Bezirksregierung Köln
EU-Geschäftsstelle
Wirtschaft + Berufsbildung

Results of empirical Investigation / WP 2

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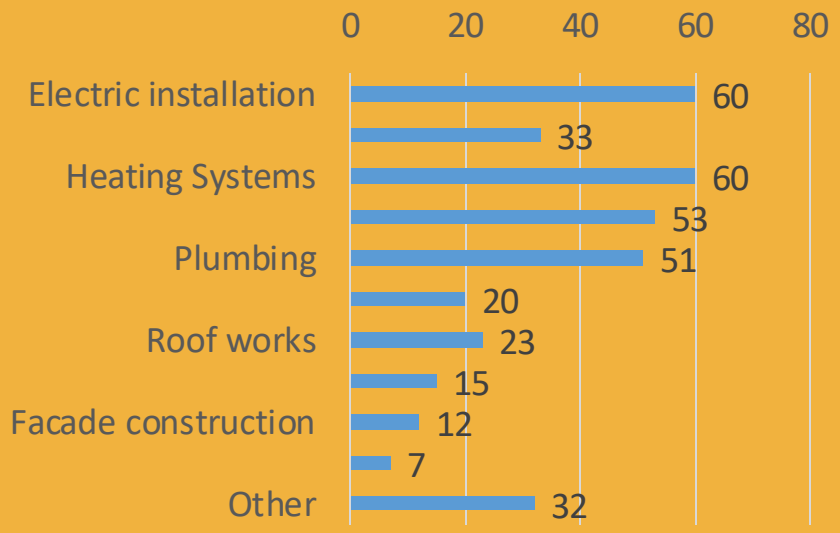
Survey participants by country

Where is your company located	Total
Finland	5
Germany	42
Italy	14
Lithuania	30
Netherlands	24
Spain	23
Total	**138**

Survey participants by area of activity and multi-service



Number of activities	Share of respondents
1	25%
2	24%
3	16%
4	9%
5	12%
6	1%
9	1%
10	1%

17 respondents (12%) of respondents indicated that their area of activity is ‘other’. 64% of respondents are working in 3 areas and every fourth (31) - only in one area. Of those, majority (18) - in electric installation

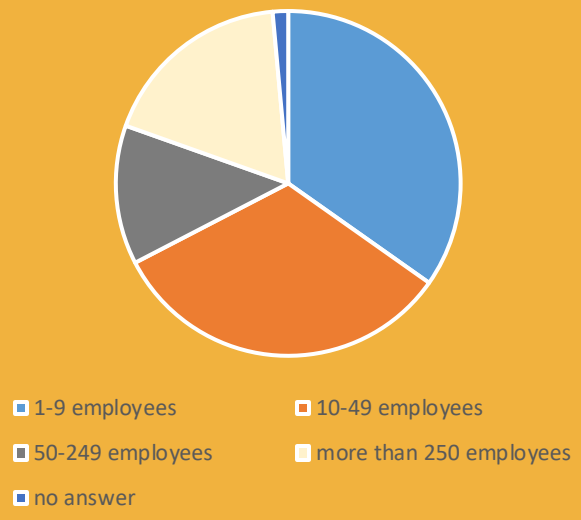
Survey participants by area and country, %

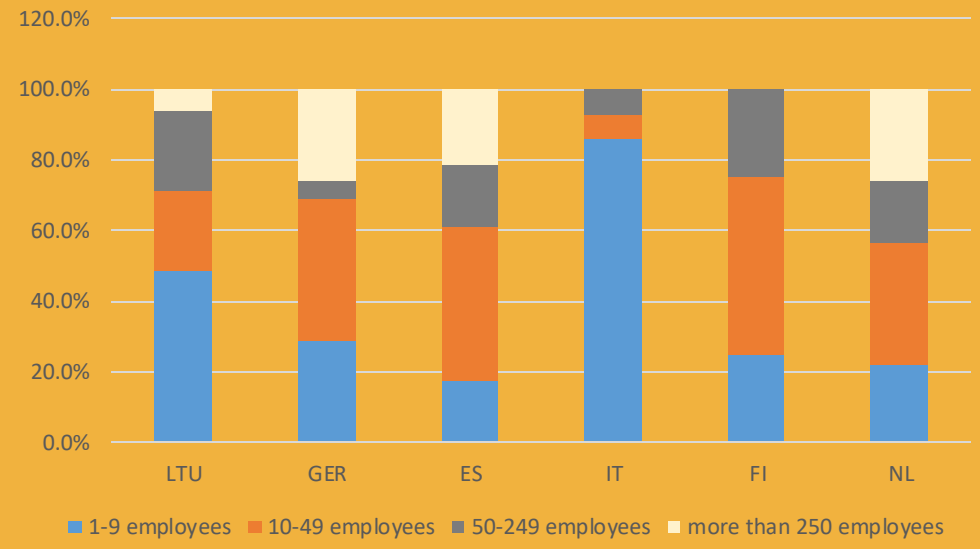
Profile of activities of respondents in different countries is very diverse

Which specific area is your company focused on? (multiple answers were possible)	LT	DE	ES	IT	FI	NL
Electric installation	**35,5**	**53,7**	8,7	21,4	25,0	**79,2**
Building Automation	12,9	46,3	4,3	7,1	50,0	25,0
Heating Systems	22,6	43,9	**73,9**	7,1	**100,0**	54,2
Cooling Systems, Ventilation	12,9	31,7	**73,9**	21,4	75,0	54,2
Plumbing	25,5	31,7	43,5	21,4	**100,0**	58,3
Bricklayer, concrete worker	32,3	2,4	21,7	14,3	0,0	0,0
Roof works	25,8	9,8	17,4	**28,6**	0,0	12,5
Windows and doors	22,6	2,4	17,4	21,4	0,0	0,0
Facade construction	25,8	2,4	4,3	21,4	0,0	0,0
Producers and Suppliers	12,9	2,4	4,3	0,0	0,0	4,2
Other	29,0	17,1	21,7	57,1	0,0	16,7

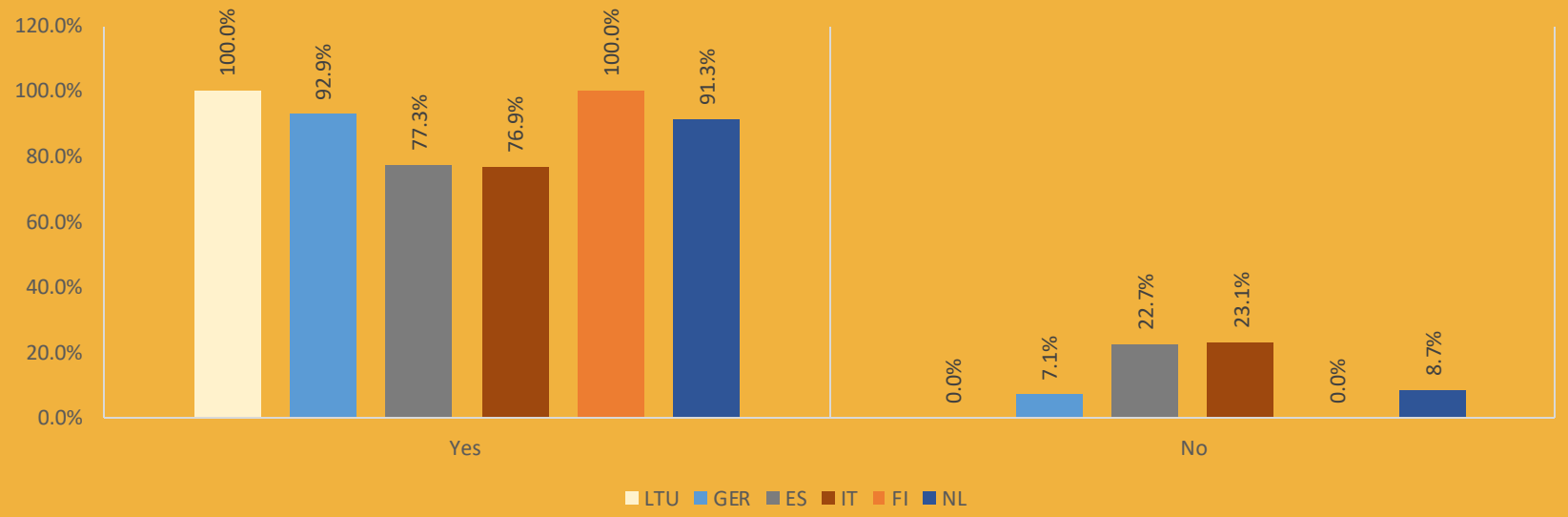
Survey participants by company size

Micro and small company respondents dominate





Does your company network and collaborate with other trades on the construction site while providing building services?



Collaboration with other trades seems to be a principle of activity

If yes, with which trades do you work closely? (multiple answers are possible)

	Total	LT	DE	ES	IT	FI	NL
Electric installation	56%	61%	68%	61%	75%	75%	48%
Heating Systems	53%	61%	65%	61%	58%	75%	48%
Cooling Systems, Ventilation	46%	48%	53%	56%	58%	75%	33%
Plumbing	44%	61%	38%	83%	50%	75%	33%
Producers and Suppliers	42%	61%	53%	28%	42%	0%	43%
Roof works	32%	42%	40%	17%	58%	50%	29%
Building Automation	31%	32%	35%	33%	25%	50%	43%
Bricklayer, concrete worker	31%	42%	35%	33%	50%	25%	19%
Windows and doors	25%	42%	28%	17%	58%	0%	10%
Facade construction	22%	39%	18%	28%	33%	0%	14%
Other	22%	16%	23%	28%	50%	0%	33%

Electrical installation, Heating systems, Cooling systems, ventilation and Plumbing are 4 trades with which the cooperation of respondents is the most intensive

Networking and collaboration with other trades by the trade of respondents (Which trades (Q1.2) primarily work together with which other trades in practice (reference to question 2 / part 2)?), %, >50%

Trade	Electric installation, %	Building Automation, %	Heating Systems, %	Cooling Systems, Ventilation,, %	Plumbing , %	Bricklayer, concrete worker, %	Roof works, %	Windows and doors, %	Facade construction, %	Producers and Supplier, %s	Other, %
Electric installation		36	57	45	38	29	33	24	19	43	22
Building Automation	58		76	73	52	33	36	33	24	45	15
Heating Systems	60	37		42	48	30	27	18	22	42	17
Cooling Systems, Ventilation	57	43	45		45	32	30	21	23	42	19
Plumbing	69	35	51	45		39	35	22	25	45	22
Bricklayer, concrete worker	80	55	65	65	80		50	40	50	35	25
Roof works	78	43	65	57	61	39		39	48	65	22
Windows and doors	80	40	67	60	73	40	47		40	47	27
Facade construction	83	50	67	75	75	67	58	58		58	25
Producers and Suppliers	57	43	43	43	43	57	43	43	43		43
Other	59	31	63	50	47	34	34	38	22	44	

Assessment of statements about importance of interdisciplinary and cross-disciplinary competences for employers

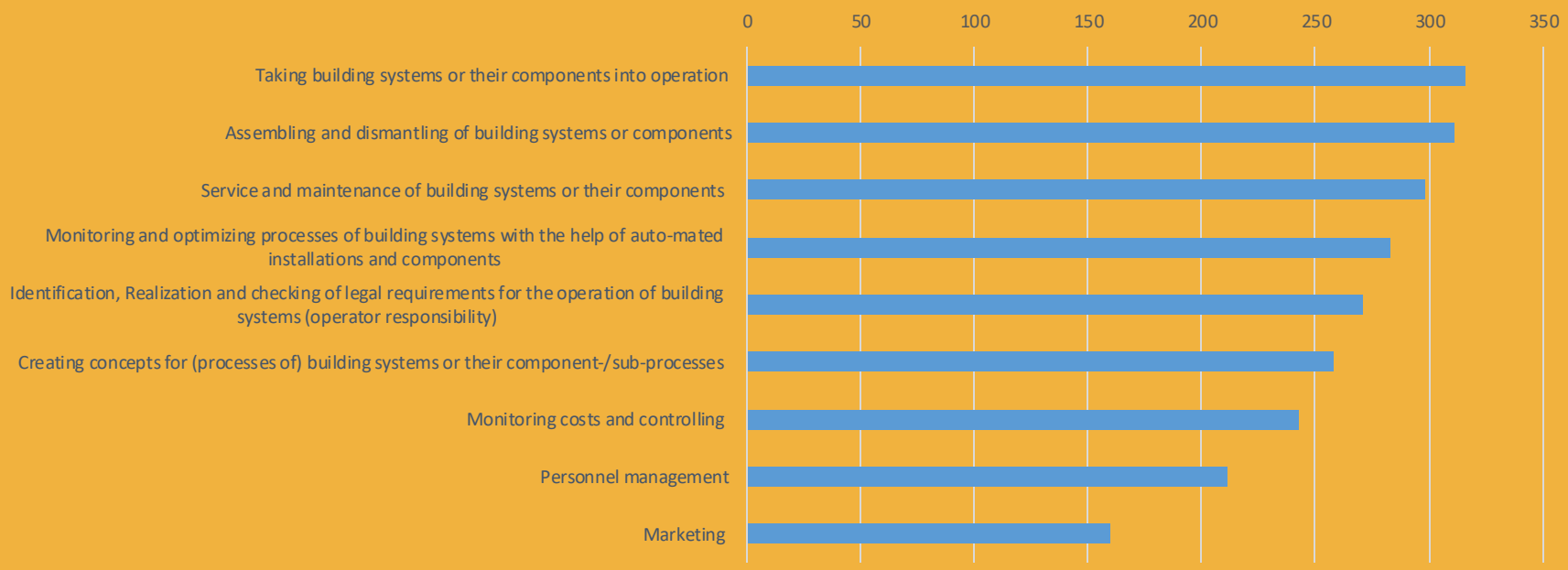
(Q2.5. How important are the following interdisciplinary and cross-trade competences for your employees), N=138

Statement	No of respondents				
	Important	Neither important nor unimportant	Unimportant	Don't know	No answer
The ability to recognize and understand relationships between different Trades	107	22	2	3	4
The ability to solve problems systematically in complex systems	124	7	2	1	4
A basic knowledge on different technical systems in a building and their interconnection	113	14	3	2	6
Understanding multiple disciplines including engineering, computer science, electronics and control systems	77	46	7	3	5
Combining expertise in different trades to implement innovation	90	35	5	2	6
The ability to integrate and automate various building systems	80	40	8	4	6
The ability to identify, analyse and resolve complex technical tasks	103	25	4	2	4
The ability to collect, analyze and interpret data from various sensors to optimize building performance	83	36	7	6	6
The ability to communicate and collaborate with employees from other trades	117	13	1	2	5

Which occupational action situations were selected most frequently?

Occupational action situations	Yes
Installation of a heat pump or a hybrid heating system	**67**
Installation of solar thermal systems	55
Installation of solar cooling systems	32
Installation of a photovoltaic system	**67**
Installation and commissioning of sensors and actuators for the automation of building processes	**72**
Troubleshooting in building systems and building installations	**88**

Which core work processes / competence areas were selected most frequently as the most important?



Which core work processes were particularly important or unimportant for the companies for which the action situation was relevant?

No.	Core work process/competence area/	Professional situation				
		1. Installation of a heatpump or a hybrid heating system (heatpump with fossil heat generator) (N=67)				
		Important	Neither important nor unimportant	Unimportant	Don't know	No response
1.	Assembling and dismantling of building systems or components	55	6	1	3	2
2.	Service and maintenance of building systems or their components	54	6	2	3	2
3.	Taking building systems or their components into operation	59	3	1	2	2
4.	Monitoring and optimizing processes of building systems with the help of auto-mated installations and components	48	10	2	5	2
5.	Creating concepts for (processes of) building systems or their component-/sub-processes	41	18	1	5	2
6.	Identification, Realization and checking of legal requirements for the operation of building systems (operator responsibility)	50	9	2	4	2
7.	Monitoring costs and controlling	44	18	1	2	2
8.	Marketing	26	22	14	2	3
9.	Personnel management	34	21	6	4	2

Which core work processes were particularly important or unimportant for the companies for which the action situation was relevant?

No.	Core work process/competence area/	Professional situation				
		2. Installation of solar thermal systems on the roofs of buildings				
		Important	Neither important nor unimportant	Unimportant	Don't know	No response
1.	Assembling and dismantling of building systems or components	43	7		2	3
2.	Service and maintenance of building systems or their components	40	9	2	2	2
3.	Taking building systems or their components into operation	43	7	1	2	2
4.	Monitoring and optimizing processes of building systems with the help of auto-mated installations and components	39	8	2	3	3
5.	Creating concepts for (processes of) building systems or their component-/sub-processes	34	11	3	4	3
6.	Identification, Realization and checking of legal requirements for the operation of building systems (operator responsibility)	37	9	2	4	3
7.	Monitoring costs and controlling	33	14	4	2	2
8.	Marketing	25	21	3	4	2
9.	Personnel management	30	18	2	3	2

Which core work processes were particularly important or unimportant for the companies for which the action situation was relevant?

No.	Core work process/competence area/	Professional situation				
		3. Installation of a solar cooling system on the roof of a building				
		Important	Neither important nor unimportant	Unimportant	Don't know	No response
1.	Assembling and dismantling of building systems or components	22	5		4	1
2.	Service and maintenance of building systems or their components	24	2	1	4	1
3.	Taking building systems or their components into operation	25	2	1	3	1
4.	Monitoring and optimizing processes of building systems with the help of auto-mated installations and components	23	3	1	4	1
5.	Creating concepts for (processes of) building systems or their component-/sub-processes	21	5	1	4	1
6.	Identification, Realization and checking of legal requirements for the operation of building systems (operator responsibility)	22	4	1	3	2
7.	Monitoring costs and controlling	19	8	1	3	1
8.	Marketing	12	11	4	4	1
9.	Personnel management	16	8	3	4	1

Which core work processes were particularly important or unimportant for the companies for which the action situation was relevant?

No.	Core work process/competence area/	Professional situation				
		4. Installation of a photovoltaic system on the roof of a residential or commercial building				
		Important	Neither important nor unimportant	Unimportant	Don't know	No response
1.	Assembling and dismantling of building systems or components	58	5	1	1	2
2.	Service and maintenance of building systems or their components	52	7	4	2	2
3.	Taking building systems or their components into operation	59	3	2	1	2
4.	Monitoring and optimizing processes of building systems with the help of auto-mated installations and components	51	8	3	3	2
5.	Creating concepts for (processes of) building systems or their component-/sub-processes	49	9	4	3	2
6.	Identification, Realization and checking of legal requirements for the operation of building systems (operator responsibility)	50	8	4	3	2
7.	Monitoring costs and controlling	45	15	3	2	2
8.	Marketing	28	21	12	4	2
9.	Personnel management	40	15	6	3	3

Which core work processes were particularly important or unimportant for the companies for which the action situation was relevant?

No.	Core work process/competence area/	Professional situation				
		5. Building automation				
		Important	Neither important nor unimportant	Unimportant	Don't know	No response
1.	Assembling and dismantling of building systems or components	60	7		2	3
2.	Service and maintenance of building systems or their components	55	9	1	3	4
3.	Taking building systems or their components into operation	58	7	2	2	3
4.	Monitoring and optimizing processes of building systems with the help of auto-mated installations and components	56	8	2	2	4
5.	Creating concepts for (processes of) building systems or their component-/sub-processes	53	12	1	2	4
6.	Identification, Realization and checking of legal requirements for the operation of building systems (operator responsibility)	50	15	2	2	3
7.	Monitoring costs and controlling	46	21	1	1	3
8.	Marketing	33	24	9	3	3
9.	Personnel management	39	22	4	4	3

Which core work processes were particularly important or unimportant for the companies for which the action situation was relevant?

No.	Core work process/competence area/	Professional situation				
		6. Troubleshooting in building systems and building installations				
		Important	Neither important nor unimportant	Unimportant	Don't know	No response
1.	Assembling and dismantling of building systems or components	73	8	3	1	3
2.	Service and maintenance of building systems or their components	73	8	3	1	3
3.	Taking building systems or their components into operation	72	8	4	1	3
4.	Monitoring and optimizing processes of building systems with the help of auto-mated installations and components	66	12	4	2	4
5.	Creating concepts for (processes of) building systems or their component-/sub-processes	60	17	5	2	4
6.	Identification, Realization and checking of legal requirements for the operation of building systems (operator responsibility)	62	15	5	3	3
7.	Monitoring costs and controlling	56	22	4	3	3
8.	Marketing	36	30	13	6	3
9.	Personnel management	52	23	6	3	4

Different occupations vs. one profession with multidisciplinary knowledge

Professional situation	Repondents, total	Need people from different professions to perform this professional situation	This can be performed by one profession with multidisciplinary knowledge
Installation of a heat pump or a hybrid heating system	67	66%	57%
Installation of solar thermal systems	55	60%	51%
Installation of solar cooling systems	32	**81%**	**50%**
Installation of a photovoltaic system	67	64%	58%
Installation and commissioning of sensors and actuators for the automation of building processes	72	**57%**	**64%**
Troubleshooting in building systems and building installations	88	60%	58%

Conclusions

- The survey confirms that **technical skills and operational knowledge** in building engineering services is still relevant. Professionals need to proficiency in such tasks as assembling, dismantling, servicing, maintaining, and operating building systems or their components to ensure functionality and sustainability through effective maintenance and troubleshooting.
- The survey confirmed the industry's shift towards **automation, renewable energy integration, and advanced building technologies** and strong demand for professionals with specialized knowledge and skills in these areas.

Conclusions

- Considering a diverse profile of companies activities and diverse range of professional situations, building engineering technicians need to be versatile and responsive to these varied demands, requiring a broad skill set that encompasses not only technical expertise but also and foremost transversal skills, such as **adaptability and problem-solving abilities**.

- The survey identifies **marketing as one of the least relevant processes** across different professional situations. This suggests that within the context of building engineering services, practical skills related to system operation, maintenance, and installation are prioritized over marketing and promotional activities. Professionals in this field are primarily focused on technical execution and service delivery.

Conclusions

- There was no clear consensus among survey participants regarding whether certain professional situations require collaboration across different professions **or can be handled by a single profession with multidisciplinary knowledge.**

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Thank you!

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Co-funded by the European Union

EU-Geschäftsstelle - Bezirksregierung Köln

Thorsten Noelle *(Geschäftsführer)*

EUGES Website

Bezirksregierung Köln
Dezernat 45 – EU-Geschäftsstelle Wirtschaft + Berufsbildung
50606 Köln

Dienstgebäude: Zeughausstr. 2-8, 50667 Köln
Telefon: + 49 (0) 221 - 147 – 2388
eMail: thorsten.noelle@brk.nrw.de
Internet: www.brk.nrw.de/europa
https://euges-cologne-projects.eu

Facebook EU-Geschäftsstelle Köln
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