WHAT KIND OF BUILT ENVIRONMENT FOR FUTURE GENERATIONS?

Bringing the solutions to the general public and the market

Christoph Müller
VDZ gGmbH

The projects have received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 760639 (EnDurCrete), 760824 (ReSHEALience) and 761072 (DACOMAT)
From Laboratory into Practice – Approach for Accelerating the Transfer of innovative materials in Civil Engineering

Knowledge Transfer into the Construction Industry

Funded by the German Federal Ministry of Education and Research

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Motivation

The projects have received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement Nº760639, 760824 and 761072.

Thematic calls from the *German Federal Ministry of Education and Research*

- **NanoTecture** (2009 – 2013)
  - „Nano Technology in the Construction Industry”
- **HighTechMatBau** (since 2014)
  - „New Materials for Urban Infrastructures”

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Motivation

Aim: Strengthening of the Construction Industry / internat. competitiveness

Material Innovation

Accelerated Transfer
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Major Findings

- Researchers
- Final Reports
- Publications

Exploitation Strategy

- Levels of Cognition (LoC)
- Options of Exploitation (OoE)

Support

- Technical Committees
- Publications
- Standards
- Conferences

Documentation

- Exploitation steps
- Overview

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Levels of Cognition (LoC)

**Basic findings**, e. g. as basis for subsequent application-oriented research activities

Large-scaled application-oriented findings, e. g. appropriate for **codes and standards**

Exemplary applications, e. g. as basis for **technical assessments and approvals**

Application-oriented findings as basis for further **product developments**
## Options of Exploitation (OoE)

<table>
<thead>
<tr>
<th>Consideration in subsequent <strong>research projects</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert <strong>publications</strong>, presentations and journals</td>
</tr>
<tr>
<td><strong>Lectures</strong> at universities, etc.</td>
</tr>
<tr>
<td>Guidelines and <strong>education</strong> materials for industry</td>
</tr>
<tr>
<td><strong>Status reports</strong> as preliminary step of standardisation</td>
</tr>
<tr>
<td><strong>Data sheets</strong> for industry</td>
</tr>
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<td>Set of <strong>rules</strong></td>
</tr>
<tr>
<td>- Codes of the WiTraBau-Partners; inclusion in existing or new codes</td>
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<td>- Technical Approvals</td>
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<td><strong>Application-oriented development</strong></td>
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<td><strong>Exploitation proposals by the Grants</strong></td>
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**Outcome – Example NanoTecture**

- **Basic Findings**
- **Large-scaled applic.-orient. Findings**
- **Exemplary Applications**
- **Findings as basis for product develop.**

**Levels of Cognition**

- Application-Oriented Development; 36
- Proposals by the Grants; 14
- Standards; 5
- Technical Approvals; 14
- Codes; 8
- Data Sheets; 26
- Reports; 21
- Guidelines; 21

**Options of Exploitation**

- 12 Projects
- 78 Findings
- 302 OoE

**Publications; 72**
**Lectures; 24**
**Subsequent Research; 61**
**Proposals by the Grants; 14**
**Technical Approvals; 14**
**Codes; 8**
**Data Sheets; 26**
**Reports; 21**
**Guidelines; 21**
What are suitable and field-tested cement types for production of concrete elements from UHPC?
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Transfer of Results into standardisation – Examples UHPC

- Nano-technologically optimized, sustainable, energy-efficient and, in particular, application-friendly UHPC (OLAF)
- Multi-functional roadways from nano-optimised concrete (UHPC\textsubscript{ROAD})
- Cold curing ceramics by means of nano-technological structure optimization
- Research on the nano-material UHPC for the application in the special underground construction taking into consideration economic and ecological aspects.

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## Construction elements and demonstrators with UHPC

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<td>Passenger car ramp (d (d = 6 cm)</td>
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What are suitable and field-tested cement types for production of concrete elements from UHPC?

Current state of discussion in Draft of the UHPC-Guideline:

- “…to be suitable for the production of UHPC are CEM I, CEM II/A (D, S, V, LL), CEM II/B (S, V, LL), CEM II/B-M (S-D), CEM III/A and CEM III/B acc. to EN 197-1.”
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hightechmatbau conference Berlin 2018
www.hightechmatbau.de

YouTube-Kanal
Die Filme des Förderschwerpunktes HighTechMatBau finden Sie auch im Videoportal YouTube.

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Summary

• Define the Levels of Cognition (LoC) you exspect to reach e. g.
  - basic findings,
  - basis for further product developments,
  - as basis for technical assessments and approvals,
  - appropriate for codes and standards,
  - in European research projects Technology Readiness Level (TRL)

• Define the Options of Exploitation (OoE) e. g.:
  - Consideration in subsequent research projects
  - Expert publications, presentations and journals
  - Guidelines and education materials, data sheets for the industry
  - Inclusion in existing or new standards, basis for technical approvals

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Acknowledgement

Thank You!

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