI MARCO - in ufficio	IN2023952	SI		TICKET N°2544	RICEVUTO	RICEVUTO	
2	P.M. SERVICE DI CARLASSARE PIERRE	P.M. SERVICE DI CARLASSARE PIERRE	VENETO (VI)	f	2 uffici separati	IN2023953	SI	ARRIVATA PER PROVE TECNICHE. OTTIME CONDIZIONI. TUTTO PULITO	TICKET N°2544	RICEVUTO		
						IN2023957	SI	ARRIVATA PER PROVE TECNICHE. OTTIME CONDIZIONI. TUTTO PULITO	TICKET N°2543	RICEVUTO		
1	SCUNCIA SERGIO	SCUNCIA SERGIO	LAZIO (RM)	D	In ufficio	IN2023950	SI	WIFI NON FUNZIONANTE - SOSTITUZIONE DISPLAY	TICKET N°2329	RICEVUTO		
1	ITALTECNICA AM SRL	ITALTECNICA AM SRL	EMILIA ROMAGNA (EC)	f	In ufficio	IN2023954	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2497	RICEVUTO		
1	PROGRESS SRL	PROGRESS SRL	TOSCANA (SI)	D	NILUB NGR SRL - in ufficio	IN2024179	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2553	RICEVUTO		
1	CLIMA LAB S.R.L.	CLIMA LAB S.R.L.	EMILIA ROMAGNA (MO)	f	In ufficio	IN2023956	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2339	RICEVUTO		
1	THERMOGAS SRL	THERMOGAS SRL	UMBRIA (PG)	D	In ufficio	IN2023955	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2482	RICEVUTO		
1	AGENZIA PERINI	MICHELE PERINI	CALABRIA (CS)	D	ALFREDO PERINI - a casa sua	IN2024029	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2396	RICEVUTO	RICEVUTO	MOLTO BASTA DA RIMANDARE
1	TIFFE	AREA CLIMA SNC DI BASILI M. & ROCCAFORTE	UMBRIA (PG)	D	TIFFE SRL - in ufficio	IN2024012	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2397	RICEVUTO	RICEVUTO	
1	CITTARELLA	CL.THERMOSERVICE SRL	SICILIA (PA)	A	GIANNI CITTARELLA - a casa sua	IN2023936	NO		TICKET N°2943	RICEVUTO		
1	DHS	2D IMPIANTI	LAZIO (RM)	D	ROBERTA PESCO - a casa sua	IN2024152	NO		TICKET N°2938	RICEVUTO	RICEVUTO	HA RICEVUTO IL MANUALE DI INSTALLAZIONE E DI MANUTENZIONE
1	BALICE	SI CLIMA DI DAMIANO COLOMBO	LOMBARDIA (MB)	f	BALICE CONSULTING SRL - in ufficio	IN2024017	SI	MOLTO RUMOROSO	TICKET N°2758	RICEVUTO		
2	OGGIANO	TERMOCLIMA DI BRANA GIOVANNI MATTEO	SARDEGNA (SS)	A	DEAR VETRI SRL - ufficio	IN2023940	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2940	RICEVUTO		
					ASIONI ANTONIO - ufficio	IN2023947	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2941	RICEVUTO		
1	ALFIO GIULIO	LA PAGLIA LUGI	SICILIA (CT)	A	ECCEBRAND ITALIA - ufficio	IN2024015	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2942	RICEVUTO	RICEVUTO	
2	TE.CO CENTROCLIMA SRL	TE.CO CENTROCLIMA SRL	VENETO (TV)	f	PERLUZZO - negozio	IN2023945	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2485	RICEVUTO	RICEVUTO	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO
1	SATER SRL	SATER SRL	TOSCANA (SI)	D	PALAZZETTI RITA - a casa sua	IN2024022	NO	LA SOSTITUIRE DEL THERMOCLIMA (A.S. 2019)	TICKET N°2504	RICEVUTO	RICEVUTO	
1	MARCO BELLETTI	RECON DI GINESIO TROBBIANI	MARCHE (FM)	f	MARCO BELLETTI - a casa sua	IN2023945	SI	CAUSA COVID NON PUO' RICEVERE IL THERMOCLIMA (A.S. 2019)	TICKET N°2777	RICEVUTO		
1	ZARA SERVICE	ZARA SERVICE	EMILIA ROMAGNA (BO)	f	MARCO BELLETTI - a casa sua	IN2023945	SI	FILTRO MOLTO SPORCO. BATTERIA INTERNA SOSTITUITA. VERIFICA SOSTITUIRE IL FILTRO	TICKET N°2939	RICEVUTO		
1	DINOSERVICE SRL	DINOSERVICE SRL	TOSCANA (FI)	D	PIATO - IN2024009	IN2024009	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2412	RICEVUTO	RICEVUTO	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO
					SCANDINO - IN2024003	IN2024003	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2411	RICEVUTO	RICEVUTO	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO
					MONTENAPOLI - IN2023977	IN2023977	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2585	RICEVUTO	RICEVUTO	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO
1	ABATE GIUSEPPE	ABATE GIUSEPPE	LIGURIA (SV)	C	In ufficio piano terra	IN2023942	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2593	RICEVUTO		
1	PROXENERGY SRL	PROXENERGY SRL	LOMBARDIA (BG)	f	DEGANI LEONARDO - a casa sua	IN2023948	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2493	RICEVUTO	RICEVUTO	2 UNITA' PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO
2	INNOVA SRL	INNOVA SRL	TRENTINO (TN)	f	In ufficio Front Office	IN2023949	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2694	RICEVUTO	RICEVUTO	
						IN2023949	SI	ARRIVATA PER PROVE TECNICHE. BUONE CONDIZIONI. FILTRO PULITO	TICKET N°2964	RICEVUTO	RICEVUTO	



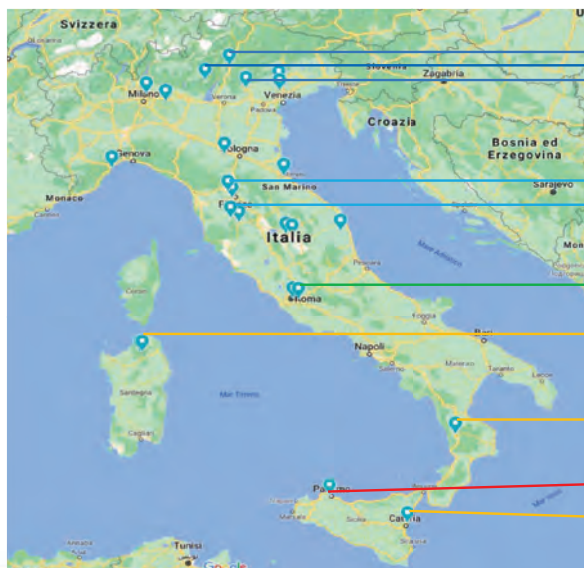
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## C4 – Selection criteria – Climatic zones Italy



ZONE F

ZONE F and ZONE B/A has been defined as "critical installation area" for their climatic characteristics

ZONE E

ZONE C

ZONE B

ZONE B

ZONE A

ZONE B

**Total Units: 28**

**Critical conditions Units: 12**

IN2023936  
IN2024015  
IN2023947  
IN2023940  
IN2024029  
IN2041549  
IN2023949  
IN2023952  
IN2023935  
IN2023957  
IN2024022  
IN2023985



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## C4 – Installations samples - ITALY



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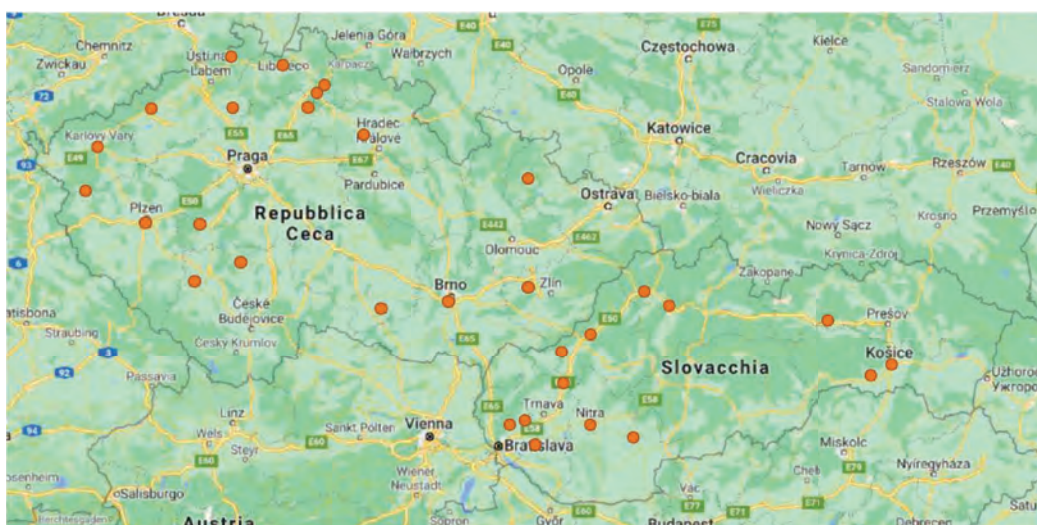




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## C4 – Installations map – Czech rep. & Slovakia



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## C4 – Installations summary – Czech rep.

Unit nr.	Region	CLIMATIC ZONE	Installation room	Room area	Serial number	Installation place inspection	Date of installation (Radek Janda)	Date of regular check (Radek Janda)	Date of survey (1round)	Date of service check (Radek Janda)	Date of survey (2round)	Feedback
1	North Bohemia	C	Family h., bedroom	25 m2	IN2024019	01.06.2020	25.06.2020	23.10.2020	13.12.2020	14.04.2021	03.06.2021	Positive reactions, nice design, easy control
2	North Bohemia	B	Family h., bedroom	5x4x2,5)	IN2024023	02.06.2020	03.07.2020	02.11.2020	13.12.2020	12.04.2021	03.06.2021	Positive reactions, nice design, easy control
3	North Bohemia	C	Family h., bedroom	5,5 x 4 x 2,5	IN2024170	05.06.2020	09.07.2020	05.11.2020	14.12.2020	15.06.2021	18.06.2021	Positive reactions, nice design, easy control
4	West Bohemia	B	Family h., bedroom	20m2	IN2023989	09.06.2020	20.07.2020	06.11.2020	14.12.2020	13.04.2021	14.06.2021	Very satisfied - used only for cooling
5	West Bohemia	C	office	22 m2	IN2023938	10.06.2020	27.07.2020	10.11.2020	14.12.2020	08.04.2021	11.06.2021	Problems with wifi, needs to be paired again, used for C/H
6	West Bohemia	B	office	21m2	IN2024175	11.06.2020	10.07.2020	09.11.2020	15.12.2020	07.04.2021	14.06.2021	Very satisfied, easy control
7	South Bohemia	B	company sample room	60m2	IN2023966	12.06.2020	28.07.2020	03.11.2020	14.12.2020	15.04.2021	03.06.2021	Connected to WIFI, very satisfied
8	North Bohemia	B	Family h., attic	16 m2	IN2024194	15.06.2020	13.08.2020	12.11.2020	15.12.2020	08.06.2021	08.06.2021	Used for cooling/heating. Good functioning. The client has also installed older version of COMO 2.0 - problems to control both units via application.
9	South Bohemia	A	Family h., living room	70m2	IN2023962	03.06.2020	29.07.2020	26.10.2020	15.12.2020	16.04.2021	09.06.2021	Very satisfied - used only for cooling
10	Central Bohemia	B	Family h., living room	80 m3	IN2023939	04.06.2020	28.07.2020	04.11.2020	14.12.2020	19.04.2021	08.06.2021	Problems with pairing the unit via application, very satisfied with the unit operation
11	East Bohemia	B	Family h., bedroom	4x3x2,6	IN2023973	16.06.2020	30.07.2020	23.11.2020	16.12.2020	10.06.2021	03.06.2021	Positive reactions, nice design, easy control
12	North Moravia	B	Family h., bedroom		IN2024185	17.06.2020	08.07.2020	27.10.2020	16.12.2020	20.04.2021	17.06.2021	Use only for cooling, functional
13	East Moravia	B	Office	29m2	IN2024156	22.06.2020	24.07.2020	18.11.2020	14.12.2020	17.06.2021	18.06.2021	Everything is okay, no problem
14	East Moravia	B	Office	20 m2	IN2024191	23.06.2020	06.08.2020	19.11.2020	15.12.2020	14.06.2021	08.06.2021	Satisfied, connected via wifi and controlled via app
15	South Moravia	B	Family h., living room	40 m2	IN2024198	26.06.2020	22.07.2020	20.11.2020	14.12.2020	01.06.2021	09.06.2021	Used for cooling/heating. Good functioning. No problems. Control mostly via remote control.
16	South Moravia	A	Family h., living room	30 m2	IN2023959	29.06.2020	21.07.2020	29.10.2020	16.12.2020	07.06.2021	09.06.2021	Very positive reactions. Not connected to wifi
17	South Moravia	A	Family h., living room	28 m2	IN2023996	30.06.2020	23.07.2020	30.10.2020	17.12.2020	04.06.2021	09.06.2021	Problems with wifi - solved, everything is fine
31	North Bohemia	C	Pension apartment	42 m2	IN2024165	02.09.2020	24.09.2020	30.11.2020	17.12.2020	06.04.2021	17.06.2021	Not connected to wifi
32	North Bohemia	C	Pension apartment	20 m2	IN2023946	02.09.2020	25.09.2020	30.11.2020	17.12.2020	06.04.2021	17.06.2021	Not connected to wifi



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## C4 – Installations summary – Slovakia

Unit nr.	Region	CLIMATIC ZONE	Installation room	Room area	Serial number	Installation place inspection	Date of installation (Ondřej Šindelář)	Date of regular check (Ondřej Šindelář)	Date of survey (1round)	Date of service check (Ondřej Šindelář)	Date of survey (2round)	Feedback
18	West Slovakia	B	Family h., living room	31 m2	IN2024032	01.06.2020	21.07.2020	12.10.2020	14.12.2020	31.05.2021	17.06.2021	very satisfied
19	West Slovakia	A	Family h., bedroom	12m2	IN2023981	02.06.2020	27.07.2020	14.10.2020	14.12.2020	08.06.2021	18.06.2021	used for cooling/heating; satisfied
20	West Slovakia	B	Family h., living room	25m2	IN2024000	03.06.2020	24.09.2020	23.11.2020	14.12.2020	18.06.2021	18.06.2021	satisfied
21	West Slovakia	B	Sales room	70m2	IN2024038	04.06.2020	22.07.2020	13.10.2020	15.12.2020	03.06.2021	07.06.2021	satisfied
22	West Slovakia	B	Restaurant terrace	25m2	IN2023953	05.06.2020	21.09.2020	24.11.2020	15.12.2020	01.06.2021	07.06.2021	Problems to connect to WIFI
23	West Slovakia	A	Family h., living room	25m2	IN2024035	08.06.2020	13.07.2020	29.10.2020	16.12.2020	07.06.2021	08.06.2021	Connected wifi, used for cooling/heating, satisfied
24	West Slovakia	B	Family h., bedroom	16m2	IN2024149	09.06.2020	29.07.2020	21.10.2020	16.12.2020	15.06.2021	18.06.2021	Used mostly for cooling, very satisfied
25	West Slovakia	B	Family h., living room	43 m2	IN2024159	10.06.2020	27.07.2020	20.10.2020	16.12.2020	02.06.2021	17.06.2021	easy control, also via wifi
26	Central Slovakia	B/C	Family h., corridor	9m2	IN2024027	11.06.2020	24.07.2020	19.10.2020	17.12.2020	11.05.2021	17.06.2021	Used mostly for cooling, very satisfied
27	Central Slovakia	B	Family h., living room	15,75m2	IN2024162	12.06.2020	30.07.2020	02.11.2020	17.12.2020	27.05.2021	17.06.2021	Used mostly for cooling, very satisfied
28	East Slovakia	A	Family h., kitchen	60 m2	IN2024182	17.06.2020	15.10.2020	30.11.2020	17.12.2020	13.05.2021	14.06.2021	satisfied with operation, remark only to too big remote control (smaller would be better)
29	East Slovakia	A	Family h., living room	26m2	IN2024007	18.06.2020	07.08.2020	22.10.2020	18.12.2020	14.05.2021	14.06.2021	Connected wifi, used for cooling/heating, satisfied
30	East Slovakia	B	Hairdresser's	40 m 2	IN2024189	19.06.2020	10.08.2020	23.10.2020	18.12.2020	12.05.2021	14.06.2021	Not connected to wifi

ZONE A - HOT  
ZONE B - AVERAGE  
ZONE C - COLD



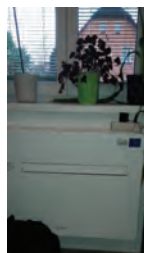
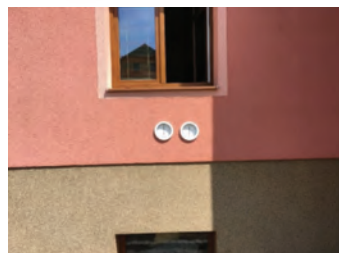
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## C4 – Installations samples – Czech & Slovakia



Autore/i – Affiliazione/i





## C4 – After installation

- The documents signed during installation were archived in the Folder of INNOVA and IVAR CS
- After installation of all 60 units – field-test usage started – operation of the units (not so hot summer – less time for cooling testing)
- Monitoring of the units – via WIFI (not all units connected to WIFI – mainly due to problems on the user's side)
- Periodical service checks are performed on all the installed field-test units (Check reports)
- For better communication IVAR CS/INNOVA – the reserved area of Innova website – TICKET SERVER was implemented where all the information, documents, reports, photos and other data are stored and updated periodically



Autore/i – Affiliazione/i



## C4 – First start up modules

## Spouštěč modul pro testování 2.0 R290

**DATUM:** \_\_\_\_\_

**OSM:** \_\_\_\_\_

**REFERENČNÍ ZÁKAZNÍK:**

**Jméno:** \_\_\_\_\_

**Adresa:** \_\_\_\_\_

**Tel.:** \_\_\_\_\_ **Email:** \_\_\_\_\_

**PROJEKT:**

**Model:** \_\_\_\_\_

**Výstupní žila:** \_\_\_\_\_

**Datum instalace:** \_\_\_\_\_



**IFAV s.r.l.**  
VODA TAPETI 214

**28** LET NÁS  
JEDNÁME  
SODNÁMATEL

1992  
2020

**PODKROVNÍ INSTALACE (pokud je gáz trubka a přikládá se k zkušebnímu portálu)**

Výstup: D) NABÍ. C) „Výška místnosti:“ \_\_\_\_\_ „Instalační výška jednotky:“ \_\_\_\_\_

Impreviz ve vytápění D) chlázením: C) \_\_\_\_\_ Přizpůsobení ovládacího systému: ANO D) NE D)

Plasma místnosti: m<sup>2</sup> \_\_\_\_\_

**Pozn. pro účelové monitorování jednotky je nutné ji připojit k Wi-Fi síti**

**KONTROLY:**

Č.	BODY KONTROLY	KONTROLA	ANO	NE
		<p><b>1. Kontrola správnosti instalace</b></p> <p>1.1. Správnost instalace jednotky</p> <p>1.2. Správnost instalace jednotky</p> <p>1.3. Správnost instalace jednotky</p> <p>1.4. Správnost instalace jednotky</p> <p>1.5. Správnost instalace jednotky</p> <p>1.6. Správnost instalace jednotky</p> <p>1.7. Správnost instalace jednotky</p> <p>1.8. Správnost instalace jednotky</p> <p>1.9. Správnost instalace jednotky</p> <p>1.10. Správnost instalace jednotky</p> <p>1.11. Správnost instalace jednotky</p> <p>1.12. Správnost instalace jednotky</p> <p>1.13. Správnost instalace jednotky</p> <p>1.14. Správnost instalace jednotky</p> <p>1.15. Správnost instalace jednotky</p> <p>1.16. Správnost instalace jednotky</p> <p>1.17. Správnost instalace jednotky</p> <p>1.18. Správnost instalace jednotky</p> <p>1.19. Správnost instalace jednotky</p> <p>1.20. Správnost instalace jednotky</p> <p>1.21. Správnost instalace jednotky</p> <p>1.22. Správnost instalace jednotky</p> <p>1.23. Správnost instalace jednotky</p> <p>1.24. Správnost instalace jednotky</p> <p>1.25. Správnost instalace jednotky</p> <p>1.26. Správnost instalace jednotky</p> <p>1.27. Správnost instalace jednotky</p> <p>1.28. Správnost instalace jednotky</p> <p>1.29. Správnost instalace jednotky</p> <p>1.30. Správnost instalace jednotky</p> <p>1.31. Správnost instalace jednotky</p> <p>1.32. Správnost instalace jednotky</p> <p>1.33. Správnost instalace jednotky</p> <p>1.34. Správnost instalace jednotky</p> <p>1.35. Správnost instalace jednotky</p> <p>1.36. Správnost instalace jednotky</p> <p>1.37. Správnost instalace jednotky</p> <p>1.38. Správnost instalace jednotky</p> <p>1.39. Správnost instalace jednotky</p> <p>1.40. Správnost instalace jednotky</p> <p>1.41. Správnost instalace jednotky</p> <p>1.42. Správnost instalace jednotky</p> <p>1.43. Správnost instalace jednotky</p> <p>1.44. Správnost instalace jednotky</p> <p>1.45. Správnost instalace jednotky</p> <p>1.46. Správnost instalace jednotky</p> <p>1.47. Správnost instalace jednotky</p> <p>1.48. Správnost instalace jednotky</p> <p>1.49. Správnost instalace jednotky</p> <p>1.50. Správnost instalace jednotky</p> <p>1.51. Správnost instalace jednotky</p> <p>1.52. Správnost instalace jednotky</p> <p>1.53. Správnost instalace jednotky</p> <p>1.54. Správnost instalace jednotky</p> <p>1.55. Správnost instalace jednotky</p> <p>1.56. Správnost instalace jednotky</p> <p>1.57. Správnost instalace jednotky</p> <p>1.58. Správnost instalace jednotky</p> <p>1.59. Správnost instalace jednotky</p> <p>1.60. Správnost instalace jednotky</p> <p>1.61. Správnost instalace jednotky</p> <p>1.62. Správnost instalace jednotky</p> <p>1.63. Správnost instalace jednotky</p> <p>1.64. Správnost instalace jednotky</p> <p>1.65. Správnost instalace jednotky</p> <p>1.66. Správnost instalace jednotky</p> <p>1.67. Správnost instalace jednotky</p> <p>1.68. Správnost instalace jednotky</p> <p>1.69. Správnost instalace jednotky</p> <p>1.70. Správnost instalace jednotky</p> <p>1.71. Správnost instalace jednotky</p> <p>1.72. Správnost instalace jednotky</p> <p>1.73. Správnost instalace jednotky</p> <p>1.74. Správnost instalace jednotky</p> <p>1.75. Správnost instalace jednotky</p> <p>1.76. Správnost instalace jednotky</p> <p>1.77. Správnost instalace jednotky</p> <p>1.78. Správnost instalace jednotky</p> <p>1.79. Správnost instalace jednotky</p> <p>1.80. Správnost instalace jednotky</p> <p>1.81. Správnost instalace jednotky</p> <p>1.82. Správnost instalace jednotky</p> <p>1.83. Správnost instalace jednotky</p> <p>1.84. Správnost instalace jednotky</p> <p>1.85. Správnost instalace jednotky</p> <p>1.86. Správnost instalace jednotky</p> <p>1.87. Správnost instalace jednotky</p> <p>1.88. Správnost instalace jednotky</p> <p>1.89. Správnost instalace jednotky</p> <p>1.90. Správnost instalace jednotky</p> <p>1.91. Správnost instalace jednotky</p> <p>1.92. Správnost instalace jednotky</p> <p>1.93. Správnost instalace jednotky</p> <p>1.94. Správnost instalace jednotky</p> <p>1.95. Správnost instalace jednotky</p> <p>1.96. Správnost instalace jednotky</p> <p>1.97. Správnost instalace jednotky</p> <p>1.98. Správnost instalace jednotky</p> <p>1.99. Správnost instalace jednotky</p> <p>2.00. Správnost instalace jednotky</p>		
01	KONTROLA SMĚRNÉ INSTALACE			<input type="checkbox"/>
02	KONTROLA SMĚRNÉHO SPRÁVNÉHO INSTALACE			<input type="checkbox"/>
03	KONTROLA SMĚRNÉHO PRŮVODU CHLÁZENÍ			<input type="checkbox"/>
04	KONTROLA SMĚRNÉHO PRŮVODU VYTÁPĚNÍ			<input type="checkbox"/>
05	KONTROLA SMĚRNÉHO PRŮVODU VYTÁPĚNÍ A VYTÁPĚNÍ KONTROLY			<input type="checkbox"/>

Podpis autorizovaného servisu IFAV s.r.l.: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Autentizace: 30.04.2020

[illegible]

Autore/i – Affiliazione/i



GENERIAMO IDEE PER UN'ENERGIA SOSTENIBILE



# C4 – Contracts Czech + Italian

**INFORMAZIONI GENERALI**  
Indirizzo: Via della Libertà, 100 37139 Verona  
Telefono: 0432 222222  
Email: info@aicarr.it

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Email: info@aicarr.it

**ACCORDO "FIELD TEST" (mod. "2.0 LIFE ZEROGWP") INNOVA**  
CA 30000 20000 30000 con sede legale in Verona (VR), Via 1 MAGGIO n. 10, iscritta al registro della  
C.C.I.A.A. di TRENTO al n. C.F./P.IVA n. 01274702207 di seguito denominata "Produttore".

**PRODOTTORE (C)**  
Il "Produttore" si impegna a fornire un numero consistente di unità di prodotto "2.0 LIFE ZEROGWP".

**CONVENZIONI**  
Il "Produttore" si impegna a fornire un numero consistente di unità di prodotto "2.0 LIFE ZEROGWP".

**CONVENZIONI**  
Il "Produttore" si impegna a fornire un numero consistente di unità di prodotto "2.0 LIFE ZEROGWP".

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Il "Produttore" si impegna a fornire un numero consistente di unità di prodotto "2.0 LIFE ZEROGWP".



Autore/i – Affiliazione/i



GENERIAMO IDEE PER UN'ENERGIA SOSTENIBILE



# C4 – Service checks reports

Periodic Checks for 2.0 field test R290

**DATE:** \_\_\_\_\_  
**CUSTOMER REFERENCES:**  
Nominativo: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
**PRODUCT:**  
Model: CPMO12IG3II  
Serial number: I N \_\_\_\_\_

CHECKS	POINTS TO CHECK	CONTROLS	YES	NO
01	CHARGING OPERATION	Check the correct charging operation of the battery pack. Check the correct charging operation of the battery pack. Check the correct charging operation of the battery pack.	<input type="checkbox"/>	<input type="checkbox"/>
02	CHECK THE CORRECT COOLING OPERATION	Check the correct cooling operation of the battery pack. Check the correct cooling operation of the battery pack. Check the correct cooling operation of the battery pack.	<input type="checkbox"/>	<input type="checkbox"/>
03	CHECK THE CORRECT HEATING OPERATION	Check the correct heating operation of the battery pack. Check the correct heating operation of the battery pack. Check the correct heating operation of the battery pack.	<input type="checkbox"/>	<input type="checkbox"/>
04	VERIFY THE CORRECT OPERATION OF THE APP AND THE POWER ON/OFF OF THE UNIT	Check the correct operation of the app and the power on/off of the unit. Check the correct operation of the app and the power on/off of the unit. Check the correct operation of the app and the power on/off of the unit.	<input type="checkbox"/>	<input type="checkbox"/>

SERVICE SIGNATURE

CUSTOMER SIGNATURE

All the units are periodically checked after some time of operation (1st round – October/November 2020 and 2nd round – April/May/June 2021

Service technicians must go through all the points to check and perform all controls.

The signed reports are again stored in the Ticket server.



Autore/i – Affiliazione/i



GENERIAMO IDEE PER UN'ENERGIA SOSTENIBILE



## C4 – Ticket server

Innova									
Visualizza 1-28 di 34 documenti									
#	Numero	Data	Tipo	Stato intervento	Centro assistenza	Prodotto	Cliente	Rapporti	Stato rapporto
1	2835	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	TAMMARO MARCO		APPROVATO
2	2834	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
3	2837	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
4	2838	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
5	2839	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
6	2840	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
7	2841	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
8	2842	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
9	2843	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
10	2844	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
11	2845	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
12	2846	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
13	2847	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
14	2848	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
15	2849	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
16	2850	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
17	2851	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
18	2852	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
19	2853	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
20	2854	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
21	2855	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
22	2856	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
23	2857	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
24	2858	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
25	2859	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
26	2860	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
27	2861	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO
28	2862	09/02/2021	✓ Gestione field-test	Primo avvio: 2.0 K206 field-test	NOVACOLD SERVICE SRL	NO22882	NOVACOLD SERVICE SRL		APPROVATO



Autore/i – Affiliazione/i



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## C4 – Ticket server

Installation and commissioning of the unit #2583

APPROVATO INAR ha creato questa Gestione field-test il 21/09/2020 08:47:31 scadenza il 31/12/2020

Cronologia

Reportistica

Rapporti

Visualizza i rapporti

Visualizza i rapporti

Anomalia riscontrata

Primo avvio: 2.0 K206 field-test

INAR il 21/09/2020 08:47:31 \* modifica

The unit was installed on a terrace of the restaurant.  
Room area: 25 m2.  
High-wall installation above the door.  
Operation set to cooling.

sc20180-3755-05-010-01842057n.jpg  
sc20180-3755-05-010-01842057n.jpg  
sc20180-3755-05-010-01842057n.jpg  
sc20180-3755-05-010-01842057n.jpg  
sc20180-3755-05-010-01842057n.jpg

Approvato

APPROVATO

Centro assistenza

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## C4 – After installation

- *ANOMALIES detected:*
- *Few cases of faulty displays/wifi module - REPLACED and fixed the problems*
- *Only 1 particular case of faulty electronics: **IN2023941***

### **E5-E6-E7**

*Brought back to factory for checks and repairs*

- *replaced power board*
- *replaced driver board*
- *replaced main control board*

- ***ZERO cases of leakages or refrigerant circuit problems***



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## C4 – User satisfaction surveys

- **USER SATISFACTION SURVEYs – (2 batches – December 2020 and June 2021)**
- *To be compiled by the end user of the appliance in order to collect more sensible data concerning daily usage and comfort as well as suggestions and improvements to take into consideration for future mass production implementations*
- *All the users were invited to present their opinion and experience with the units installed*



Autore/i – Affiliazione/i



GENERIAMO IDEE PER UN'ENERGIA SOSTENIBILE



## C4 – User satisfaction surveys

USER SATISFACTION SURVEY FIELD TEST 2.0 R290



LIFE17 CCM/IT/000026

The purpose of this survey is to collect information, criticisms and suggestions to improve product quality	Insert a mark from 1 to 10, in relation to each question
<b>QUESTIONS TO ANSWER:</b>	<b>VOTE 1 to 10:</b>
1. How do you evaluate the courtesy and competence of the technicians who installed the unit?	--
2. How do you consider the availability and competence of technicians in giving advice and answers on aspects related to the functionality of the unit?	--
3. How do you evaluate the general preparation of technicians?	--
4. How do you consider the courtesy and competence of the technicians in the telephone answers received to your eventual requests / needs?	--
5. How do you assess the timeliness of intervention in the event that the product has manifested a malfunction?	--
6. Did the product satisfy your air conditioning and environmental well-being needs?	--
7. How do you evaluate the design of the unit?	--
8. How do you consider the noise deriving from the use of the unit?	--
9. How do you evaluate the energy consumption derived from the use of the unit?	--
10. How do you consider the service provided by the company overall?	--

We are open to suggestions and ideas. His opinion is very important. If you want, write your advice in the box below in block letters.



Autore/i – Affiliazione/i



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## C4 – User satisfaction surveys

*In the second phase of surveys a list of question about the use of flammable refrigerant gas inside an air conditioner unit has been added in order to ensure the correct user's awareness – data collection of the second part is still in progress – will be analysed in the deliverable file D22 till the end of June*

Questions regarding the adoption of the R290 propane flammable refrigerant gas inside an AC-DD domestic unit	Insert a mark from 1 to 10, in relation to each question
<b>QUESTIONS TO ANSWER:</b>	<b>VOTE 1 to 10:</b>
1. How do you rate the perceived safety offered by the air conditioner?	--
2. How do you assess the possible danger of the air conditioner with flammable refrigerant gas? (1 low - 10 high)	--
3. How do you evaluate the implementation of a low environmental impact refrigerant gas?	--
4. How important do you think it is to use a product with a low environmental impact? (1 low - 10 high)	--
5. Did the product meet your air conditioning and safety needs?	--

We are open to suggestions and ideas. His opinion is very important. If you want, write your advice in the box below in block letters.



Autore/i – Affiliazione/i



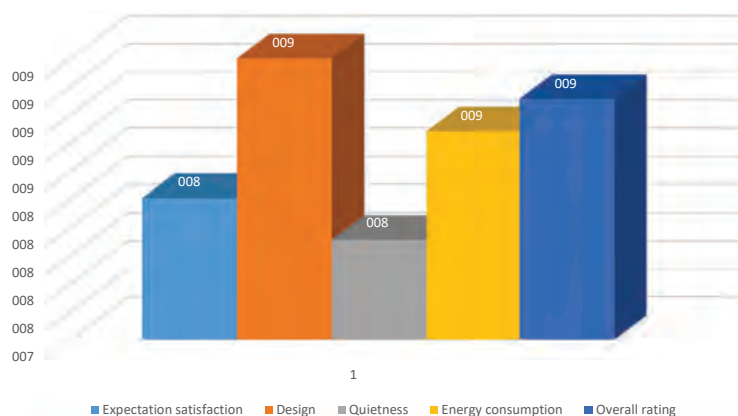
GENERIAMO IDEE PER UN'ENERGIA SOSTENIBILE



## C4 – Data collection - Italy

- Results of the User satisfaction survey analysis in ITALY– 28 INSTALLED UNITS:  
The following graph shows the summary of every collected data:

Average scores



As it can be deduced from the graph, all the users are very satisfied with the units – the lowest score is related to the quietness, however, still it has a very good rating (8,11 out of 10 scale).



Autore/i – Affiliazione/i



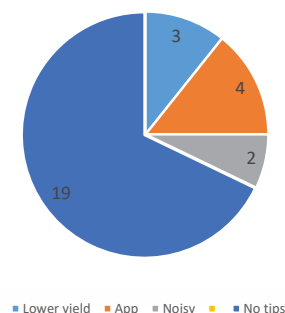
GENERIAMO IDEE PER UN'ENERGIA SOSTENIBILE



## C4 – Data collection - Italy

- Results of the User satisfaction survey analysis in ITALY– 28 INSTALLED UNITS:  
The users could also express their opinion and tips for improvements of the unit. From the data received, we picked up the main tips concerning the noisiness, app uses difficulties and low yield. Only few users have encountered some problems with the application – here is the related graph:

Tips



Autore/i – Affiliazione/i

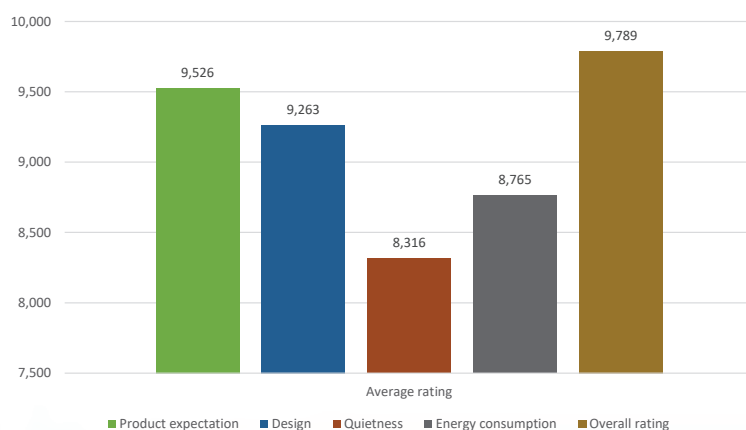




## C4 – Data collection – Czech rep.

- Results of the User satisfaction survey analysis in the Czech Republic – 19 INSTALLED UNITS:  
The following graph shows the summary of every collected data:

Surveys rating scores



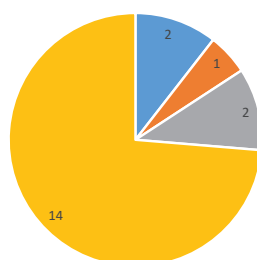
All the users are very satisfied with the units – the lowest score is related to the quietness, however, still it has a very good rating (8,32 out of 10 scale).



## C4 – Data collection – Czech rep.

- Results of the User satisfaction survey analysis in the Czech Republic – 19 INSTALLED UNITS:  
The users could also express their opinion and tips for improvements of the unit. From the data received, we picked up the main tips concerning the noisiness and energy consumption. Only few users have encountered some problems with the application – here is the related graph:

Tips/feedback



Energy costs Noisy App No tips



## C4 – Data collection - Slovakia

- Results of the User satisfaction survey analysis in Slovakia – 13 INSTALLED UNITS:  
The following graph shows the summary of every collected data:

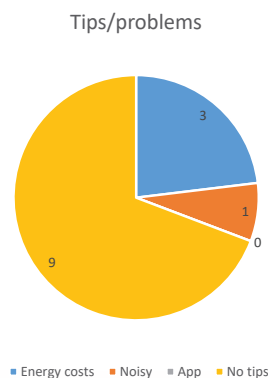


Slovakian field-test user surveys present very similar results to the Czech ones. All the units were very well evaluated. The lowest mark here relates to the Energy consumption; however, it still records very good rating (8,62 out of 10).



## C4 – Data collection - Slovakia

- Results of the User satisfaction survey analysis in Slovakia – 13 INSTALLED UNITS:  
The users could also express their opinion and tips for improvements of the unit. From the data received, we picked up the main tips concerning the noisiness and energy consumption. In Slovakia, none of the users have encountered any problems with the app.  
Here is the related graph:





## C4 – Data collection summary

- The purpose of the surveys is to collect user's feedback and use critical information such these to improve product quality and performance efficiency.
  - Noone has encountered any functional problem of the unit (cooling, heating, fan).
  - All users positively evaluate the appearance of the unit and the easiness of the installation.
  - Few users found the operation of the unit noisy.
  - Few users would appreciate smaller remote control.
  - One user complained about heat drops over the installation holes (when the outside temperature is low).
- Despite different climatic zones and installation types – the results of the surveys are very similar in Italy, Czech as well as in Slovakian rep.
- **IMPORTANT:** the data are valid for just several months of the installed unit's operation – there is now proceeding another round of surveys to be concluded by the end of the project (now the data collection is finishing – next week analysis – the results will be part of the Deliverable file.
- The producer has used all the data for the mass production of the units 2.0 with R290 refrigerant.



## C4 – Monitoring

- By INNOVA through Grafana server  
Units were remotely connected to one specific server used for data collection from which we were able to see unit's operation in real time and act promptly in case of necessity. Monitoring has been possible thanks to the installation of a Wi-Fi module with an appropriated software developed only for these units.  
Data are collected and stored in a specific section of the open-source web application Grafana.  
In case of abnormal behaviour of the unit, error or anomalies it was easy to analyse even in real time data such as: The data collector software allowed us to compare unit performances, settings, possibly errors as well as decide the range of time to analyse.





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## C4 – Monitoring through Grafana Server

*In case of abnormal behaviour of the unit, error or anomalies it was easy to analyse even in real time data such as:*

- Status flag
- Temperature measurements (outdoor, outdoor coil, discharge, room, in coil, setpoint)
- Fans speed (outdoor, indoor)
- EEV steps
- Compressor frequency (actual, target)
- Power consumption (voltage, current)
- Alarms
- Compressor protection (stop, fast down)
- Fault codes
- Frequency limitation
- Special register
- Data uploads checks (= unit effectively connected)



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## C4 – Monitoring through Grafana Server

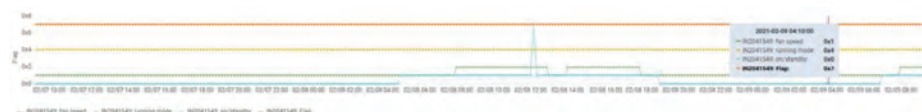




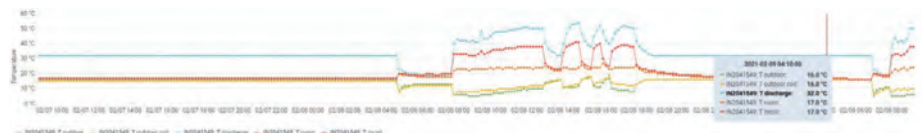
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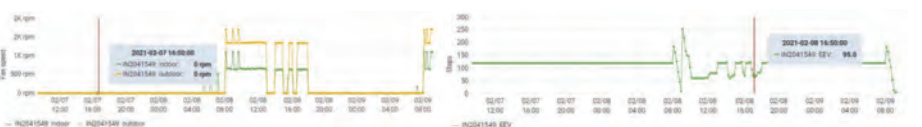
## C4 – Monitoring through Grafana Server



Status flag



Temperature measurement



Fans speed - EEV steps



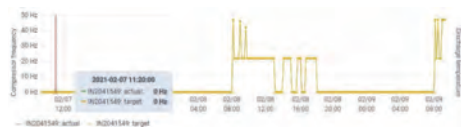
Autore/i – Affiliazione/i



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## C4 – Monitoring through Grafana Server



Compressor FHz - Power



Alarms - FHz limitation



Data uploads check



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## C4 – Main problems encountered

1. **Delay in production** prolonged also the phase of the units installation at the field-test users places (not so hot summer here – less time for cooling testing – some interesting data in June 2021).
2. The **Covid-19 restrictions** affected all the processes (ban of travelling, not only abroad but also within the different regions/districts of the Czech and Slovakian rep. and Italy, closed restaurants, pensions, home-offices).
3. **NO problems** encountered **during installation** (only on the field-test users site – missing wifi, not prepared installation site) of the units.
4. **A few users have some problems with pairing** the unit with the application – remote control – after updating the app everything is okay (only 1 unit in Slovakia has still some problems).



## C4 - Main results

1. Validation of the field-test units resulting in a future market entry of a mass-production DD-AC R290
2. Validation of a well-functioning system for monitoring, supervision and data collection which will be soon implemented for Service purposes at the INNOVA Service Department (Tickets server)
3. The user field-test will continue also after the end of the project – as the units 2.0 R290 remain installed at the installation places – connected to Wifi – they can be still monitored.





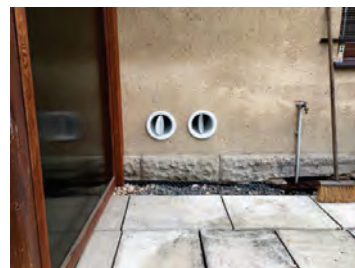
## Conclusions

1. *Data collected and monitored have unambiguously proved the maximum flexibility of the units installation.*
2. *All the users have been so far very satisfied with the units – they like the easiness of the installation, good performance in cooling (only few units are used for heating in the Czech. R./Slovakia as all buildings here have their own central heating system)*
3. *Very well evaluation of the unit appearance and smooth design (fits to every internal environment and due to unobtrusive external flaps also to every external environment).*
4. **NO refrigerant leakage => safe units operations in case of correct installation**



## Some interesting installations – Czech rep.

C, FH - bedroom



Description:

SERIAL NUMBER: IN2024170

Installation was performed in a family house on 09/07/2020.

A low-wall installation at 1 m. Room height: 2,5 m. Room area: 24 m2. Mode set to cooling. Without condensate drainage.



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## Some interesting installations – Czech rep.

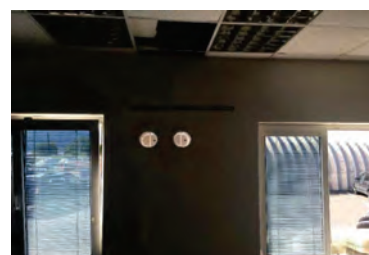
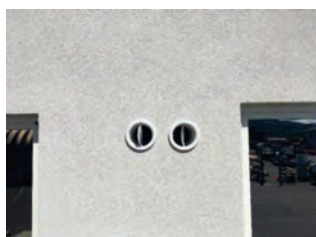
### C, office



#### Description:

SERIAL NUMBER: IN2023938

The unit was installed in an office of the company on 27/07/2020. Room area: 22 m<sup>2</sup>. Room height: 2,5 m. High wall installation at height 2 m. Operation set to cooling. Without condensate drainage.



Autore/i – Affiliazione/i



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## Some interesting installations – Czech rep.

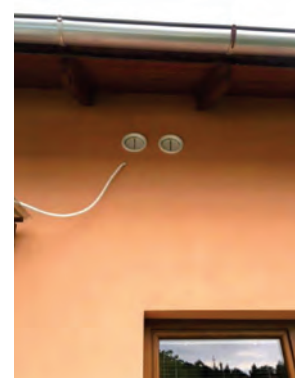
### B, FH – attic



#### Description:

SERIAL NUMBER: IN2024194

The unit was installed in a family house on 13/08/2020. Room area: 16 m<sup>2</sup>. Room height: 2,3 m. Installation height: 1 m. Without condensate drainage. Operation set to cooling.



Autore/i – Affiliazione/i





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## Some interesting installations – Czech rep.

### C, Pension apartments



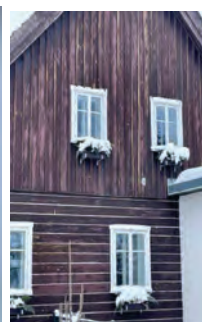
#### Description:

**SERIAL NUMBER: IN2024165**

The unit was installed in a pension apartment on 24/09/2020. Room area 42 m<sup>2</sup>. Room height 2,55 m. Low-wall installation at height 0,1 m.  
Operation set to heating. With condensate drainage.

**SERIAL NUMBER: IN2023946**

The unit was installed in a pension apartment on 25/09/2020. Room area 20 m<sup>2</sup>. Room height 2,55 m. Low-wall installation at height 0,1 m.  
Operation set to heating. With condensate drainage.



Autore/i – Affiliazione/i



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## Some interesting installations – Slovakia

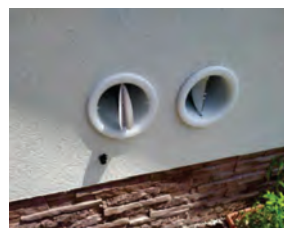
### A, FH – bedroom



#### Description:

**SERIAL NUMBER: IN2023981**

The unit was installed in a family house on 27/07/2020. Room area: 12,4 m<sup>2</sup>. Room height 2,5 m. Low-wall installation at height 0,7 m. With connected condensate drainage.  
Operation set to cooling.



Autore/i – Affiliazione/i





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## Some interesting installations – Slovakia

### B, Sales room



#### Description:

SERIAL NUMBER: IN2024038

The unit was installed in the premises of the company (shop) on 22/07/2020.

Room area: 145 m2. Room height 2,65 m. High-wall installation at height 2,40. With condensate drainage. Operation set to cooling.



Autore/i – Affiliazione/i



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## Some interesting installations – Slovakia

### B, FH – restaurant terrace



#### Description:

SERIAL NUMBER: IN2023953

The unit was installed on a terrace of the restaurant on 21/09/2020. Room area: 25 m2. High-wall installation above the door.

Operation set to cooling.



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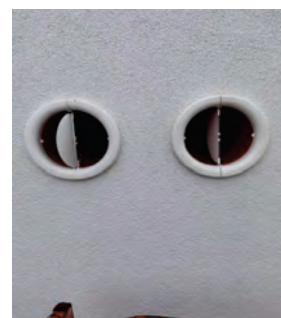
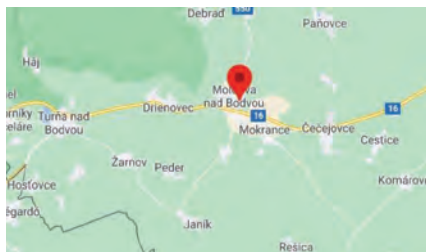


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## Some interesting installations – Slovakia

### A, FH – kitchen – built-in installation



#### Description:

**SERIAL NUMBER: IN2024182**

The unit was installed in a family house on 15/10/2020. Room area: 40 m<sup>2</sup>. Room height: 3 m. High-wall installation at height 2,8 m.

With connected condensate drainage. Operation set to heating.



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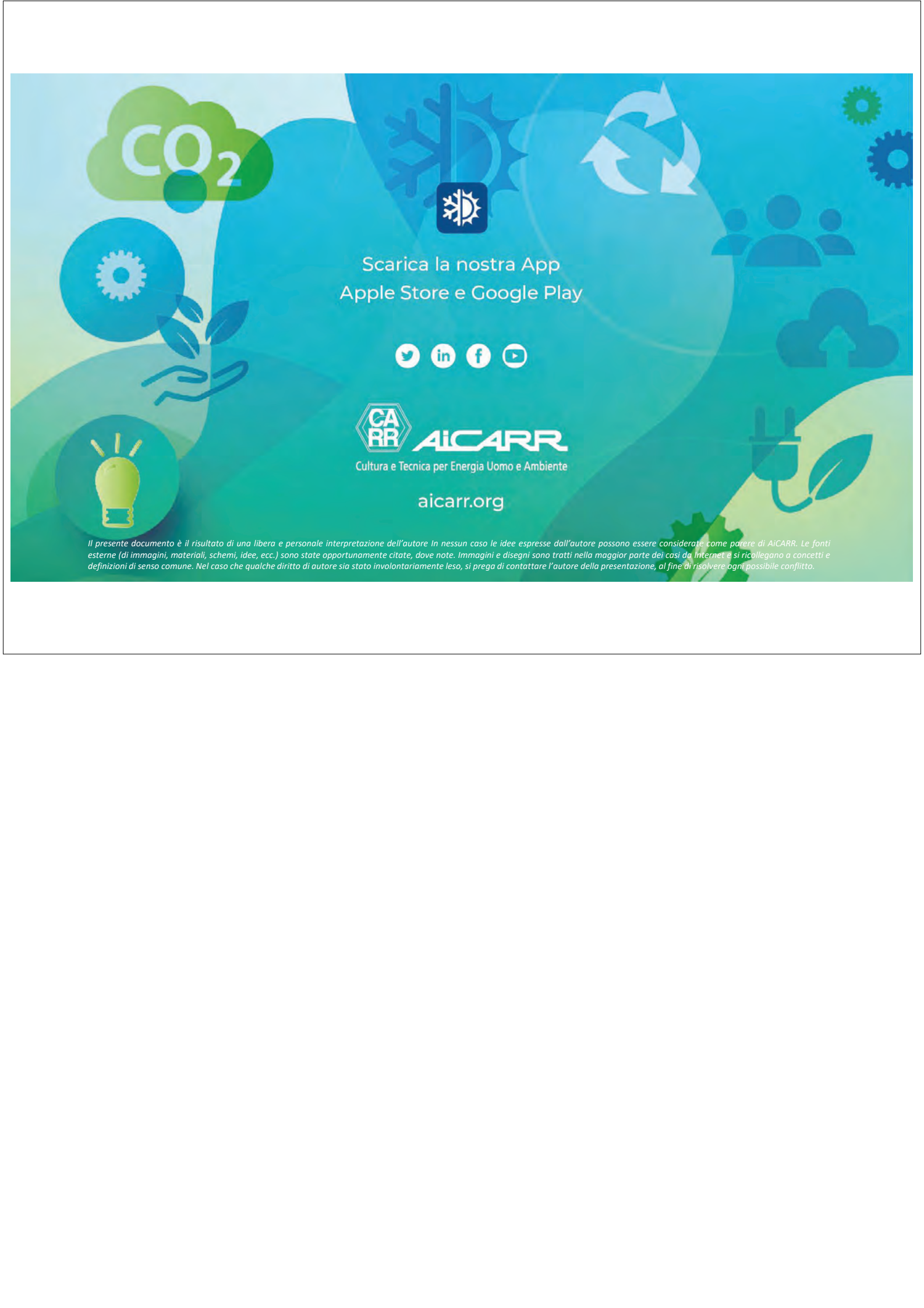
## THANKS FOR YOUR TIME AND ATTENTION

## GRAZIE PER L'ATTENZIONE

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