THE ISOCELLER

THE ISOCELL MAGAZINE
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ISOCELL

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THE WORLD DOES NOT NEED A MAGAZINE ABOUT CELLULOSE INSULATION.

The world of ISOCELL is large, diverse and innovative. And by this we do not mean only our new headquarters that has recently become our new home. In recent years, in a close exchange of information with our customers, we have developed from a manufacturer of cellulose insulation into a company that offers innovative solutions for thermal insulation. From now on we want to let you know about these solutions and our wide range of products as well as about our partners and companies who, with their ideas, are in line with our vision of a sustainable future.

And there is no better medium for telling stories and sharing ideas than a magazine. You are holding the first issue of THE ISOCELLER in your hands. 52 pages that will acquaint you with our vision and our ideas. From page 4 onwards you be guided through our world and our headquarters, a tour through the world of ISOCELL.

From page 12, our Company Secretary, Gabriele Leibetseder explains how ISOCELL established a trend and why the company may soon be able to offer the first CO2-negative products. On page 24 the Production Manager of the first ISOCELL cellulose plant in Hartberg gives an insight into the evolution process of an extraordinary thermal insulation material.

ISOCELL is a part of a sustainable family that is convincingly green. So that there is still a tomorrow. The innovative electric cars from Tesla, whose extraordinary business model is portrayed from Page 18, are equally as related to ISOCELL as Reinhold Barta.

We have dedicated our Culinary Special in the first issue of THE ISOCELLER to the passionate bio-brewer (page 44). Here we want to tell you about these things and many more besides.

Enjoy the world of ISOCELL in magazine form!

Your ISOCELLER,
Anton Spitaler

WHAT THE ISOCELLER STANDS FOR

WE THINK OF TOMORROW

EDITOR: **THE ISOCELLER**

At a time in which nature is threatened by climate change and waste of resources. ISOCELL not only stands for a sustainable lifestyle but a new way of thining.

When ISOCELL is mentioned people immediately think of thermal insulation made of waste paper. But ISOCELL is more than just insulation. Come with us - on a journey through our world.

24 YEARS ISOCELL

FROM CANADA
TO SALZBURG

The ISOCELL story really begins in Canada – more than 100 years ago. This is where the first form of cellulose originated. From this tradition the company founder, Anton Spitaler, had a great idea and in 1992 a company came into existence in Neumarkt am Wallersee, near Salzburg. From here, local and foreign builders were gradually introduced to the green revolution in insulation.

FIVE COUNTRIES WITH
A PARENT IN AUSTRIA

Meanwhile the company employs 59 people at the Neumarkt location alone. If we also count the sales subsidiaries in Germany, Sweden, Switzerland and France, as well as the employees at the 5 plants at Hartberg, Schoppen (Belgium), Plourin-lès-Morlaix and Servian (France) and Tibro (Sweden), the ISOCELL team now consists of almost 140 persons.

SOLUTION PROVIDER IN
AIRTIGHTNESS ISSUES

But ISOCELL can do much more. Besides cellulose insulation it has made a name for itself with tradesmen and installers as a solution provider in matters related to airtightness. And, since the mid-1990's it has also been selling roofing membranes, wind seals, vapour barriers and adhesive systems under the trade names AIRSTOP and OMEGA.

3,190 SQUARE METRES

The new ISOCELL head office was opened in 2015. It came into being just a stone's throw away from the old headquarters. A building complex in stone and timber construction providing 3,190sqm floor space on up to three storeys. And its planning was orientated mainly to the company's needs.

Worth seeing and innovative – inside as well as outside: The new ISOCELL head office opened its doors in 2015

ISOCELL stands for building bridges from company management to nature and sustainability.

LIVING IS IMPORTANT FOR US

BUILDING BRIDGES

It is only a stone's throw away from the old to the new headquarters. And from this bridge we can even see it. The old timber hall, too, where nowadays only tests are carried out.
The bridge connects not only buildings. The bridge stands for many things our company also stands for: at ISOCELL we build bridges.

THE TRAINING ROOM

The sharing of knowledge is a philosophy at ISOCELL. Anyone wanting to work with our special sustainable insulating technology needs training. Here the company trains and shares knowledge; and greets experts from all over Europe for Expert Days.

THE KITCHEN LABORATORY

Those who plan their own office and are known for innovation, are also creative in planning. ISOCELL is famous for its research and in the past a normal kitchen acted as a laboratory for some experiments. The fact that there are now two kitchens proves just how worker-friendly the new building was designed. In one we do indeed eat, in the other we satisfy our appetite for new knowledge. The laboratory between the offices does not only look like a kitchen, it is equipped as such. There are kitchen appliances such as an oven, freezer, extractor fan. However, not for preparing food but for tests concerning ISOCELL's next innovations.

Either you are an ISOCELLER or you are not - our staff live the pioneering spirit

SMART PEOPLE, THESE ISOCELLERS

WHERE THE ISOCELLERS WORK

A LABORATORY FOR TECHNOLOGY
Josef Putzhammer, Christian Nöhammer, Christian Pohn and Petra Buklin at a very special work place: in the laboratory. Here research and tests are carried out.

THE MEETING PLACE
An open-plan kitchen encourages chance meetings. Here Sandra Drachschwandtner (left) and Juliane Sampl (right) happen to meet machine technician, Wilhelm Paischer.

ORDER IS A MUST
Our head office also has large storage space. And there you will find Sabrina Thaler, Thomas Willingstorfer, Norbert Schmidhuber and Johann Heinrich (from left to right).

AIRTIGHT DIVERSITY
Roof membranes, façade membranes, vapour barriers, adhesive systems – staff in the airtight department are kept busy with dispatch and quotations. Tanja Blechinger, Jasmin Eder, Daniel Ruthner and Melanie Eggenberger (from left to right) are responsible here.

NUMEROUS
Our accounting department does not only handle figures, numerous members of staff have gathered in the break room: Elvira Voggenberger, Ernst Angerer, Sylvia Klinger, Sabine Achleitner, Manuela Riesner and Anita Helml (from left to right).

DATA PROCESSORS
Our IT ensures smooth running of our data processing. The DP experts are: Markus Moser (left) and Richard Fellinger.

DISTRIBUTED
The department responsible for blow-in insulation distributes, coordinates and invoices a part of ISOCELL's products. In the photo: Martina Dürager, Eva-Maria Schwarzmayr and Isabella Klinger (from left to right).

WELL ORGANIZED
They are well organized in the kitchen and are the same in their day-to-day work. The Logistics and Purchasing Department managed by Hans-Peter Pöllmann, Roland Doppler, Andrea Katzlberger and Robert Buchner (from left to right).

WE ALSO THINK ABOUT THE DAY AFTER TOMORROW:

ISOCELL'S PATH TO PRODUCER OF FERTILIZER

Josef Putzhammer, ISOCELL Building Technology and Research

At ISOCELL we try to think about tomorrow today. And even further ahead. As proud as we are of our history, our cellulose insulation has been used for a relatively short period of only 20 years. Today it is perhaps obvious to hardly anyone but this means that theoretically, at some time in the future, we could produce a great amount of waste. If we look at the life cycle of a building, many buildings where cellulose was used for insulation are torn down after about 40 years.

In the practice waste is only produced theoretically with our cellulose insulation. For two good reasons: on the one hand our recycled insulation made from used paper can be blown up to three times without any problems and lasts for decades. On the other hand, even when it has become too fine for re-use after repeated installation, it is by no means a waste product.

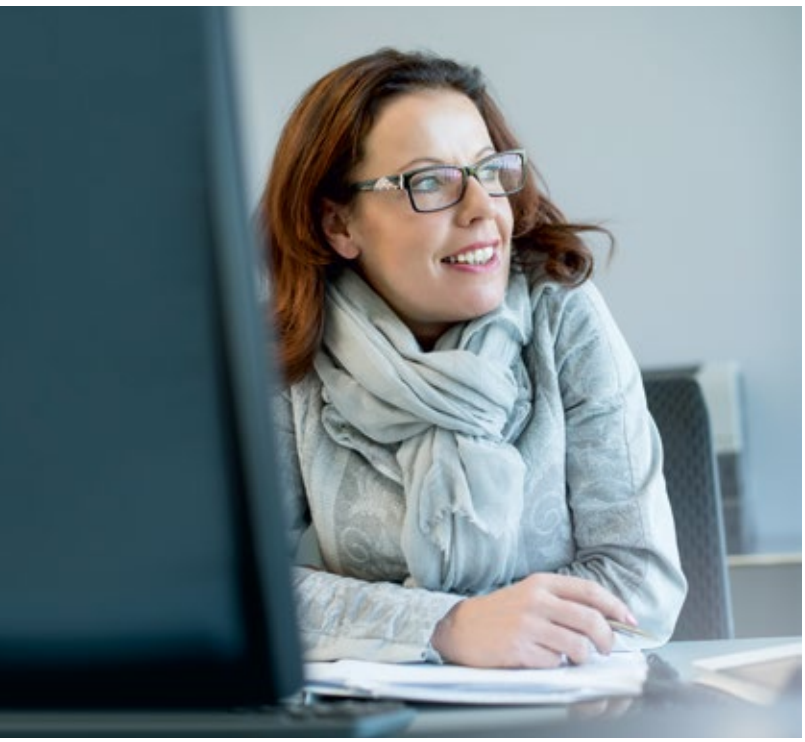
Recently an award-winning project was completed in which students of the HBLA (Agricultural College) in Ursprung and ISOCELL together found a way to recycle cellulose insulation into a highly efficient agricultural fertilizer. Only subsequent processing in the form of a carbonization process is needed. So, in a few years, old cellulose could become ISOCELL boron fertilizer. This would be a substance that can still bind harmful CO2 in the earth in the long term.

When we think of tomorrow, cellulose is superior to other insulation materials with regard to sustainability, moisture regulation, thermal storage, air resistance and heat protection. When we think of the day after tomorrow too, then cellulose insulation is again superior to its competitors at the end of its life. Think of polystyrene, an insulation which, after being removed from a demolished building, must be classified as: special waste.

“WE HAVE ESTABLISHED A TREND”

EDITOR: **THE ISOCELLER**

Gabriele Leibetseder is Company Secretary at ISOCELL and also an expert for the world of sustainable innovations. An interview about pioneering work, in particular corporate culture and CO2-negative products.



Gabriele Leibetseder lives ISOCELL and the company's vision of sustainability

Gabriele Leibetseder, there is an organigram in the new ISOCELL headquarters. Almost all arrows in this illustration point to the centre – to you. Yet, you are actually in charge of the sales and technology departments. Are you the woman for everything at ISOCELL?

"We have established a trend that is now being copied".

Yes, everything converges here. But that is not all. Although I am indeed in charge of Sales, I do not tell the employees what to do but they discuss further procedure with me. We ISOCELLERS are a little different – in a positive sense. Our employees think independently and innovatively. We live the pioneering spirit and positive feelings. This may sound somewhat exaggerated but it is our experience from recent years. A good example is our Controller who is best described not as a tame number-juggler but as someone who tries to provide me with key values for lay-understanding so that sometimes I have to say: "But I still need a few figures". (laughs)

The feeling that things at ISOCELL run a little differently than at most comparable companies of this size is conveyed last but not least by the special atmosphere in the new, highly modern head office that was only opened last year. How did this building come about?

The new building was necessary as we continued to grow and wanted to become more efficient in our daily work together. We now have considerably shorter distances to cover and that is beneficial to our mutual daily work. The path to this architectonic concept that was geared to our requirements, was long. We had eight plans of how this building could look and long discussions on the various challenges. We approached these in a practical way. When we were uncertain about the route of the incoming trucks, we quickly decided to have a model built and drove distances to scale with small model cars. In this way we found solutions in an almost playful manner.

ISOCELL likes to think ahead – not only about the construction of our new headquarters. The company rates as pioneer in the field of cellulose insulation and airtight systems. How did this come about?

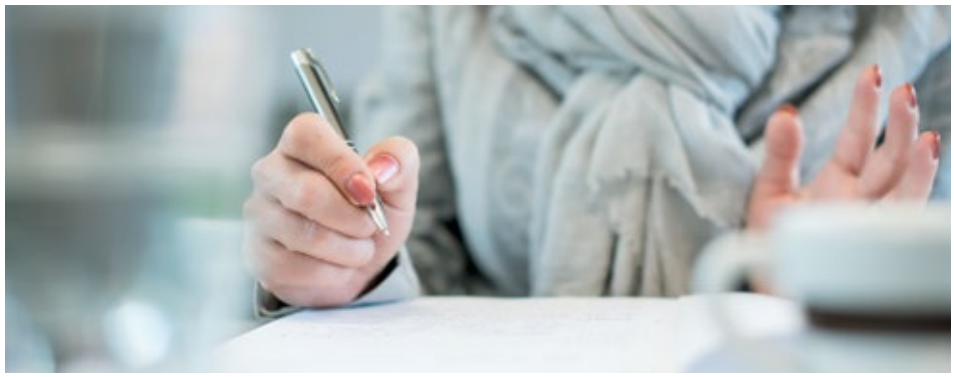
We have indeed established a trend and that is why we are copied today. The pioneer was the company founder and current Managing Director, Anton Spitaler. A person who knows no limits, is very connected with nature and has always lived an ecological and sustainable life.

After completing his military service he found a mentor in Ewald Berendt at the DIHAG company and was soon working with innovative, biological materials such as cork and coconut fibre. New ideas and products resulted

from Berendt's experience and Spitaler's innovative spirit: one of these was cellulose insulation, blown-in insulation made from newspaper. As the product did not suit Dihag's portfolio, ISOCELL was created as a brand name in 1992.

Yet, ISOCELL is far more than just cellulose insulation and has a wide product range. Would the well-known and popular cellulose alone not have been relevant enough on the market?

It is an innovative and popular product but airtightness and our broad product range with roof façade linings or vapour barriers make our range complete. Besides, the interplay of insulation components is of great importance. There is a reason why we began to focus on airtightness: if the vapour barrier does not seal well our insulation cannot be blown in. The positive side effect is that we offer materials that every carpenter needs. We have been able to reach out to so many people who did not know our insulation or were still not convinced by it. You could say: the other products open the door for our pioneer work as a sustainable insulation supplier.



"We even think green. ISOCELL has always been of the opinion that C02 should not stay on the road. We built a plant wherever the customer markets in Europe are largest."

If we remain on the subject of cellulose insulation for a while: how sustainable is this form of insulation really?

Recently a new European project started to grade building material using letters depending on its ecological footprint, in the same way as refrigerators or washing machines are rated. When viewed in its entirety cellulose insulation rates best when installed in what is considered the typical way. Mainly because we use so little energy in production and our raw material is recycled material. For this reason we pose a danger to other competitors such as mineral wool and are hindered at European level. For example, our product standardization has been blocked for three years at European level. Awesome test scenarios are invented, piloted by opposing lobbies, in order to impede the success of cellulose insulation. Even in France we are greatly hindered – e.g. by the Ministry for Technical Approval. For approval that is valid for three years we pay as much as mineral wool manufacturers pay for a seven-year approval. This is no conspiracy theory and not falsified PR – but simply facts that we are stating. In contrast there are numerous external tests carried out by Research and Test Institutes, such as Holzforschung Austria (Austrian Forest Products Research Society), Carinthia University of Applied Sciences or the Technical University of Dresden, where cellulose insulation repeatedly proved advantageous compared with other materials. Whether this concerned heat or sound protection, moisture behaviour or resistance to rotation flow that have a great influence on the real insulation value.

ISOCELL products last for decades - there is alteration work where cellulose insulation looks like new after 23 years. But even the best of insulation is subjected to external influences, for example the threat of water ingress. Can this be countered?

The problem is not to repair the damage but to recognise it. That is why we are currently researching in the field of monitoring. We want to monitor a roof with sensors. This is a big task for the future. Water comes exclusively from outside and not because the roofer did bad work but perhaps because ground wasps caused a hole to form. As membranes are used as seals, the leaks are not recognised.

ISOCELL rates as an innovative leader and is known for investing a great deal of money in research.

Together with pupils from the HBLA Ursprung we have developed a method in which cellulose insulation can be used to produce a valuable plant fertilizer. For this purpose a special component of insulation is used: boracic acid. This part of the insulation acts as natural fire protection. However, in farming boracic acid is a valuable fertilizer. In the procedure used by the HBLA students the insulation is carbonised at over 500° into a carbon-boron mixture. For many plants boron is a vital trace element. The carbon in the mixture has been binding atmospheric CO2 for centuries and provides fertile soil for plants. There is no official approval yet but we are only a small step away from being in a position to supply the only insulation in the world that is not only CO2-neutral but even CO2-negative.

Meanwhile ISOCELL has around 140 employees locally and abroad and produces in Austria, Belgium, France and Sweden. Is worldwide expansion a target for the future?

We already have enquiries from all parts of the word. We have supplied to South Korea, Japan and Israel. Via Denmark we are also represented on the Faroe Islands and, thanks to the French overseas territories, even in New Caledonia in the Pacific. A project in America together with a partner is also in the offing. But this simply happened to us and we are not forcing it. Actually we do not want to go too far away and are satisfied with our focus on Europe. And there is a simple reason for this: we think green, too. ISOCELL has always been of the opinion that CO2 should not be left on the street. Where the market is large in Europe we have built plants – in this way we ensure shorter production paths that also benefit the environment.

ISOCELL WINS AFTER 90 MINUTES

A burning question and a really hot topic: is the fire protection factor a negative aspect of insulation made from waste paper?
No.

A recently published test carried out by the 'Danish Institute of Fire and Security Technology' confirmed that there is no 'significant difference' in burning behaviour between glass wool, mineral wool and Isocell cellulose insulation within the first 90 minutes. In the past, fire protection was often used as an argument against cellulose.

THE DRIVING REVOLUTION

EDITOR: **THE ISOCELLER**

Tesla, electric car manufacturer, is about to turn the automobile industry upside down with its Model 3. Thanks to a very special strategy.

Elon Musk was 12 years old when he sold his first computer game for 500 dollars. And a little later, during a short phase of self-discovery in his youth he decided that he wanted to save the world.

The South African is one of the great doers of the present. In 1999 he sold his first start-up Zip2 for 307 million dollars to Compaq, later he founded the online payment service Paypal. Meanwhile he is 44, builds rockets and wants to soon offer trips to Mars – and since the start of the noughties he has been working on making a large contribution to indeed save mankind. At least from the effects of climate change. Because, with his Tesla brand he has made the electric car socially acceptable. With a very special strategy that began exactly ten years ago. In 2006, and after a three-year development period, Musk presented the Tesla Roadster. A two-seater sports car with a 215 kW strong electric motor in the boot. With only one gear and a lithium-ion battery pack whose strength was 6,831 times as powerful as a commercial laptop at that time. Range 340 kilometres, acceleration from 0 to 100 km/h in 4.02 seconds. An elegant electric car in a very modern style. The first mass-produced of its kind. But the price was high: 109,000 dollars.

The next two Tesla models that were soon to follow, were anything but cars for the ordinary person. The Tesla S saloon appeared on the German market in 2013, priced at EURO 65.000. With 5 seats as well as two optional children's seats and a range of up to 500 kilometres the company took a step into the mass market. With an acceleration of 0 to 100 km/h in 3.4 seconds the elegant S model was rather more a competitor to the BMW 7 series or to the Mercedes Benz S Class. And also the X model, in mass production since last autumn, is practically only for the high-income earners at a price of EURO 75.000.

So what sort of a strategy is it that produces cars only for people with a high income? One where, of all things, a sports car such as the Roadster with a high lifestyle factor is supposed to herald in a change in peoples' views of an energy-efficient future? "New technology always has a high unit cost before it can be optimised. Tesla enters the market at the top end where consumers are used to paying high prices," Elon Musk explained even before the first Tesla was sold.

ANDREAS ÖSTLUND, CEO ISOCELL SWEDEN AND OWNER OF A TESLA

"I have driven a Tesla S since last August and am very satisfied. There are several reasons why I made this decision. This car is ahead of its time and with its values of sustainability and environmental consciousness it suits the world of ISOCELL. By the way the Tesla S sold better in Sweden in 2015 than comparable high-class cars of other manufacturers, such as the BMW 7 series or the Mercedes S Class."

"New technology always has a high unit cost before it can be optimised. Tesla enters the market at the top end where consumers are used to paying high prices."

He not only wanted to offer the complete range but had a clear vision. With an elegant, fast and highly praised sports car such as the Roadster, Tesla was able to show that electric motors could be superior to internal combustion motors. With the income from the Roadster it was possible to build a five-door sports model at almost half the price – the model S. In turn, with the income from model S it was possible to develop a more family-friendly car. With these three models Tesla had succeeded in creating a brand whose electric models stand for innovation, lifestyle and elegance. And so the electric car was ready for the mass market.

SEARCH
The supercharger charging stations are shown on the vehicle's 17" touchscreen

CHARGING
Enjoy the break with a coffee or a snack while the car is charged

DRIVE ON
The Tesla app tells you as soon as your car is fully charged

Proof that the strategy would succeed came on the 31st March 2016. It was time for a presentation that had many parallels to the product introductions of Apple's Steve Jobs: Musk was celebrated on stage like a popstar as Tesla rang in the era of the lifestyle electric car for everyone. With model 3 – a mid-range car at an introductory price of 35,000 dollars. With ample space for five adults, a range of 350 kilometres, model 3 also accelerates from 0 to 100 km/h in 6 seconds, can be driven on semi auto-pilot and has a 5-star rating in every aspect of safety. Besides, internationally the number of super charging stations for electric cars is soon to be twice as high.

The car can be pre-ordered now for 1,000 dollars and should be available at the end of 2017. In the first three days alone 276,000 were pre-ordered. 50,000 cars are then intended for sale annually – that is approximately the number of vehicles that Tesla sold in total up to the end of 2015.

Tesla is on the best way to justify its reputation as the Apple of the automobile industry. Maybe soon there will be as many Tesla 3's on the roads worldwide as there are iPhones in trouser pockets. There is no doubt that this scenario is the only one by means of which Tesla can survive. The losses in 2015 amounted to 800 million dollars. But if the Tesla 3 maintains the technical and quality promises made by its three expensive predecessors then it is hard to imagine that Elon Musk will not be successful.

The question remains what project one of the biggest movers and shakers of the present will tackle next, when he has really revolutionised the auto industry.

BASIC TECHNICAL DATA

REDUCED AND STYLISH
is Tesla's design. Not only the cars themselves but the accessories such as this charging device for your own four walls. It doesn't matter whether it is attached to the outer wall or inside the garage.

THE BODYWORK
of the Tesla models is aluminium. This makes the cars lighter. Steel is only used where necessary. The reason is obvious: the storage batteries are heavy. And no car wants to be too heavy.

THE TESLA GIGAFACTORY
is the company's current mammoth project. Lithium-ion batteries are to be produced on a large scale on an industrial site in the US state Nevada.

ON-BOARD COMPUTER, TOUCHSCREEN –
the inner features of the Tesla models are not only optically appealing. The Tesla can also drive alone on auto-pilot. Shown here: the interior of the model S saloon.

The Tesla superchargers restore the full range – in just 40 minutes

CELLULOSE INSULATES FOR LONGER THAN THE HOUSE STANDS

EDITOR: **THE ISOCELLER**

ISOCELL opened its first production plant for cellulose insulation in Hartberg, Styria, in 1998.

The production manager then, as now, is engineer Wolfgang Lackner. In the interview he speaks about cellulose production throughout the course of time, the path to insulation and improvement potential of a mature product.

Mr. Lackner, for the past 20 years you have been an expert in the production of cellulose insulation from waste paper. How did the question of waste paper arise?

Thinking back, cellulose was used as insulation in America as far back as the 17th century. However, in those days the inner part of corn cobs was used as insulation, also straw was used. The idea of using waste paper as insulation came to Europe from America in the 1980's, with the background of using recycling material then putting this material to use. This has an ecological, and naturally also, a price advantage. Besides the fact that we have industrialized cellulose insulation with waste paper.

What changes have there been in production over time?

Many – in almost every field: such as in fire protection and milling technology or in the heat conduction figures. Even the classification and standardisation of fire protection has continually changed. There used to be different flammability ratings than today, and other tests. The coefficient of thermal conductivity is and was important in this connection. The flame inhibitor used to have direct negative influence on the thermal conductivity. Nowadays, innovative means are used and also fewer, which results in an improvement of the values in every range. There was simply an overdosage. To name just one figure: the flame inhibitors have been reduced from 16 to 10 percent. There is evidence that the density and coefficient of thermal conductivity of the insulation have been substantially improved in this way.

Production Manager
Engineer Wolfgang Lackner

FROM RAW MATERIAL TO THE FINISHED PRODUCT

"When the coefficient of thermal conductivity changes in the milliwatt range it is progress and helps the product, although hardly noticeable in reality."

You previously mentioned milling technology that ensures that the waste paper is turned into small particles of cellulose. What has happened here?

We used to use only hammer mills. Today we mostly use finer whirlwind mills. These tear the paper apart using air compared with the hammer mills which used to hammer the paper with blows. Using the new method we are now in a position to produce finer fibre and have less paper particles with the remains of print. Naturally every newspaper has a particular structure that should finally look like cotton wool. Pieces of paper that are only ripped naturally have poorer insulating properties.

Today cellulose is seen as a highly innovative and popular insulation material that leaves competitive products such as glass wool or polystyrene far behind in all studies. What can still be improved?

There are various approaches. At present more is happening in the field of applications such as the installation of cellulose for the prefabricated construction industry. But of course attempts are always made to improve even a successful product. The limit has almost been reached because there are physical limits to raw materials. As long as these are not altered or other production techniques used, changes will stay in the range that is no longer really verifiable by the consumer.

What do you mean by that?

This involves innovative steps that are difficult for outsiders to notice. If the coefficients of thermal conductivity change in the milliwatt region this is progress and helps the product, but in reality is hardly perceivable.

ISOCELL began to make cellulose insulation acceptable in central Europe in the mid-nineties. There are numerous success stories of where cellulose insulates after decades as well as on the first day. How long should your insulation from waste paper last?

In Europe we are subject to external controls from the material testing authority. We name buildings where our material has been used and then after ten, fifteen and twenty years the product properties are analysed. Up to present we have never had a single problem. And when we see how long paper lasts in libraries, I think: without external influence cellulose theoretically insulates as long as a book. And that is a matter of hundreds of years. But that is not even the lifetime intended for a house. This means, it is probably more important that insulation material can be easily disposed of. And with cellulose this is the case.

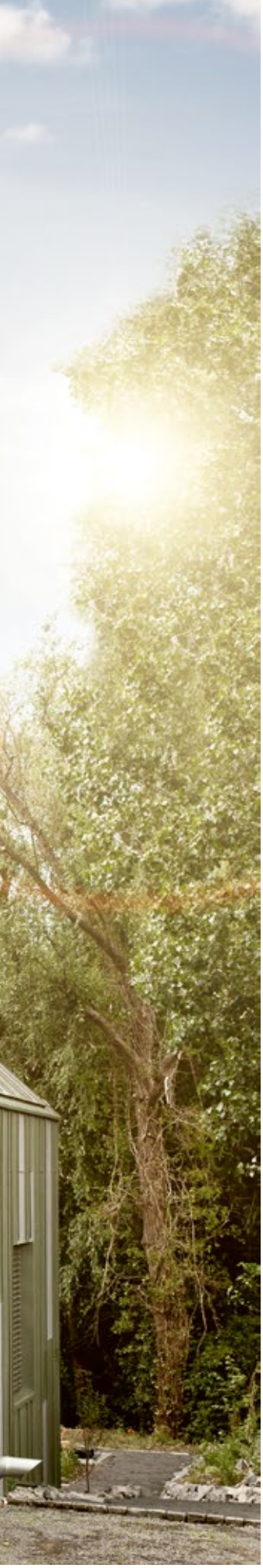
INFO

The first ISOCELL cellulose plant started work in 1998 with two members of staff – one in the production and one in the office. Meanwhile production at this location is in three shifts.

Besides Hartberg, ISOCELL also produces cellulose insulation in plants at Schoppen (Belgium), Plourin-lès-Morlaix and Servian (both in France) as well as in Tibro (Sweden).

"IF I INSULATE WELL, THE TECHNOLOGY IS UNIMPORTANT"

EDITOR: **THE ISOCELLER**



Kay Künzel is an expert in green architecture. He focuses on passive buildings as well as energy efficient construction and is an officially accredited expert for acoustic and thermal insulation.

A discussion on the troublesome question of the economic efficiency of investments and space insulation.

BACK-GROUND

Kay Künzel established 'space for architecture' in 2000, has six employees and his company is located in Wachtberg in Germany, south of Bonn. He is an approved passive house planner and builds for public as well as private clients – however, exclusively in timber and renewable materials.

Mr. Künzel, how should a house be built in the 21st century?

Quite simply, sustainable. Nowadays the term is used in an inflationary manner and no longer in its original meaning. Originally the word sustainable was used in connection with forestry. You were only permitted to fell as many trees as you could plant again. But when we architects use the term, then we mean individual design of the respective project that is sensible in the long-term and economical.

Why is thermal insulation an important component of an energy efficient building?

To make a simple comparison: I do not go skiing in a T-shirt. When I wear a jacket, thick pants and thick socks, then even at low minus temperatures I can still be quite comfortable, thanks to the thermal insulation of the clothing. With houses we do this because no one wants to waste energy on heating buildings, not only because of the cost, but also for climate-relevant reasons. We should not only think of energy efficiency, but should take action – and that leads irrevocably to cost-efficiency. Thermal insulation has many facets and inefficient or open windows contribute nothing to insulation either. Although, the question of cost-efficiency has bothered me for a long time.

What do you mean by that?

I cannot understand the culture of "When does that pay off?" with regard to building a house. We do not ask this question when buying a pair of pants. This is a fundamentally incorrect approach because in profitability calculations we should always proceed dynamically and individually. We must learn to compare different types of investment. When I insulate a house I have to ask myself what is more expensive for the house. Heating power is not infinitely available nowadays. Due to the climate change we should treat it more carefully.

Not only because bank interest is so low at present: all in all, I will always be financially better off when I choose energy efficiency than if I decide to use more energy. The building's shell is much more important. If I insulate this well, the technology is not so important.

Kay Künzel stands for innovative passive house construction and builds for public and private clients

TRANSFORM OLD INTO NEW ECONOMICALLY

BLOWN CELLULOSE
Kay Künzel uses almost exclusively ISOCELL insulation

IT DOES NOT ALWAYS HAVE TO BE A NEW BUILDING
Even old buildings with character can be upgraded to passive house standard

“I cannot understand the culture of “When does that pay off?” with regard to building a house. We do not ask this question when buying a pair of pants.“

Your office building has an impressive shell. Did you invest in the building?

Yes, our office building with its 80 square metres is actually a very good example. It was built in 1954 and completely renovated in 2009. Windows from the 1980’s, wallpaper from the 70’s, night storage heaters – there was no reason to keep anything. We gutted the building and rebuilt it. For insulation we blew in 30cm ISOCELL cellulose and 40cm for the roof. We did not use a conventional heating system. Pellets or gas were too expensive to even consider. Our funds all flowed into the building’s shell. We have a small heating system with 450 watt maximum energy input and the fixed costs at the end of the month are EURO 36.

You are known as a friend of cellulose insulation. Why?

Firstly, I am also in favour of insulation quality. I have been insulating with cellulose since the start of my office career in 2000, and for good reason. It is simpler and safer, there are no restrictions and it is even cheaper than polystyrene or glass wool. Cellulose does not only insulate in winter, it also handles the heat of summer and moisture well. At the beginning of my time there was a lot of scepticism towards the material. I experienced this too when I planned the first house at the age of 25. The house owner was a steel worker who I had to convince to use wood for the construction. He argued that cellulose burns. So he tested it, and had three large cubes built – made of rock wool, mineral wool and cellulose. He lit the burner and we saw the positive properties of cellulose. A small carbon film of 10 to 20mm could be seen – nothing more. Both other materials had long since burned. The house owner also wanted to investigate another prejudice. It is said that blown insulation sinks. So we removed a large panel after a few weeks. The cellulose had settled perfectly – and did not even fall out. At that time I was in the fourth semester of my studies and have been convinced ever since.

Would you wish for further development of cellulose insulation?

We know that cellulose has physical limits. But I do not need space insulation. If something makes no physical sense, it makes no sense as a product either. The proportion of timber constructions and ecological timber constructions is growing fast and I assume that the market share of cellulose will increase. I always use it and am not paid for doing so, but stand by my decision. I do it with passion, simply because it is a really good product. Frankly. I am pleased every time one of my new projects is standing and pressed cellulose goes into the cavities.

It is not only a question of the outer shell: interior renovation and modernisation also pay off

"OUR BLOWING MACHI
HIGH-TECH EQUIPMEN

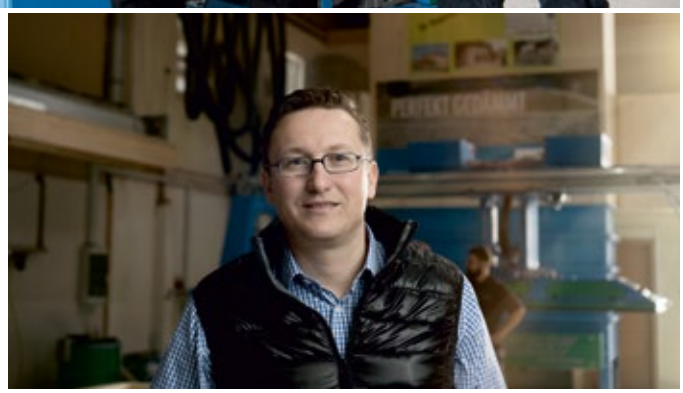
NES ARE T"

EDITOR: **THE ISOCELLER**

So that cellulose insulation keeps what it promises, we need innovative technology. Herbert Kriechhammer is head of the Blowing Technology Department at ISOCELL.

Mr. Kriechhammer explains in an interview why ISOCELL became active in the field of machine technology and what we can expect in the future.

Herbert Kriechhammer, head of Blowing Technology at ISOCELL, shown together with Wilhelm Paischer and Alexander Tollerian



Mr. Kriechhammer, when did ISOCELL actually begin to supply blowing machines?

We are celebrating our anniversary this year. In 1996 we produced the ISOBLOW PROFI and we are still supplying it. But I should add that it was named ISOCELL TURBO at that time. Our main customers in those days were firms concerned with blowing cellulose who drove to building sites with their trucks. There were hardly any machines on the market that were well-equipped, fast and performance-oriented. And so we began to construct blowing machines ourselves.

Which problems did the machines encounter on the market?

A variety of problems. We had partners in Germany and America. The American machines were robust and had a long life but were not convenient with regard to radio connection or they often ran on 110V only, which is a problem in Central Europe .

FACTS

From experts for experts. As an installer and a manufacturer ISOCELL really does know what works best. There is a lot in favour of using the full scope of the supply chain – also that ISOCELL produces 300 machines in a year as a supplier of systems. This number is increasing constantly, in total there are 2,500 of our own machine-technology systems that once again make ISOCELL the innovation leader in its branch.

Machines of our German partners were quite well thought out and constructed, were high-performance, lightweight and even had remote controls. However. the machines often did not work. If we complained we were told that our insulation material or the builder was at fault. Clients were already threatening to use insulating mats again instead of our cellulose. Then at some point we said: "The machine must be at fault". That is when we began to take matters into our own hands. Consequently, we were in a positon to offer a complete system, besides cellulose insulation and various accessories such as airtight products. This step, to manufacture machines ourselves, has proved successful. Every day that we are successful proves we were right.

"The machine had to be at fault and we took things into our own hands. With cellulose insulation and various accessories, such as airtight products, we were able to provide a complete system."

Meanwhile there is a wide range of products built around blowing machines. Why?

Because our customers have varying requirements. The smaller machines are used more in the field of renovation work, the high-performance units for new constructions. Besides this we offer solutions for the prefabricated industry. The various machine sizes have a reason and a background. For example, due to the size of vehicle used by the installers it is not possible to drive trucks in every town and so there is, technically speaking, a space limit. In France you will often find pointed roofs where smaller handy-size machines are used. There can also be economic reasons for using a smaller machine. In a country such as Poland it is more difficult to invest in a machine than in work-time because work power is relatively inexpensive.

On the market ISOCELL rates as innovation leader in the field of blowing technology. What exactly takes place in your company?

Within the company we carry out research and development. But we buy different components such as frames, switch boxes, turbines or fans that are assembled here by a local engineering company. Our blowing machines are high-tech high-quality units. We have integrated pressure sensors that switch off as soon as sufficient insulation has been blown in. They work by remote control and big bale systems for pre-manufacturing even have a touchscreen. To name just one figure: depending on the type of machine the insulation output is between 600kg and 1900 kg per hour.

What research are you currently carrying out?

We are always aware of market needs in all sectors, but now, after two decades we are naturally very well positioned in many areas. However, the stationary big bale systems have been in greater demand again since 2013. Timber constructors and manufacturers of prefabricated houses are simply investing more in this field. And so we wanted to be even quicker with our solutions for prefabrication in this sector and become fully automatic. That means: the customer should need only to press a button to have his wooden-frame elements fully blown.

Why is the field of big bale systems increasingly important?

In principle there are two possibilities for timber constructors. Either he can have his wood-framed elements completely insulated before they are delivered to the building site or can choose to provide holes through which insulation is blown in on site. At the moment installation on site predominates. Arguments such as permanent quality control for external monitoring, higher value and the time-saving factor are convincing increasingly more timber constructors to insulate during pre-production. This is a trend we have been prepared for for years, as is always the case. Therefore, more and more timber construction companies are opting to purchase a big bale system themselves.

THE HYPE ABOUT THE TIMBER HOUSE

EDITOR: **THE ISOCELLER**

Construction with timber is booming. Zenz Holzbau GmbH is celebrating its 60th anniversary and Managing Director Georg Zenz knows why there is increasing demand.

The third generation is already knocking at the door. Last year Michael Zenz was awarded his diploma as Master Craftsman and is already active in the company. One day he will take over the business from his father, Georg, just as he did in 1989.

That is when Georg Zenz took over from his father of the same name as head of Zenz Holzbau. Work with timber is a family tradition here in Eggelsberg, Upper Austria. A family tradition that started 60 years ago.

In 1956 Georg Zenz senior founded his small business that is now, in 2016, a modern medium-sized timber construction company. With a staff of just under 30, Zenz Holzbau GmbH builds up to 25 prefabricated houses every year, adapts and converts and is also a specialist for classic carpentry work. And the boom continues.

"There has been an increasing demand for wooden construction for years" Georg Zenz explains. "Back in the 1980's there were already a few pioneers, however since the 1990's the trend towards health-conscious building has made more and more people decide in favour of a timber house." At a time when wooden materials, metal connectors, vapour barriers, insulation material such as that of ISOCELL, as well as all further necessary materials have undergone a huge improvement and matured to intelligent building materials. There is another simple reason why the boom is continuing: "At present it seems that timber construction is the most modern form of construction, not only because of the style but thanks to the raw material." Georg Zenz explains. Wood is environmentally friendly, sustainable, available, very versatile and gets the best structural results."

Not to mention the time factor. For a wood construction is dry – and is considerably faster to complete than other forms of construction. "From the moment the excavator rolls onto the greenfield site a wooden construction should be ready within three to four months". For this reason timber construction is increasingly becoming a factor where there are building deadlines such as extra storeys to be added to school buildings that have to be completed within a very short time frame, for example in the holidays.

Wooden houses for single families have been on the market for quite a while but there is a new market for office blocks and large-scale housing with several storeys. "We recently completed a three storey office complex in Burghausen," Georg Zenz reports. Many such jobs will follow. An end to the boom in timber construction is not in sight.

As service provider Zenz Holzbau GmbH responds to its clients' individual wishes and offers wooden construction ranging from the conversion to the turnkey prefabricated house. The family-owned company has its own technical office, has just under 30 employees and has been a partner of ISOCELL for many years.

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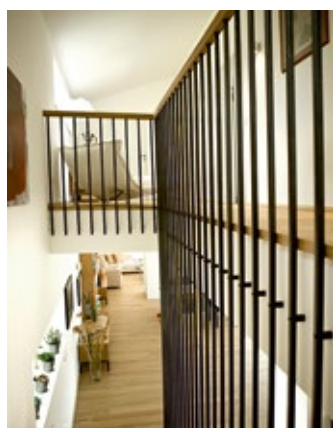
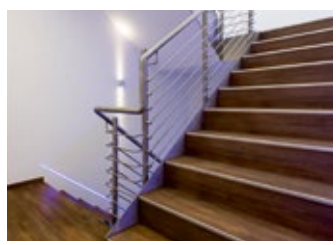




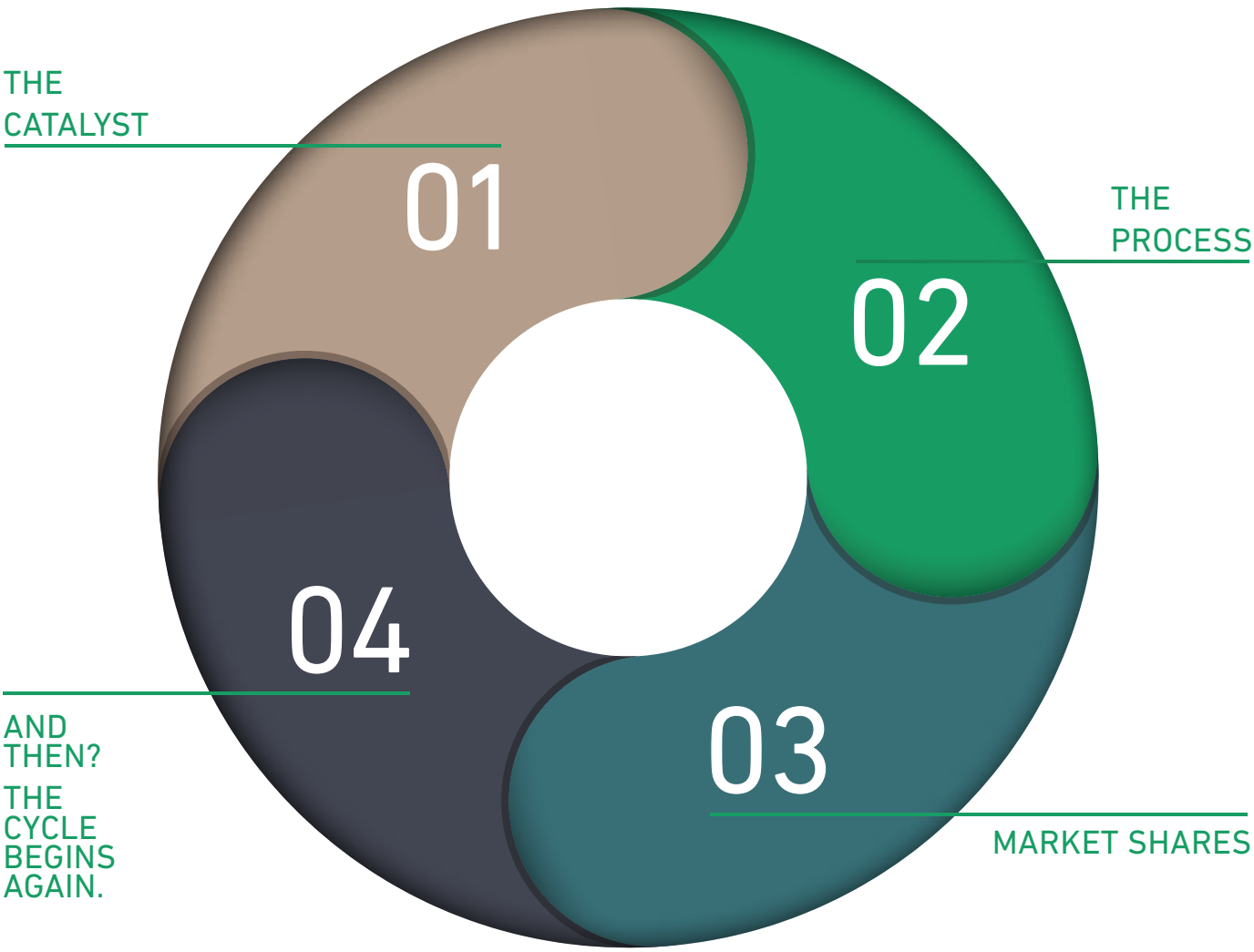
FROM CUSTOMER DEMAND TO INNOVATION

Where there is no market, there are no buyers. Taking airtight products as an example Christian Nöhammer, expert for construction technology, explains in three steps how ISOCELL fulfils customer requirements.

EDITOR: **THE ISOCELLER**

01_ "The cycle of a new product begins with the wishes and input of our customers. In this way a wide product range built around cellulose insulation has grown at ISOCELL. Input and wishes are either passed on to our representatives or forwarded to our office service. Our customers mainly ask for solutions in relation to work on the building site or practical solutions. It plays a significant role that products are easy to handle and also the fact that in practice the products will save time. ISOCELL's usual high quality standard as well as the customary first-class raw materials used are meanwhile taken for granted by our customers."

02_ "Before a product is even planned it undergoes a market survey, as it were. What does the market demand in detail? Exactly which features does the customer demand? Let's take the ISOWINDOW FEBA SOFT as an example, as it is still comparatively new in our product range. In demand was a soft and slightly flexible backing material with sufficient adhesive strength that could also be plastered and painted over. The performance and division of the pull-off liners was also of great significance for the development. Of course such a product always has to meet technical and legal requirements."



04_ "Every end is virtually a new beginning. We are always searching for and working on new and more practical solutions for the building site with an aim to extending the ISOCELL range of products. Of course, again in close contact with our customers who provide feedback and ideas. This is a characteristic of ISOCELL."

03_ "The time needed until an idea results in a marketable part of our product range differs – according to product and field of application. This can take several weeks but even several months. The development of the product is monitored by in-house material testing. Here too, we take into consideration the wishes and feedback from our customers. We often use model building sites during the development in order to provide the best possible product."

WE SEAL

ISOCELL'S product range is varied and wide. The ISOCELLER presents a small extract of the best products for the most effective insulation. From measuring equipment up to insulation made from waste paper. Or, are you looking for wood fibre?

BASIC TECHNICAL INFORMATION

CELLULOSE INSULATION
Insulation made from waste paper has made ISOCELL famous. The sustainable thermal insulation made from cellulose fibres is produced from newspaper in an optimal recycling process.

WOODYCELL
The natural insulation, WOODYCELL, consists of wood fibres – and is environmentally unbeatable and suitable for all areas of application.

GRANUBLOW
Insulating cavity brickwork after construction? GRANUBLOW core insulation is just the right thing. It can be blown in and poured in.

OMEGA UDO-S 330
ROOF MEMBRANE
A permeable and weldable roof membrane for underroof with enhanced protection against rain according to ÖNORM B 4119. Used for roofs with pitch from 1.5°. Also available pre-cut.

ÖKO NATUR VAPOUR BARRIER
An item in our range for a long time and still popular: the fibre-reinforced moisture-regulating vapour barrier and airtight layer for wall and roof construction.

AIRSTOP FLEX ADHESIVE TAPE
A universal tape that can be plastered over. A transparent and extremely durable adhesive layer for almost every substrate.

ISOWINDOW UVAU
WINDOW TAPE EXTERIOR
A window tape for outdoors. Seals quickly and safely – and consists of a highly UV-resistant, vapour permeable backing that can be plastered over and painted over.

ISOWINDOW FEBA SOFT
The tape consists of a soft, fleece backing that can be plastered over and is covered with a high-performance adhesive. This makes adhesion at corners far easier than with conventional, rigid window tapes.

OUR WIND SEALS FUNCTION LIKE GORE-TEX JACKETS

Only those who protect their building from wind do not lose the effect of insulation. Josef Putzhammer is an expert for wind seals and also for research and development. In an interview he explains how to effectively prevent heat loss and why cellulose gives the best performance in research projects.

EDITOR: **THE ISOCELLER**

Mr. Putzhammer, wind tightness is a comparatively new area in the optimisation of thermal insulation. Why has this area become so important?

We have had windtight products in our range since 1994 and this area has not existed for much longer in our trade. They appeared together with increased insulation thicknesses where permeable membranes were necessary. The wind seals we are speaking about are always membranes that protect from wind and rain but also permit drying. They function in the same way as a Gore-Tex jacket that keeps you dry but is also breathable.

Why is wind tightness so important?

Poor windtightness leads to the flow of air from outside through the insulation level. This greatly reduces the performance of the insulation. This effect becomes worse the more the insulation is open to the flow of air. In principle, an architect or planner works out the dimensions of the building components on the basis of certain calculations. In the so-called Energy Certificate, the actual heat loss or heating requirement is then estimated. However, there are components which, due to insufficient windtightness permit greater transmission heat loss than they should, with the result that the actual energy consumption deviates greatly from the calculations.

Is this due to incorrect calculation?

Not necessarily incorrect. It is perfectly right to issue an Energy Certificate. However, the basis of calculation are laboratory values that deviate greatly from the actual heat-resistance values. Theoretically many products achieve very good insulation values, which in practice fail on workability or are affected by physical influences. That is why windtight construction is so important. A further important aspect is that the flow resistance of the insulation has a strong impact. With an open-flow insulation such as mineral fibre, the effect on the U-value will be far more negative than with a flow-resistant insulation such as cellulose.

ISOCELL was partner in a research project carried out by the independent research society, Holzforschung Austria, on the subject 'Windtightness of underroofs". That is closely connected to your comments. What were the results?

In the laboratory, and in field trials, various types of insulation were installed in roof slopes. Leakage was integrated as often occurs in practice. In the region of the eaves only a sparrow board is usually mounted between the rafters and very seldom will these be sealed. In the research project the attempt was made to find out what effect this leakage had on the transmission heat loss of the roof. It was found that this value was 1.5 times higher with mineral fibre than with cellulose insulation. Cellulose compensates the lack of wind seal, as we can confirm and underline through other tests.:

Which tests were carried out?

We wanted to find out exactly how airtightness can change just by changing the insulation. For this purpose we tested the volume flows of a wall covered on both sides with 18mm OSB panels with a 50 Pa difference in pressure. The improvement between uninsulated and glass wool was 0.8 percent. The cellulose brought about an improvement of 48.7 percent. That is a highly positive value.

Since 2010 ÖNORM 2320 in Austria has stated that the windtight level must be continuous. How difficult is it to implement this standard?

It sounds easier than it is and requires a lot of effort. The demand for detailed solutions is becoming greater. Nowadays very long membranes are laid but not connected tightly at all corners and ends. It is often extremely difficult e.g. to connect the roof membrane to the windtight level. Austria's standards are leading worldwide, whereas in Germany the regulations are not yet up to the standard of technology.

A BIO-BREWER BY CONVICTION

Reinhold Barta is considered a pioneer of Austrian craft beer. But actually he set up the first bio-brewery in Austria only out of conviction. The story of an authentic model for success.

EDITOR: **THE ISOCELLER**

"Without passion I cannot carry out my occupation," says Reinhold Barta.

And he knows what he is talking about. During his studies at the University of Natural Resources and Applied Life Science he discovered his love of beer while he was working as a delivery man for a brewery. He was soon brewing the first beer himself, together with his best friend, Wolfgang. In his parents' garage. This creation was named 'Lupulus lupulinus' – the wolf cub hop. The hobby was to become his profession. Today he says "My profession is my vocation." He has operated the Gusswerk Brewery, the first bio-brewery in Austria, in Hof near Salzburg since 2007. He has been in the brewery business now for 16 years. And meanwhile he supplies 23 types locally and abroad. But why beer? And why organic? One thing after the other.

REINHOLD BARTA: "MY PROFESSION IS MY VOCATION"

It all began in his childhood in Lower Austria. Barta's biology professor was a friend of the family and his godfather. As far back as the 1980's he learned that things could not continue as they were in farming. "But compared to today it was still an intact world," Barta sighs. He had been made aware at an early age how nature should be treated – and became a sustainability follower in the early days.

"We did what is fashionable today out of conviction," he says. Firstly using biological products but meanwhile Barta works only with Demeter products which are dedicated to the biological dynamic farming of Rudolf Steiner. But sustainability is more than just a label for the passionate bio-brewer. "I define sustainability in two categories – product quality and production quality, which has a lot to do with taste," At the start of the bio-production, products and production quality were equally good. In the meantime, mass production has taken over. "If the bio-bread in the Austrian supermarket comes from the Ukraine, that is not sustainable. The greatest volume of bio in Europe comes from China."

Barta does not do mass production. Quality has priority. Success and international awards with numerous gold medals and first prizes confirm this. Production has been in the Gusswerk in Hof near Salzburg since 2007. This was 350,000 litres in 2015. This sounds a lot but it isn't. "It corresponds to 0.5 per thousand of the Austrian beer market," remarks Barta. He supplies his 23 types – "There will not be more, this is sufficient" to beer houses, bars with a craft beer menu, some supermarkets as well as to high-class caterers and specialist shops. Among the latter customers there are also distribution partners abroad. In spite of delivery to Asia or the Caribbean his focus is still on the Austrian market and the market share should remain at around ten percent.

Reinhold Barta has been operating the Gusswerk Brewery since 2007. It is the first bio-brewery in Austria. He has been in business for 16 years. And meanwhile supplies 23 types at home and abroad.

The ecological footprint is also important to Barta. His beer bottles are produced 100 kilometres away – more expensive than in Portugal, but regional and therefore promoting supply chains for Austria in the same way as the cardboard boxes used.

Bio, sustainable, environmentally-friendly and last but not least, craft beer. Barta has a lot of hype and fashion factor in his product, that simply 'happened' out of his conviction. And he does not really see himself as a craft beer brewer. "I have never defined myself as such and never used the word. Suddenly I was Austria's craft beer pioneer because the term was hip. I don't really mind. I want to offer quality.

One day perhaps even for everyone? No, that would be too much. The Stiegl Brewery produces about as much in one day as he does in a year. "It would be nice to double to 700,000 litres per year but I see this in a relaxed way. I just want to live from it and feed my family." Barta is really not interested in making a lot of money. He cares far more about his passion. As in former times – when he first brewed his own beer in his parents' garage.

1.Traditional, classic brewery skills – the Gusswerk Brewery stands for this

2.In these vats Reinhold Barta and his team brew 350,000 litres of beer annually

3.The diversity of beer sorts is large – the brewery has 23 different beers on offer

4. In the brewery's restaurant not only beer is tapped - guests are treated to top catering

CULINARY SPECIAL
VEGGIE BURGER

VEGGIE BURGER

RECIPE AND METHOD

Ingredients for 4 burgers

Preparation time: 60 minutes

Ingredients for potato rounds

400 g	mashed potatoes
1	egg
1 tbsp.	oil

Ingredients for burgers

200g	seitan filet
100g	oyster mushrooms
A dash of	balsamic cream
15	asparagus spears
1	pointed red pepper
1 tub	cottage cheese
1 sprig	fresh basil

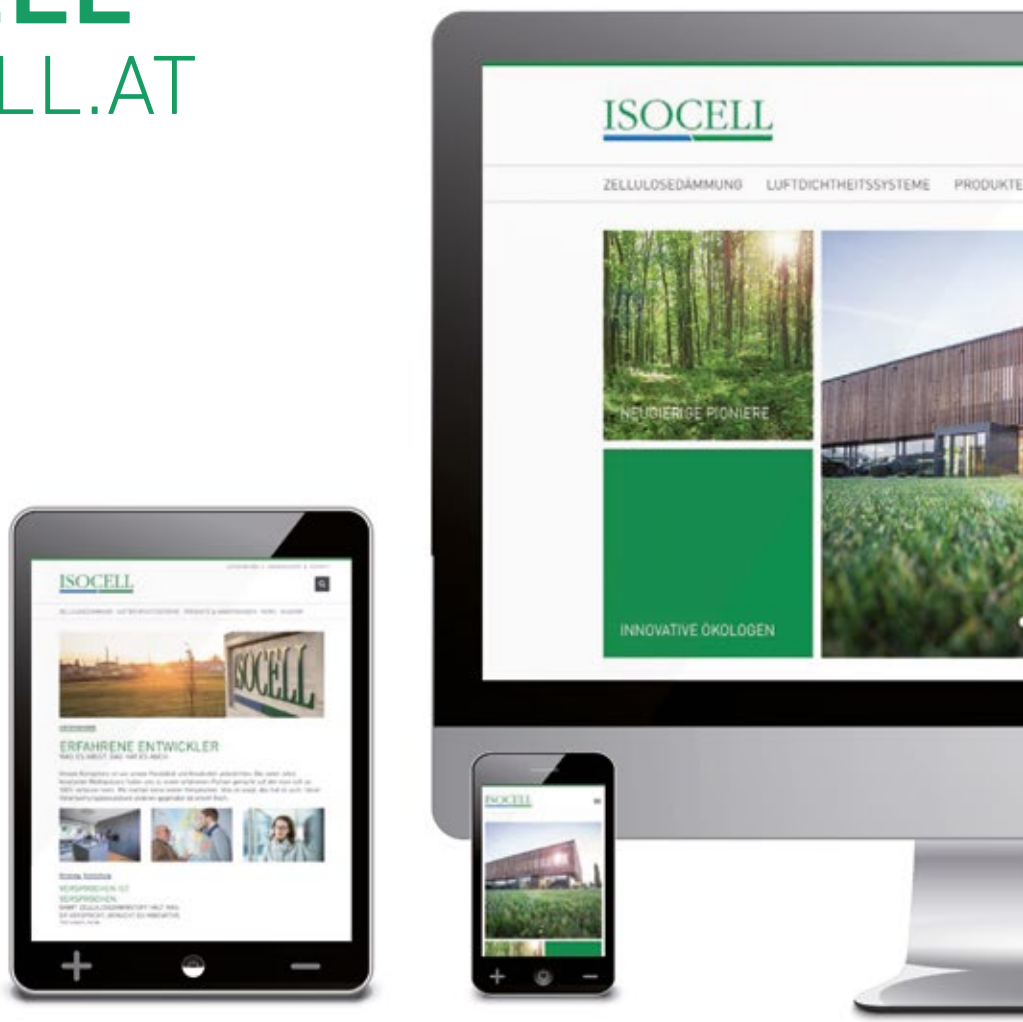
1. Mix 400g mashed potatoes with an egg. Fry tablespoon-sized portions in a little oil.
2. Cut 200g saitan filet into strips, season to taste and fry in oil until crispy. Quickly fry a handful of oyster mushrooms and add the balsamic cream. Quickly fry about 15 green asparagus spears in olive oil.
3. Remove the seeds and core of the red pointed paprika and cut into fine rings. Now dress the burger as desired with cottage cheese, seitan filet strips, paprika, mushrooms and freshly chopped basil.
4. For example, in this order: Place a spoonful of cottage cheese on the potato rounds. Then a few asparagus spears, the pointed paprika and oyster mushrooms. Cover with a second potato round, add more cottage cheese, then the seitan filet strips and freshly chopped basil. One more potato round on top, then serve. Meat-eaters replace the meat substitute with juicy strips of medium rare beef steak – just as delicious! Enjoy!

WORLD WILD WORLD OF ISOCELL

WWW.ISOCELL.AT

In general, we ISOCELLRS are people who like to talk to one another.
Our products also require a lot of consultation. Often they do not even exist. And a new website is supposed to be something really special. We particularly wanted our new website to not only show the world of ISOCELL but also to make it perceptible.

There was to be space for all employees, of course all countries; there had to be lots of room for news (because something is always going on here!) and last but not least we wanted to present our products as simply and clearly as possible. Not so easy... We hope the task has been successful and that you will often click in. Into the new online world of isocell.at.



ISOCELL IS OF COURSE MOBILE

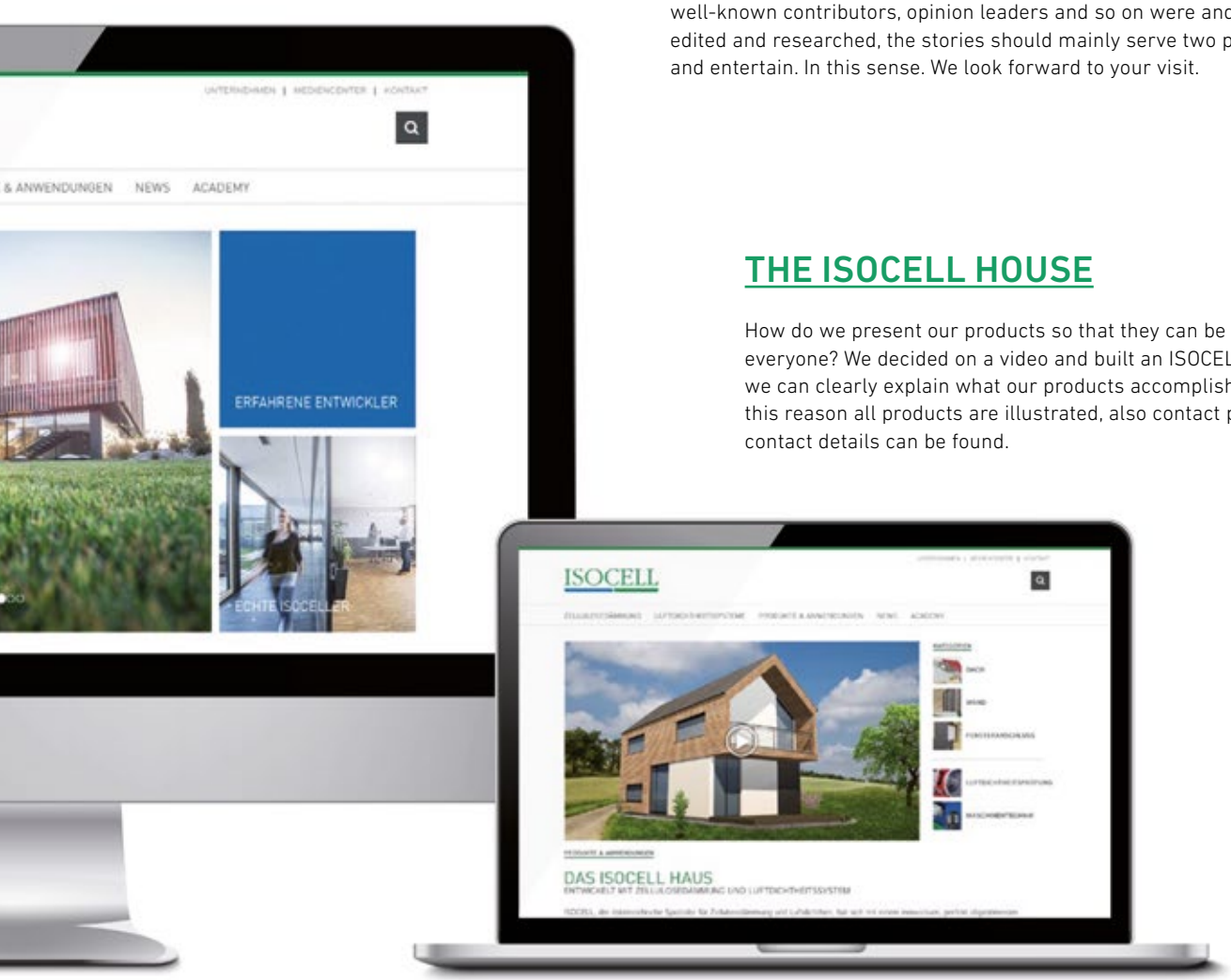
You can also enter the world of ISOCELL from your smartphone or your tablet without any problem. You can read our stories lying on the sofa and just as easily on public transport.

THE WHOLE WORLD

Who is hiding behind curious pioneers, experienced developers, innovative ecologists and genuine Isocellers? At the end of the day it is always the people who write history. At isocell.at there are many people. And many stories that are regularly updated.

NEWS AND STORIES

We didn't realize that we had so many stories to tell! A sheer endless fountain of occurrences, opinions, attitudes of our own, our partners, our colleagues, well-known contributors, opinion leaders and so on were and are available. Well edited and researched, the stories should mainly serve two purposes: inform and entertain. In this sense. We look forward to your visit.



THE ISOCELL HOUSE

How do we present our products so that they can be understood by everyone? We decided on a video and built an ISOCELL house with which we can clearly explain what our products accomplish and where. For this reason all products are illustrated, also contact partners and their contact details can be found.

CELLULOSE INSULATION AND AIRTIGHTNESS

Our products need some explanation. Facts, data, figures combined with stories that match the theme. And at the same time there may … sometimes be a guest commentary from a distinguished university professor, or a current research project.

SO THERE IS STILL A TOMORROW

What do I care about yesterday's newspaper? A lot. Because it is for tomorrow. Tomorrow means a lot to us ISOCELLERS. And the day after tomorrow, too. Not because we are idealists. But because we believe in reliable quality that is unique. Unique as recyclable raw material and unique in the sense of functionality. We work and research to constantly improve this. It is our commitment. Today. Tomorrow. And the day after.

ISOCELL

CELLULOSE INSULATION
AND AIRTIGHT SYSTEMS