

Construction of facility for flue gas desulphurization should start soon in TPP "Nikola Tesla" in Obrenovac, and after completion it will be the most expensive environmental project ever implemented in the Balkans. Unlike government and EPS officials, which are sure that technological solution applied in the process will be the best, Professor of Physics Faculty of Belgrade, Dr. Milorad Kuraica argues that the treatment system proposed by the group of eminent Serbian scientists, who has not been accepted, not only environmentally justified but also significantly more cheaper! He would also achieved the removal of nitrogen oxides, which is not the case now with the chosen technology.

Between two proposed solutions in TPP "Nikola Tesla" without much hesitation chose the one that means using water and ground limestone in the desulfurization process, the so-called wet-limestone method. In this process remains gypsum by-product, it can be used in the construction industry mixed with ashes and in the road construction. So a proposal advocated by ten renowned Serbian scientists from the Chemical, Technology and Metallurgy, Electrical Engineering and Physics Faculty of University of Belgrade came off, to do the smoke purification from sulfur dioxide and nitrogen monoxide done with the help of a plasma generator and ammonia.

According to the manager of the project which is not brought to the higher power level in industrial plant, prof. Dr Milorad Kuraica, technological solution proposed by the Serbian scientists would bring many more benefits than what is accepted.

-Serbia would not import so much quantity of artificial fertilizers that remain as a finished product in the desulphurization process in a way that we proposed, with the help of plasma and ammonia. Price of one fertilizer ton is much higher than the same gypsum amount what would guarantee even a good profit in this job. Such smoke treatment requires only high costs, which will ultimately be reflected in a higher price of each kilowatt produced in Obrenovac- says Dr. Kuraica.

The professor explains that the plant construction has not even begun and it is already clear that in the TENT will be confronted with the problems for which will be difficult to find a solution without additional major investments. From the problems with transport of huge limestone quantities, over the wastewater treatment, to the storage problems of annual gypsum production of over 300.000 tons. It is out of question that the resulting gypsum quantities even at levels much lower than obtained here can be used in the construction industry. Even aspect of this whole project is controversial and environmentally friendly.

- For every ton of deleted sulfur dioxide in the atmosphere will be released 700 pounds of carbon dioxide, gas whose increase in concentration the most important influences on the global-warming and harmful effects of so-called greenhouse effect. The penalties for the carbon dioxide release already are very expensive charging in our country and in Europe. This aspect only brings into the question the validity of the entire project- specified Dr Kuraica.

This very expensive environmental project will be financed by loan worth about 250 MEUR, which the Japanese International Cooperation Agency approved at the end of 2011th. With this money will be constructed plants for flue gas desulphurization in four "TENT A" units (A3-A6).

Nothing less will be expensive the work of such a facility, for an annual consumption, or limestone purchase, will need at least 20MEUR, which will significantly hamper the successfully entry into market electricity in the competition that awaits us.

If the costs of wastewater treatment from this process are added, and also gypsum landfills and accommodation facilities are right on the river bank, the question is a new security issue of water supply in Belgrade.

It would be interesting to see the review and approval of the Ministry of Environmental Protection, which probably issued a permit for the construction of such a plant, what was the assessment of measures compliance for an integrated approach to environmental protection in the working life of this plant.

According to the Serbian law, the project must be implemented in 2017th, and by 2018th to the European regulations. Five renowned companies from abroad, potential bidders for the construction of future plants for desulphurization, applied at the tender (Kawasaki Heavy Industries, LTD, Mitsubishi-Hitachi consortium, Babcock, Alstom Power and Andritz Energy). Dr Kuraica claims that precisely that big money contributed in making the final decision.

-At the moment we experimentally proved that the proposed technology solution was feasible, all contacts stopped with us. We were forced to stop work on the project after six months of research in 2007th. Now we would need more than two years to have all the elements for the large plant design, whose construction would cost twice less than the one which will be built soon -states professor.

He argues that the decision was made with strong suggestions from Japan from whose cash the project is financed. Dr Kuraica suspected that against the methods with ammonia were also an import lobbies that now make good money on the sale of imported fertilizers.

- The fact that Serbia now imports over 500.000 tons of fertilizer should not be overlooked, and according to our estimates, more than half of these quantities can be produced in TENT, explains Dr. Kuraica.

The professor says that lobbyists, which advocated for wet-limestone desulfurization method, criticized their methods of use of the enough unexplored plasma generator and very toxic ammonia, so the fertilizer produced in this way would have unacceptable levels of heavy metals in its composition. However, the professor argues that these claims are unfounded and that the truth is quite different. Plasma generator is used for the removal of nitrogen oxides, which will not be included in the technologies selected by EPS, but the facilities for that part will be done later and new major resources will be separated. The separation of sulfur oxides and production of artificial fertilizer without getting gypsum and

extra carbon dioxide does not require plasma. The injection of ammonia water in the flue gas electricity is sufficient, as large power plants of 350MW in the U.S. work for years, for example, in Alberta, or Dakota, what we can personally see.

- This technology of low temperature plasma has been developed during the last 40 years in the world. Our faculty has developed prototypes of generators needed for this job. We have also patented the original system of electrodes and some measuring instruments, and from the Faculty of Agriculture we received a certificate based on the analysis that the fertilizer we got in the experimental facility was clean and free of illegal quantities of heavy metals and therefore it is possible to use it in agriculture. Ammonia is toxic, but its transport and storage at the present time are one hundred percent sure - emphasizes Dr. Kuraica and adds with amazement that seems incredible that none of the officials in Serbia wanted to hear the proposal which was the result of domestic science. This decision is not just matter of EPS; it is a matter of national importance. Canada put this decision to be under the supervision of the state consortium made up of experts' team of more professions, which should be done in our country, or even opened to the media debate.

- Only a year ago we got a chance to present our project in Belgrade Chamber of Commerce through a fifteen-minute presentation. Deputy Ministers of Energy and Science and several colleagues from EPS listened to us there. It was the first time in seven years that we have had a dialogue with the authorities. Unfortunately, after that meeting, we did not have many contacts, so that the fate of our project is still uncertain, concludes Dr. Kuraica.

They chose a proven technology

Svetozar Dobrasinovic, assistant manager in the desulphurization project in TPP "Nikola Tesla", says that the idea of the fertilizers production is very interesting, but this method, according to his knowledge, has not been sufficiently tested in practice. Therefore, they in Obrenovac decided for the proven technology in Japan, which has given excellent results. He said that in the area of Obrenovac there is enough limestone which transfer to the future plant will be organized in trains. He also claims that there will be no problems with accommodation facilities, because the gypsum will be mixed with ash, which will enable its fixing.

Strict European standards

European Directive prescribes the content of sulfur dioxide to 200 milligrams per cubic meter for the elderly and 150 milligrams for new power plants. In this moment TPP "Nikola Tesla" in Obrenovac transmits between 2.500 and 5.000 milligrams of harmful compounds. Source; Serbia Energy