

New “Blue Sky technology” and systems needed to meet the energy challenges of the future!

By **Stefan Hultman**, freelance journalist, Sweden (on behalf of Elof Hansson)

Over the last two decades the world has rapidly developed. The population has increased, the economy has grown and the middle class has expanded, all of which contributes to a growing demand for energy. This has resulted in unsustainable climate change. Yet awareness of our environmental problems creates a demand for sustainable energy sources. New types of fuels are introduced at an increasing rate, creating demand for new technologies in the combustion processes.

Investments in new technology require a considerable return: cost-efficient use of plant assets and fuel resources, legislated emission reductions (such as NO_x, CO, CO₂ and others), reduced and simplified maintenance, and modernised operations. Additionally, the new technology should embrace efficiency, sustainability, flexibility and manageability in order to embrace the future.

In Sweden, about 250 km south of Stockholm, is the small, scenic town of Åtvidaberg; this is a town with a long history of innovations: from copper mining and calculators to the production of its own automobile in the early 20th Century. Located there today is a large Industrial complex named IBR (Industrial Business

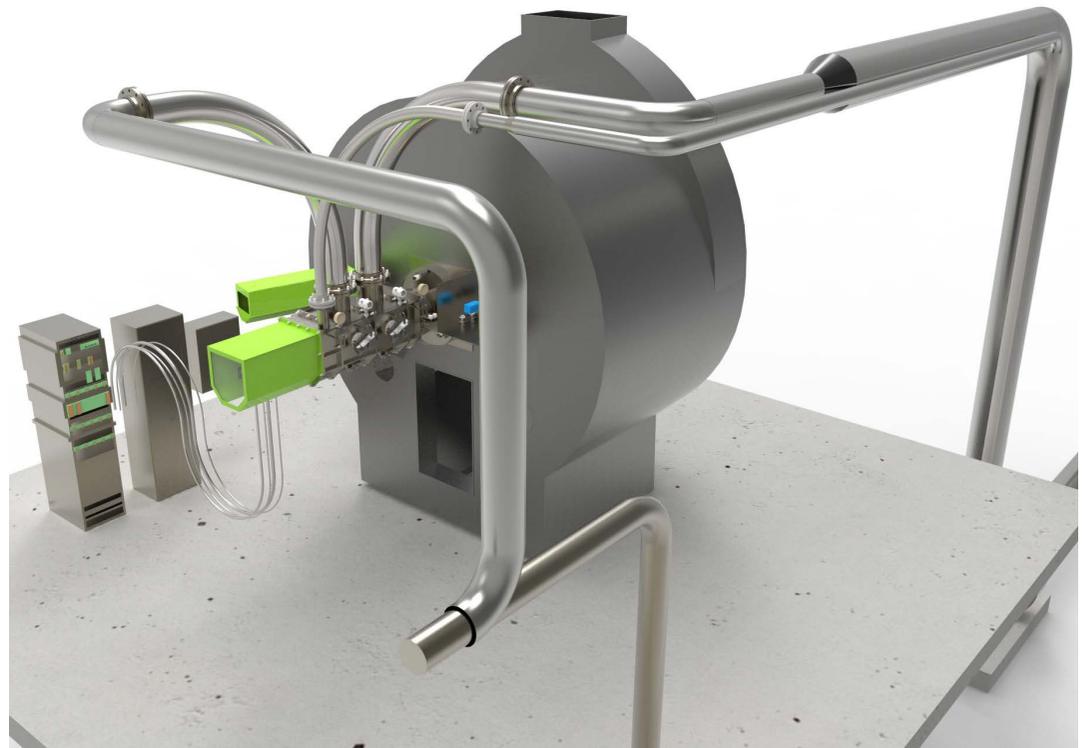


Figure 1. 3D Cad visualisation of Bratsk Multifuel Burner System

Residence), housing a variety of startups and innovative companies, as well as more experienced manufacturing operations.

Of particular interest in those companies located at IBR is Clean Combustion Technology Sweden AB. The Company develops dynamic industrial combustion technologies and systems that help improve efficiency whilst lowering emissions. Their Industrial Burner Solutions embraces all types of fuels (gas, liquid, slurry and solid) and approaches a sustainable, yet

optimised combustion for every fuel introduced.

Clean Combustion also develops systems for advanced flame control through technical surveillance. They design, manufacture and supply equipment which allows clients to monitor high temperature processes. The solutions indicate the flame position, furnace health, exhaust gases and other details of the combustion process. The imaging solutions provided by Clean Combustion help to maximise performance by showing the flame,

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fuel and air flow in the burning zone. The knowledge gained allows clients to run their plants efficiently, safely and in a more environmentally friendly manner.

Clean Combustion is taking technical improvements even further by offering integrated BMI (Burner Management Intelligence) systems that enable encrypted communication with live data from the Burner System and the actual process. This enables outstanding cost-efficient support from experienced experts and technical engineers that can be remotely provided from anywhere on the planet in order to ensure that the burner operates at optimised efficiency; in turn, this ensures the lowest possible emission levels for NO_x, SO₂ and other emission particles – a vital part of Clean Combustion’s “Zero Emission Vision” concept.

Clean Combustion was founded in 1999 with the vision to question and challenge both the operation and the technology used within combustion processes. Clean Technology’s science and ideas about efficient energy combustion has been developed over the past 25 years, through field studies and experience from working with the majority of the large pulp and paper companies both in Sweden and around the world, including sites in South Africa, Russia and India.

EXAMPLE 1

In 2016, Clean Combustion shipped a 50 MW Lime Kiln multi-fuel burner with command and control systems as well as peripheral equipment to

Sappi for use in the Ngodwana paper mill in Mpumalanga, South Africa. Ngodwana is a fully integrated paper mill producing pulp for domestic consumption, as well as newsprint and containerboard. In order to meet increased capacity requirements and stricter environmental emission limits, Sappi searched for the latest and most energy efficient technologies,

combined with high environmental standards.

EXAMPLE 2

A multi-fuel burner with command and control systems and peripheral equipment (which included a furnace monitoring system) was also recently delivered to JSC, Ilim Group for use in the Bratsk paper mill in Russia. It

Figure 2.
Lime Kiln Burner at Mondi Mill, Sweden



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Figure 3. *Online connected service engineer*

stage of a long term initiative at Södra Cell Mörrum, and will increase the mill's capacity by 45,000 tons.

Over the last few years, Clean Combustion have devoted considerable effort into product development of a new fuel injection technology adapted for green fuels as well as old fossil fuels. Recently they began working to develop and supply eco-friendly multi-fuel burners for the modern shipping industry. Clean Combustion have recently signed a three-year contract with Alfa Laval as a supplier and development partner of eco-friendly, multi-fuel burners – a sub-project in Denmark's largest green marine innovation project. The objective is to offer environmentally efficient burners and systems for use in both the construction of new

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is one of the major producers in the Russian pulp and paper industry, traditionally supplying market pulp and containerboard to South-East Asia. The multi-fuel burner system is expected to bring large operational benefits and significantly increase the energy efficiency for the mill.

EXAMPLE 3

Also worthy of a mention is the contract to supply a complete Lime Kiln Burner system to the Södra Cell Mörrum Pulp mill. The scope covers design, manufacturing, delivery, dismantling, commissioning and performance tuning of the Lime Kiln Burner System. The Board of Directors of Södra had earlier decided to invest about €103 million in the pulp mill at Mörrum. The investment is the second



Figure 4. *Södra Cell Mörrum pulp mill*



Figure 5. Final delivery of Multifuel burner for the Sappi Group

vessels and for modernisation of the existing fleet. During the next four years, more than 40 companies and organisations will work together to develop environmentally friendly and competitive solutions in the collaboration project, named Blue Innoship.

In 2013 Clean Combustion began a partnership with Elof Hansson, an international specialist in the pulp and paper industry, originally founded in 1897. The worldwide activities of the Elof Hansson Group are managed from their headquarters in Gothenburg, Sweden. Elof Hansson

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subsidiaries are the strategic hubs of a global network of business specialists. They interact with both agents in the individual regions, and the sales managers at the headquarters in Gothenburg. In total, Elof Hansson have subsidiaries and agents in more than 100 countries, each involved in one or more of the Group’s business areas.

Their partnership has continued to strengthen and evolve, and in 2016 Elof Hansson joined with ALMI Invest (Government Investment fund) to invest further in Clean Combustion. This new partnership and its

resources support Clean Combustion’s future international expansion.

Clean Combustion’s Founder & CEO, Kjell Myrén, summarises what makes Clean Combustion unique: “We know that we are working in an industry of the future, where green, clean and energy efficient technologies are clearly needed. We remain committed to use our long experience & knowledge to develop “Blue Sky products” designed for zero emission, online emission measuring control, [whilst also creating tangible] economic sustainable benefits for our customers”.