

How is it that even after the plant reducing sulphur in the smoke of the Kostolac B thermal power plant has been installed, 2018 emissions of this pollutant were several times the permissible limit

It was mid-July 2017, and newly-appointed Prime Minister of Serbia Ana Brnabic said in Kostolac that “in cooperation with China, the project to build a flue gas desulphurisation plant of units B1 and B2 at the Kostolac B thermal power plant has been completed.” The media then reminded that the value of the venture was \$ 130.5 million, and that work on the desulphurisation system began in May 2014.

Why does the smoke released by thermal power plants have to be desulphurised at all? Because sulphur dioxide (SO₂), which is one of the products of coal combustion, has a detrimental effect on human health - it causes respiratory and cardio-vascular diseases, leads to the formation of acid rains, and at the same time takes part in the creation of so-called secondary suspended particulate matter (PM), which is extremely hazardous to human health.

Sulphur dioxide is just one of the polluting substances in the environment (including particulate matter and nitrogen oxides), Serbia committed to reduce in 2006, when it ratified its membership in the Energy Community.

Serbia has been obliged to implement the European Commission Directive on large combustion plants from early 2018, which would significantly reduce emissions of these substances. This had to be done in two ways - through the National Emission Reduction Plan (NERP), so that emissions from large plants would be reduced each year, while four plants had to be gradually decommissioned by late 2023.

However, according to the latest Energy Community report (November 2019), the Serbian government has not yet adopted the NERP, “which means that power plants must adapt individually to the emission limit values” of the European Commission Directive. “Despite repeated reminders from the Secretariat (Energy Community) and despite the conclusion of the strategic environmental assessment, no final version of the NERP has been adopted so far,” the Energy Community website continues.

Nonetheless, the Ministry of Environment told *Vreme* that “NERP is already being implemented in accordance with the provisions of the Regulation prescribing limit values of pollutant air emissions from combustion plants”, and that the “Ministry of Mining and Energy submitted a report on the implementation of NERP for the year 2018 to the Energy Community Secretariat.”

However, let's go back to Kostolac and sulphur dioxide. After a flue gas desulphurisation plant has been installed in Kostolac, it would have been reasonable to expect a significant reduction in sulphur dioxide emissions into the environment, since Kostolac can be credited for the highest emissions of this substance, right after the Nikola Tesla Thermal Power Plant (TENT).

Nevertheless, according to data by the Electric Power Industry of Serbia (EPS) taken from the annual environmental report, published in April 2019, all thermal power plants emitted more than 355 thousand tons of sulphur dioxide into the atmosphere during 2018. That amount is higher than the 2017 figure and exceeds the NERP allowance by more than six times, and the Kostolac thermal power plants have only slightly reduced SO₂ emissions compared to 2017.

A December 2019 report by Bankwatch International ("Comply or Close: how Western Balkan coal plants breach air pollution laws and what governments must do about it") states that "the Kostolac B1 and B2 TPP case is particularly troubling, given that the thermal power plant has undergone a revitalisation process and that China Machinery Engineering Corporation reportedly completed the installation of desulphurisation equipment in 2017, which has been in use ever since."

"The only thermal power plant in Serbia to have flue gas desulphurisation equipment (FGD) exceeded the SO₂ limit values prescribed by NERP over 14 times," Bankwatch writes about Kostolac B, claiming that building permits for the installation of this equipment were only filed in November 2018, and have been (at least) rejected twice.

Previously, in February 2019, HEAL came out with its report on the impact of thermal power plants on public health. This report states that, according to 2016 data, the Kostolac B thermal power plant is the largest pollutant in Europe when it comes to sulphur dioxide. According to this report, there are 16 obsolete coal-fired power plants in the Western Balkans that threaten public health and generate huge amounts of air pollutants. According to the report, the consequences of such pollution are 3,000 premature deaths a year, 8,000 cases of bronchitis in children and other chronic diseases "costing healthcare systems and businesses a total of € 6.1 to 11.5 billion."

In October 2019, Mining and Energy Minister Aleksandar Antic criticized this HEAL report: "They just needed to further emphasize that it was 2016 data that, in the meantime, the Electric Power Industry of Serbia had constructed a flue gas desulphurisation plant in Kostolac", Antic said, which was reported by the Serbian Broadcasting Corporation. Indeed, compared to 2016, in 2018, TPP Kostolac emitted 16 percent less sulphur dioxide.

However, this reduction should be much larger, Bankwatch writes, as available technology “can achieve a reduction of around 85-95 percent” and “the environmental impact assessment itself for this project mentions 95 percent reduction”.

Vreme therefore asked both EPS and the Ministry of Energy whether the desulphurisation plants installed in TPP Kostolac B1 and B2 were in operation and whether they were working at all. However, no answer was received from both addresses.

The only “clue” about the current state of the desulphurisation plant may be found in press releases – in October, the website of Radio Boom93 in Pozarevac published a statement by Nenad Markovic, director of energy production of the Kostolac branch of EPS, that “a new desulphurisation plant in TPP Kostolac B works well and that the efficiency percentage is over 97 percent, as well as that “flue gases released after the desulphurisation system are up to 200 mg per cubic meter” and that these results are in accordance with European directives.

It is also significant that in April 2019 the construction of a pier near the Kostolac TPP was completed as part of an arrangement between China and Serbia, which should send 150,000 tonnes of ash and 100,000 tonnes of gypsum annually from Kostolac. Otherwise, gypsum is a by-product of desulphurisation of smoke exiting the thermal power plant.

“The power plants have reduced their particulate matter emissions significantly, because the filters still work,” Aleksandar Macura, of the RES Foundation, told *Vreme*.

“Serbia is, when it comes to large combustion plants, i.e. thermal power plants, more or less within permissible levels. There may be some exceedances, on some of the older facilities, maybe even twice as much as allowed, but this is rather an exception than a rule.” Nitrogen oxides are also regulated, but sulphur is a problem. Desulphurisation is the most costly, while consuming a lot of electricity, thus reducing the generation of such facilities and essentially reducing the cost-effectiveness of these old units,” Macura says.

In December 2019, the Renewables and Environmental Regulatory Institute (RERI) filed a request for an extraordinary inspection of EPS-owned thermal power plants.

“The 2018 Environmental Report of EPS shows that only Kostolac Thermal Power Plant emitted three times more tonnes of sulphur dioxide, and Nikola Tesla Thermal Power Plant almost four times more tonnes of sulphur dioxide than anticipated by all 12 plants covered by NERP for 2018.

However, although EPS plants covered by NERP emitted a total of 336,373 tonnes of sulphur dioxide into the air in 2018, 6 times the permissible emissions, according to publicly available information, the state has not taken measures to ensure thermal power plants emissions compliance with obligations prescribed by NERP,” RERI said at the time.

EPS, i.e. the environmental impact of this country's largest company, has been the subject of two recent reports by state institutions - the Fiscal Council and the State Audit Institution (SAI).

The SAI in its November 2019 report on industrial waste management states that EPS failed to comply with the project "rehabilitation, closure and reclamation of the fly and bottom ash landfill 'Srednje Kostolacko Ostrvo' because the landfill was not closed until July 2015 as foreseen by the detailed design". As a result, "ash is dispersed around the neighbouring settlements, together with pollutants from the ash landfill, which poses a risk to the environment and human health."

Similarly, according to the SAI report, as early as 2015, the projected service life of the so-called ash cassette at the Kolubara Thermal Power Plant, all activities for the construction of the new cassette ceased in 2015, and the current levee height has exceeded the maximum permitted height (currently at 118 meters above sea level, although a maximum of 116 meters is allowed).

According to this report, for the 2016-2018 period, it was established that TENT, TPP Kolubara and TPP Morava "do not properly perform temporary storage of both hazardous and non-hazardous waste due to the temporary storage in an area not technically equipped to store waste at the producer's location".

DRI also writes that out of the total of 11.6 million tons of waste produced in Serbia in 2018, the largest share is generated by thermal power facilities, "which during their operation produce fly ash from coal, created at the level of 7.5 million tonnes during 2018" - of which 5.3 million tonnes in TENT and 1.7 million tonnes in TPP Kostolac - and that Serbia is the second last country in Europe (only ahead of Northern Macedonia) in terms of waste reuse: almost 80 percent of waste simply remains at the producer's storage.

On the other hand, the Fiscal Council in the analysis of EPS business writes that as a consequence of poor investment policy, "at present, no plant meets all national and EU environmental regulations, so this company is individually the largest environmental polluter in Serbia," and that it can also say that "EPS is also one of the largest air polluters in Europe".

"EPS will have to invest almost € 800 million by 2027 to bring its thermal power plants in line with environmental regulations and reduce pollution to a reasonable extent," the Fiscal Council writes.

On 2 January 2020, the acting director of EPS, Milorad Grcic, said just that - EPS will invest another € 800 million into environmental projects, more than 600 million of which will reduce air pollution, and Energy Minister Aleksandar Antic said "it cannot be said that these

are the recommendations of the Fiscal Council as this body has taken over EPS plans and included the latter in its own report.

Then again, Antic seems not to have read the entire Fiscal Council analysis, as it states that according to the original plans of the company, “EPS should comply with the existing legal provisions by 2015 at the latest, which required investments of about 1.2 billion. However, total environmental investment by 2018 was just over € 400 million, which means that only a third of the planned and needed investments were made, as a result, EPS’ thermal power plants are among the negative record holders in Europe after sulphur dioxide air emissions, with emissions of other pollutants well above the European average.”

Although the Fiscal Council writes that air in Serbia is of very poor quality, “considerably contributed by EPS as one of its biggest polluters,” interestingly, according to the Serbian Environmental Protection Agency (SEPA), sulphur dioxide is not the culprit for air pollution. It is indisputable – as shown by the Agency’s report – that the main reason for air pollution (where present, because, according to the Agency’s findings, territorially, most of Serbia has top quality air) is the particulate matter concentration (PM 10 and PM 2.5).

Thus, PM 10 exceedances were recorded at all measuring stations, and the worst were in Valjevo, Uzice, Smederevo, Novi Beograd, Kraljevo, Sremska Mitrovica, Subotica, Kosjeric, Kragujevac, Obrenovac and Pancevo. As many as 170 daily exceedances of the limit values of these particles were recorded in Valjevo, so the Agency concludes that in 2018, particulate matter “was, as in previous years, the dominant pollutant in the Republic of Serbia.”

However, despite all those thousands of tonnes of sulphur dioxide emitted, the mean annual concentration of this substance did not exceed the limit value during 2018, with exceedances of the daily limit values in Bor and Belgrade only, and hourly exceedances in Bor, the SEPA report shows.

And this should probably be taken with a grain of salt. According to a report by Coalition 27 for March 2018 – February 2019 (“Chapter 27 in Serbia: You get very little for what you paid for”), “the reliability and availability of measuring stations measuring air quality in the national network have been steadily declining since its commissioning.”

“In 2011,” according to this report, “of all installed SO₂, NO₂, CO, PM₁₀ and O₃ analysers, the availability of valid hourly values in excess of 90 percent was achieved on 94 percent of analysers. In the following years, such a degree of measurement was not achieved: In 2012 it was 68 percent, in 2013 it was 72 percent, in 2014 it was 30 percent, in 2015 it was 25 percent, in 2016 it was 23 percent, and in 2017 it dropped to 22 percent.”

Truth be told, Coalition 27 also writes that, based on media coverage, it can be concluded

that between March 2018 and February 2019 “there were activities dedicated to increasing the volume of measurements within the national network”, but that data from measuring stations of the Public Health Office for the City of Belgrade “have not been available for a long time on the Agency’s website”, and that in October 2018 the process of public procurement of equipment for automatic monitoring of air quality “was in progress”, which was unfortunately suspended on 26 January 2019 without selecting a successful bidder.

Source: vreme.com