

Desk Research and Analysed Relevant Publications

Table 1: Summary of Analyzed Relevant Publications.

Reference	Stages	Stakeholders
[1] RIBA workplan for all disciplines on the construction industry (Table 2)	0. Strategic definition 1. Preparation and briefing 2. Concept design 3. Spatial coordination 4. Technical design 5. Manufacturing and construction 6. Handover 7. Use	• Client team • Design team
[2] Integrated design and construction processes for new building construction (Table 3)	1. Building conception 2. Design 3. Construction preparation 4. Façade construction/assembly 5. Construction delivery and facilities management	• Project owner • Architectural Designer • Design coordinator • Façade designer • Suppliers/façade assemblers • Contractor
[2] Integrated design and construction processes for renovation projects (Table 4)	1. Conception 2. Design	• Project owner • Design coordinator • Architectural designer • Façade designer
[3] Key phases associated with zero-energy residential building renovation (Table 5)	1. Pre-project 2. Concept design 3. Final design 4. Execution and handover 5. Post-construction	• Client team • Design team • Consultants • Construction team • Subcontractors • Facility management team
[4] Façade design and construction processes associated with the curtain wall industry (Table 6)	1. System Design 2. Pre-design/Development 3. Architectural Design 4. Execution Design 5. Production 6. Assembly 7. Use (building operation) 8. End of Life	• System supplier/developer • Investors/developers • Architects • Consultants • Façade builder • Facility management team • User
[5] Design strategies guiding the design and evaluation of solar cooling integrated façades (Table 7)	1. Conception and Strategic Definition 2. Preparation and Briefing 3. Façade Technological Selection 4. Façade Integration Design	-

Table 2: Workplan for all disciplines on the construction industry considering [1]

Process	Inputs	Outputs and information exchanges at the end of the process	Requirements or considerations	Tasks/Tools	Stakeholders	Others
0. Strategic definition	-	<ul style="list-style-type: none"> • Suitable means to achieve client requirements • Appointed client team 	<ul style="list-style-type: none"> • Client requirements • Business case 	<ul style="list-style-type: none"> • Preparations of client requirements • Development of a business case considering project budget and risks for feasibility options • Ratification of an option delivering client requirements • Review feedback considering previous projects • Evaluation of site conditions • Evaluation of planning considerations 	<ul style="list-style-type: none"> • Client 	<ul style="list-style-type: none"> • The output of process 0 can be the decision of project initiation • Design team is not required • Advisors of the client might be determined for approving strategic advice to the client

Table 2: Workplan for all disciplines on the construction industry considering [1] (cont.)

Process	Inputs	Outputs and information exchanges at the end of the process	Requirements or considerations	Tasks/Tools	Stakeholders	Others
1. Preparation and briefing	<ul style="list-style-type: none"> The decision of project initiation 	<ul style="list-style-type: none"> Approved project brief confirming that ability to accommodate the project on site Appointed design team Project budget Site information Information requirements <ul style="list-style-type: none"> Project program Matrix of responsibilities Procurement strategy 	-	<ul style="list-style-type: none"> Preparations of project brief covering project and sustainability outcomes, quality ambitions, spatial requirements Conduction of feasibility studies Agreement on project budget Collection of site information Preparation of project program and execution plan Determination of pre-application planning advice Initiation of preconstruction data collection regarding health and safety 	<ul style="list-style-type: none"> Client team 	<ul style="list-style-type: none"> Processes 1 to 6 represent the project span Design team is not required Advisors of the client might be determined for approving strategic advice to the client

Table 2: Workplan for all disciplines on the construction industry considering [1] (cont.)

Process	Inputs	Outputs and information exchanges at the end of the process	Requirements or considerations	Tasks/Tools	Stakeholders	Others
2. Concept design	<ul style="list-style-type: none"> • Pre-application planning advice 	<ul style="list-style-type: none"> • Approved architectural concept by the client • Appointed contractor in case of Management Contract/Construction Management procurement route • Cost plan • Brief derogation of the project 	<ul style="list-style-type: none"> • Approved project brief confirming that ability to accommodate the project on site (ensure the alignment) • Employer's requirements in case of Design & Build 2 Stage or Contractor-led procurement routes • Strategic engineering requirements • Cost plan • Project strategies and specification • Compliance with building regulation • Signed off stage report 	<ul style="list-style-type: none"> • Preparation of architectural concept • Design reviews • Preparation of stage design program 	<ul style="list-style-type: none"> • Client team • Design team 	<ul style="list-style-type: none"> • Processes 1 to 6 represent the project span

Table 2: Workplan for all disciplines on the construction industry considering [1] (cont.)

Process	Inputs	Outputs and information exchanges at the end of the process	Requirements or considerations	Tasks/Tools	Stakeholders	Others
3. Spatial coordination	<ul style="list-style-type: none"> Approved architectural concept by the client 	<ul style="list-style-type: none"> Spatial coordination of architectural and engineering information Preferred bidder in case of or Contractor-led procurement route 	<ul style="list-style-type: none"> Cost plan Project strategies and specification Compliance with building regulation Signed off stage report 	<ul style="list-style-type: none"> Architectural concept test through engineering analysis, design studies, and cost estimations Initiation of change control procedures Preparation of stage design program Preparation and submission of planning application Agreement on the pre-contract services in the case of Design & Build 2 Stage procurement route 	-	<ul style="list-style-type: none"> Processes 1 to 6 represent the project span

Table 2: Workplan for all disciplines on the construction industry considering [1] (cont.)

Process	Inputs	Outputs and information exchanges at the end of the process	Requirements or considerations	Tasks/Tools	Stakeholders	Others
4. Technical design	<ul style="list-style-type: none"> Contractor's proposals in case of Design & Build 1 Stage, Design & Build 2 Stage, and Contractor-led procurement routes 	<ul style="list-style-type: none"> Design information for manufacturing and constructing the project Appointed contractor in case of Traditional, Design & Build 1 Stage, Design & Build 2 Stage, and Contractor-led procurement routes 	<ul style="list-style-type: none"> Employer's requirements in case of Design & Build 1 Stage Project strategies and specification 	<ul style="list-style-type: none"> Development of architectural and engineering design Preparation and coordination of design team Preparation and integration of specialist subcontractor Preparation of stage design program Submission of building regulations application Tendering in case of Traditional procurement route Preparation of construction phase plan 	-	<ul style="list-style-type: none"> Processes 1 to 6 represent the project span Processes 4 and 5 can overlap in many cases

Table 2: Workplan for all disciplines on the construction industry considering [1] (cont.)

Process	Inputs	Outputs and information exchanges at the end of the process	Requirements or considerations	Tasks/Tools	Stakeholders	Others
5. Manufacturing and construction	-	<ul style="list-style-type: none"> • Completion of project manufacturing, constructing, and commissioning • Building manual covering fire safety information and health and safety files • Asset information • Practical completion certificate considering list of defects 	<ul style="list-style-type: none"> • Compliance with planning conditions associated with construction 	<ul style="list-style-type: none"> • Finalization of site logistics and carrying out construction phase • Production of building systems and construction of the building • Progress monitoring with respect to the construction program • Inspection of construction quality • Resolution of sit queries • Building commissioning and preparation of building manual 	-	<ul style="list-style-type: none"> • Processes 1 to 6 represent the project span • Processes 4 and 5 can overlap in many cases • Design works are not present in process 5, except the response to the site queries. • Processes 5 and 6 are bridged by building handover tasks considered in the plans for building use

Table 2: Workplan for all disciplines on the construction industry considering [1] (cont.)

Process	Inputs	Outputs and information exchanges at the end of the process	Requirements or considerations	Tasks/Tools	Stakeholders	Others
6. Handover	-	<ul style="list-style-type: none"> • Initiated aftercare • Concluded building contract • Final certificate • Project performance • Feedback from Post Occupancy Evaluation (POE) 	<ul style="list-style-type: none"> • Compliance with planning conditions 	<ul style="list-style-type: none"> • Building handover • Project performance review • Seasonal commissioning • Rectification of defects • Completion of initial aftercare tasks considering light touch POE 	-	<ul style="list-style-type: none"> • Processes 1 to 6 represent the project span • Process 7 begins simultaneously with process 6 and lasts for the building life • Processes 5 and 6 are bridged by building handover tasks considered in the plans for building
7. Use	-	<ul style="list-style-type: none"> • Efficiently used, operated, and maintained building • Feedback from POE • Appointed Facilities and Asset Management teams and/or strategic advisers • Updated building manual covering fire safety information and health and safety files 	<ul style="list-style-type: none"> • Compliance with planning conditions 	<ul style="list-style-type: none"> • Implementation of Facilities and Asset Management • POE of building performance during use phase • Verification of project outcomes 	-	<ul style="list-style-type: none"> • The ongoing building use • Process 7 begins simultaneously with process 6 and lasts for the building life • Building adaptation at the end of life may results in new process 0

Table 3: Integrated design and construction processes for new building construction considering [2]

Stage	Phase (Processes)	Inputs	Outputs	Requirements or considerations	Tasks/Tools	Stakeholders	Others
1. Building conception	Determination of possibilities and restrictions	Legal and technical data	<ul style="list-style-type: none"> • Technical and legal restrictions • Possibilities to establish the façade product 	-	Data collection	<ul style="list-style-type: none"> • Project owner • Architectural Designer • Design coordinator 	-
	Preliminary definitions and briefing	<ul style="list-style-type: none"> • Possibilities to establish the façade product 	<ul style="list-style-type: none"> • Building objective, project size and geometric aspects • Intended standards & performance requirement (aesthetics, structural, fire, acoustics, and energy efficiency) • Defined Finishing 	<ul style="list-style-type: none"> • Technical and legal restrictions 	-		The following two outputs influences the façade design: <ul style="list-style-type: none"> • Intended standards & performance requirement (aesthetics, structural, fire, acoustics, and energy efficiency) • Defined Finishing
	Technical visibility study	Intended standards & performance requirement (aesthetics, structural, fire, acoustics, and energy efficiency)	Viability to meet priority requirements program	<ul style="list-style-type: none"> • Technical and legal restrictions 	Technical evaluation		-
	Developing documents with technical and administrative definitions	-	<ul style="list-style-type: none"> • Stakeholders' responsibilities • Process schedule • Guarantees 			<ul style="list-style-type: none"> • Project owner • Design coordinator 	Used for developing notebooks of each particular contract

Table 3: Integrated design and construction processes for new building construction considering [2] (cont.)

Stage	Phase (Processes)	Inputs	Outputs	Requirements or considerations	Tasks/Tools	Stakeholders	Others
2. Design	Preliminary design	<ul style="list-style-type: none"> • Building objective, project size and geometric aspects • Intended standards & performance requirement (aesthetics, structural, fire, acoustics, and energy efficiency) • Defined Finishing 	<ul style="list-style-type: none"> • Technical functions of façade elements and components • Optimal architectural potion • Pre-evaluated costs 	-	<ul style="list-style-type: none"> • Feedback dossier analysis • Evaluation of architectural options • Cost estimation 	<ul style="list-style-type: none"> • Project owner • Design coordinator • Architectural designer 	-
	Façade technological selection	<ul style="list-style-type: none"> • Optimal architectural potion 	<ul style="list-style-type: none"> • Architectural façade technology 	<ul style="list-style-type: none"> • Project owner requirements • Cost, technical, and risk benefit criteria 	-		-
	Pre-design	<ul style="list-style-type: none"> • Intended standards & performance requirement (aesthetics, structural, fire, acoustics, and energy efficiency) • Architectural façade technology 	<ul style="list-style-type: none"> • Quantitative parameters for the characteristics of façade elements • General façade composition • List of interfaces • Graphical representation of the adopted solution • Estimated life-cycle costs, including maintenance cost • Preliminary schedule 	-	<ul style="list-style-type: none"> • Determination of element characteristics • Graphic designs • Cost analysis • Scheduling 	<ul style="list-style-type: none"> • Façade designer • Design coordinator 	-

Table 3: Integrated design and construction processes for new building construction considering [2] (cont.)

Stage	Phase (Processes)	Inputs	Outputs	Requirements or considerations	Tasks/Tools	Stakeholders	Others
2. Design (cont.)	Executive design	<ul style="list-style-type: none"> Architectural façade technology General façade composition Graphical representation of the adopted solution 	<ul style="list-style-type: none"> Defined façade element modulation Defined manufacturing and assembly tolerances List of technical and operational interfaces covering components, elements, and systems Formulated documents indicating structural calculations and the compliance with safety criteria, such as fire, structural, and maintenance Documents covering the installation techniques of the faced system 	<ul style="list-style-type: none"> Intended standards & performance requirement (aesthetics, structural, fire, acoustics, and energy efficiency) 	<ul style="list-style-type: none"> Comparing designed façade with intended standards Evaluating interfaces related to façade use and maintenance, cleaning equipment, and inspection accessibility. Studying geometric tolerances Providing technical installation definitions. 	<ul style="list-style-type: none"> Architectural designer Façade designer Design coordinator 	-

Table 3: Integrated design and construction processes for new building construction considering [2] (cont.)

Stage	Phase (Processes)	Inputs	Outputs	Requirements or considerations	Tasks/Tools	Stakeholders	Others
3. Construction preparation	Hiring suppliers/façade assemblers	<ul style="list-style-type: none"> Documents covering the installation techniques of the faced system 	<ul style="list-style-type: none"> Selected suppliers/façade assemblers 	<ul style="list-style-type: none"> Stakeholders' responsibilities Process schedule Guarantees 	<ul style="list-style-type: none"> Supporting project owner 	<ul style="list-style-type: none"> Façade designer Design coordinator 	-
	Contracting	<ul style="list-style-type: none"> Selected suppliers/façade assemblers 	<ul style="list-style-type: none"> Established rules to be adopted by selected suppliers/façade assemblers regarding the construction 	-	-	<ul style="list-style-type: none"> Façade designer Design coordinator Suppliers/façade assemblers 	-
	Detailed Design	<ul style="list-style-type: none"> List of technical and operational interfaces covering components, elements, and systems Documents covering the installation techniques of the faced system 	<ul style="list-style-type: none"> Detailed design Construction design Façade interface with construction Assembly procedure 	<ul style="list-style-type: none"> Product characteristics of selected suppliers/façade assemblers 	-	<ul style="list-style-type: none"> Façade designer Design coordinator Suppliers/façade assemblers Contractor 	-
	Construction planning	<ul style="list-style-type: none"> List of technical and operational interfaces covering components, elements, and systems Façade interface with construction 	<ul style="list-style-type: none"> Physical and financial schedules 	-	-	<ul style="list-style-type: none"> Façade designer Design coordinator Suppliers/façade assemblers Contractor 	-

Table 3: Integrated design and construction processes for new building construction considering [2] (cont.)

Stage	Phase (Processes)	Inputs	Outputs	Requirements or considerations	Tasks/Tools	Stakeholders	Others
4. Façade construction/assembly	-	<ul style="list-style-type: none"> Physical and financial schedules 	<ul style="list-style-type: none"> Coordinated construction companies and activities 	-	Construction management	<ul style="list-style-type: none"> Façade designer Suppliers/façade assemblers Contractor 	-
5. Construction delivery and facilities management	Building delivery	-	<ul style="list-style-type: none"> Documents, including as-built drawings, demonstrating the construction completion according to contractual requirements . 	-	Reviewing design process and construction phase	<ul style="list-style-type: none"> Façade designer Design coordinator 	-
	Maintenance plan	-	<ul style="list-style-type: none"> Preventive and corrective maintenance plans 	-	-	<ul style="list-style-type: none"> Suppliers/façade assemblers Contractor 	-
	Building use	<ul style="list-style-type: none"> Façade performance during building operation 	<ul style="list-style-type: none"> Feedback document 	-	<ul style="list-style-type: none"> Performance analysis 	<ul style="list-style-type: none"> Contractor Project owner 	-

Table 4: Integrated design and construction processes for renovation projects considering [2]

Stage	Phase (Processes)	Inputs	Outputs	Requirements or considerations	Tasks/Tools	Stakeholders
1. Conception	-	Performance issues related to thermal performance, watertightness, maintenance, or structural security	<ul style="list-style-type: none"> Renovation aim 	-	-	<ul style="list-style-type: none"> Project owner Design coordinator
2. Design	Preliminary studies	<ul style="list-style-type: none"> Building design at the original construction time Designs of any interventions Façade performance conditions Sketches of design alternatives 	<ul style="list-style-type: none"> Building historical dossier Created building design prior to building renovation Technical and economic viability of building renovation process 	<ul style="list-style-type: none"> Technical and architectural issues Laws related to architectural modifications of the façade 	<ul style="list-style-type: none"> Studying building history Architectural design Building conservation diagnosis Feasibility study 	<ul style="list-style-type: none"> Design coordinator Façade designer Architectural designer
	Façade technological selection	<ul style="list-style-type: none"> Building historical dossier Created building design prior to building renovation Technical and economic viability of building renovation process 	<ul style="list-style-type: none"> Architectural façade technology 	<ul style="list-style-type: none"> Project owner requirements Cost, technical, and risk benefit criteria 	-	

Table 5: Key phases associated with zero-energy residential building renovation considering [3]

Process	Outputs	Tasks/Tools	Stakeholders
1. Pre-project	<ul style="list-style-type: none"> • Defined project needs, problems, and ambition • Approved project brief • Confirmed feasibility • Appointed design team 	<ul style="list-style-type: none"> • Determination of project objectives and criteria • Diagnosis of the building conditions • Definition of the client requirements • Initial cost estimation • Definition of the client requirements • Design team selection 	<ul style="list-style-type: none"> • Client team
2. Concept design	<ul style="list-style-type: none"> • Approved renovation strategy 	<ul style="list-style-type: none"> • Identifying and comparing strategies, interventions, as also design principles • Identifying renovation measures • Consideration of design concepts involving industrialized components • Evaluation and optimization • Preparing building permit application 	<ul style="list-style-type: none"> • Client team • Design team • Consultants
3. Final design	<ul style="list-style-type: none"> • Design information required for manufacturing and constructing the project 	<ul style="list-style-type: none"> • Detailed designs for the industrialized renovations • Surveying the existing building • Component engineering • Tendering and product specification 	<ul style="list-style-type: none"> • Design and/or construction team • Subcontractors
4. Execution and handover	<ul style="list-style-type: none"> • Completion of manufacturing, construction and commissioning • Project handover 	<ul style="list-style-type: none"> • Manufacturing • Transportation • Installation and site construction • Quality control 	<ul style="list-style-type: none"> • Construction team • Subcontractors
5. Post-construction	<ul style="list-style-type: none"> • Efficient use, operation, and maintenance of the building 	<ul style="list-style-type: none"> • Optimization of building operation • Monitoring and POE 	<ul style="list-style-type: none"> • Client • Facility management team • Consultants

Table 6: Façade design and construction processes associated with the curtain wall industry considering [4]

Processes	Subprocesses	Inputs	Outputs	Requirements and considerations	Tasks/Tools	Stakeholders	Others
1. System Design	-	<ul style="list-style-type: none"> External factors: <ul style="list-style-type: none"> ◊Society interest, or ◊Sustainability in the built environment 	Developed system.	<ul style="list-style-type: none"> Anticipated market requirements: <ul style="list-style-type: none"> ◊Legal requirements ◊Architectural design requirements External factors, such as the social interest in sustainability in the built environment. 	System development	System supplier/developer	<ul style="list-style-type: none"> Project independent The design of a façade system is carried out before the actual design
2. Pre-design/Development	-	Buildings' type, size, location	<ul style="list-style-type: none"> Building basic requirements Functional requirements of façades 	<ul style="list-style-type: none"> Legal requirements 	Feasibility studies and market surveys	<ul style="list-style-type: none"> Investors/developers Architects Consultants 	<ul style="list-style-type: none"> Project dependent

Table 6: Façade design and construction processes associated with the curtain wall industry considering [4] (cont.)

Processes	Subprocesses	Inputs	Outputs	Requirements and considerations	Tasks/Tools	Stakeholders	Others
3. Architectural Design	-	<ul style="list-style-type: none"> Functional requirements of façades 	<ul style="list-style-type: none"> Construction technical details & working drawings Tender documents Estimated façade cost 	<ul style="list-style-type: none"> Building permit requirements Mutual agreement on costs with clients 	Agree on products	<ul style="list-style-type: none"> Investors/developers 	<ul style="list-style-type: none"> Project dependent Can differ from a country to another Iterative process that may require feedbacking the outcomes to previous steps.
					Support	<ul style="list-style-type: none"> System supplier/developer 	
					Design	<ul style="list-style-type: none"> Architect 	
						<ul style="list-style-type: none"> Consultants 	
					Design support	<ul style="list-style-type: none"> Façade builder 	

Table 6: Façade design and construction processes associated with the curtain wall industry considering [4] (cont.)

Processes	Subprocesses	Inputs	Outputs	Requirements and considerations	Tasks/Tools	Stakeholders	Others
4. Execution Design	Overall	<ul style="list-style-type: none"> Construction technical details & working drawings 	Finalized decision about the system to be used	Guaranteeing the thermal performance, wind/water tightness	Design	<ul style="list-style-type: none"> Façade builder 	<ul style="list-style-type: none"> Project dependent Various internal design steps are performed by façade builders during the execution phase which ensure the ability to carry out the job.
					Supervision	<ul style="list-style-type: none"> Architect 	
					Sales	<ul style="list-style-type: none"> System supplier/developer 	
					-	<ul style="list-style-type: none"> Consultants 	
					-	<ul style="list-style-type: none"> Investors/developers 	
	Development of the basic product	Architectural design outcomes: <ul style="list-style-type: none"> Construction technical details & working drawings Tender documents Estimated façade cost 	Developed basic system	-	<ul style="list-style-type: none"> Identifying potential missing elements in tendering documents 	Façade builder	
	Design elaboration and completion	-	-	-	<ul style="list-style-type: none"> Sending related designs to architects/consultants for obtaining the approval. 		
	Production and Assembly design	-	-	-	<ul style="list-style-type: none"> Ordering all necessary components 	Façade builder	
					<ul style="list-style-type: none"> Support 	<ul style="list-style-type: none"> System supplier/developer 	

Table 6: Façade design and construction processes associated with the curtain wall industry considering [4] (cont.)

Processes	Subprocesses	Inputs	Outputs	Requirements and considerations	Tasks/Tools	Stakeholders	Others
5. Production	-	Profiles and fittings	Manufactured and/or pre-assemble curtain walls	<ul style="list-style-type: none"> • Façade builders' production facilities • External factors, such as the social interest in sustainable production 	Cutting, milling , and coating received profiles and fittings	Façade builder	• Project dependent
					Supporting façade builders with Profiles and fittings	• System supplier/developer	
					Supervision	• Architect	
					Monitoring	• Consultants	
					-	• Investors/developers	

Table 6: Façade design and construction processes associated with the curtain wall industry considering [4] (cont.)

Processes	Subprocesses	Inputs	Outputs	Requirements and considerations	Tasks/Tools	Stakeholders	Others
6. Assembly	-	Manufactured and/or pre-assemble curtain walls	Finished installed façade system	<ul style="list-style-type: none"> • Time schedule. • Weather conditions • Primary structure status • Façade quality requirements • External factors, such as societal interest in minimal transport 	-	Façade builder	• Project dependent
					Supervision	Architect	
					Monitoring	Consultants	
					-	<ul style="list-style-type: none"> • System supplier/developer 	

Table 6: Façade design and construction processes associated with the curtain wall industry considering [4] (cont.)

Processes	Subprocesses	Inputs	Outputs	Requirements and considerations	Tasks/Tools	Stakeholders	Others
7. Use (building operation)	-	<ul style="list-style-type: none"> Energy bill and building performance 	-	<ul style="list-style-type: none"> External factors, such as societal interest in low energy consumption 	Maintaining and/or repairing the façade	Façade builder	<ul style="list-style-type: none"> Dependent on the business model
					-	<ul style="list-style-type: none"> Investors/developers 	
					Management	Facility management team	
					Inhabitation	User	
					Monitoring	-	
8. End of Life	-	-	-	<ul style="list-style-type: none"> External factors, such as societal interest in reducing waste or CO2 impact 	Promoting second lives of building components. Reuse or recycle of building components	-	-

Table 7: Design strategies guiding the design and evaluation of solar cooling integrated façades [5]

Stage	Key processes/steps	Key required information and inputs	Key decisions	Key Outcomes	Tools and means to obtain the outcomes
Conception and Strategic Definition	<ul style="list-style-type: none"> Establishment and assessment of the reference model 	<ul style="list-style-type: none"> Regulatory requirements Project characteristics/building drawings/ building use profile Weather, geographic and urban data 	<ul style="list-style-type: none"> Determine relevant measures to optimize building design Select building optimized and suitable model 	<ul style="list-style-type: none"> Construction characteristics of the envelope Building required cooling demand of the optimized and suitable model 	<ul style="list-style-type: none"> Data collection and market survey Energy simulation
	<ul style="list-style-type: none"> Identification of possibilities for façade integration 	<ul style="list-style-type: none"> Construction characteristics of the envelope of the optimized suitable model Relevant solar cooling technologies 	<ul style="list-style-type: none"> Determine configurations of cooling generation, distribution, and delivery components Identify available envelope possibilities for technological integration based on the selected model and relevant solar cooling technologies 	<ul style="list-style-type: none"> Possibilities for façade integration 	
Preparation and Briefing	<ul style="list-style-type: none"> Investigation of the type of technology and components 	<ul style="list-style-type: none"> Building requirements in terms of cooling demand Performances and efficiencies of technologies Technical design criteria and performance requirements 	<ul style="list-style-type: none"> Determine available envelope possibilities meeting cooling demand 	<ul style="list-style-type: none"> Assessed product performance and efficiency of generated possibilities meeting cooling demand 	<ul style="list-style-type: none"> Data collection and market survey Energy simulation Cost estimation
	<ul style="list-style-type: none"> Evaluation of how the technology can be integrated and operated 	<ul style="list-style-type: none"> Sizes, wights, working materials, and maintenance requirements Technical design criteria and performance requirements 	-	<ul style="list-style-type: none"> Evaluated technological potentials for building integration 	

Table 7: Design strategies guiding the design and evaluation of solar cooling integrated façades [5] (cont.)

Stage	Key processes/steps	Key required information and inputs	Key decisions	Key Outcomes	Tools and means to obtain the outcomes
Preparation and Briefing (cont.)	<ul style="list-style-type: none"> Assessment of economic viability 	<ul style="list-style-type: none"> Cost of technologies Economic design criteria and requirements 	-	<ul style="list-style-type: none"> Cost-effectiveness of possibilities meeting cooling demand 	<ul style="list-style-type: none"> Data collection and market survey Energy simulation Cost estimation
Façade Technological Selection	<ul style="list-style-type: none"> Summarization of techno-economic feasibilities 	<ul style="list-style-type: none"> Assessed techno-economic feasibility of the generated possibilities Design criteria and techno-economic requirements 	-	<ul style="list-style-type: none"> Summary of techno-economic feasibilities 	<ul style="list-style-type: none"> Data visualization Multi-criteria analysis
	<ul style="list-style-type: none"> Selection of architectural façade technology 	<ul style="list-style-type: none"> Summary of techno-economic feasibilities 	<ul style="list-style-type: none"> Determine the scenario having highest scores with respect to design criteria and selected relevant architectural façade technology 	<ul style="list-style-type: none"> Relevant architectural façade technology 	
Façade Integration Design	<ul style="list-style-type: none"> Determination of characteristics of key elements 	<ul style="list-style-type: none"> Selected relevant architectural façade technology 	-	<ul style="list-style-type: none"> Features of main elements of the selected technology 	<ul style="list-style-type: none"> Graphic and detailed design
	<ul style="list-style-type: none"> Demonstration of detailed design 	<ul style="list-style-type: none"> Relevant safety requirements and standards 	<ul style="list-style-type: none"> Determine means of connections according to the standards 	<ul style="list-style-type: none"> Façade composition and construction details 	

References

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