# Reprocessing slags from waste incineration plants

## ATAB engages bifa to examine process optimisation

*To improve resource efficiency, between October 2014 and March 2015, bifa worked on a new project on behalf of nine members of the ATAB – a consortium of the operators of thermal waste treatment plants in Bavaria.*

After analysing and evaluating existing and new industrial technologies for efficient reprocessing of slags from waste incineration plants, a system proposal for economically and ecologically optimised recovery of bottom ash. Each of the studies for further improvement of the existing processes in detail, mainly pays attention to the achievable savings in valuable end storage (landfill) space:

- Evaluation of data on the quantities and qualities of the mineral slag fractions (approx. 85 %) and the ferrous and non-ferrous metal separation results and
- Possibilities for further recovery of the reprocessed slags via the tried and tested recovery channels as waste material, in addition to filling and landfill site construction.

In addition, the potential for joint, improved reprocessing and marketing of the slags will be examined. A proposal will be drawn up for optimised reprocessing of the bottom ash and the potential of usable fractions with optimum metal yield, recovery of the mineral constituents and costs in a location-specific consideration. It is being checked whether an efficient, central high-tech plant could possible produce further economic and ecological advantages.

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# Energy efficiency through combined heat and power generation

## Testing and development of heat concepts for Weißenhorn waste incineration plant

*Since it was started up in 1991, heat use concepts have been discussed at the waste incineration plant in Weißenhorn, until now without achieving external use of heat. Following several start-ups in recent years, the bifa Umweltinstitut was engaged to check heat use concepts and if applicable to develop them ready for implementation.*

Following a rough preliminary check of different use concepts, in particular, variants of piped heat supply within the town of Weißenhorn were developed. In a further stage of the project the options were defined more specifically and calculated with detailed data of larger heat users. To do this, a large number of meetings with potential purchasers were necessary. A large step in the direction of further implementation was the bringing together of the main players in the waste management company, rural district and the town of Weißenhorn. Two routes were recommended in the working committee of the rural district. On the one hand, the town centre of Weißenhorn with public properties and private users should be supplied and on the other hand, steam users in an industrial park with a separate pipe route. A connecting pipe to the district heating network of Senden is still under discussion.

With the fundamental decision to continue with the project, the working committee decided to form a steering committee with members from the town of Weißenhorn and the rural district, which will provide help and advice for the further implementation. In the next step, specific negotiations will be started, in order to then move into the detailed planning stage. A desirable outcome for the town and region would be to use a base load plant for the heat supply and therefore not only actively implement climate protection but also to improve the emissions situation in the town.

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## Events

**Metall-Rohstoffe – viel Wind um nichts?** Talk im Technikum
04.03.2015, bifa

**16. Bayerische Abfall- und Deponietage**
18.–19.03.2015,
Landesamt für Umwelt, Augsburg

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# aktuell

4.2014

# Climate change – opportunities and risks for the Bavarian economy

## Minister of State Scharf presents new guidelines

*Companies are increasingly examining the consequences of climate change on their production processes, raw material markets or sales channels; because climate change, says Minister of the Environment Ulrike Scharf, „is a global challenge with regional consequences, including the Bavarian economy". Companies are also increasingly faced with the question of how to protect themselves from the consequences of climate change – and here they have to recognise precisely what affects them and to what extent and when this concern becomes specific. No easy task!*

New paths were therefore taken in the case studies with seven business from producing industry, the construction industry and trade: With the help of an innovative workshop concept, the representatives of the participating companies advised each other, with the support of experts of the project partners: bifa Umweltinstitut, the University of Munich and the Bayerischer Industrie- und Handelskammertag (BIHK - the Association of Bavarian Chambers of Commerce and Industry). This approach of „collegial coaching" was new to many of the company representatives and decidedly fertile; because they received plenty of ideas and suggestions, which above all were brought about by this practical „thinking outside the box".

The results of this study, unique in Germany, were then summarised in new guidelines. In October it was presented to the interested public at two of the participating companies: by Minister of State Ulrike Scharf in Erding at Huber Technik and by Undersecretary Dr. Monika Kratzer in Augsburg in Modehaus Jung. „Measures for >>

## Dear Readers, Dear bifa Partners and Clients,

2014 is drawing to a close. The new year is almost here and for many of us it is already packed with challenges and expectations. Yet before it arrives there are still innumerable things to be done. Who doesn't have to cram numerous tasks and appointments into these few weeks?

Only in the last few hours before Christmas do things start to slowly calm down. On behalf of myself and my employees, I wish you contemplative moments, happy hours with your family and friends and a relaxing time! Because all too quickly it will be the new year 2015, for which I wish you good health, fortune and satisfaction.

The closing message for the Christmas issue too is: Enjoy reading about interesting projects!

W. Rommel

Yours, Wolfgang Rommel

Furthermore in this issue:



>> adapting to the consequences of climate change and especially tailored to the participating companies were developed", says the Minister. In this way, risks can be reduced and economic opportunities identified early. Through climate-compatible products and technologies, such as intelligent shading systems, new markets can also be opened up. In the case studies with the companies it was also possible to show that central fields of action for climate adaptation strategies are already emerging. These often involve protecting employees from heat and exposure to the sun. Measures of preventive health & safety, air conditioning or new working hours models were discussed.


*Group photo of the project participants; left: Event in Erding with Minister of State Scharf; right: Event in Augsburg*

Apart from the topic of logistics, a second frequently named topic was sustainable securing or raw materials, e.g. through strategic alliances with suppliers or developing own resource markets Finally, in addition to new or modified business models, protection of buildings and safeguarding production processes were also important topics.

The parameters identified with this study and examples of adaptation measures provide ideas and help for other industries too. The brochure can be downloaded immediately, free of charge as a pdf, from www.bestellen.bayern.de.

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# Radiant superheaters

## Increasing the efficiency of thermal waste treatment plants with high corrosion

*The project with the objective of developing and trialling a corrosion-protected radiant superheater for increasing the efficiency of thermal waste treatment plants and comparable plants with high corrosion was first reported on two years ago. This project was successfully completed in November.*

The radiant superheaters can now be used to implement a system with which it is possible to superheat the steam in incineration plants for non-standard fuels far above the currently usual standard of 400 °C, without causing plant operational limitations due to corrosion of the superheater. Due to the increased steam parameter, the electrical efficiency of such an incineration plant can be increased significantly, which leads directly to primary energy savings and a reduction in specific $CO_2$ emissions during electricity production. Another advantage is that components at risk of corrosion in the area of the contact heating surfaces are moved into the combustion chamber and there they are provided effective protection. In this way, not only can efficiency be increased but also the stoppage times reduced, and under certain boundary conditions the throughput can also be increased. Increasing the steam temperature generally proves to be difficult. At times substantial corrosion effects are known of even in plants with the usual steam temperature of 400 °C. Effective and reliable protection systems are currently not available on the market. Many plant operators try to use new materials, for example, Inconel 686, or new processes, for example, thermal spraying, in order to extend the lives of the superheaters. The experience acquired to date is not clear. In some plants these protection systems function satisfactorily, but in other plants they fail completely.

Based on the operating experience with radiant superheaters acquired in the project, the concept of overcoming the limits set to date by corrosion appears to stand the test. Therefore, the use of a radiant superheater becomes relevant in Bavaria in all energy generation plants in which comparatively severe corrosion occurs due to the fuels used and an increase in performance can be achieved via higher steam temperatures. Here, for example, use in biomass plants would be possible, in which the input of potassium causes very high stressing of the boiler materials, which in the tests could not be controlled at high temperatures even with very sophisticated materials. Due to the very limited investment situation for new plants, upgrading, optimisation and extending existing thermal waste treatment plants is increasingly becoming more important. This is seen as an important market for the radiant superheaters. The concepts for upgrading 20 or 30 year old plants are tremendously important.

In addition to Rosenheim waste incineration plant, the project partners were Martin GmbH and CheMin GmbH. The project was co-funded by the European Union, with money from the European Fund for Regional Development and the Bavarian State Ministry of the Environment and Consumer Protection.

Europäische Union
„Investition in Ihre Zukunft"
Europäischer Fonds für regionale Entwicklung

Bayerisches Staatsministerium für Umwelt und Verbraucherschutz

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# Friedberg starts in the energy future

## Presentation of the energy use plan in a special session of the town council

*The energy use plan for the urban area Friedberg was presented by the joint project partners; bifa Umweltinstitut and Prof. Georg Sahner of Stuttgart in a special session of the town council.*

In Friedberg the joint project partners had drawn up an energy use plan in which new methods were applied, for example the structure meter, to assess districts with regard to development possibilities or central heat supply systems. These methods are relevant for municipalities, especially during the concept development phase and when defining objectives. Apart from the energy aspects, in particular, urban development aspects were included, in order to obtain an integral consideration with regard to the development options of the municipalities. Accompanied by a project group from Friedberg, the target set for 2020 was to increase electricity generation from renewable energy from 15 % to 35 % while at the same time avoiding power surpluses. In the area of heat supply, development areas and areas with central supply possibilities were assessed and their further processing was prioritised. In total, a catalogue of measures with 21 projects on the topics of electricity saving, developing renewable energy, energy management, heat networks, use of the waste heat of biogas plants and energy modernisation was derived.

It was important for the town councillors for the energy use plan to not remain a concept document but something that is viable for the town, can be updated and also produces specific projects. This could be achieved with four implementation projects, which were progressed far into the project development state. Municipal energy management was introduced in the town, an innovative local heat concept for a terraced housing estate was tackled with the owners and through the regional energy agency, energy advice was provided for a district with the „Energiekarawane" (Energy Caravan) project The development of a local heating network, starting from public properties in Friedberg's town centre, offers great potential. The specific projects also achieved cross-party approval in the town council and a spirit of optimism for the topic of energy in Friedberg.

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# Material flow analysis: from raw materials to recycling

## bifa supports companies with material and technology strategies

*The surveying, analysis and management of material and energy flows have become an essential instrument of ecological and economic business control.*

Control of entrepreneurial activities with a view to resource and material efficiency at operational or product-based level needs systematic surveying and analysis of a company's own material flows. bifa advises its clients on choosing methods and uses its many years of experience in the surveying or collection and evaluation of data. In addition, bifa provides help in linking the internal material flow analysis with external action fields – such as raw material supply and waste management.

The following two project examples highlight exemplarily just how multi-layered the bifa portfolio for material flow analyses is:

- For example, bifa successfully assisted a technology corporation in developing its waste management targets further. First of all the company's worldwide waste data was analysed and, with the help of bifa's expertise, was evaluated in disposal methods and structures. As a result the ecological and economic potential of the corporation-wide recycling efforts were firmed up with a view to individual locations and regions.
- In other projects bifa analysed the complete recycling chains for the electronic products of companies and developed specific approaches to optimised recovery of raw materials. Important contributions included analysis of the raw material use in quality and quantity and based on that the identification of suitable recycling methods.

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