



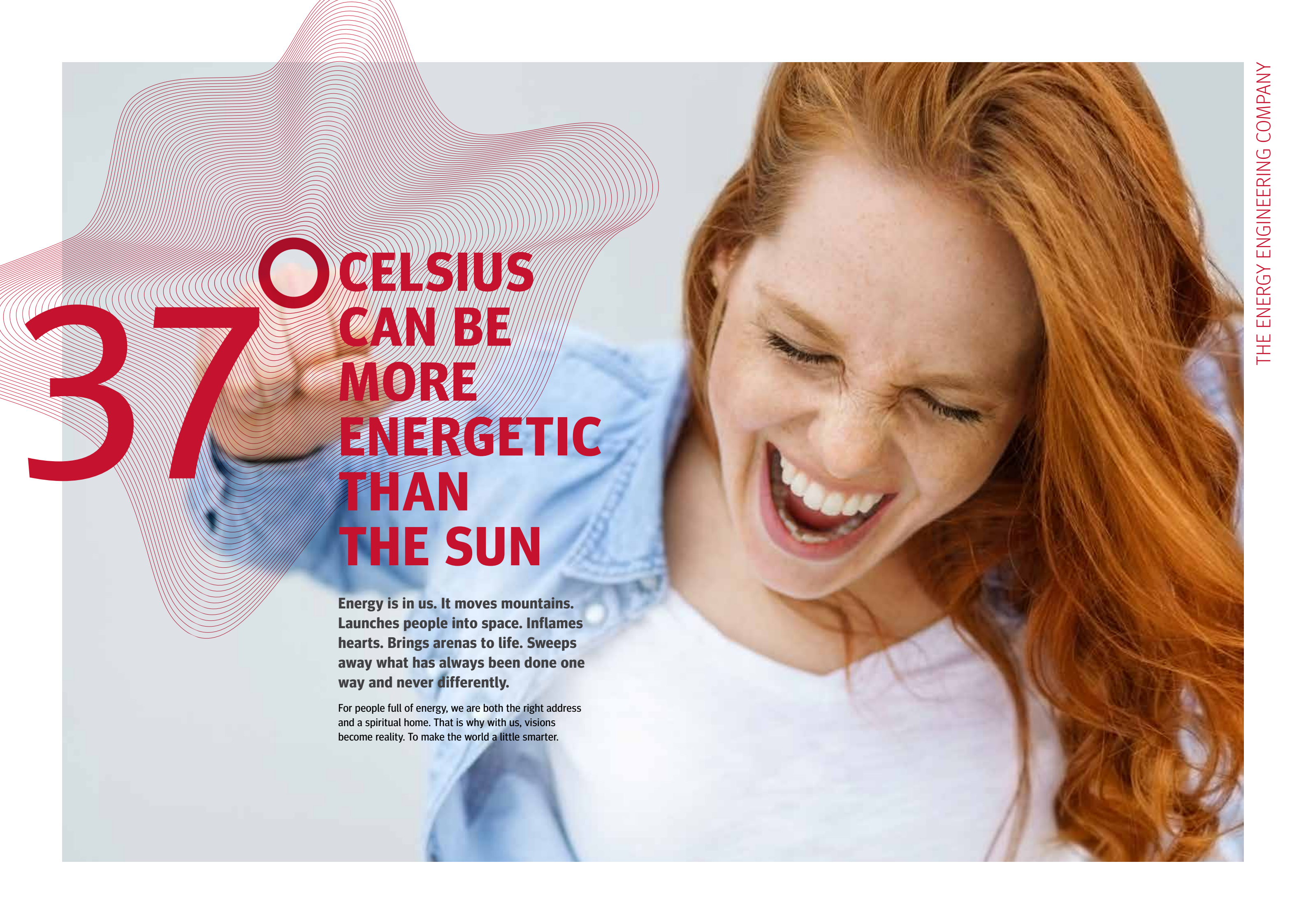
THE ENERGY ENGINEERING COMPANY



ENERGY IS THE FLICKERING OF CHANGE

Fire making, water wheel, steam engine, dynamo, the combustion engine: Great inventions for energy production have often introduced new epochs in human history. When Planck and Einstein wrote their “E” for energy on the blackboard, the world of physics was shaken to its foundations.

Today we are in the midst of the next paradigm shift. There is enough energy on earth. That's the good news. But the climate hangs in the balance between sustaining or endangering life. One of the things we urgently need now are intelligent control systems for decentralized power generation and supply, for energy management and in virtual grids.



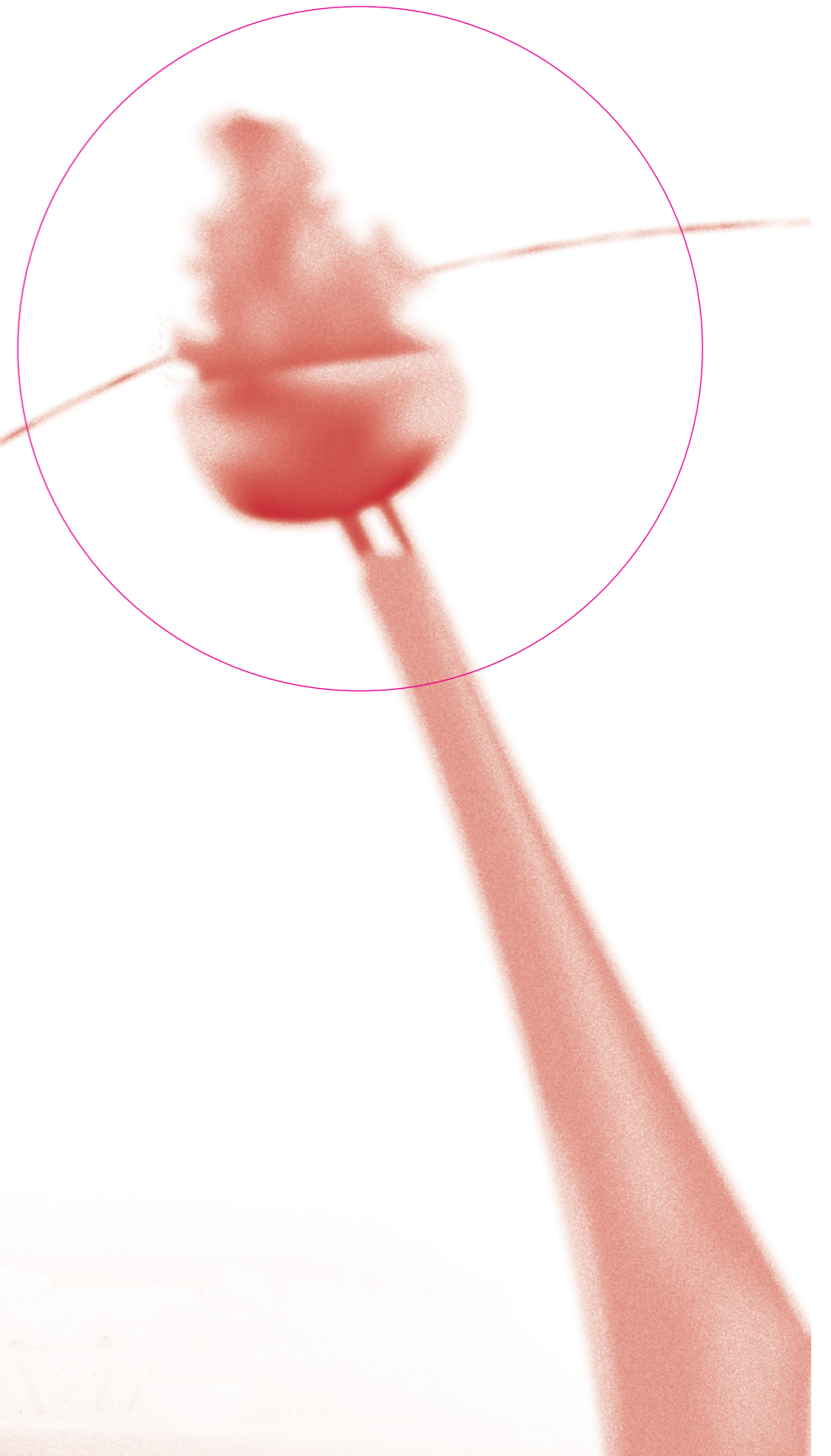
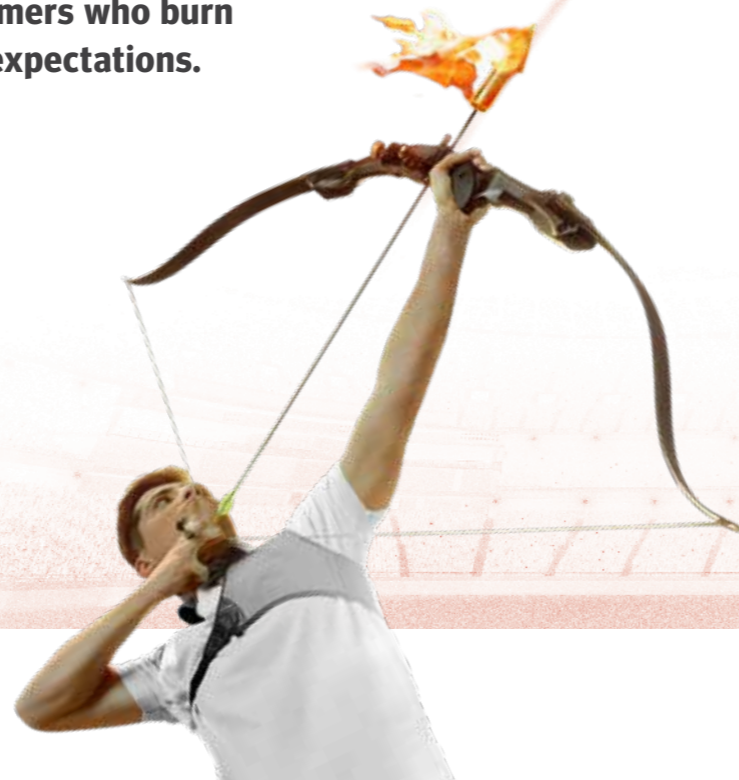
37 CELSIUS
CAN BE
MORE
ENERGETIC
THAN
THE SUN

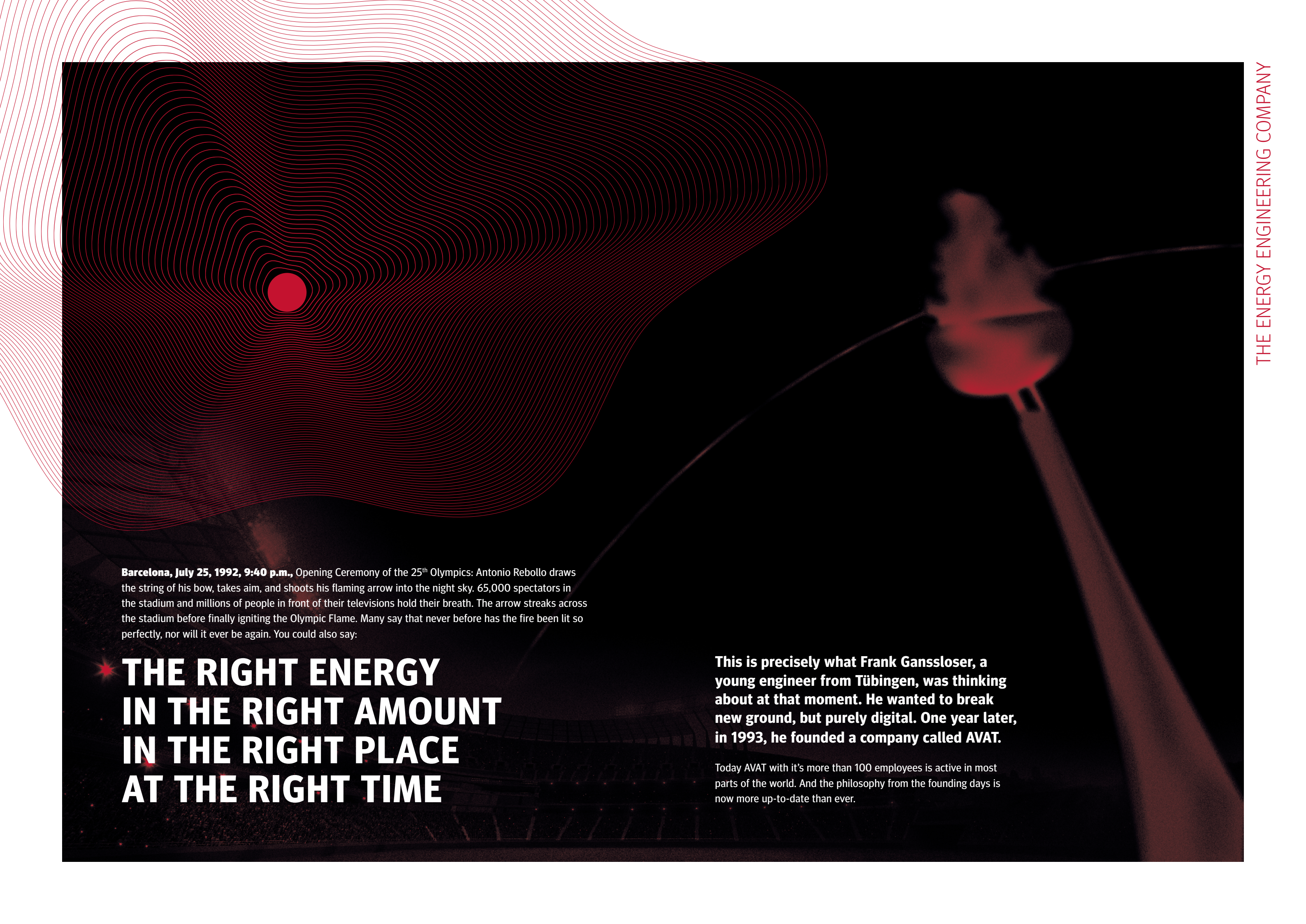
Energy is in us. It moves mountains. Launches people into space. Inflames hearts. Brings arenas to life. Sweeps away what has always been done one way and never differently.

For people full of energy, we are both the right address and a spiritual home. That is why with us, visions become reality. To make the world a little smarter.



The energy we measure in kilowatt hours. And the energy we measure ourselves against. At AVAT, we combine these two to develop pioneering Energy Engineering. Designed and built for customers who burn for solutions that exceed expectations.





Barcelona, July 25, 1992, 9:40 p.m., Opening Ceremony of the 25th Olympics: Antonio Rebollo draws the string of his bow, takes aim, and shoots his flaming arrow into the night sky. 65,000 spectators in the stadium and millions of people in front of their televisions hold their breath. The arrow streaks across the stadium before finally igniting the Olympic Flame. Many say that never before has the fire been lit so perfectly, nor will it ever be again. You could also say:

**THE RIGHT ENERGY
IN THE RIGHT AMOUNT
IN THE RIGHT PLACE
AT THE RIGHT TIME**

This is precisely what Frank Gansloser, a young engineer from Tübingen, was thinking about at that moment. He wanted to break new ground, but purely digital. One year later, in 1993, he founded a company called AVAT.

Today AVAT with its more than 100 employees is active in most parts of the world. And the philosophy from the founding days is now more up-to-date than ever.

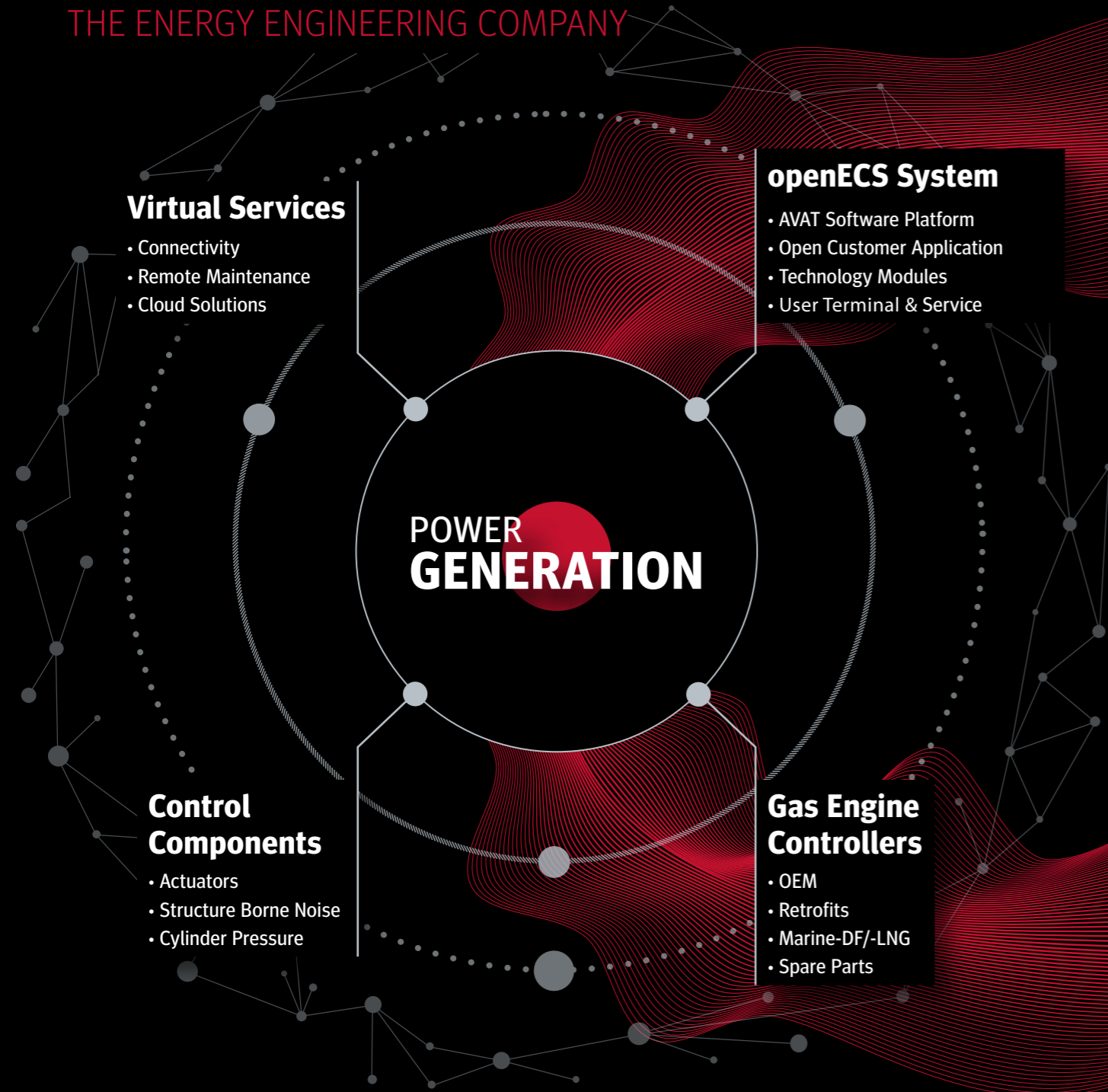
EVERYONE CONTRIBUTES. WE, FOR EXAMPLE, WITH FRESH ENERGY ENGINEERING.

The guests are coming: Turn on the decorative lights, keep the temperature cozy, take a quick shower and then pull the roast from the gas oven. But it could just as well be described as: The shift begins, production at full capacity, offices heated.

In both cases, we view power generation, energy supply, energy management and virtual grids as a whole. This view is advantageous for everyone involved, both at the end of the chain and at the beginning. We have the right ingredients for it. In the form of concepts, components, controls, systems and services.

And we bring something else: Over 25 years of experience and curiosity to understand, analyze and easily solve your highly specialized tasks.





Virtual Services

- Connectivity
- Remote Maintenance
- Cloud Solutions

openECS System

- AVAT Software Platform
- Open Customer Application
- Technology Modules
- User Terminal & Service

Control Components

- Actuators
- Structure Borne Noise
- Cylinder Pressure

Gas Engine Controllers

- OEM
- Retrofits
- Marine-DF/-LNG
- Spare Parts

POWER GENERATION

IF A SYSTEM CAN CONTROL NEARLY ANY GAS ENGINE, WE CALL THAT

SMART

**EVERY GAS ENGINE.
EVERY TYPE.
EVERY CLASS.
EVERYONE EFFICIENT.**

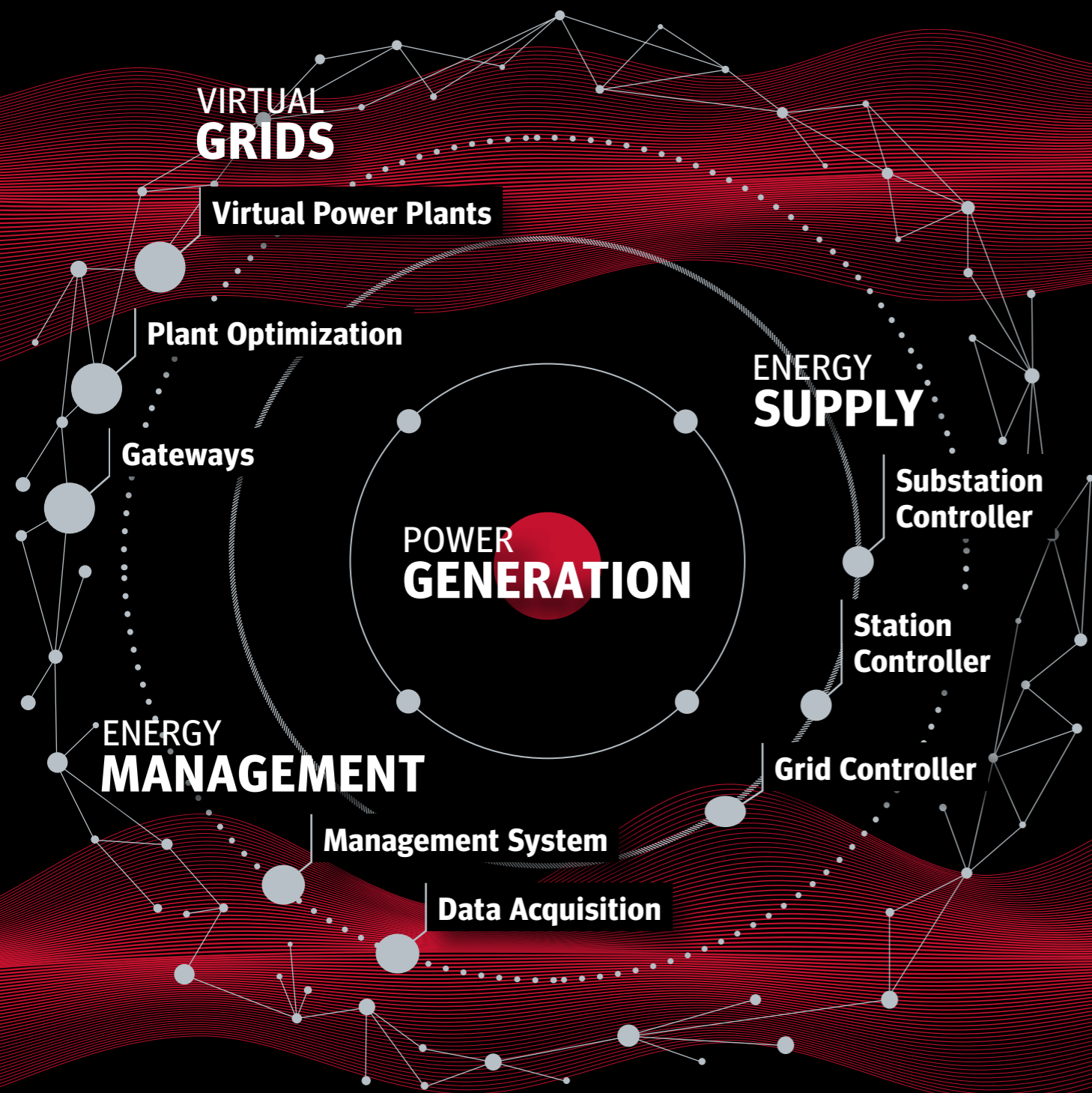


openECS – our self-developed modular and highly flexible system – represents openness. Open for future requirements, for third-party components, for own developments. openECS is the heart of all our independent control systems and components.

Gas engine controllers for original equipment or retrofitting of all common CHP engines and systems. Additionally, control components for the highly dynamic multi-variable control of actuators, for reliable knock and misfire detection and for cylinder pressure-based control – powerful diagnostic and service tool included.

A clear overview of the engine or an entire pool: Our Virtual Services enable full access to all available operational data for seamless monitoring and predictive remote maintenance, from anywhere and at any time.

We have revolutionized the control of large gas, dual fuel and CHP engines for stationary and marine applications several times. To date, we have developed and supplied over 10,000 engine control systems, including the TEM-Evo controller, which has been used over 1,000 times. These figures show: We combine inventive spirit and competence with comprehensive experience.



SMART IS WHEN ALL LEVELS ARE COMBINED TO FORM A GREATER WHOLE.

SMART

**ALL SECTORS.
ALL SIZES.
ALL PARAMETERS.
ALL SATISFIED.**

Starting with the engine and CHP controls, to energy stations and local substations, to grid control technology in combination with our energy management system, up to the connection to virtual power plants: **Our intelligent solutions for decentralized energy systems are uniform, scalable at any time and always integrated. That's what we call smart.**



A homogeneous communication infrastructure, coordinated interfaces and intelligent control concepts ensure the highly efficient operation of local substations and energy stations. The superordinate grid control technology monitors the decentralized systems and guarantees supply safety at all times.



System-supported collection of all energy-relevant key performance indicators for ISO 50001-compliant energy management. Monitoring, reporting, evaluation and alert functions create a user-friendly central instrument for the continuous optimization of generation, consumption and ultimately yield.



Virtual grids offer a highly successful strategy for cost optimization. We optimize energy systems from industrial plants or energy suppliers through the use of forecast-based production, load and storage management, thus enabling the marketing of existing flexibilities.

RESEARCH LABORATORY OR HOBBY ROOM? BOTH.

Researching, tinkering, programming: The activities that many of our employees successfully pursue are things that they have always enjoyed doing. This makes their results even more conclusive.

You can read about this in our many brochures, although the case studies offer a more exciting read. Because they also reflect the satisfaction of our customers. Many of them have had the same experience as our employees. When they discovered AVAT, they felt:

Goal reached, filled with passion.



Our value

Enthusiasm

holistic

Hardware plus software, planning plus implementation, profitability plus responsibility, performance plus simplicity: AVAT combines the factors required for durable success.

interdisciplinary

Development engineers, computer scientists, mechatronic engineers – they all still sit door-to-door with each other. They want it that way, not management. But it stands behind this enthusiastically and even sits in the thick of things itself.

dynamic

Do we do things faster because we work passionately, or does our efficiency create passion that infects our teams and our customers likewise? For once, a question that we are happy to leave unanswered.

CHANGE OF DIRECTION?

We swarm for tasks like this.

In energy policy, forecasts are highly speculative. But even in areas that are under your own control, for example your CHP as part of a decentralized energy system, you must expect the unexpected. Demand is changing, and the market environment is dynamic.

You therefore must be able to adapt capacities and structures as quickly, smoothly, and economically as possible. Through such tasks you will discover: Flexibility is a constant with us. With hardware components, in the software architecture, in networking.

And first and foremost, in thinking.

Our value Flexibility

smart

Of all the words that describe us, this is the shortest. At the same time, it contains great depth. Smart means intelligent and expandable along all dimensions. But smart also describes the analog feeling of operating our systems: clear, intuitive, comfortable.

efficient

Flexibility also means: A product can easily be adapted to individual circumstances. In many cases, this does not require any time-consuming programming, only configuration. Fast, economical, and therefore efficient.

future-oriented

Our founder has relied exclusively on digital systems from the very beginning. Foresight has shaped our product development ever since. And because many pairs of eyes simply see more, we continuously involve universities and research institutions.

REGARDLESS OF ANY CHANGE: YOU WILL ALWAYS RECOGNIZE US.

And not just based on appearance.

Where does flexibility end, and where does unpredictability and lack of principle begin? We have never deviated from this fine line over our 25 years of existence. And the conditions for maintaining this balance in the future are excellent. As an owner-managed company, we are free to make our own decisions – and stand by them.

This reliability is far more than just a question of style. Our consistency ensures the future of your investments. Future developments will remain compatible with existing systems to the fullest extent possible.

After all, we want your enthusiasm and flexibility to persist.



Our value

Dependability

attractive

As a technology leader and impulse generator in our fields, we set the direction. Product policy shifts or technological disruptions can't be forced upon us so easily. This also protects our customers.

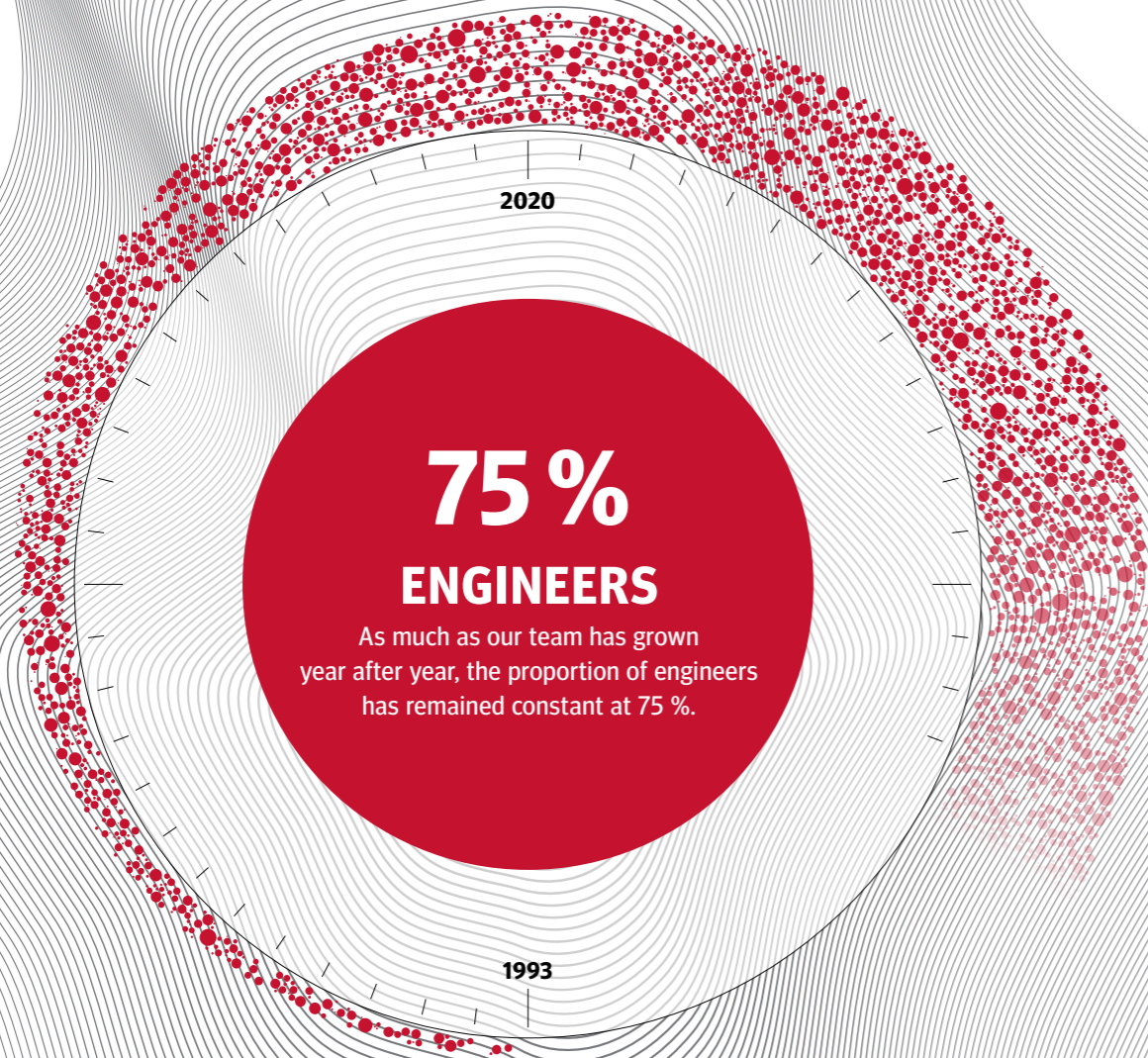
cooperative

Our success has given us access to many industries and markets. Understanding widely different customers and wishes is therefore not an obstacle for us, it's a pleasure.

independent

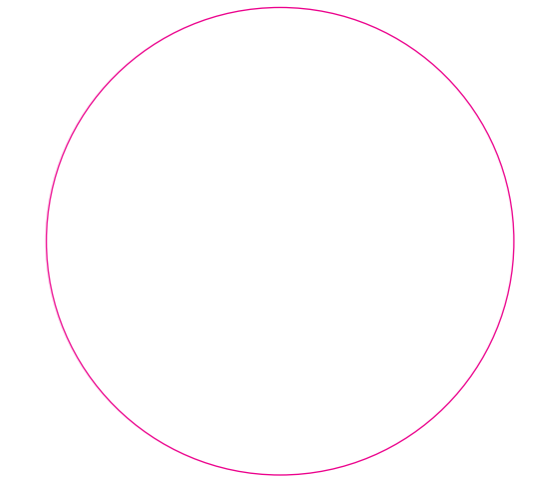
Investors or holding companies have no power over us. We are completely free in our choice of suppliers, collaborations and standards. Combined with our philosophy of loyalty to our partners, this means long-term planning security for you.

NOTHING NEW IN 25 YEARS. AND WE'RE EVEN PROUD OF IT.





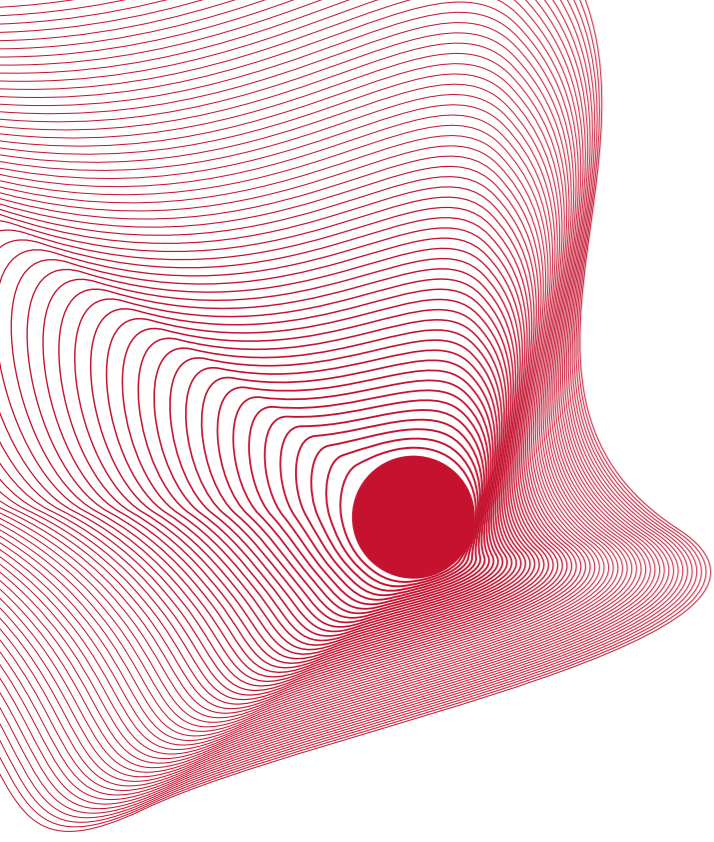
100 % ADAPTED. AND THERE- FORE SO DIFFERENT.



**You specify the environment.
We provide the solution that will
work there. Who will influence
whom? Our solutions integrate
perfectly without us having to
reinvent everything. Established
systems and standards form the
backbone on which we base our
own developments.**

In this way, we keep an eye on the details,
but concentrate our resources on the overall
architecture and the consistency of our products
and solutions. Each part retains its value, even
when integrated within a solution that is larger
than the original one. This means that all paths
to expansion and networking always remain
open to you.

Today, tomorrow, whenever you want.
And that worldwide.



Future generations need energy for their plans. A lot of energy. On the other hand, they have the right to intact living conditions on our earth. Those remain two loose ends. Whether they will ever meet is being decided today.

Smart Energy Engineering builds bridges.

Between people and energy sources.
Between responsibility and profitability.
Between idea and reality.
Between today and tomorrow.

Let us work together to build these bridges
and make the world a little smarter.

**FULL OF ENERGY
FOR THE WORLD
OF TOMORROW**



