

# **ENVIRONMENTALLY FRIENDLY METALLURGY IN UKRAINE**

***Yuliya Nadtochiy, Denys Smolennikov,  
Nadiya Kostyuchenko***  
*Sumy State University, Ukraine*

According to the report of international analytical organization World Steel Association (WSA), Ukraine took the 10<sup>th</sup> place in the world's steel production in 2012. Traditional steel smelting technology such as usage of Marten's furnaces with natural gas as fuel causes 3 million tons of waste products a year per one furnace. Pollutants include NO<sub>x</sub>, CO, SO<sub>x</sub> and heavy metals dust.

Many metallurgical processes have been changed to decrease emissions to the atmosphere replacing outdated furnaces. The problem is that new technologies are quite expensive and often need the total modification of the plant. That's why the last open hearth of one of the largest Ukraine's metallurgical complexes "Donetskstal" was stopped only in 2012 but there are others still working (mostly situated at the Donetsk basin).

Nowadays the only totally green rolling producing mill in Ukraine is Interpipe Steel that is the largest investment project in Eastern Europe, comprising a total of USD \$ 700 million. Strict monitoring system has been implemented during construction of the project to measure air pollution and noise volume factors and reduce their environmental and social impacts. The system of ecological management of the Company is based on the principles of sustainable development and is certificated according to the EN ISO 14001 standard.

Modern electrical steel-smelting technology used at this complex is powered by 330 kW cable transmission line from Pridneprovskaya Thermal Power Plant (TPP) to a new substation "Pechnaya". It reduces natural gas consumption in the region for 87 million m<sup>3</sup>.

A lot of dust appears while cutting and smelting of scrap-metal used as a raw material at Interpipe Steel. It includes parts of iron, lead, zinc and other heavy metals that can seriously damage people's health. New dust collecting technology implemented at the mill in combination with an absence of open burning processes cause 2.5 times less emission of harmful substances into the atmosphere.

River water consumption at the mill is reduced by 4-5 times comparing to the standards by following:

- the implementation of a 'zero-discharge' scheme (6 m<sup>3</sup>/hour of highly mineralized flows facilitates the complex's slag cooling);
- a complete reduction of any discharge of process water into the Dnieper river.

Furthermore, Interpipe Steel takes social responsibility supporting and respecting internationally proclaimed human rights and creating the proper labor conditions according to the requirements of OHSAS 18001.

“Green metallurgy” is a great step in the development of the domestic Ukrainian pipe industry and brings a lot of ecological, economic and social benefits but it also needs a lot of money to be invested.

**Економіка** для екології: матеріали XIX Міжнародної наукової конференції, м. Суми, 30 квітня – 3 травня 2013 р. / редкол.: Д. О. Смоленніков, М. С. Шкурат. – Суми : Сумський державний університет, 2013. – С. 111-112.