

The logo for AZL, consisting of the letters 'AZL' in a bold, green, sans-serif font.

New Potentials for Composite Technologies in Buildings & Infrastructure  
Joint Market and Technology Study

Markets and Applications | Materials | Production Technologies | Business Cases

In cooperation with

The logo for AK, featuring the letters 'AK' in a large, blue, stylized font. Below it, the text 'INDUSTRIEVEREINIGUNG VERSTÄRKTE KUNSTSTOFFE' and 'FEDERATION OF REINFORCED PLASTICS' is written in a smaller, blue, sans-serif font.

**AK**  
INDUSTRIEVEREINIGUNG  
VERSTÄRKTE KUNSTSTOFFE  
FEDERATION OF REINFORCED PLASTICS





Building

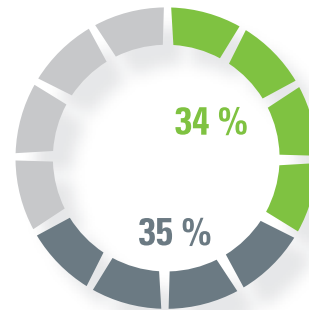
Buildings & Infrastructure

## Two markets – limitless opportunities

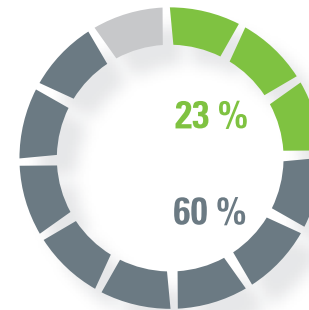
Buildings & Infrastructure are – comparable with the transportation sector – markets with enormous potential for lightweight materials and related technologies. Moreover, they will continue to grow.

The new construction but also the rehabilitation and the renovation of existing Buildings & Infrastructure components will play a decisive role. These markets are interesting for all players along the value chain of innovative materials.

Glass fiber (European market)



Carbon fiber (global market)



The B&I markets in comparison to transportation markets

- Buildings & Infrastructure
- Transportation

Based on data of market report AVK 2014

Basis for the business

## Technology and market knowledge

For a target-orientated development and in order to open up new business areas, a well-founded basis for strategic decisions is required.

In order to benefit from booming markets, it is necessary to build up a technical expertise, but also a well-grounded knowledge of market-specific information.



What kinds of applications are existing?

Which components, materials and production technologies are used today?

How big is the economic potential?

Who are the key-players and how are the value chains structured?

What kind of demands and barriers can be derived?

Which developments and scenarios are promising to overcome the technological and economical barriers?





Together

## Advantages and possibilities

1

### Market research as a joint study

In the framework of a joint study, you will jointly benefit from the knowledge of all participants and experts who are involved into the project. Additionally, a joint study means a lot of project partner and less temporal and financial effort for the participants. During the course of the process, you will be a direct part of the study and it will be possible to influence the progress according to your specific demands.

2

### Technical knowledge and marketing intelligence

The sole combination and concentration of technical expert knowledge and market intelligence expertise at the AZL in the sector of lightweight materials, production technology and application know-how is unique. It opens up new markets and technological solutions you did not know until now.

3

### Competences and capacities

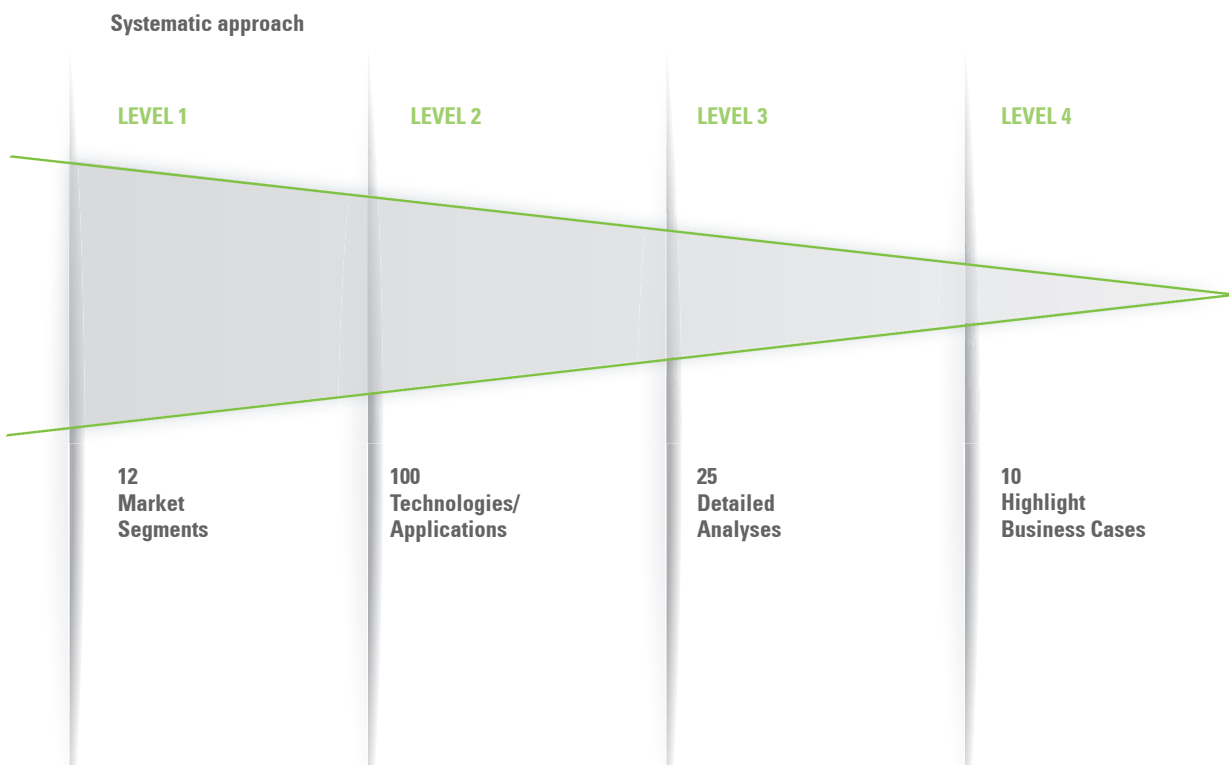
We accompany you not only during the execution of the study. We support you also during the realization, because everything we identify in the frame of the study will be possible to realize. The AZL and the partner institutes of the RWTH located within walking distance possess the capacities, the competences but also the necessary hardware for transferring concepts into reality.



**Facts**

We are analyzing the markets and determining where and with which products, materials and production technologies you will open up new business opportunities. Therefore, we are creating and rating new scenarios for high potential applications and provide necessary information to support your product and service development.

Our approach has been successfully implemented within a branch independent joint study with 34 participating international companies along the entire value chain. As a result from this huge success, we set up our actual Partnership Network, various joint and bilateral development projects on the identified challenges as well as topic-related industrial workgroups with regularly semiannual meetings.



## 6 Months – 3 Steps

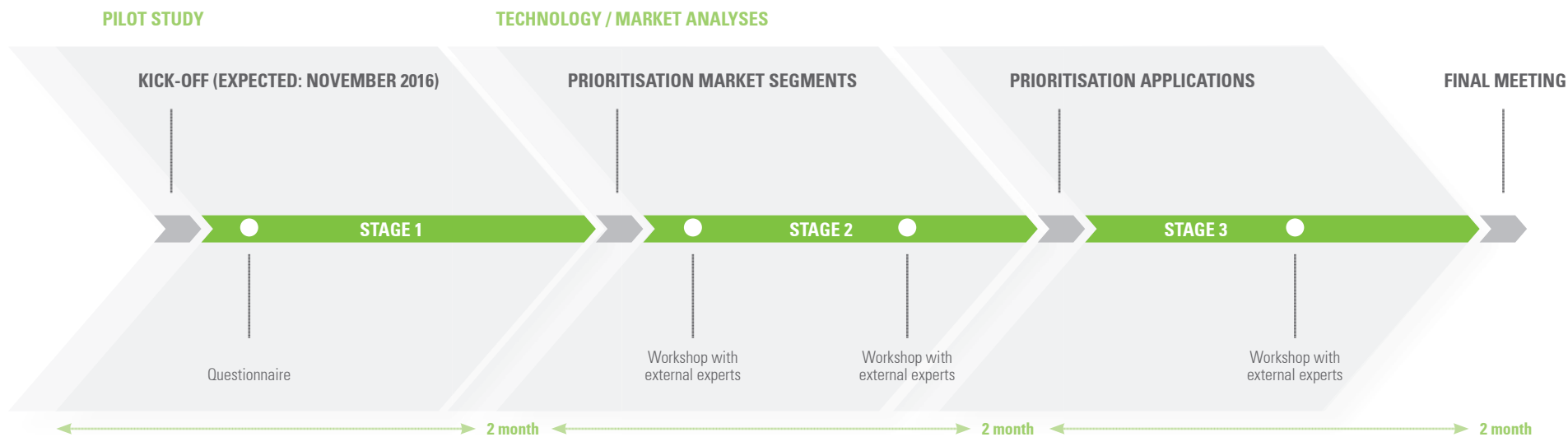
The completion time of the study is about 6 months. In 2 prioritization workshops, we determine the key segments as well as 10 technologies/applications with the highest market potential. In 3 other workshops, we convey you external experts concerning the selected segments and applications.

In **step 1**, we first analyze the markets Buildings & Infrastructure. On the basis of the data of this first pilot study, we select from the first workshop 12 segments in order to find 6 “key segments”, which promise particular big potentials.

In **step 2**, we subject the key segments a systematic analysis and derive approx. **100 technologies/applications**. Market sizes, technological criteria and market regulations determine the first preselection of 25 technologies and applications of the selected applications.

In **step 3**, we identify in a second workshop 10 technologies/applications **with the most promising market potential**. The 10 selected technologies / applications will be used for further business case analyses including the derivation of relevant required process chains and technologies, materials, services, suppliers as well as detailed cost analyses.

In the final meeting, we **present the 10 detailed business case analyses including** solution concepts for the realization of profitable production chains which can be realized in proof-of-principle follow-up projects together with AZL.



**Be part of the study**

Due to the holistic consideration of markets, applications, materials, production technologies and the corresponding production chains, the study delivers key information to the participants of all steps of the value chain.

- Material supplier
- Molders
- Service Providers (e.g. architects)
- Producers of systems and production lines
- Tier 1/2
- End users (e.g. construction companies)

**Expected start of study: November 2016**

**Be partner of the AZL.**

Generally, the activity of the AZL is not limited to the execution of market and technology studies. In many aspects, our partners benefit from the direct contact to the AZL and to the RWTH Aachen.

**Discount for AVK members and AZL partners**

AZL and AVK – Federation of Reinforced Plastics e.V. are cooperating in this study. Both, AZL partner companies and AVK member companies can benefit with discount on the project fee.



In cooperation with



Project fee for **external participants:**

Number of employees	Project fee per participant*
< 250	12.000,- Euro
250 – 500	15.000,- Euro
> 500	20.000,- Euro

Project fee for **AZL partner companies:**

Number of employees	Project fee per participant
< 250	8.000,- Euro
250 – 500	10.000,- Euro
> 500	12.000,- Euro

\*AVK member companies can participate with a 15 % discount on the project fee for external participants.





Competences

Collaboration in research

## AZL of RWTH Aachen University

RWTH Aachen University is one of the world-wide leading universities in the field of production technology. The collaboration with the industry is one of the main pillars of success. To take collaboration to the next level, RWTH's campus is actually being expanded with 19 new cluster buildings for joint research between industry and academia at a total investment of about 2 billion €. Within this inspiring environment, the Aachen Center for Integrative Lightweight Production (AZL) consolidates the lightweight expertise of eight partner institutes with 750 scientists.

**AZL** **RWTHAACHEN**  
Aachener Zentrum für  
integrativen Leichtbau **UNIVERSITY**

Within walking distance, it is possible to find all competences for the development of new lightweight materials and components as well as the appropriate process chains. Since 2012, the AZL cooperates with its partner institutes to make lightweight construction suitable for series production due to interdisciplinary cooperation between the material science and production technology.

Being a research institute, the AZL of RWTH Aachen addresses teaching activities as well as basic research and development of lightweight products, materials, production processes and systems and has access to the latest full-scale machines and automation systems.





Development

Cooperation with the industry

## The AZL company network

**AZL**  
Aachen GmbH



AZL transfers this scientific research and development to industrial application in close cooperation with AZL Aachen GmbH, a service provider collaborating with companies in the field of lightweight production technology. AZL Aachen GmbH offers industrial services in the areas of engineering, consultancy and project management, networking and business development. This has a great advantage for the commercial partners: The AZL is a central contact in the case of interdisciplinary research and development projects.

In the AZL Partnership, the AZL works closely in regular meetings and projects with more than 70 international companies involved in lightweight production.

Research network

Partner institutes along the whole value chain



The Buildings & Infrastructure study will be conducted with our partner, the Institute of Building Materials Research and Chair of Building Materials



A significant part of IBAC's services is testing building materials. IBAC is also an authorized testing, inspection, and certification agency in accordance with the State Building Regulations and a certification office according to the Building Product Act.

International industrial network

More than 70 partner companies







**Mr. Justin Jin**

AXIA Materials, CEO, Korea

“Our fast developing company is specialised in thermoplastic composite sheets, offering a unique selling point of organosheet in widths up to 3 meters and zero VOC. This is predestined for applications in B&I. We’re thrilled to be part of AZL’s B&I study and expecting broad information regarding applications and potential customers. Furthermore, the networking aspect of the consortial study is one main motivation, to generate new business.

I believe this AZL’s B&I study will be a starting point of combining all of the existing composite solutions into Building section and will create other huge value for humanity as well as for composite industry.”

**Thomas Wegman**

Aliancys, Marketing Manager

“Aliancys is pushing the limits of both composite part manufacturing and performance by taking an integral approach to new product development. B&I is already one of our key markets, where we are working with our customers and channel partners to create exciting new applications. We strongly support taking a structured approach to identify new opportunities for composites, quantifying the benefits these versatile materials can bring and identifying how to make conversion a true success.”

**Dr. Andrew Willett**

Toyota Motor Europe, Manager Advanced Production Processes and Measuring, Belgium

“One of my major contributions to the success of Toyota is the early identification of new technologies, especially related to advanced materials. Besides close cooperation with AZL in various development projects, we regularly use their expertise in market and technology studies. Our engagement within AZL’s first, branch independent, consortial study in 2013 strengthened our insight into the challenges and opportunities for application of composites from the perspective of the supply chain and end users in other industrial sectors.”



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# Reply Form

## Joint Market and Technology Study "Buildings & Infrastructure"

Company: ..... Name: .....

E-mail address: .....

**Please answer at the latest by  
October 14<sup>th</sup> 2016**

by fax: +49 241-8904-6150  
or by email: [info@azl-aachen-gmbh.de](mailto:info@azl-aachen-gmbh.de)

The project will start November 2016

- We are interested in participating in the study and would like to receive a detailed project offer.
- Please contact us: We would like to discuss the details in person.

- We are already convinced and will participate in the Market and Technology Study "Buildings & Infrastructure". Hereby we order the participation in the study bindingly:

Project fee is depending on number of employees:

AZL Partner Companies pay a more reduced fee:

- |   |                          |   |
|---|--------------------------|---|
| <input type="checkbox"/> < 250 employees:     | 12,000.00 € (excl. VAT)* | 8,000.00 € (< 250 empl.); 10,000.00 € (250 – 500 empl.); 12,000.00 € (>500 empl.) |
| <input type="checkbox"/> 250 - 500 employees: | 15,000.00 € (excl. VAT)* |   |
| <input type="checkbox"/> > 500 employees:     | 20,000.00 € (excl. VAT)* |   |

**\* Regular Price. AVK Members will get a discount of 15%.**

*Payment: 50% in advance after receipt of order (Nov. 2016), 50% after end of project (2017). Note: All payments are due within 30 days after receipt of the invoice without deduction. The purchase tax, according to the applicable statutory tax rates is to be added to the mentioned fees (currently 19%).*

Customer-specific purchase order number: .....

VAT number: ..... *VAT number only for customers within the EU (except for Germany)*

\_\_\_\_\_  
Name, Signature

\_\_\_\_\_  
Date

*The project will start in Nov. 2016, if a minimum of 25 companies placed the order. In the case the expected number of at least 25 participating companies cannot be reached until October 31st 2016, the received orders will be cancelled after written consultation of the companies and the received deposits will be returned by November 30th 2016.*