

RAMSSES - Realisation and Demonstration of Advanced Material Solutions for Sustainable and Efficient Ships

GA 10/E-LASS Seminar #14

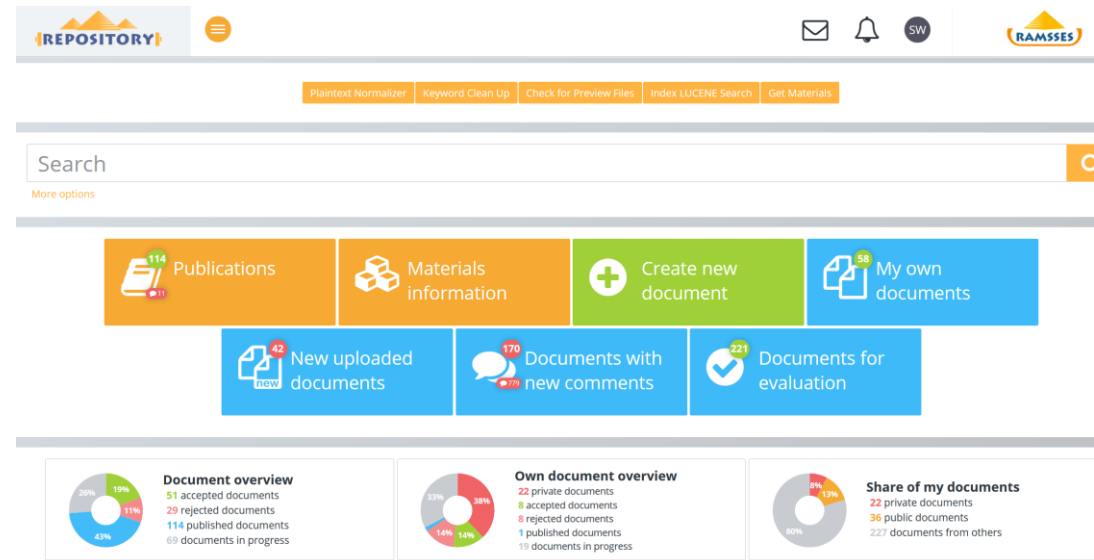
RAMSSES database and its usefulness
BALance Technology Consulting GmbH



- Objectives of the RAMSSES database and the innovation platform
- Main functionalities and processes
- Material and test data to support the Smart Track to Approval
- Summary and next steps

- Provide information to project partners
 - Project results
 - Background information
 - Information will be evaluated by custodians before being released
- Publish RAMSSES results
 - To selected user groups
 - To the general public
- Support co-operation with other projects and with commercial partners
 - Via agreements with EU funded projects
 - By providing interfaces for external access
 - By using interfaces offered by other applications
- Provide interfaces to collaboration platforms
 - Information about authors and experts
 - By information about related research projects
- Supporting Smart Track to Approval
 - Material and test database

- The RAMSSES database works web-based and might be accessed with any recent web browser
- Uploading and storing document based information
 - Upload may be allowed to everybody (as long as the person is registered as a user)
 - Documents might stored as private information (restricted to a specific group) or forwarded to the custodian process





Document

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Related files

FLARE D9.3 - v02.pdf	Stephan Wurst	stephan.wurst@bal.eu	2021-Jun-14 09:01:39	251,8 kB	 
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Document details

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FLARE D9.3 - v02.pdf

Description

An overview of the FLARE project

Uploaded

Stephan Wurst

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Keywords

Keywords: Defined by others Your entry Your new entry Delete all keywords

Categories

☐ Advertisement

☐ background material (must reads)

☐ Commercial content

☐ conference paper

☐ material data sheets and test reports


☐ nice to know (leisure reading)

☐ press release

☐ project deliverables

☒ related research

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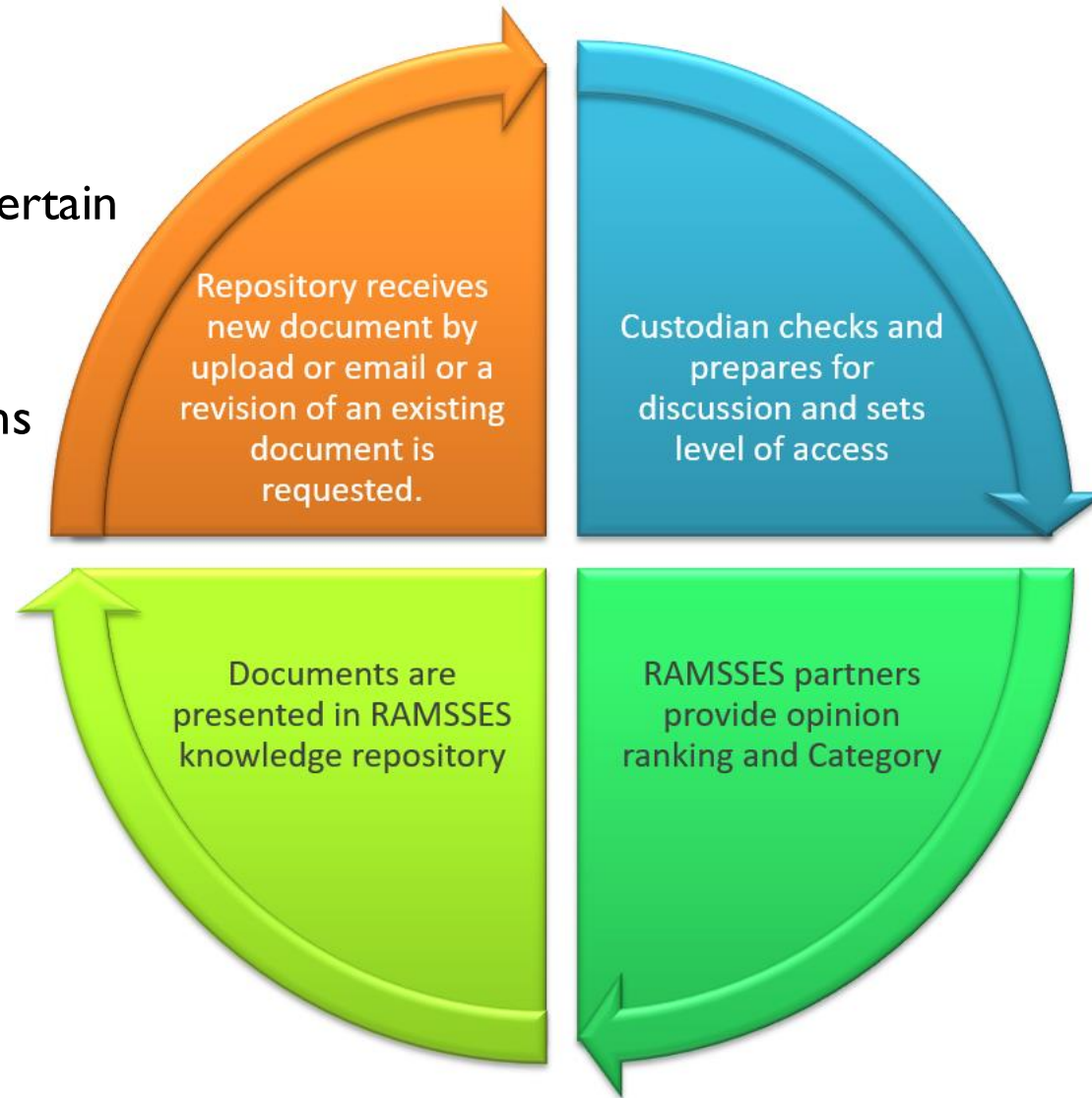
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
10

Document 

 Rules and Regulations in FRP Infrastructural applications - Infracore (RAMSSES Technology transfer group: Infrastructure)

Author: J. Peeters

 100% (1)

 0% (0)

Presentation from Infracore during technology transfer group (TTG) workshop in Pitea, Sweden, January 24th 2019

CONTENT: • Current FRP Infrastructural Market / • EU Design Guidance – JRC (joint review committee) – Usage of guidance notes from other sectors / • National regulations – Netherlands: CUR 96 / Edition 2017 – Italy: CNR-DT 205/2007 – Germany: BUV Empfehlung TKB / • Insights in CUR 96 / Ed. 2017

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engineering

fatigue

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infrastructural

laminate

market

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
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
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VG


 08. Sep. 2020 22:18 by Vivian Garos

Removed keywords: chapter


VG


 08. Sep. 2020 21:54 by Vivian Garos

Removed keywords: level, factor



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2021-06-15
RAMSSES database; Stephan Wurst, BALance Technology Consulting





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1 2 3 4 5 6 10

SW

RAMSSES TTG-Y1 -3D metal printing

Author: Riebenbauer, Martina

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3D-metal printing in the automotive industry and applications in the maritime sector.

Document uploaded by Stephan Wurst

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MK

Technical Report COMposite superstructures for large PASsenger Ships (COMPASS)

Author: Vasileios Karatzas

0% (0) 0% (0)

This document presents the major findings of the COMPASS project. COMPASS focused on the design of superstructures made out of composite materials for large Passenger ships. The project was funded by the Danish Maritime Fund (Den Maritime Fond) and the Maritime Reconversion Fund (Den Maritime Omstillingspulje). The project was carried out in a partnership between Danish Institute of Fire and security Technology (DBI) and the Technical University of Denmark (DTU), Department of Civil Engineering and Department of Mechanical Engineering. The scope of the COMPASS project was to demonstrate how an existing passenger ferry may be refurbished substituting parts of the existing superstructure with polymer composite materials. Emphasis has been given in the potential effects on the ships performance and the behaviour of the selected composite materials at elevated temperatures in the event of fire.

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Validation & verification test topologisch optimierter und additiv gefertigter Brackets

Author: Catharina Freyer;Matthias Niedermair

0% (0) 0% (0)

Presented during DLR Wissenschaftstag in Braunschweig (2019-11)

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RAMSSES TTG-Y1 -3D metal printing

Author: Riebenbauer, Martina

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3D-metal printing in the automotive industry and applications in the maritime sector.

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MK

Technical Report COMposite superstructures for large PASsenger Ships (COMPASS)

Author: Vasileios Karatzas

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1

Workshop on composite-steel hybrid adhesive bonded joints in a marine environment

Author: Jesus Mediavilla

0% (0) 0% (0)

Presented during Qualify lightweight project event in Rotterdam (2019-06-18)

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Validation & verification test topologisch optimierter und additiv gefertigter Brackets

Author: Catharina Freyer;Matthias Niedermair

0% (0) 0% (0)

Presented during DLR Wissenschaftstag in Braunschwig (2019-11)

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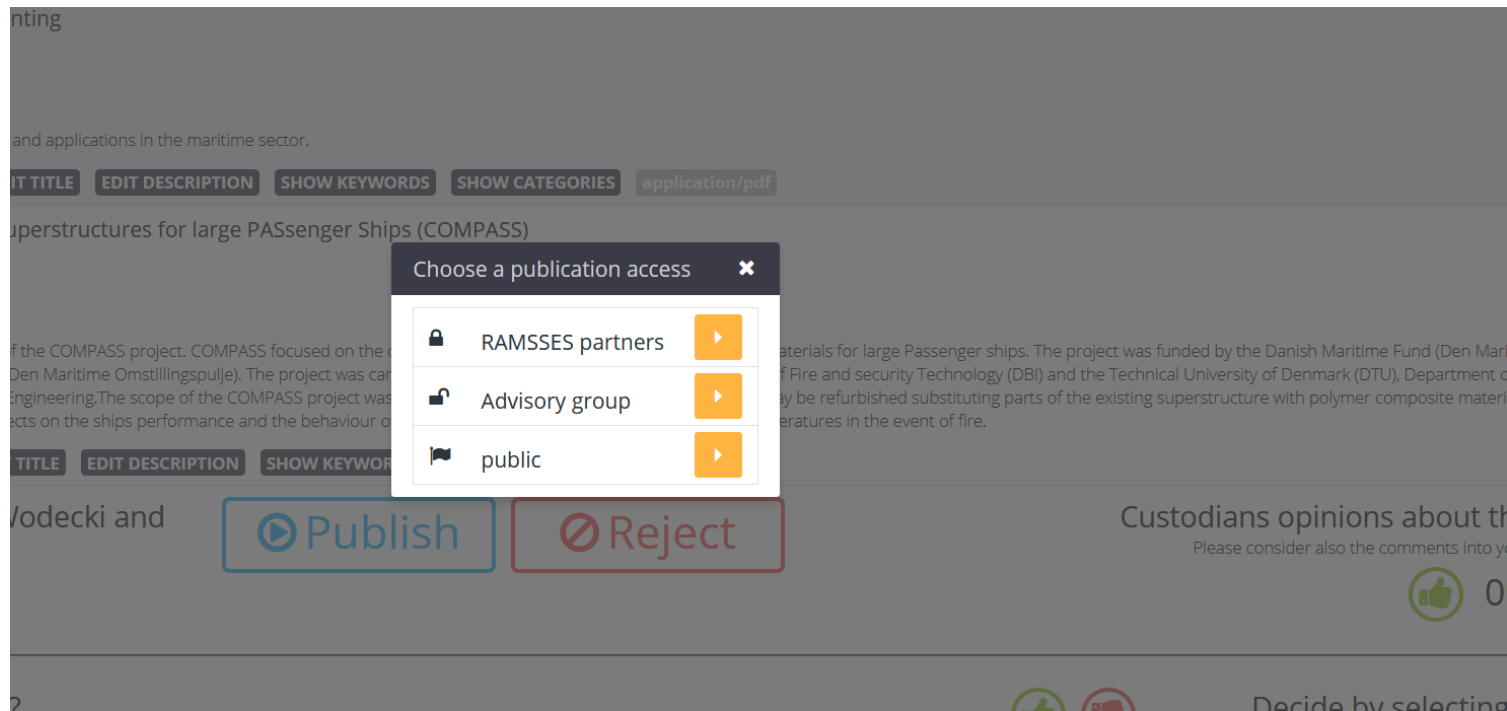


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9

- Releasing information
 - Dissemination levels to ensure that only authorised users get access
 - Currently, three levels have been implemented








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Documents: 215   1 2 3 4 5 6 7 8 9 10   10 

		Document 	
VG		<div> Modernising composite materials regulations</div> <div>Author: Vivian Garos</div> <div> 0% (0)  0% (0)</div> <div>One of the major inhibitors to the uptake of composites in new sectors is that regulations, codes and standards are often inappropriate for composites. This is because they are both explicitly and implicitly based on named materials, such as steel, and do not permit consideration of composites applications despite the strengths and benefits of the materials in many cases. This review provides important evidence supporting the primary aim of the RCS Working</div> <div>Document uploaded by Vivian Garos EDIT TITLE EDIT DESCRIPTION SHOW KEYWORDS SHOW CATEGORIES application/pdf</div>	 
MK		<div> NetComposites Green Guide to Composites</div> <div>Author: Marcus Koch</div> <div> 100% (1)  0% (0)</div> <div>Title: green guide to composites - Subtitle: an environmental profiling system for composite materials and products - Abstract: This guide has been created to allow the composites industry to understand the environmental and social impacts of different composite materials and manufacturing processes. The life-cycle impacts of each material and process choice from the cradle to the factory gate are presented in simple A to E comparative rankings, for the first time allowing informed decisions to be made on the environmental and social effects of composite materials and process choices.</div> <div>Document uploaded by Marcus Koch  EDIT TITLE EDIT DESCRIPTION ADD KEYWORDS ADD CATEGORIES application/pdf</div>	 
MK		<div> Reconfigurable tooling-Revolutionizing composites manufacturing</div> <div>Author: Ginger Gardiner</div> <div> 100% (2)  0% (0)</div> <div>an article from Composite world magazine, November 2017 edition, about the reshapable, reusable moulds/adaptive moulds</div> <div>Document uploaded by Marcus Koch EDIT TITLE EDIT DESCRIPTION SHOW KEYWORDS SHOW CATEGORIES application/pdf</div>	 

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Composite



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- ☐ Commercial content
- ☐ conference paper
- ☐ material data sheets and test reports
- ☐ nice to know (leisure reading)
- ☐ press release
- ☐ project deliverables
- ☐ related research

Author: Marcus Koch

 100% (1)  0% (0)

ly based on named materials, such as steel, and do not

- Definition of material properties and tests
- Storing material data
- Storing test data
- Searching for material with specific properties and passed tests
- Getting in contact with material developers and test institutes

- Storing material data
 - As parameters inside the data set
 - Complementary information might be attached as document

<div>h</div> <div>✓</div> <div>ICC-3-WP17 A Manufacturer: https://infracore-company.com/</div>			
Name	ICC-3	Manufacturer	https://infracore-company.com/
Polymer	Vinyl Ester	Fibre	Glass
Thickness of laminate	mm	Number of laminates	4 plies [45,45,45,45]
Core material		Thickness of core	mm
Coating	yes	Total product weight	kg/m ²
Density	g/cm ²	Fibre weight fraction	%
Fibre			

- Providing information about tests and their results
 - Mechanical tests
 - Fire tests
 - Noise tests
 - Other types of tests could be defined
- The database defines the relevant parameters and clearly shows which tests have been performed and which ones are missing.

EN ISO 1183-1:2004-05 Density	EN ISO 1172-1:1998 Textile-glass content	DIN EN ISO 527-4/3/2, Tensile test	DIN EN ISO 527-5, Tensile test	DIN EN ISO 14129:1997, Tensile test	ISO 14126:1999
ISO 3597-3:2003, compressive test	ISO 14125:1998, flexural test	ISO 14130:1997, ILSS test	ISO 3597-2:2003, flexural test	DIN 53293, 0 deg, Flexural test, 4 point bending	
DIN 53293, 90 deg, Flexural test, 4 point bending	ISO 14125 - 3-point bending	ASTM C 273/C 273M-07a, Compression shear test	DIN 53291, Compressive test		



Density

1.82 g/cm²

Test report name

WP-PB-MB-A31701-17.1-01

Number of tests

Criteria

No criteria defined

EN ISO 1183-1:2004-05 Density EN ISO 1172-1:1998 Textile-glass content DIN EN ISO 527-4/3/2, Tensile test DIN EN ISO 527-5, Tensile test **DIN EN ISO 14129:1997, Tensile test** ISO 14126:1999

ISO 3597-3:2003, compressive test ISO 14125:1998, flexural test **ISO 14130:1997, ILSS test** ISO 3597-2:2003, flexural test DIN 53293, 0 deg, Flexural test, 4 point bending

DIN 53293, 90 deg, Flexural test, 4 point bending ISO 14125 - 3-point bending ASTM C 273/C 273M-07a, Compression shear test DIN 53291, Compressive test




Maximum load per Unit Width stddev	73.9 kN/m
Maximum load per Unit Width mean	4.33 (8) kN/m
Shear strain mean	0.0127 (8)
Shear strain stddev	0.00412
In-plane shear strength mean	20.03 (8) MPa
In-plane shear strength stddev	1.179 MPa
In-plane shear modulus mean	3087.4 (8) MPa
In-plane shear modulus stddev	205.25 MPa
Number of tests	




























Criteria


No criteria defined

- Due to the generic nature of the data definition, the data sets can be customised to the requirements of the approval process.

Related parameters 

Drag and drop to reorder

Name		 
Manufacturer		 
Polymer		 
Fibre 		 
Thickness of laminate	mm	 
Number of laminates		 
Core material		 
Thickness of core	mm	 
Coating	<input type="checkbox"/> yes <input type="checkbox"/> no	 
Total product weight	kg/m²	 
Density	g/cm³	 
Fibre weight fraction	%	 
Fibre		 

 Add

Edit component

Name *

ISO 14125 - 3-point bending

Description

Creation date

09-Jun-2021

















Deactivate component

☐

Parameter manager

Related parameters 

Drag and drop to reorder

Maximum load per Unit Width stddev	kN/m	 
Maximum bending moment per unit width mean	kNm/m	 
Deformation on the outer surface of specimen mean	mm	 
Type of failure		 
Maximum load per Unit Width mean	kN/m	 
Maximum bending moment per unit width stddev	kNm/m	 
Deformation on the outer surface of specimen stddev	mm	 
Number of tests		 

+ Add

Material and test database to support Smart Track to Approval

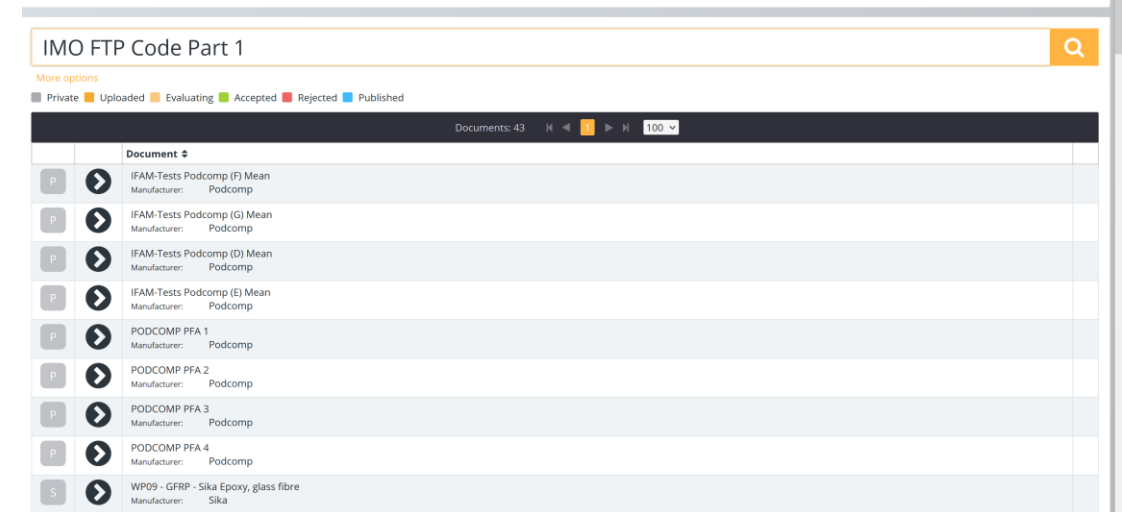
P	➔	IFAM-Tests Podcomp (F) Mean Manufacturer: Podcomp
P	➔	IFAM-Tests Podcomp (G) Mean Manufacturer: Podcomp
P	➔	IFAM-Tests Podcomp (D) Mean Manufacturer: Podcomp
P	➔	IFAM-Tests Podcomp (E) Mean Manufacturer: Podcomp
P	➔	PODCOMP PFA 1 Manufacturer: Podcomp
P	➔	PODCOMP PFA 2 Manufacturer: Podcomp
P	➔	PODCOMP PFA 3 Manufacturer: Podcomp
P	➔	PODCOMP PFA 4 Manufacturer: Podcomp
S	➔	WP09 - GFRP - Sika Epoxy, glass fibre Manufacturer: Sika
S	➔	SIKA GFK II Manufacturer: Sika
S	➔	SIKA GFK I B Manufacturer: Sika
S	➔	SIKA GFK II B Manufacturer: Sika
S	➔	SIKA CFK Manufacturer: Sika
W	➔	AEL-2-WP17 Manufacturer: www.aviationenterprises.co.uk
W	➔	AEL-3-WP17 A Manufacturer: www.aviationenterprises.co.uk

W	➔	AEL-3-WP17 B Manufacturer: www.aviationenterprises.co.uk
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W	➔	AEL-6-WP17 B Manufacturer: www.aviationenterprises.co.uk
H	➔	ICC-1-WP17 Manufacturer: https://infracore-company.com/
H	➔	ICC-2-WP17 Manufacturer: https://infracore-company.com/
H	➔	ICC-3-WP17 ICC2 Manufacturer: https://infracore-company.com/
H	➔	ICC-3-WP17 A Manufacturer: https://infracore-company.com/
H	➔	ICC-3-WP17 B Manufacturer: https://infracore-company.com/
H	➔	ICC-4-WP17 Manufacturer: https://infracore-company.com/
B	➔	Demo Set Manufacturer: BAL
P	➔	PFA-A1 Direction B WP 10 Manufacturer: Podcomp
P	➔	PFA-A1 Direction A WP 10 Manufacturer: Podcomp

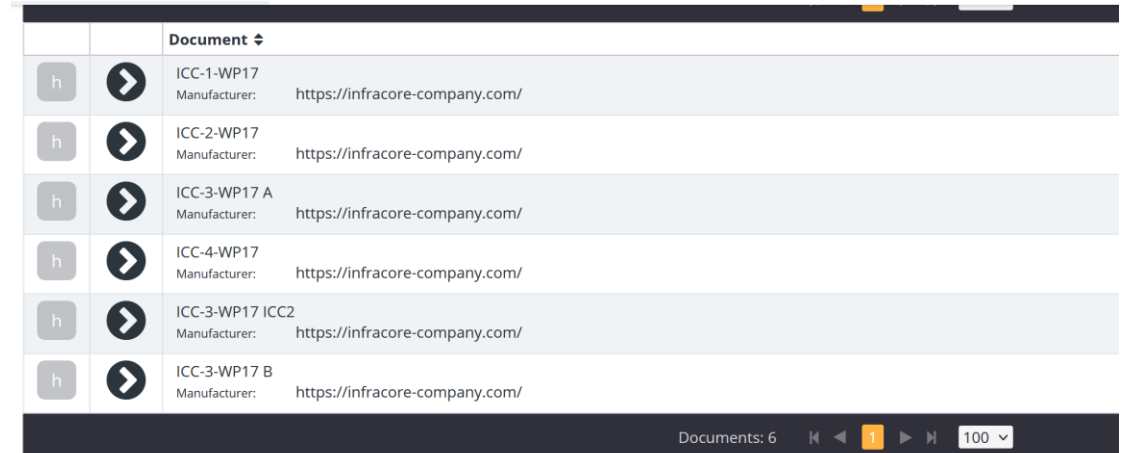
H	➔	ICC-4-WP17 Manufacturer: https://infracore-company.com/
B	➔	Demo Set Manufacturer: BAL
P	➔	PFA-A1 Direction B WP 10 Manufacturer: Podcomp
P	➔	PFA-A1 Direction A WP 10 Manufacturer: Podcomp
P	➔	PFA-B1 Direction A WP 10 Manufacturer: Podcomp
P	➔	PFA-B1 Direction B WP 10 Manufacturer: Podcomp
P	➔	PODCOMP-Sandwich Material Type D Direction A WP 10 Manufacturer: Podcomp
P	➔	PODCOMP-Sandwich Material Type D Direction B WP 10 Manufacturer: Podcomp
P	➔	PODCOMP-Sandwich Material Type E Direction A WP 10 Manufacturer: Podcomp
P	➔	PODCOMP-Sandwich Material Type E Direction B WP 10 Manufacturer: Podcomp
P	➔	PODCOMP-Sandwich Material Type F Direction A WP 10 Manufacturer: Podcomp
P	➔	PODCOMP-Sandwich Material Type F Direction B WP 10 Manufacturer: Podcomp
P	➔	PODCOMP-Sandwich Material Type G Direction A WP 10 Manufacturer: Podcomp
P	➔	PODCOMP-Sandwich Material Type G Direction B WP 10 Manufacturer: Podcomp
P	➔	PODCOMP Silicate Foam WP 10 Manufacturer: Podcomp
?	➔	GFRP WP 16 Manufacturer:
?	➔	CFRP WP 16 Manufacturer:
B	➔	WP09 - GFRP - Büfa Epoxy, glass fibre Manufacturer: Büfa

- Using the RAMSSES database to support the Smart Track to Approval
 - Storing all required data about materials
 - Making data available to shipyards and approval organisations in an easy-to-use yet comprehensive way
- Preparation of the material to cover all relevant information
 - Tests passed
 - Additional documents
 - Responsible persons for material development and tests
- Searching for relevant materials
 - Which tests have been performed? What results?
 - What are the mechanical properties?
 - Contacting the material supplier and test institutes to get additional relevant information

- Search for fire test IMO FTP Code Part I (Non-combustibility)
 - The system returns all materials that contain data for such a test
 - It is up to the user to check whether the test has been passed
- Limit the search to cover materials that have been tested according to ISO 525-5, Tensile Test or ISO 14129 Tensile Test
 - The filter will be applied to the results of the previous search
 - The user can now check which material fulfils the requirements of the planned application




	Document #
P	IFAM-Tests Podcomp (F) Mean Manufacturer: Podcomp
P	IFAM-Tests Podcomp (G) Mean Manufacturer: Podcomp
P	IFAM-Tests Podcomp (D) Mean Manufacturer: Podcomp
P	IFAM-Tests Podcomp (E) Mean Manufacturer: Podcomp
P	PODCOMP PFA 1 Manufacturer: Podcomp
P	PODCOMP PFA 2 Manufacturer: Podcomp
P	PODCOMP PFA 3 Manufacturer: Podcomp
P	PODCOMP PFA 4 Manufacturer: Podcomp
S	WP09 - GFRP - Sika Epoxy, glass fibre Manufacturer: Sika



	Document #
h	ICC-1-WP17 Manufacturer: https://infracore-company.com/
h	ICC-2-WP17 Manufacturer: https://infracore-company.com/
h	ICC-3-WP17 A Manufacturer: https://infracore-company.com/
h	ICC-4-WP17 Manufacturer: https://infracore-company.com/
h	ICC-3-WP17 ICC2 Manufacturer: https://infracore-company.com/
h	ICC-3-WP17 B Manufacturer: https://infracore-company.com/

- Looking into the details

- Material properties
- Test results
- Manufacturer contact

h		ICC-2-WP17 Manufacturer: https://infracore-company.com/	
Name	ICC-2	Manufacturer	https://infracore-company.com/
Polymer	Vinyl Ester	Fibre	Glass
Thickness of laminate	mm	Number of laminates	4 plies UD, tested perpendicular to main fibre direction
Core material		Thickness of core	mm
Coating	yes	Total product weight	kg/m ²
Density	g/cm ²	Fibre weight fraction	%
Fibre			
EN ISO 1183-1:2004-05 Density EN ISO 1172-1:1998 Textile-glass content DIN EN ISO 527-4/3/2, Tensile test DIN EN ISO 527-5, Tensile test DIN EN ISO 14129:1997, Tensile test ISO 14126:1999			
ISO 3597-3:2003, compressive test ISO 14125:1998, flexural test ISO 14130:1997, ILSS test ISO 3597-2:2003, flexural test DIN 53293, 0 deg, Flexural test, 4 point bending			
DIN 53293, 90 deg, Flexural test, 4 point bending ISO 14125 - 3-point bending ASTM C 273/C 273M-07a, Compression shear test DIN 53291, Compressive test			
	Maximum load per Unit Width stddev	10.2 kN/m	Criteria
	Tensile Strength mean	49.78 (7) MPa	No criteria defined
	Tensile Strength stddev	5.474 MPa	
	Tensile Modulus mean	11984.8 (7) MPa	
	Tensile Modulus stddev	394.42 MPa	
	Poisson's Ratio mean		
	Poisson's Ratio stddev		

- The RAMSSES database provides a comprehensive collection of information about RAMSSES results and background information.
- Information can be published on different dissemination levels.
- A major objective is the support of the Smart Track to Approval for innovative materials.
- The system is being populated at the moment and should be complete by the end of RAMSSES.
- After the end of the project, the platform will be made available publicly.
 - The conditions are under negotiation and will be released at a later point in time.



RAMSSES receives funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme under grant agreement n° **723246**.

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