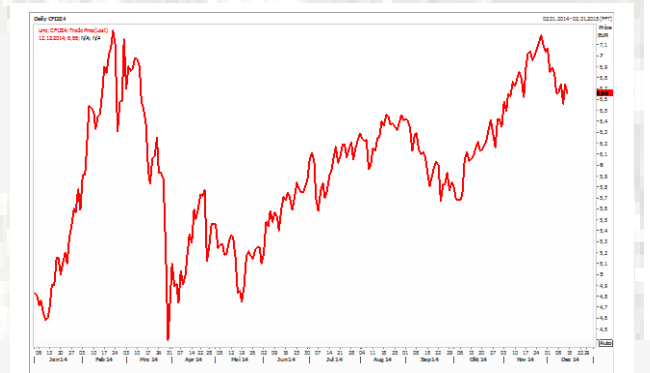




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EUA DEC14 01.01.2014 bis 12.12.2014

Source: ICE London

Emission News 13-2014

Practical Information for Emission Trading

Edition 15.12.2014

New EU targets for reduction of primary energy consumption - Also installations in emissions trading benefit from new funding

In October 2014 the European Union has established in its energy and climate package to reduce the consumption of primary energy at least by 27% until 2030 (in relation year 2007). The German Federal Government has established a Cabinet decision on 12.3.2014 that as an immediate measure, the National Action-Plan Energy Efficiency (NAPE) enters into force on 01.01.2015, which will launch major initiatives and support programs. Alongside also a funding program for small and medium-sized enterprises (SMEs) applicable was launched, which also applies to operators in mandatory emissions trading if they comply with certain conditions. The underlying idea of the funding principle of improving energy efficiency applies in principle also to installations in mandatory emissions trading.

As the current energy efficiency in these installations does, due to low CO₂ prices and consequent lack of willingness to invest, continue to show high potential energy savings for efficiency improvement, many operators can implement further cost savings here.

For this reason Emissionshändler.com® demonstrates in his **Emission News 13-2014** not only the technical potentials that can lead to energy cost reductions but moreover the potential for savings and increase of CO₂ emission rights, which are often in a direct relation.

Review of former objectives of emissions trading

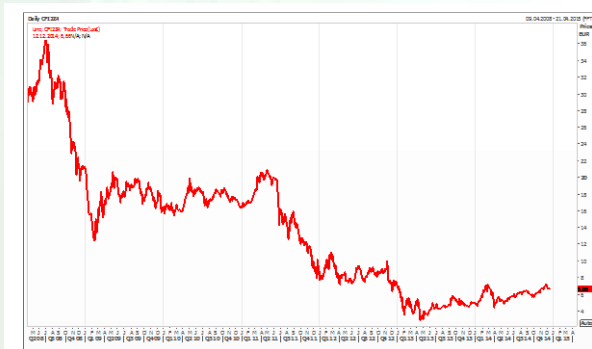
On 01.01.2005 the 1st period of emissions trading began in the European Union for the larger industrial and municipal energy consumers. This ushered in an attempt to achieve free trade in emission rights through a limited issuance of emission rights for CO₂, which would lead to such a high price per tonne of CO₂ that it would inspire further action by operators because investment to reduce emissions would be economically attractive. However, once the price of emission allowances fell due to too high free allocation to zero at the end of 2007, it was believed that this would be a start-up problem of the trial period which would be eliminated in the following periods, through reduced allocations.

But when two years later in the 2nd trading period after an "early rise" looking price level of 30 €/t the EUA price was pressed by the economic crisis under 15 €/ton and another two years later due to Fukushima and the energy revolution - influenced as well by the debt crisis of the EU countries - the price of emission allowances in early 2013 even dove under the threshold of 8 €/t it was obvious that the energy efficiency at the affected plant operators could no longer be affected by the CO₂ price any more. This is especially true because the EU rules so far did not permit a correction of free allocations once adopted in the EU ETS and the trading system with its CO₂ price is therefore



defenceless against political and economic influences.

Therefore, it became obvious that economic crises, debt crises and political crises always have a direct impact on a CO₂ price when the output quantity of free allowances is close to the actual demand of installations in "normal times". In times of crisis, then declining production of economic goods and electricity does then also have a declining effect on the demand for emission certificates. This is the case and even more so if saved certificates from bad times with low demand are valid for several periods and therefore lead to excess amounts of up to 2.4 billion tons.



EUA price DEC14 April 2008 until 12.December 2014

Due to the complex political decision-making processes only from 2013 onwards a way could be found to reduce the quantity of allowances for auction temporarily, so that currently the price has stabilized at around 7 €/t.

The current situation of the energy efficiency inside and outside of the EU-ETS

The need to increase the energy efficiency outside the EU ETS, results for policymakers, not least because of the missing control effect over the years of the low price of CO₂ emission rights lead to the fact that operators impacted by emissions trading did almost see encouragement to invest in technical measures to increase energy efficiency.

Outside the sector of mandatory emissions trading such as building heating and transportation also only little progress in energy efficiency has been achieved in recent years.

These two effects at the national level can now lead to the fact that most of the reduction targets of CO₂ emissions by 40% compared to 1990 are no longer achievable for Germany until 2020, unless the German government takes additional initiatives.

Funding initiatives for energy efficiency – also for installations included in emissions trading

Amongst those initiatives now been launched is the National Action Plan for Energy Efficiency (NAPE) which has been adopted by resolution on 03.12.2014. It is to promote the implementation of the EU Directive 2012/27 / EU on energy efficiency in areas outside the EU emissions trading scheme but also in addition to some other programs and initiatives there exists a particularly noteworthy national support programme for small and medium-sized enterprises (SMEs), to improve the energy efficiency in the manufacturing process of their products and of secondary energy such as steam or cold.

Infobox

The impact of emissions trading on energy efficiency in day to day operations

Regardless of the price of emission rights, the introduction of emissions trading since 2005 in conjunction with rising energy prices in recent years, the "energy awareness" has risen significantly with those responsible in the operation because the associated emissions trading formalisms an annual recurring hazard made the preoccupation with the operating energy a continuous requirement.

A special push for this „awareness development“ was achieved in the transition from the second to the third trading period from 2013 up to 2020th

In previous periods, the application for free allocation of emission allowances was largely based on historical emissions in a defined reference period. Now, however, the allocation request had to be based on an emission calculation for a required production, based on the experience-values for a modern efficient plant, out of which so-called benchmark values were derived for the allocation request. Thus, the owners of old inefficient plants were punished because of their higher emissions resulted in the lack of free allocation. Another significant change was that, in principle, also there was no free allocation any more for the emissions resulting from using fossil fuels in the generation of electricity. And finally, it was decreed that the allocation of free allowances from year to year had to melt down, so that in the last year of the 3rd trading period (year 2020) only a maximum of 30% of the calculated demand for emission allowances have to be allocated free of charge, unless the can demonstrate its assignment to the carbon leakage list.

As the regulatory framework is largely determined by relevant EU regulations, any additional initiative can only result from the stimulation of voluntary measures deployed by enterprises - and installation included in emissions trading – that have to be decided over by the enterprises and installation themselves and have to be self-financed. However,



such a SME support program if it were to be applied amongst companies impacted by emission trading would lead to multiple savings that should come to light in comparison with a company not impacted by emissions trading. More about this topic can be found in our emission **Emission News 01-2015** on January 2015.

The opportunity for energy efficiency measures within installations impacted by emission trading
Emissionshändler.com® want to show in anticipation of his next **Emission News 01-2015** to small and medium-sized enterprises in this context here which main technical and logistical starting points do exist to take advantage of the attractive SME funding. It will be demonstrated how plant operators can from 01.01. 2015 save with the help of the funding not only primary energy and emissions but also how they achieve good technical benchmarks through more efficient plants and plant parts, which, in turn, lead to a reduction of the otherwise required additional purchase of emission rights from the market.

One of the few conditions of the on returnable funding for SMEs is an actual occurring energy saving. Emissionshändler.com® will differentiate in subsequent examples of efficiency potentials of installations impacted by emissions trading between **energy-saving** (eligible and primary energy costs will be reduced) and **emissions-costs-savings** (not-eligible but emissions costs are reduced).

In addition, there will be installations or operators that do save with the SME funding in both aspects, a reduction of primary energy costs and **additionally** from a reduction of emissions costs.

The limitation of the maximum heating capacity or production capacity

The participation in emissions trading is mandatory for such stationary installations and air transport, which are defined in Annex I to Directive 2003/87 / EC.

This refers to both stationary systems as well as to air transport. To reasonably limit the number of covered installations and aircraft operators' capacity definitions were mostly used to determine the obligation to participate in emissions trading.

Stationary installations are primarily the rated due to the thermal or the production capacity of the plants. These criteria are relevant to the individual plant ant to regulatory

approval. This coincides in most cases with the capacity actually installed.

However, it is not as if the installed capacity (especially in the case of remote thermal boilers) is actually needed and utilized. Boilers have a long lifespan over several decades and the installed capacity come from operational requirements of earlier times, which are often not known. In such cases, it is recommended to determine the current requirements limit by monitoring the heat input by of years of use. Should this be well below the limit of 20 MW, then a reduction in the approved thermal capacity should be requested from the Authority. Compliance with the new upper capacity limit can then be - without changing the shell hardware - to be ensured by an additional lock or latch at the equipment. With such an appropriate official notification to the operator the obligation to participate in emissions trading can be omitted. Logically, this method can also be applied if unnecessarily high production capacity has been approved and a reduction in the capacity value of may be requested without compromising the corporate objectives of the installation.

Consequence: Mostly corresponding analysis indicates approaches for real energy savings, e.g. to lower the requirements for heating in the peak of winter.

Result: External advice is eligible to funding. Energy costs are saved. Possible exit from the emissions trading is possible.

Infobox

Use of support money from the federal government on energy conservation

The federal government announced in the fall of 2014 that it will provide financial assistance to small and medium-sized enterprises (SMEs) when they perform the analysis of their potential savings in energy consumption by refunding the cost of external consultant services up to 80%. Emissionshaendler.com is ready to perform the appropriate consulting services, including assistance in creating the funding application, which must be made in the course of 2015, on the basis of its extensive relevant experience. Because of the relatively low cost, which have to be covered in the end by the SMEs, many companies should take advantage of these offering. A detailed description of the terms and conditions of participation can be found in emission letter 01-2015 in January 2015.

Determining the energy balance

The definition of the energy balancing groups is important especially when several participants are involved in energy production and energy use. For example, it could happen that one of the partners operating a cooling circuit for appropriate temperature controlled media which is required by the other partner for its production processes. If the balancing group boundary of the first partner ends where the cooling medium leaves his unit at a low temperature and re-enters his balancing group with a higher temperature, then the determination of the energy requirements of the first partner must include this heat



'increase' pursuant to the rules and this amount is to be deducted in calculating the allocation of free allowances to the first partner. If the balancing group is laid out as such that the cooling units are installed at the second partner and the balance limit only includes the heat flows needed by the second partner for operating the adsorption coolant engines, then balancing will be performed according to the higher outlet temperature of the downstream media and includes the lower temperature of the return flow. Here then the useful heat has been assessed physically correct. Such a correction of balancing groups, however, requires a change in the official assignment of plant components to the partners involved in most cases. This can prove to be very rewarding, however, if the effect of increased allocation is considered in many years to come. Again, also here a new and improved authorization has to be requested as soon as the official notification has been issued.

Consequence: An energy savings can result when it becomes obvious in the analysis of the energy transport across the system boundaries that transport losses can be avoided through better heat insulation of pipes.

Result: External advice is eligible to funding. Energy costs are saved. Reduction of purchased amount of emission rights by increasing the free allocation is likely.

Depending on definitions

In the analysis of chemical processes, the term 'residual gas' does play a major role. The recognition of the energy of residual gas being burned in the central boiler, for example, as a legitimate activity source for allocation can increase the allocation of free emissions allowances considerably. The energy contained in residual gas can - depending on the particular process control - appear also in liquid form and can be atomized only when fed into the boiler and assume a gaseous consistency there. In this respect - namely, the energetic use of waste products from the chemical process - there is no difference in the result. But because the regulations use the term 'residual gas' and not the more correct term 'residual material flow', the DEHSt may not take this energy flow into account when deciding on the application for free allocation of emission rights if the gas is not already in the feed to the boiler in gaseous form. In such a case, it may be useful to supplement the system configuration so that even outside the boiler an additional segment of pipes turn this medium in the gaseous state, by bringing it to a correspondingly higher temperature and by preheating it.

Here, an increase in the allocation can only be requested if a physical technical change to the plant status at the previous application (for allocation) was presented.

Consequence: A change of definitions is achieved at the DEHSt, which leads to higher allocation.

Result: External advice is not eligible to funding. Energy costs will not be saved. But a significant reduction in the purchase requirement of emission rights is to be expected.

Mathematical determination of boiler efficiency

In the ZuV 2020 under § 6, 'Determination of reference data' in Section 4, the following statement can be found:

'In case there is no data to determine the degree of utilization, a utilization rate of 70 percent is applied to the corresponding energy required to produce measurable heat efficiency as a reference value.'

First, this means the following: If the useful heat generated by the boiler is not detected directly by measurement of the vapour stream and the temperature of the condensate return flow, then a utilization rate of 70% has to be used, although the actual utilization of a good boiler system can be over 90%. In this approach, one would therefore lose an approximately 30% higher allocation. As far as Emissionshändler.com® could assess here, this simplified procedure was often elected in the allocation applications for the 3rd trading period, in case no direct measurements of the useful heat have been made in the past and present. However, there is the possibility to calculate the rate of actual use by using the results of dutiful recurring measurements mandated by the BImSchV of exhaust gas composition by an independent verification body. With this method Emissionshändler.com could help to avoid the assessment of the installation to the low value of 70% in the preparation of allocation requests and instead use the efficiencies of around 90%; a result which may differ for each plant by something in many cases.

Consequence: A subsequent change of allocation decisions for 2020 is to be expected because no the standard utilization is in many cases longer applicable.

Result: External advice is not eligible to funding. Energy costs will not be saved. A subsequent significant increase in the free allocation of emission rights is to be expected. However, probably only in case of physical modifications to the system, which is a prerequisite for a recalculation.

Proof of non-applicability of benchmarks regarding special products

In principle one should use the benchmark values for the current product when creating the allocation applications by deducting from metric ton of product to its permissible emissions. But it turns out that sometimes the application of the benchmark value, even though included in the definition for specific products does not make sense seems because the actual production values are far away from the benchmark values despite being used in modern facilities. In such cases it should be investigated in cooperation with the DEHSt whether a deviation from the benchmark values and a return to the actual values for the application is admissible because, for example, in small batch productions of special types of glass, the low benchmark values that were observed in the mass production of normal glass, cannot be achieved here on any physically justifiable principle.

Consequence: A deviation from the benchmark values should always stipulate an analysis of the causes of the higher specific energy needs. When analysing the grounds for the deviation, the insight can occur that the production



should be modified in terms of reduced energy needs, providing a realistic energy-saving effect.

Result: External advice may be eligible to funding. Energy costs may be saved.

A significant reduction in the purchase requirement of emission rights is to be expected.

Determination of Utilization factors

The same applies to the utilization factors used in calculating the allocation amount. Also here, the values to be used are mandated for some processes. If these differ greatly from the actual or experienced values of the system, then the use of system-specific values can be justified.

Consequence: An energy saving is not expected by the use of the measure just described, however, a significant reduction in the purchasing needs of emission rights by a significant increase in the allocation of free emissions allowances can result. A real specific energy savings could, however, arise if the analysis detects opportunities to increase the effective time utilization, because the amount of energy loss during standby periods can be reduced.

Result: External advice may be eligible to funding. Energy costs may be saved. Cost savings by significantly lower purchasing emission allowances can be expected.

Optimized running pattern for new plants or during capacity changes in existing installations

It would take too long to explain this in greater detail. Generally, however, changes in the approved capacity must be officially determined by re-examining the so called the "initial installed capacity". This replaces the officially approved and installed capacity when calculating the amount of allowances in connection with the applied utilization factor. In determining the "initial installed capacity" one has to refer to the actual production quantity in a given reference period after commissioning of the changed installation. It is up to the discretion of the operator to designate the reference months and - in some operational boundaries to go to the start-up the installation, so that the highest possible actual production occurs in this reference period. Once the initial installed capacity has been determined as allocation base, the allocation cannot be increased, even if later a much higher utilization of the production capacity of the plant will occur. Only in case of another physical change, it may be allowed under certain circumstances, to perform a reassessment of the, initial installed capacity and that may result in a changed allocation.

Consequence: An energy saving is not expected by the measure described, however, a significant reduction in the purchasing needs of emission rights by a significant increase in the allocation of free emissions allowances is possible.

Result: External advice is not eligible to funding. Energy costs will not be saved. Cost savings by significantly lower purchasing emission allowances can occur.

Infobox

In January 2015: Creation of the Message for Operation and annual Report 2014

Plant operators should call before Christmas to remind you that at the beginning of January 2015, annual MzB (Communication for operation) must be created.

According to the relevant EU laws and the national implementation of these laws is the requirement to submit the MzB for any operator of a facility which free allocation in the 3rd trading period 2013-2020 and operate a facility subject to emissions trading.

This obligation also exists in principle, if there is no change in the operation was found and also when no CO₂ was emitted. This release includes all the operating allocation elements and their activity rates in the past and future as well as any technical changes to system components or the operation of the plant or individual system parts.

*The MzB for the years 2013 to develop by 2020 in a software management system provided for this purpose (FMS) by each operator and **to 31.01.** leave a year for the previous year (§§ 19 - 22ZuV2020).*

In the case of incorrect, not consistent or not timely fill out the FMS form a reduction of the allocated free emission rights is possible: a so-called ex-post-correction. An ex-post-correction can be made even if the capacity of the plant has been reduced.

Even then, at first created in the summer of 2014, it made sense for many operators to transfer the tasks of creating the MzB to an external consultant in order not to be subject to involuntary allotment reduction or to miss the chance of an allocation increase.

Since then equal to the MzB of CO₂ annual report 2014 for stationary operators and for aviation operators has to be created, it makes sense to use this option accompanied by the creation of the MzB together to an external service such as Emissionshändler.com® forgive, even to internal staff shortages to avoid.

To request a quotation or further inquiries, interested operator contact as possible before the end of the year Emissionshändler.com® under +49 (30)398872110 or info@emissionshaendler.com.

Measures with energy-saving effects and emission reductions

During the so-called combined heat and power (CHP) process, heat generated by the combustion initially is used to generate electricity, but immediately afterwards it is used to provide useful heat. This allows a high combined energy yield. Switching to condensing burner technology and replacement of old burners by modern burners can also reduce the amount of fuel required to achieve a certain heating effect. The above measures will result at the same activity level (in this amount of useful energy) in lower fuel consumption and lower CO₂ emissions. Further savings can be found in the optimization of the illumination, optimization of the ventilation, the use of waste heat from furnaces to perform drying processes. This



approach was not common, as long as energy was cheap. In those days halls and jobs areas were illuminated at locations where light was not required, while using light sources with low light efficiency. During the ventilation process it helps in winter to produce significant energy savings when the heat of the ejected the spent air is transferred to the incoming fresh air before it is discharged into the environment. Based on the experience of Emissionshändler.com® these possibilities are only utilized in rare cases.

Consequence: A savings analysis gives evidence of real energy savings that can be in the amount of 10 to 15% and this is true without major investment.

Result: External advice is eligible to funding. Energy costs are saved. Cost savings can arise through reduced purchasing emission allowances and lower fuel consumption.

Influence of the fuel type

If you look at the CO₂ emission level that arise for the same heat generation while using coal, oil, gas or renewable energy sources, it must initially strike that emissions renewable energy sources by the emissions trading principle need not be considered, i.e. in the reports to DEHSt can be taken into account with the value zero, because through the regrowth of the raw materials, a corresponding amount of CO₂ is withdrawn from the atmosphere. But for fossil fuels is very important to note that coal causes the highest emissions of CO₂ at the same heat generation. The so-called emission factor for coal at about 0.095 to 0.11 t CO₂ / GJ and of oil at about 0.075 t CO₂ / GJ and for gas only about 0,055 CO₂ / GJ. That implies that, under certain circumstances, the CO₂ emissions will be virtually halved while satisfying the same heat demand by just by switching from brown coal combustion to gas combustion. When converting to biomass the emissions - as mentioned above – are not even considered any more.

Consequence: The choice of fuel affects secondary costs, as they arise for example, by large storage space for supplies of coal or oil tanks which are not necessary when using gas heating. This can also result in the reduction of energy consumption (coal transportation expenses within the system, preheating of stored fuels to keep to keep them usable during very cold weather). When using gas as a combustion fuel, the better controllability - and thus adaptation to current demand - in the case of vapour production for instance, will contribute to reduction of fuel.

Result: External advice is eligible to funding if currently using different fuels than natural gas. Energy costs are saved. Potential cost savings through reduced purchasing emission allowances.

Effect of measuring technology and controls

The measuring technique is used to obtain an accurate online picture of the processes in the installation. Some types of measurements (temperature, pressure, flow rate)

are to be installed and to be maintained easily and with less effort than others (concentration of substances in the exhaust gas composition of product streams in chemical processes). One therefore usually tries to derive mathematically the desired information from measurements of the kind with require less effort. In many cases, this is also possible but in chemical reactions with a plurality of ingredients, it can be difficult. In such cases, the change to using direct measurements by installing appropriate devices, with the addition of a security premium, may prove to be very useful for in the calculation results for CO₂ emissions. In such cases, the transition to direct measurement may prove advantageous not only to an improvement of control processes but also for allowing savings effects in energy consumption.

Consequence: In total these refined measuring techniques will provide notes on optimization of control processes that lead to real energy savings, which in turn can be in the sum of the order of 10% - in many cases without major investment.

Result: External advice is eligible to funding. Energy costs are saved. Corresponding cost savings possible arise through reduced purchasing of emission allowances.

Note to our readers

Since 2006 Emissionshändler.com® publishes its proven CO₂ newsletter.

About 4,500 industrial customers, utilities, interest groups and individuals in Germany, Poland and other Eastern European countries can currently benefit from our emission letter in German, English and Polish, to inform themselves about current practices and up to date on topics on European emissions trading.

To continue offering our newsletter in the most accurate and up to date form and quality to our interested readers, from February 2015 onwards, we will have to provide our newsletter offering for a fee (with a few exceptions).

Further information and registration information will be available in the upcoming remaining free issues of our info letters.

The possibility to register for an annual subscription can be found when visiting our website at:

<http://www.emissionshaendler.com/en/newsletter/infobrief-bestellen.html>

We look forward to your interest

Conclusion

There exist continuous technical and administrative opportunities for operators to reduce the need of purchase of emission allowances or to avoid it at all. This is especially interesting if, as expected, the price of emission allowances will return to the politically desired level of more than 15 €/ ton CO₂. For corresponding energy-analysis for individual companies or plants the consulting costs are eligible to funding, according to a new decision



by the federal government for small and medium-sized enterprises, up to 80%.

This win-win situation where the operators and the federal government are walking side by side to reduce CO2 emissions of installations and to further reduce CO2 in Germany as a whole should be recognized and exploited to the fullest extent. Since here, operator and companies not only save by reduced energy costs but in some cases also by reductions in emission rights and due to the fact that also the consulting fees are almost completely covered by the government, this is a chance that an operator in mandatory emissions trading should not pass up.

Disclaimer

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Christmas Greetings from Emissionshändler.com®



We wish all our readers and their families a Joyful Christmas many gifts and a healthy and happy New Year 2015

Our offer

Please contact us without obligation at +49 (0)30-398 8721-10 or info@emissionshaendler.com as well as via mail or find out more about the Internet services under www.emissionshaendler.com.

Kind emission regards



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