ZIEMANN CIMC ENRIC HOLVRIEKA CIMC ENRIC

KHS
Filling and Packaging – Worldwide

THE 21ST CENTURY BREWERY

www.ziemann-holvrieka.com

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THE ENERGY REVOLUTION HAS LONG BEEN A REALITY

With the *21st Century Brewery* ZIEMANN HOLVRIEKA and KHS are creating the infrastructure to convert any brewery completely or partially in order to integrate renewable energy sources and sustainably reduce resource consumption. An energy revolution in the brewery is more than a distant vision: it is rapidly becoming a reality, one which is of a long-term benefit to the global brewing industry. Imagine:

- Greater future security
- Maximum technological freedom
- Long-term energy cost planning
- A positive influence on the CO_2 footprint debate
- A great image for the brewery and the brand
- Possible state funding for decentralized energy generation obtained from renewable sources

TECHNOLOGICAL FREEDOM IN HARMONY WITH ECONOMY AND ECOLOGY

How do you make your brewery more efficient without having to restrict the brewing processes? ZIEMANN HOLVRIEKA, your brewhouse and tank specialist, and KHS, your expert for filling and packaging systems provider, have developed a solution for you. By intelligently combining our core competencies, we make your brewery fit for the 21st century. The optimal use of energies and resources is one of our essential guiding principles.

The overall concept is based on four key foundations:

- Close cooperation of specialists and experts
- A holistic masterplan
- Cross-divisional energy management
- The use of renewable energies

During the entire planning and implementation process ZIEMANN HOLVRIEKA and KHS are your competent partners. Our service includes full resource planning, the involvement of the site-related factors and the adjustment of the production to any environmental influences and consumer behavior. Challenge us with your demands and requirements!

Of course, this concept goes beyond the interest of breweries. Our holistic approach is suitable for beverage production of any kind where the processes involve heating, cooling, filling and bottling. Our concept allows you to make production more efficient while reducing costs; in short:
get fit for the 21st century!

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1

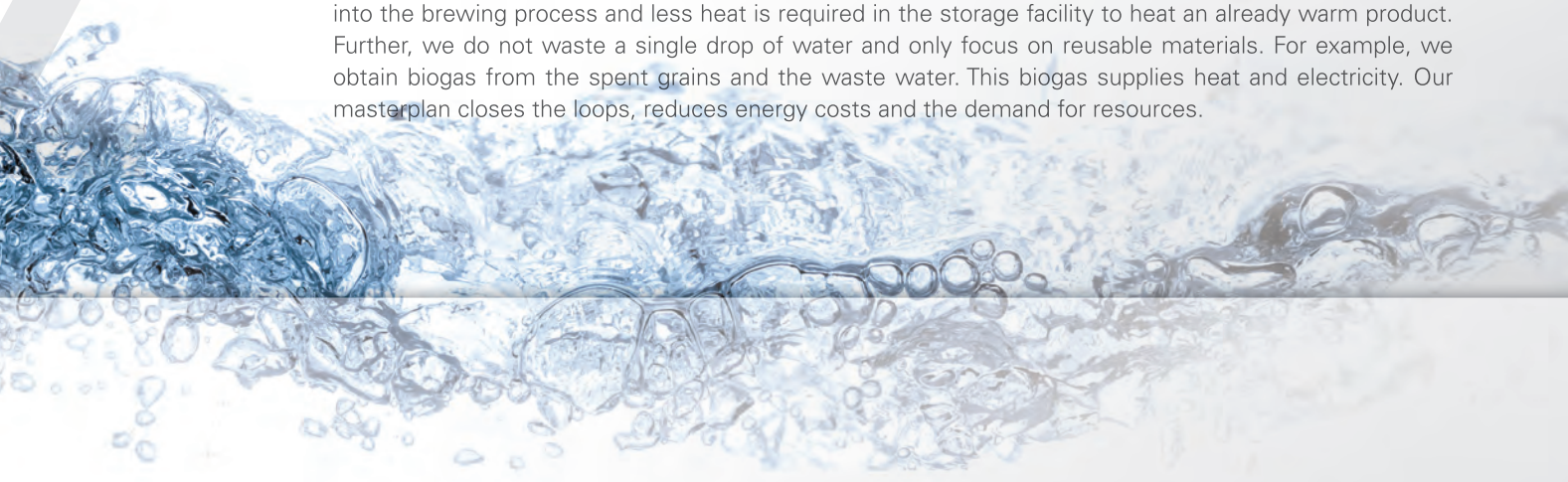
CLOSE COOPERATION OF SPECIALISTS
PRODUCTION AND BOTTLING BECOME A SINGLE ENTITY

The production block and the bottling plant so far have been two separate areas. The only connection was the transfer of the beer from production to where it is bottled. Both areas have been optimized over the years and their respective resource management has been lowered. New savings are not so easy to achieve, and often restrict technological freedom. However, thanks to our close cooperation we are able to take a holistic view in merging the brewhouse with the bottling plant into a single entity.

2

A HOLISTIC MASTERPLAN
THINKING IN CYCLES

The *21st Century Brewery* is based on a holistic resource management. We use the heat from the brewhouse to clean the bottles in the filling process. Cold from the filling process in turn flows back to the wort cooling system in the brewhouse because the beer is bottled at a higher temperature when using modern filling technologies. These are just two examples where savings are made. The cooling energy is fed back into the brewing process and less heat is required in the storage facility to heat an already warm product. Further, we do not waste a single drop of water and only focus on reusable materials. For example, we obtain biogas from the spent grains and the waste water. This biogas supplies heat and electricity. Our masterplan closes the loops, reduces energy costs and the demand for resources.



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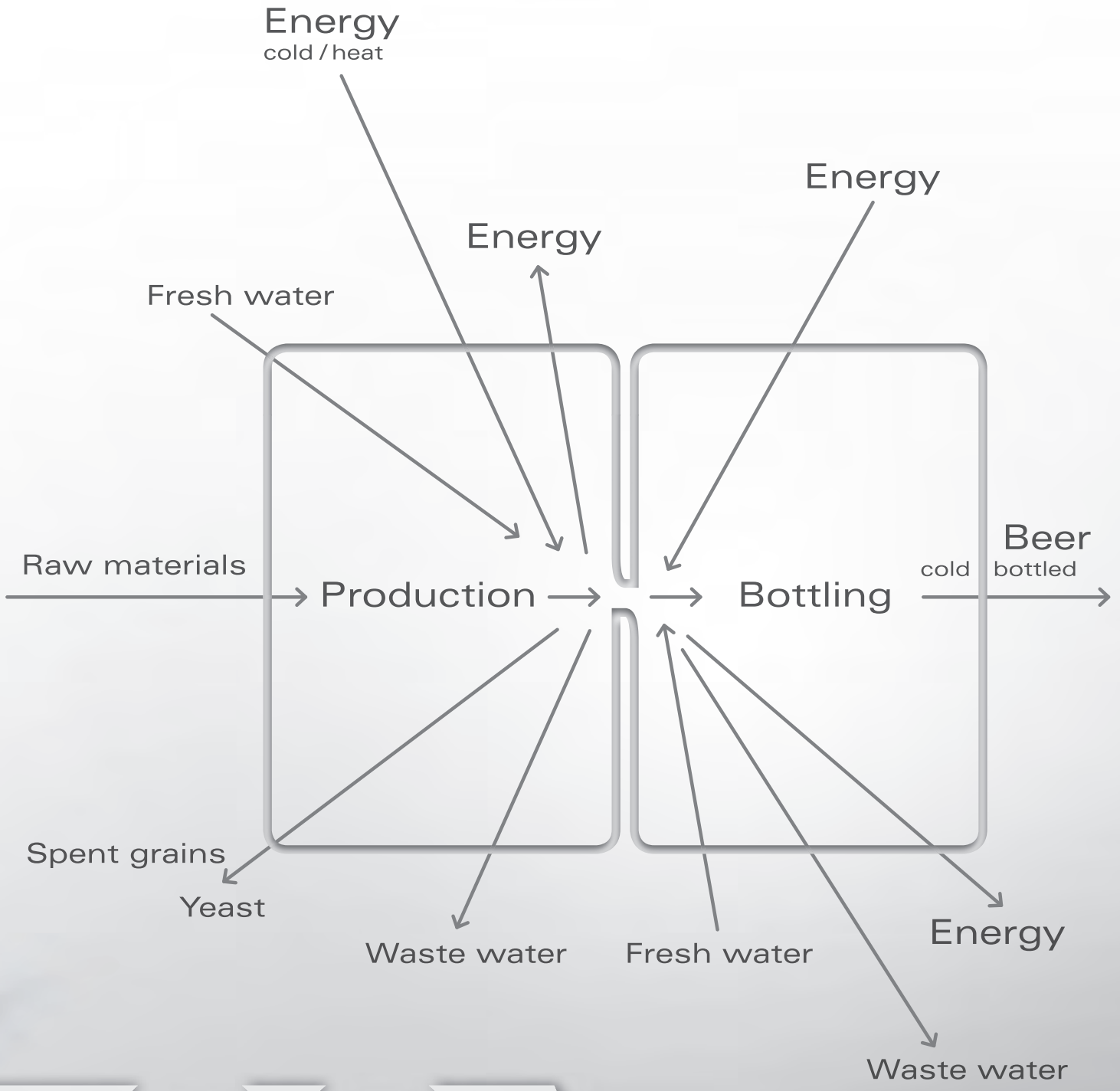
CROSS-DIVISIONAL ENERGY MANAGEMENT
INTELLIGENTLY LINKED SUPPLY

With our holistic masterplan we optimize the energy balance of the brewery in terms of supply, demand, time and place. This results in the shortest possible distances between source and consumer, thereby maximizing efficiency. The just-in-time energy concept operates on the principle that if the brewing process requires a temperature of 75°C the heat supply is initiated at approx. 80°C. This reduces the energy storage costs and minimizes the losses in the distribution network; further demonstrating that the reusable energies, such as solar and geothermal, play a decisive role in the energy mix.

THE USE OF RENEWABLE ENERGIES
CALCULABLE COSTS AND CREATIVE RECIPES

Renewable energies allow you to calculate your brewery's energy costs in the long run. It is the best sustainable position for any brewery. Furthermore, it allows the brewmaster to brew with traditional recipes alongside creating new styles of beers. Partial mashing, long wort boiling times and lower storage temperatures are now economically and environmentally justifiable.



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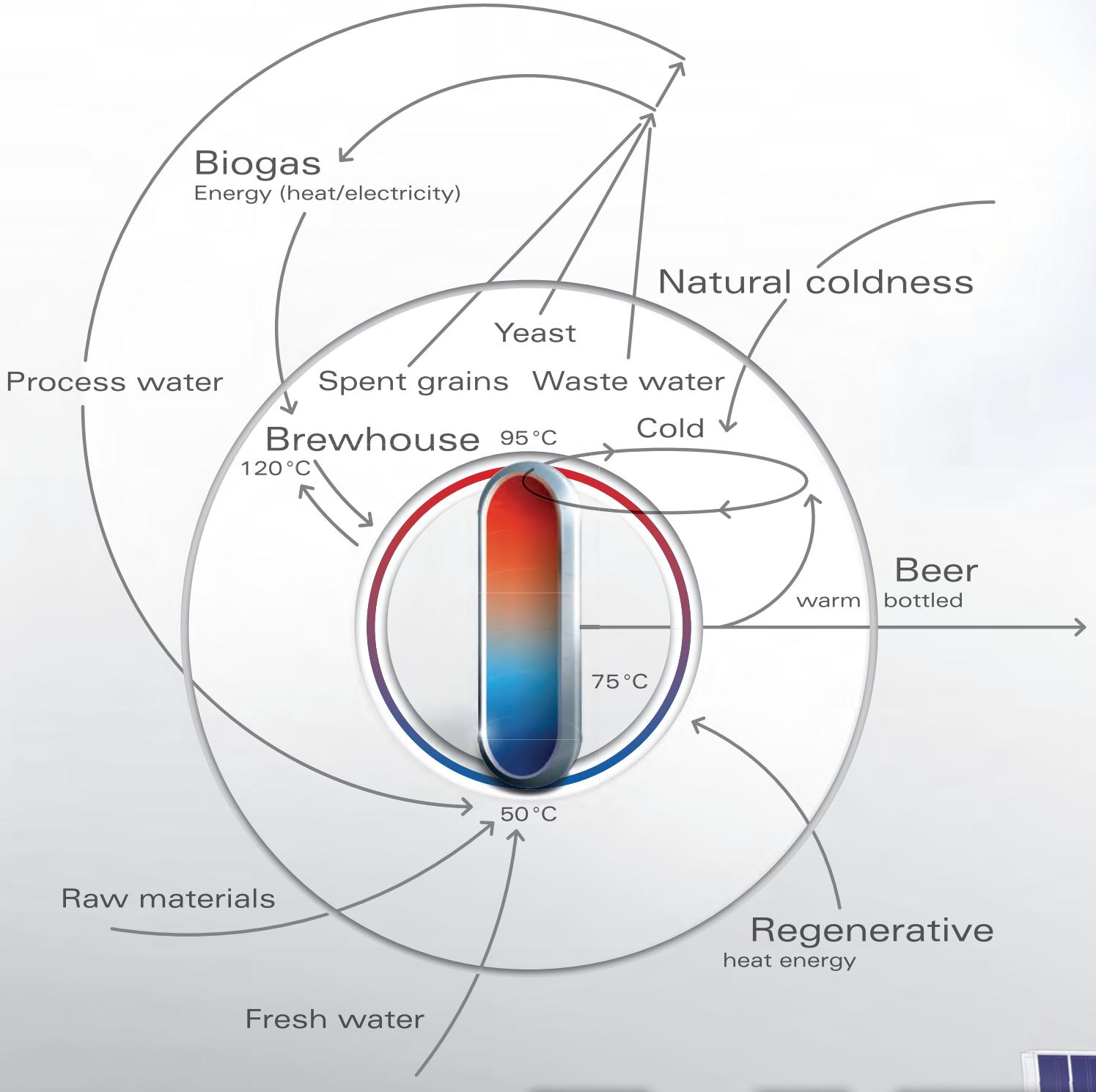
The production block and the bottling plant so far have been two separated areas, whose respective resource management could be significantly reduced. However, further savings are extremely expensive regarding the achieved potential or end up in the restriction of technological freedom



The concept of the *21st Century Brewery* is based on four foundations: the close cooperation of specialists, a holistic masterplan, cross-divisional energy management and use of renewable energies. Previously separated areas – from the brewhouse to the filling plant – are merging into a single entity. This offers enormous future potential in terms of the environment, economy and technology.

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