

# We Hear From

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## Carbon dioxide-free Steel Production: Revolutionary Research

An alliance of three Swedish industrial concerns wants the steel production. Instead of CO<sub>2</sub> only water should be pushed out in the atmosphere. The steel cooker SSAB, the mining concern LKAB and the energy suppliers Vattenfall want bid good bye to the coke plants and blast furnace based traditional production process SSAB is still according to its own statement is the biggest CO<sub>2</sub> emitter in Sweden. On the way to CO<sub>2</sub> free steel production the undertaking is taking a

long time. More than a span of 20 to 25 years they will work in collaboration with industrial researcher partners LKAB and Vattenfall and also with universities and research institutions. "We consider this as our responsibility to solve the CO<sub>2</sub> problem of steel industries" as said by SSAB Chief Martin Lindquist. (Ref: VDI nachrichten, 8 April 2016, Nr. 14, Technik & Gesellschaft, Seite 17).

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## Generation of Cavitations discovered

In fact lubricants should protect the machines against friction. But at the transition from oil repellent to oil attractive surface very small steam bubble vapour is produced to the contrary exactly. Such so called cavitations can damage the materials to some extent with propeller or pumps. The researchers at the Institute of Technology Karlsruhe found out that now in the context of simulation of models.

The discovery which strongly depends on the viscosity of the oil shows that chemically

changing surfaces can lead to cavitations bubble. Until now it was assumed that previously the geography of a structural component part is responsible for this.

Through the affirmed employed surface chemistry, one could therefore highly improve the changing operation between surfaces and lubricant. That would be interesting as for example for motors or cylinder system. In model the researchers could scrutinize an improvement of surface separation by 10%.

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