

# Update and reformulation of the European Adhesive Bonder Curricula using a modular and learning outcomes approach

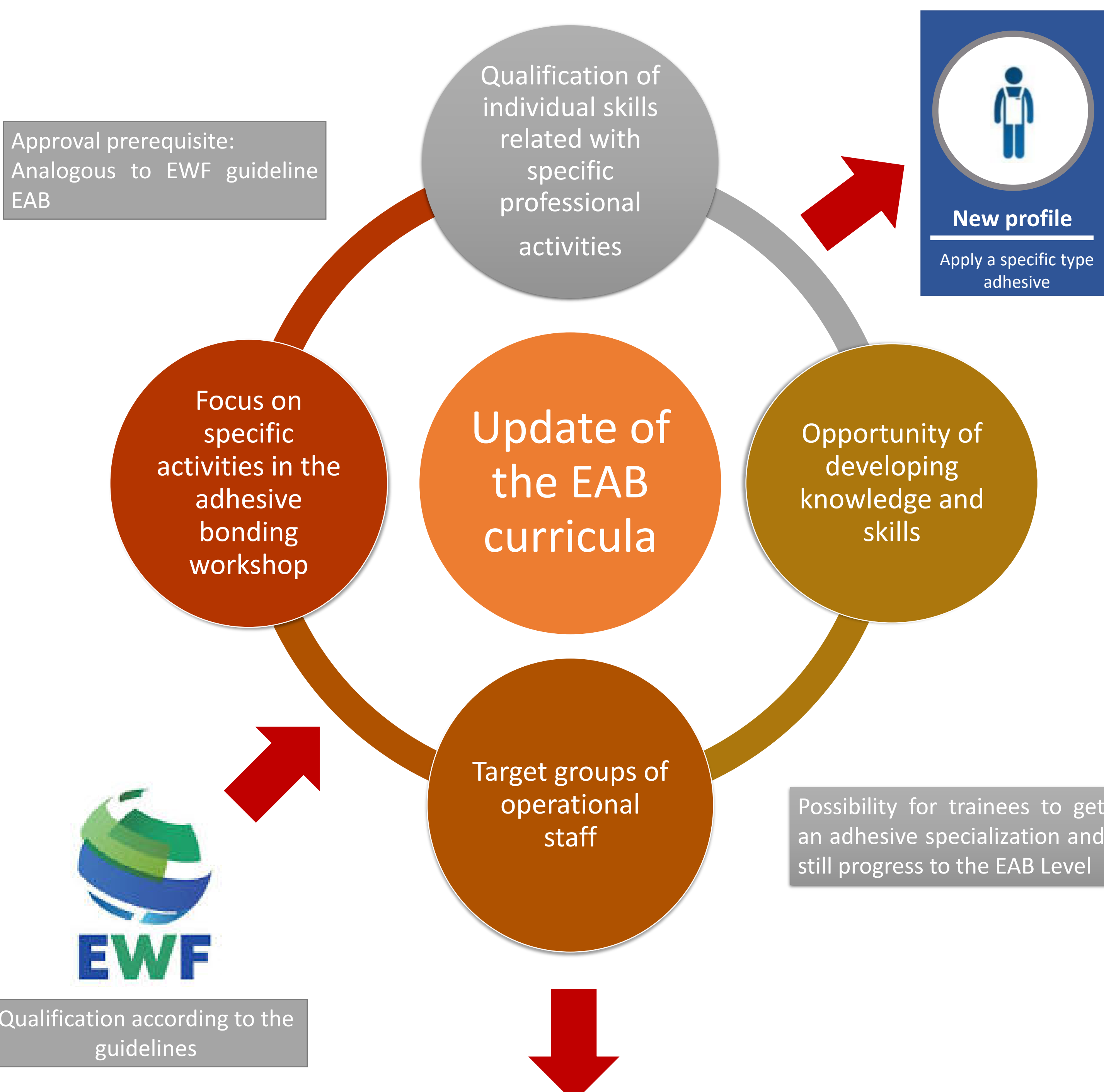
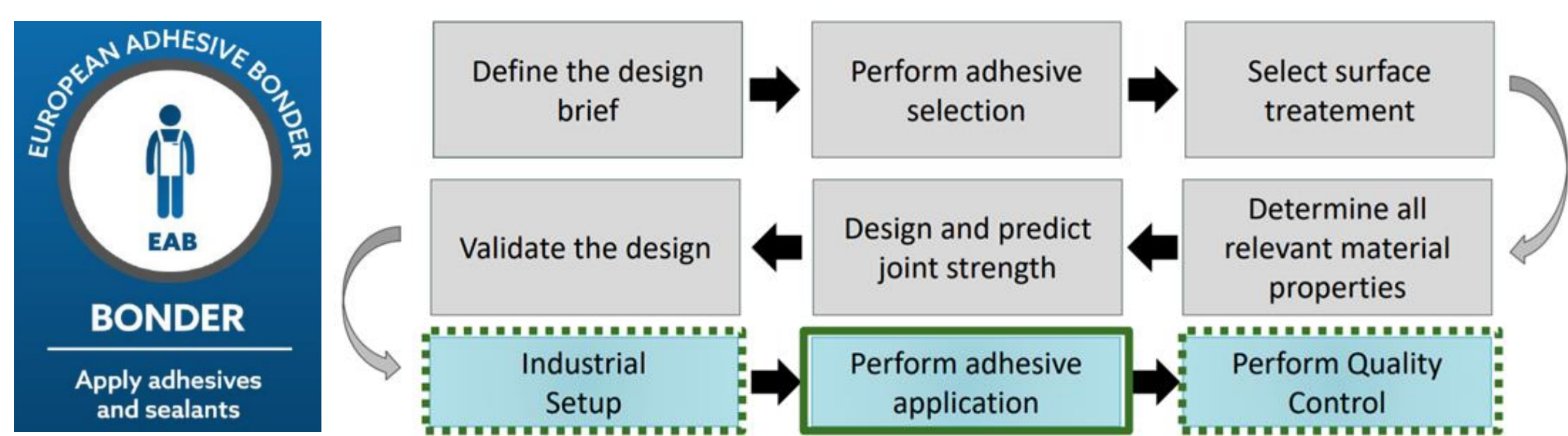
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## Introduction

Adhesive bonding is increasingly being used in industrial applications mainly due to its adaptability and ability to reliably join a wide range of materials. Numerous industrial sectors have now adopted adhesive bonding as a key manufacturing technology, with the automotive industry being the leader in adhesive usage [1]. With the increasing popularity of such joining techniques comes the necessity to train qualified professionals. EWF developed a harmonized qualification system, providing trainings on 3 different levels: European Adhesive Bonder (EAB), Specialist (EAS) and Engineer (EAE) [2,3].

Currently, the established EAB is a comprehensive qualification for the performing personnel, where professionals are qualified to carry out their tasks in a consistent manner according to work instructions, regardless of the adhesive, the application area, the joining part materials, the surface treatment or the application technique used.

As such, there is no possibility for individuals that carry out very limited spectrum of bonding work (e.g., operational staff, machine operators, joiners, surface treatment workers, direct glazing in vehicles, etc.) to develop and certify the knowledge and skills related with specific professional activities as they are being required within their workplace. In order to enable the alignment with the industrial needs and specific adhesive bonding application, a market analysis was conducted to support the identification of possible occupational groups and the mapping of their adhesive bonding activities.



The modularization of the EAB level course and the development of personalized learning paths will improve the permeability of further training in adhesive bonding technology, thus introducing the possibility of having a cumulative system which facilitate trainees access to the qualification level and will sustainably increase the acceptance of the EWF qualification system in the industry.

## Course content and schedule

Two indispensable prerequisites are decisive:

1. the respective composition of the course must fulfil the superordinate learning objective of the new profile qualification.
2. even in the case of industry or company-specific courses, the product-neutral character of the course must be recognizable beyond doubt and verifiable by the ATB.

EAB is who cleans and prepares the surface of the substrates, applies adhesive and/or sealant according to previously established procedure or work instructions.

Component	Program content	Duration (hours) EWF-515r2-19	New profile	
Theoretical	Fundamentals of adhesives and adhesion	1	common branch – Mandatory	
	Surface preparation before adhesive bonding	4	Specific branch – Optional	
	The main families of adhesives and sealants	10		
	Design and construction of adhesive joints	0.5		
	Quality control of bonded structures	1		
	Durability of adhesively bonded joints	0.5	common branch – Mandatory	
	Benefits and limitations of adhesive bonding technology	1		
	Health and safety	1		
	New Practical	Open adhesive bonding topics		
		Practical Skills Training	15	
Final exam	Theoretical Part	1	Specific branch – Optional	
	Practical Part	4h45		
	Oral evaluation	Minimum 15 minutes		
<b>Total</b>		<b>40</b>		

The time spans for the respective contents given in the list of main topics may deviate by a maximum of 25%

## Open topic - Industrial fields/applications

Automotive  
Railway  
Aeronautics  
Marine  
Energy (wind power)  
Packaging  
Electronics



## References

- [1] L.F.M. da Silva, A. Öchsner, and Adams, R. D. in Handbook of adhesion technology. (Springer Science & Business Media, 2011).
- [2] Barbosa, A., da Silva, L., Loureiro, A., Marques, E., Carbas, R., & de Barros, S. (2021). European Adhesive Bonder: A Targeted Training for Portuguese Professionals Harmonized with European Directives. U. Porto Journal of Engineering, 7(1), 37-47.
- [3] Barbosa, A. Q., Loureiro, A., da Silva, L., Almeida, A., Rosado, T., Casero, A., ... & Almeida, R. (2021). AdTech project: European harmonized training system focus on adhesive bonding technologies. Journal on Teaching Engineering, 1(1), 133-149.

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