





# Interview with Ivan Tučník, Head of Group Sustainability Asahi Europe & International

How does Radegast Brewery work with water when brewing beer, what are the brewery's aims regarding sustainability, to what extent does the brewery use the latest technological trends in its production, and why do we like bitter beer in the Czech Republic? The offer to be interviewed for our VTEI journal was accepted by Ing. Mgr. et Mgr. Ivan Tučník from Asahi Europe & International; in the Czech Republic, the company owns Radegast, Plzeňský Prazdroj, Velkopopovický Kozel, and many other breweries across Europe.

**Mr. Tučník, Radegast has long been one of the world leaders in water conservation in beer production. How far can you go in water conservation?**

A lot depends on how far you set your limits. There are breweries in the world that can go somewhere between 1.6 and 1.7 litres per litre of beer produced. The question then becomes how much each tenth of a litre saved is worth. You get to the stage where, to save water even more, you need to use, for example, reverse osmosis technology, which is not only an energy-intensive process, but also generates hazardous waste. For us, we have set this limit at a level that we have mapped out, but above all at a level that we are able to apply in production. In addition, there is not a single brewery in the Czech Republic that would be at risk of water shortage, so there is no need to lower this limit even more. Nevertheless, we are trying to find ways of maximising the efficiency of water use without having to treat it in such a complex way. In fact, we have already reached our limits. This is evidenced by the fact that we have made no progress in reducing consumption in the last two years. Rather, our aim is to maintain this threshold.

**How are the other breweries in the Asahi Group doing with water conservation? To what extent is Radegast a model for other breweries?**

We are fortunate that there are people at Radegast who are interested in water conservation during the brewing process and who place great emphasis on this topic. What is important, however, and where Radegast has an undeniable advantage over, say, the Pilsner brewery, is the complexity of the operation and beer production itself. The more types of beer you brew within one brewery, the higher the water consumption. Every time you start brewing a different kind of beer, it means a complete sanitization of the entire system, which is reflected in the aforementioned water consumption. Radegast Brewery has the advantage that there are not so many types of beer brewed here compared to other breweries in the group. It is definitely an inspiration for others, but with the small footnote that not everything that is possible at Radegast is possible elsewhere. Radegast Brewery is the absolute leader in terms of water consumption, not only in comparison to the entire group of breweries belonging to Asahi, but also globally.

**To what extent can you use this know-how with other breweries?**

A lot. We always try to share our experience with each other, and if something works, we try to apply it further. However, we have to take into account the local context every time. The extent to which solutions can be replicated is sometimes limited. We operate four breweries in the Czech Republic and Slovakia, with a total average consumption of 2.8 litres of water per beer. Our ambition is to get to 2.75 without using energy-intensive technologies.

**Surely, such low water consumption also works as a good promotion point...**

Of course, this is perceived very positively by our consumers. This approach did not start as a marketing concept coming from an idea of a marketing team or a PR manager. The whole current approach has its foundations from the bottom, and other things have built on top of that over time. There are other activities that we do at Radegast.

**One of the proofs is not only water conservation in operation, but also management of rainwater. What is Radegast's approach in this respect?**

We have a rather unique way of treating rainwater directly in the brewery. We call it the brewery ponds, which is a biotope that we built here about twenty years ago. It is a system of several ponds through which we treat rainwater from the brewery before we discharge it into the Morávka river. In addition, we have a grant programme through which we support community projects around the breweries, such as Beskydy landscape management.

**The brewery's cooperation with Forests of the Czech Republic is well known...**

Yes, cooperation with Forests of the Czech Republic is basically a way to extend our approach to landscape protection to the whole country. We are currently preparing an evaluation of the effect that these activities have had so far on the total volume of water retained.

**How financially demanding are these activities?**

These activities come at a cost, but they are very important to us. And they help the brand. Our initial communication of this initiative was very cautious, mainly because the use of sustainability in communication is not so widespread in the Czech Republic. We put a lot of emphasis on being able to prove all our activities and back them up with valid research and robust methodology. Therefore, we collaborate with universities and research institutions.

**You want to be water neutral by 2030.**

Through projects that build pools and restore wetlands, we plan to retain the same volume of water in the landscape as we use in operations. By 2030, we aim to have enough similar projects in place to ultimately retain a volume of water equivalent to around 570 million litres, which is our annual consumption at Radegast Brewery at current operating levels.

**Where are your activities expanding or heading next?**

Cooperation with Forests of the Czech Republic in building pools and restoring wetlands is probably what is most visible now. However, we are also focusing a lot of effort on cooperation with farmers. We are aware that the Czech Republic is beginning to struggle with drought, which we see, for example, in our barley and hops suppliers. We feel that working with our suppliers from

a value chain perspective is the most natural for us. Let us take the example of our most famous hop variety – Žatec semi-arid red. If this variety were to disappear or if its production were to be dramatically reduced, it would have a major impact on the Czech brewing industry and on the quality of Czech beer. I like to compare hops to spices in food; you do not need a lot of it to make beer, but it is absolutely essential to the taste and quality of beer. Without Žatec red, our Pilsner lager would not be what we are used to.

#### **Please describe to our readers how such cooperation with farmers works.**

To give you an example, in our three-year research project “For the Hops” we were trying to understand how hops themselves manage water and how they react to external stimuli. At six sites, we installed devices to collect and assess meteorological data, including data on soil processes. We measured soil moisture and temperature at twelve different depth horizons. At the same time, we monitored the development of the hop garden using time-lapse cameras. We went so far as to use sensors on selected plants to monitor sap flow, stem shrinkage, and assess the stress level of the plant in response to water and temperature. The result is the first software solution aimed at efficient irrigation of hops. I was surprised myself how little we actually know about hops.

#### **How will you use the results of this research?**

Last year we tested this solution on twenty-eight hop farms, roughly one tenth of Czech hop growers. We are now in the process of building a network of weather stations across all hop-growing regions, and we will offer our solution to other hop growers in the Czech Republic. We are collaborating with three technology start-ups, including a Czech software company, and professionally with our hop-growing institute in Žatec. It is quite a complex collaboration of about forty people living on three continents and in about fourteen different cities, which is sometimes a bit difficult to coordinate.

#### **That sounds very interesting. Can you tell us how much interest there is in this product?**

There is definitely interest, and what I would like to point out is that we do not ask anything from the growers in return. We realise that a farmer's decision to grow hops is not a year-to-year decision, like other crops. It is a decision for several years, often decades. Our offer is essentially a service to a small community of hop growers, which is an important raw material for us.

In addition to the technology initiatives mentioned above, we have a project where we are testing regenerative hop growing, which basically means that we are focusing on growing crops in the inter-row, which is normally ploughed and nothing grows there. We are in our third year of cooperation with the Czech University of Life Sciences on about twenty-five hectares. We are looking at the effects of intercropping on yield, quality and soil, but also on the amount of organic matter in the soil, water-holding capacity, cooling of the soil during hot days, and many other things. We have observed that we can cool the soil by two to five degrees with the appropriate choice of intercropping.

#### **How does Radegast Brewery manage wastewater? Do you use any higher levels of water purification or recycling?**

We do not want to have this tunnel vision where we are only dealing with water and we do not care that we will create problems elsewhere. The associated high energy consumption is not just about cost, but also about carbon footprint. We are trying to balance the different parts of the process that we are focusing on, and our possibilities are therefore limited. So, we do not really see this as a path for breweries in the Czech Republic that we want to apply

intensively and on a large scale because in our conditions it does not really make sense to us at the moment.

#### **Could the energy needs be met by solar power?**

In breweries where it was possible, we have solar panels on the roofs. In Nošovice we have them on the automated warehouse, which makes it basically energy neutral, but in terms of the total consumption of the brewery it is about three per cent. Therefore, for us, it is more of a supplement, not a final solution. However, we were able to find that in Slovakia. While we are still looking for a partner in the Czech Republic, in the east of Slovakia, about fifty kilometres from our brewery, we have just launched the largest greenfield solar park as part of the so-called VPPA project, which supplies electricity to the grid which is then used in the brewery.

#### **Regarding the quality of water at the inlets, do you use raw water from your own sources or water from the supply system?**

We have water treatment plants in all our breweries to ensure the parameters we need. In Nošovice we have three wells of our own, but in most breweries it is a combination. In Pilsen, for example, we have our own 100-metre-deep wells that we use for the beer itself, but we take surface water from the system for all the technical processes around it, because in that case, using groundwater would be wasteful. By the way, this is also why Pilsner lager is not brewed anywhere else but Pilsen; whether you have it in Tokyo or Washington, it always comes from the same brewery and the same brewhouse. Otherwise, we have a multi-stage system of controlling the quality of water and its parameters. We are not using carbon filtration yet; our water treatment is more parametric in terms of mineral content, de-ironing, etc. And in the next control stage, for example in Želivka, its quality is monitored by live trout (*laughs*). The quality of residues of agro-preparations and pesticides, whether in hops or barley, is monitored both by the agronomist and by us when we receive the goods, and if the analyses do not come out well, we reject the batch and these substances do not get into the beer.

#### **How about buying these products directly from certified organic farms?**

If we wanted to convert everything to organic at our volumes, it would not be realistic. For example, there are only maybe three or four organic hop fields in the Czech Republic, which might be enough for a microbrewery, but not for us. We see the future mainly in improving the soil for growing hops and barley, both in terms of quality and carbon content and the water-holding capacity. This is one of the things we have committed to at Radegast. We now have two research projects on this and then, based on the results, we will look at ways to scale this across our suppliers.

#### **Is climate change having any effect on the quality of our hops?**

Primarily, it manifests itself in an increase in yield fluctuations and content of bitter substances in the hops. For example, about three years ago, we had the best harvest in the last century; the year after, we had the worst harvest since the 1960s. So it is about reducing your predictability, which has implications for medium-term commitments with our partners. By having our recipes standardised for alpha bitters, essential oils and other things, we are able to compensate for that so you do not taste anything in the actual beer. However, it may lead to the fact that you need twice as many hops as the year before to achieve the same quality of beer, because the concentration of the substances in question is lower in that particular harvest. And if you combine the variation in quality and quantity, the year-to-year variation is very noticeable.

The worst-case scenario is a poor harvest with low alpha acid content. However, it cannot be said that a warmer and sunnier year – as in the case of winemakers – means better hop quality; there are many more factors at work. We generally have problems with a higher number of tropical days in a row in a longer rainfall-free period. To some extent, this can be compensated for by lowering the soil temperature in regenerative cultivation and the plants in the undergrowth. The results of our research will give more clues.

### What about the other important raw material, barley?

Climate change does not have that much impact on yields, but it does have an impact on the malt quality; we need it to have a certain ratio of nitrogen, protein, and other substances to be malleable. From the grower's point of view, it is actually a bit of a lottery because you do not know until the harvest whether you are going to get malting parameters in barley or whether you will have to sell it as feed. And the difference in the purchase price is often double. This risk is leading to a lot of growers moving away from malting barley – the malting barley area has halved in the last 25 years. Within our research, we are looking for ways to stabilise quality for growers. We are looking at changes in sowing practices and improving soil quality, and we believe that this could be the way forward – somewhere between organic and conventional production.

### Is it possible to calculate how much barley is used to make beer compared to making bread? Beer is called liquid bread...

We need about one hundred and fifty thousand tonnes of barley per year, which is about thirty thousand hectares. If we consider that the arable land in the Czech Republic is two million hectares, this is not an entirely insignificant amount. Otherwise, about one million tonnes of malting barley are produced in the Czech Republic every year, of which we account for about fifteen per cent. It is also a very important export commodity. We export both barley and malt to many European countries. As the Czech Republic, we are fully self-sufficient in its production.

### And what about the declining trend of “going to the pub” in the Czech Republic?

We sell about thirty-five per cent of our beer to pubs and the rest is domestic consumption. We are doing what we can to maintain this ratio. We cooperate with pubs a lot and invest about four hundred million a year in them to help them remain an attractive place. We invest in repairing their facades as well as their interiors and toilets, so it is not just about providing them with taps and glasses. We are particularly mindful of the quality of beer, so we invest in training so that the pub staff know how to treat the beer well. Having a beer in a pub is about the experience, there has to be some added value – a properly chilled glass, a well-adjusted tap. As we say: the brewer brews the beer and the innkeeper makes it. The quality of the beer and the quality of the tapping is about half and half.

### And what about the phenomenon of Czechs not drinking classic 10- and 12-degree beers so much and turning to modern beers?

I am going to surprise you. If I take bottom-fermented beers in the sense of lagers and draught beers, their production is definitely above ninety per cent. In reality, Czechs still want bottom-fermented beer and the general trend is more lager than 10-degree beer. The Czechs are very conservative in this respect and their consumption is built on bottom-fermented beers, especially Pilsner-type beers. In cities, however, there is more experimentation with other types of beer.

### Czech breweries are competing to see who can come up with the most bitter beer. Why do you think Czechs like bitter beer so much, whereas Western Europe, for example, tends to prefer sweet, malt, and sour beers?

When we look at our most popular brands and the overall character, beer in the Czech Republic is generally more hoppy than in Western Europe; it is a Czech specificity. In Slovakia, we also see a leaning towards more bitter and more hoppy beers. It is a historical development and a long-term local habit. Basically, since the emergence of Pilsner Urquell as the benchmark for bitter beer, which has a character built on local Žatec hops, it has made its way into Czech beer culture. In recent years, however, we have also seen sweeter and more sour beers that have their famous predecessors elsewhere in the world. It is also about what one likes, whether the beer is well brewed, treated, and properly tapped. It is clear that the younger adult generation tends to prefer less bitter beers, and we are meeting that with our range, led by Proud beer.

### Are preferences also changing in bottle sizes and packaging?

There is much more demand for smaller packages, which is also related to modern trends in reducing alcohol consumption. That is why we now offer Radegast in one-third-litre returnable bottles. In terms of packaging type, cans have been growing in popularity for a long time. We are happy to stick with returnable bottles because they are great from an environmental point of view; we fill each bottle on average twenty-six times and we have a ninety-eight per cent return. The life of a bottle is approximately seven to eight years. If a bottle is rotated so many times in the system, it is the most environmentally friendly way to package beer ever. Of course, the older bottles may be a bit worn, but we check thirty parameters of the bottles for quality before filling them, and if one of them does not fit, the bottle is discarded and goes for recycling. Conversely, the worst option for beer in terms of carbon footprint and all the other things is if you throw away a newly produced bottle of beer after drinking it. This means a non-returnable bottle because it is heavy from a distribution point of view and it is energy intensive to produce. For us, it costs three to four times more than a returnable bottle. Four years ago, we also reduced our ecological footprint by replacing the aluminium and plastic part of the Pilsner beer label with paper. Even such a detail has a significant impact on the ecology of the operation and only underlines our long-term path and vision.

*Mr. Tučník, thank you for taking the time to talk to us.*

**Ing. Josef Nistler**  
**RNDr. Tomáš Hrdinka, Ph.D.**

### Ing. Mgr. et Mgr. Ivan Tučník

Ing. Mgr. et Mgr. Ivan Tučník, born on 26th February 1986 in Považská Bystrica. He graduated from Masaryk University in Brno with a Master's degree in International Relations, Business and Management, and European Studies. Prior to joining Asahi Europe & International and Plzeňský Prazdroj (since September 2017), he worked as a consultant and communications manager at MAKRO Cash & Carry, Bison & Rose, and AMI Communications.

