

# No Small Beer

Master brewer Peter Kraus and Professor Wilfried Zörner walk together through the cellar and survey the huge fermenting vats at the Herrnbräu brewery in Ingolstadt, Upper Bavaria. The air – at the site where Herrnbräu makes some of the 250,000 hectoliters of beer it brews each year - is thick with the sweet, heavy aroma of hops and malt.

Ingolstadt has been famed for its beer for half a millennium. It is no coincidence that Duke Wilhelm IV proclaimed the Bavarian Purity Law for beer in the city on the banks of the Danube in 1516. Students and professors at Bavaria's first university in Ingolstadt already knew a good beer when they tasted one.

Fast forward some five hundred years and the city, its master brewers, and the

A team of scientists, spearheaded by Professor Wilfried Zörner and specializing in renewable energies at the Institute for Applied Research (IAF) at Ingolstadt University of Applied Sciences, aims to tap the sun's energy to make brewing even more energy-efficient and to reduce production costs. The buzzword is "solarthermics." This involves generating so-called "process heat" by solar thermal means. Unlike the commonplace capture of heat using a solar thermal system for residential purposes, process heat is all about generating energy for industrial manufacturing processes. The sheer scale of a medium-sized brewery and the complexity of the numerous different production processes represent a major challenge to the IAF scientists: the heat is stored in a large buffer tank, using water as the me-

The subsequent production stages require different temperatures, for example, for cleaning returned deposit bottles for refilling with fresh beer.

The ambitious research project is a pilot project that seeks to make the new technology available to other breweries and food-manufacturing businesses. The objective is to achieve a significant reduction in CO2 emissions to help counteract climate change.

The research project comes under the umbrella of the BayForeta research consortium being supported by the Bavarian Ministry of Science, which brings together a total of 11 research institutes conducting leading research into how to boost the energy efficiency of specimen industries.



*It's tapped!*



*In the top-fermentation cellar*



*Sun simulator*

world of science are still experts at innovation. Where beer once blazed the trail, Ingolstadt is now acquiring a reputation for a second German export hit with beery associations: renewable energies.

dium, with various strata at various temperatures inside one and the same tank. These strata can in turn be used for production processes requiring different temperatures. Take mashing for instance, which starts off the actual brewing process. The brewing water is heated up to about 60 °C, crushed malt is added, and the resulting mash is heated to around 75 °C while being stirred constantly.

So, if you ever find yourself in Ingolstadt, you can safely raise your glass, knowing that you are making your own small personal contribution towards protecting the climate. Cheers!

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