


The overview of the EUA price, unfortunately only visible for paid subscribers of emission letter

# Emission News 11-2016

**Practical Information for Emission Trading**

**Edition 25.10.2016**

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# Will the EUA Price be driven by Technical Problems in the French Nuclear Power Plants' Park?

**While Emissionshändler.com® reported in September about the plans of the French environment minister to push the EUA price upwards by means of a minimum regulation, this process seems to take place at present on a quite natural way.**

**Due to more and more increasing technical problems in the French nuclear power plants' park consisting currently of 58 atomic reactors, which produce roundabout 75% of the French electric power, the need for EUA certificates to cover the fossil electric power production in Europe is constantly increasing. Probably almost the complete atomic power plants' park may be affected by the installation of security-critical elements. Their production can probably not be documented entirely or might even be the result of counterfeiting. The shut-downs and inspections resulting from these irregularities reach an extent which leads to a sharp increase of the electric power price and EUA price.**

**Emissionshändler.com® reports about the background in this present Emission News 11-2016 issue as well as about a new emissions trading system of aviation which is supposed to be applied worldwide until 2021.**

## Nuclear Power in France – EDF and its supervisory Authority ASN

The big majority of currently 58 active French atomic reactors in 19 nuclear power plants of the country started to operate within a short time period between 1977 and 1992.

Consequently the eldest active reactors will be 40 years old soon, so the question for a prolongation of the nuclear power plants' operation time arises. These had been constructed for a 40 years' service life, a time period having also been stipulated originally by the French law.

For this reason, the state-owned EDF (Électricité de France) was obliged in the past to ask the ASN – Autorité de sûreté nucléaire – each time for a 10 years prolongation of an operating license for old reactors. The ASN is the authority for nuclear safety. The request for prolongation was followed by a thorough inspection of the nuclear power plants and reactors (pressurized water reactors only) concerned in order to find out if these are still in conformity with the safety standards after 40 years.

In order to obtain a permission for prolongation, EDF has to prove to ASN that the evidence aging process of the construction parts and equipments will cause no technical problems and that the adaptation of security standards can be managed. Especially the condition of the reactor vessels and the concrete walls' sealing systems as well as the heat transfer fluid circuit's sealing systems deserve a special attention.

Still in the year 2010 ASN as supervising authority [illegible] a 10 years prolongation of the 3 reactors' [illegible] These reactors had been at the grid for more than 30 years.

When sensibility for nuclear safety increased considerably after the Fukushima accident in 2011, the French nuclear inspectorate ASN instructed EDF to "approach" the reactors' safety standards of the second generation to those of the third generation EPR. In fact almost all active reactors were affected by this instruction but a detailed technical target about the [illegible]

However, an investment program has been launched which is designated to finance the operating licenses' prolongation of French nuclear power plants with more than 40 years' operating life and allow simultaneously the rise in security standards. This investment program will extent to a volume of 55 billion Euro until the year 2025.

## The Atomic Energy Act and the Energy Revolution in France

Apart from the improvement of safety standards for existing nuclear power plants and the prolongation of operating licenses, France decided for a new reactor generation "EPR". These dispose of a better electrical performance, [illegible] and a projected operating period of up to 60 years. The first EPR reactor is presently under construction with a capacity of 1,600 mwel in Flamanville at the Breton Coast. The construction costs had been figured originally with 3,3 billion Euro, now they reached 8,5 billion Euro. The commissioning process was planned for 2012, [illegible] Further delays in commissioning may happen because severe defaults had been found which are supposed to be committed by the producer of the reactor vessel. The project for a second EPR reactor in Penly has been put on hold until 2017 after a decision of the French Prime Minister François Hollande. Currently it is assumed that this decision is basing on [illegible]

The French Act for energy revolution from August 2015 determines a maximum limit of 63.2 GW for the capacity of all nuclear power plants throughout

### *Infobox*
### *The French Nuclear Power Plant Park*

*France disposes of the second largest nuclear power plant park in the world. 416.8 TWh of nuclear electricity have been produced in France in 2015. This is 76.3% of the total French electricity production.*

*At present France disposes of 58 active nuclear reactors in 19 nuclear power plants. 12 more reactors are definitely deactivated and shut off but 9 of them are currently being decommissioned. These were all reactors of the "first generation" or experimental reactors: 9 gas graphite reactors (developed in the fifties), one gas- heavy water reactor and two breeders.*

*It is one of the French power park fleet's speciality that all active reactors are powered by means of the same technology of a pressurized water reactor.*

*All 58 active pressurized water reactors belong to the reactor type "REP", the so-called "second generation", and are divided in 5 construction types, always in accordance with reactor technology and production capacity which all have experienced technical improvements in the course of time.*

- *34 reactors with a performance of approximately 900 MWe:*
  - *type CP0: 6 reactors* [illegible]
  - *type CPY: 28 reactors.*
- *20 reactors with a performance of approximately 1300 MWE:*
  - *type P4: 8 reactors*
  - *type P'4: 12 reactors*
- *4 reactors with a performance of approximately 1450 Mwe:*
  - *type N4: 4 reactors* [illegible]

*A new reactor of 1650 MWe is currently under construction in Flamanville in Normandy the EPR (European Pressurized Water Reactor). This is a reactor of the "third generation". It will be equipped with a new, high-developed security system.*


*French Reactors in France* *Source: Wikipedia*

the country. This corresponds exactly to the capacity of all reactors being currently in activity.
This means at the same time that a start-up of the new nuclear power plant in Flamanville will have to be compensated by a closure of reactors with the same performance. At present the shutdown of the two Fessenheim reactors at the German border is provided. Their cumulative capacity reaches approximately 1,840 MW.
In this context, it is interesting that the French act for energy revolution determined a decrease of nuclear power production from 75% to 50% until the year 2025. In order to achieve this aim, renewable energies in France are supposed to reach [illegible] until 2020 and then raise to 32% in the year 2030.

## Severe defaults detected during Security Checks in French Nuclear Power Plant's Park

When the atomic supervision ASN checked security standards on the occasion of the construction of the new EPR reactor in Flamanvile, they found out that a continuous documentation of material characteristics was not available for the manufacturing process by the forge Areva in Le Creusot. Consequently the characteristics of the decisive steel material ([illegible]) would hardly be assessable and, as a result, imponderable.
In detail "discrepancies, modifications, or omission" on production parameters and test results were concerned. More than 50 sensible material parts of the manufacturer Areva had been installed in French nuclear power plants. The Areva boss Philippe Knoche informed in an interview that even false statements on material compositions cannot be excluded.
Pierre-Frank Chevet, president of the atomic supervision ASN, declared in this context that this problem has [illegible].
Furthermore serious faults seem to be found on the steam generators, according to ASN, which need to be corrected urgently.
[illegible] the ASN thereupon started an extensive additional test program which included all active reactors in France.
The result seems to be alarming for ASN and for the public:

An announcement was published on **23rd June 2016** which expressed that other reactors might have the same problem as in Flamanville. ASN discovered sectors of the steam generators which also had only an insufficient documentation of their material characteristics. Until now 18 of 58 active reactors are affected by an insufficient documentation. Contrarily to the construction site in Flamanville the risk is tremendously higher because these reactors are all under ongoing operation.
Due to these results the atomic supervision ASN started with a verification of further equipment and construction parts which also suffered no continuous documentation of the material characteristics (especially about the sufficient toughness of steel) during their manufacturing process. Especially the steam generators find extra attention which are, according to ASN, "important for the nuclear power plant's security".
According to an [illegible] having been manufactured in the French factory in Le Creusot, the producer Areva detected irregularities on totally 46 steam generators in French nuclear power plants' park. The other half of the analysed materials was produced in the manufacture of the Japanese group JFCC.

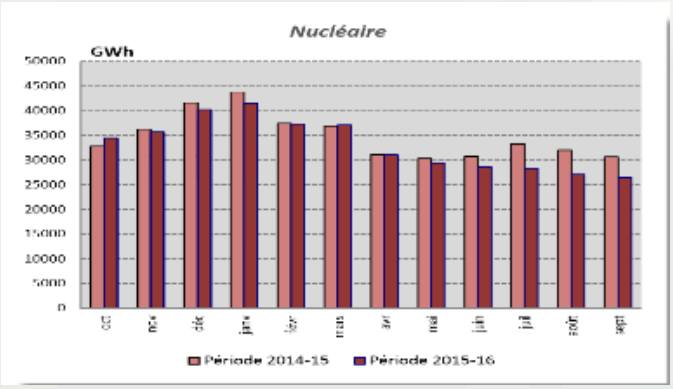
Owing to these results EDF announced their intention on **28th September 2016** to execute further inspections on 13 reactors in the course of the following months. As not only the reactors will have to be shut down for this purpose which could [illegible] according to EDF, this process will not only lead to an electricity shortage but also to a delay of the whole renovation project of the second generation's reactors which are supposed to become more secure and more efficient in order to obtain a permission for the prolongation of their operating period.

Since the first announcement of a reactors' verification on 23rd June 2016, 13 reactors had been disconnected from the grid so far but 6 of them were restarted as per state of end October. A special verification of 13 more reactors was announced on 28th September 2016 but it is not yet clear when this check will take place because another [illegible].

To make matters worse, EDF announced on **18th October 2016** to stop 5 further reactors for verification reasons (probably after pressure from ASN).
The French EDF plans to realize this check immediately and now because October 2016 turns out to be a rather warm month and as a result, the consumption of electricity remains low. However, the verification has to be realized in any case [illegible] because due to historic experience, the highest power capacities are needed in January.
Among others, the reactor 1 of the nuclear power plant Fessenheim beside the German border is concerned by the present deactivation. Reactor 2 of Fessenheim had been switched off already mid-June 2016 for an inspection. Later the atomic supervision withdrew a test certificate from the reactor and put it off.

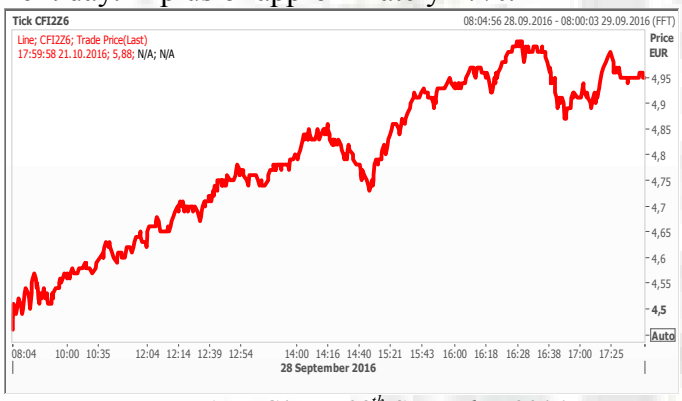
## The Effects on the Price for Electricity and Emission Certificates

As a result of continuous reductions of French electricity capacities from nuclear power plants not only increasing electricity prices are a consequence but also an emerging [illegible] of electricity from countries surrounding Europe. Until now France used to export its electricity almost exclusively.
In comparison with 2015, EDF corrected already now the production forecast for 2016 downwards to 9% only. If the nuclear power plants' inspections will last longer, experts say that France will import electricity for a long-lasting period in case of a cold winter because a loss of up to one third in the French nuclear power plants' park cannot be compensated any longer.



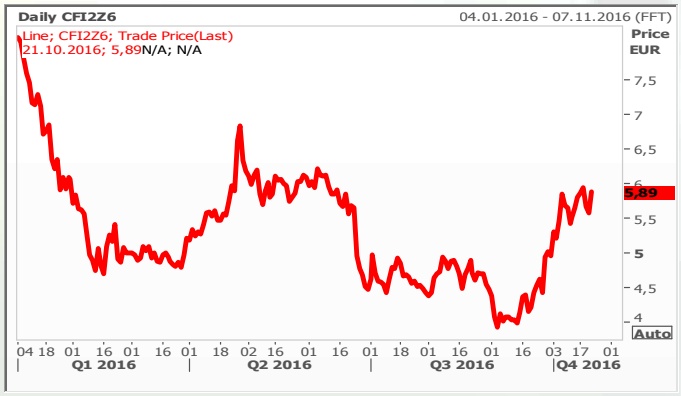

*Monthly French electricity production from nuclear power 2014/2015 in comparison with 2015/2016 Source: rte-france*

In connection with the revision of the nuclear power plants the 4 coal-fired power plants of the country are running at full blast with a capacity of 3,000 MW. These 3 GW coal-fired generators as well as the lack of export of French nuclear power usually lead to a significantly higher demand for emission certificates in the European market.
This surge in demand became obvious already on 28th September 2016 when EDF [illegible] The EUA price rose in the course of the day from 4.45 Euro/t to 5.02 Euro/t in order to climb up to 5.35 Euro/t on the next day. A plus of approximately 17%.




*Price increase EUA DEC15 on 28th September 2016*

The EUA continued to rise in the course of the first October week to 5.88 Euro/t on 7th October 2016.
When a revision of 5 further reactors was announced on 18th October 2016, the EUA DEC16 rose again to more than 6.14 Euro/t and achieved a clearly higher level than registered on the occasion of the Brexit in June 2016.




*EUADEC16 in the course of a year – Price increase*

## Conclusion on the Development of the EUA

All in all a price increase from 3.93 Euro/t to 5.88 Euro/t can be registered for the period between 5th September 2016 – day of the lowest price – and 21st October. It represents an increase of almost 34%.

As the situation in France can hardly be surveyed, [illegible] more surprises may come up soon. Moreover we can rely on the fact that the French nuclear inspectorate ASN, scared repeatedly by unexpected bad surprises, will execute its next inspections thoroughly and will not be afraid [illegible] more reactors or [illegible] down definitely by the EDF.
Such a process would certainly entail another price increase not only for electricity but also for emission certificates.

If we look at the EUA price development of the past weeks, by the way, we can rely on the fact that the statements the director of the International Atomic Energy Authority (IAEA), Yukiya Amano, expressed about cyber-attacks on nuclear power plants are indeed worth to be considered as critical but will nevertheless not fail to make an impact. He made his statements on the occasion of [illegible] on 10th October 2016 in a meeting with foreign minister Steinmeier and a German magazine. Yukiya Amano was convinced

> **That no one can say if everything about these Cyber Attacks is already well-known or "if just the tip of the iceberg suffers a tender touch".**

It is almost obvious that such messages may be a reason for speculators and investors to realize blank purchases on the EUA market because a looming cyber attack could lead to prophylactic shut-downs of nuclear power plants which, as a result, would push the CO2 price upwards.

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The present issue is only partial readable, as it remains free of charge.
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***Infobox***
***Global Measure to reduce Aviation Emissions***

*In the frame of the International Civil Aviation Organization ICAO, the UNO Community of States agreed with overwhelming majority to a global climate agreement for air traffic in Montreal in October 2016.*
*Consequently the air traffic is presently the first and only industrial sector world-wide so far with an own climate agreement. Thus the UN air traffic organization ICAO underlines the meaning of the Paris Climate Agreement also for the air traffic. By means of the offsetting system* ***CORSIA*** *(Carbon Offsetting and Reduction Scheme for International Aviation), CO2 emissions caused by growth shall be subject to compensation from the beginning of 2020.*
*Between 2021 and 2027 the states are free to decide if they accept the level system with the resounding name developed by ICAO. Only after 2027 the system is world-wide obligatory. Exceptions to the rule are only weakly developed island states and countries with a very low air traffic volume which does not affect the global balance.*
*Although the obligation starts only in 2027, 65 states [illegible] already accepted the ICAO rules. Among those states who agreed are the whole EU, some gulf states, the USA, and China. For the time being states like Russia, India, Saudi-Arabia, Brazil, and Chile remain outside.*
*Due to the ICAO agreement the EU can continue to adhere to its Emission Trading System (ETS) for air traffic in the first instance from 2016. The EU-ETS system introduced the Union in 2012 and suspended it immediately in the year afterwards – expecting an ambitious, global, market-based mechanism. The EU transport commissioner Violeta Bulc presently hesitates to express if the commission will be capable to modify the ETS which currently is applicable anyway exclusively on the continental air traffic (Intra-EU flights). In front of the European Parliament the environment committee always pronounced a consequent and hard position regarding ETS. [illegible] as "disappointing" and affirm that continental flights will remain included in the emissions trade. According to the responsible correspondent, the German CDU member of Parliament Peter Liese, "the parliamentarians now have to analyse very close how to deal with the result".*
*It needs to be noted for the airlines being affected by the European emission trade that nothing will change for the time being because the ICAO agreement is supposed to become effective only in the beginning of 2021. Due to its voluntariness the reduction aims set by the EU will not be achieved before 2027. Thus the airlines are recommended to take into account a report and submission liability in the frame of EU-ETS at least for the years 2017 until 2021.*
*ETS-Verification (see contact details next page) and Emissionshändler.com remain always at your disposal for any further question regarding the emissions trade.*

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Kind emission regards

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