



Switzerland, retrofitting pioneer on the way to EU leading deep tech nation cleantech!

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Resources are running out, leaving society with a complex new reality and Switzerland is no exception in this regard. In the face of shortages of energy and raw materials, geopolitical tensions and the impacts of pandemics, rethinking our modes of production and consumption is now a sine qua non, not just for business but for society as a whole.

Circular economy, a real paradigm shift

In this time of change, cleantech and especially the global circular economy approach is emerging as an essential paradigm shift. It is no longer a question of simply recycling materials, as circular economy is too often considered in a false and overly simplistic way. No, it is clearly a question of completely rethinking our actions throughout the product life cycle. For example, let's reconsider product design from scratch, known as eco-design or customer product co-design. Switzerland the pioneer, with its economic fabric teeming with solutions, is at the forefront of these approaches for years. The circular economy provides us with a framework and is becoming a sort of compass that offers stability and opens up the way to a more sustainable, resilient and balanced future. In Switzerland, more than ever, solutions exist to accelerate the transition to a more sustainable society targeting net-zero emissions by 2050.

Retrofitting – applying old approaches to decarbonize industrial sectors

Re(inventing) old new approaches, like retrofitting, is part of this game. According to Wikipedia, retrofitting is *“the process of replacing old or obsolete components with newer ones, usually by changing the technology, without changing the function”*. In a previous life, as young R&D engineer working for an international power generation constructor, retrofitting of power plants’ turbines was daily business. It consisted mainly at replacing the turbo-group and inner casing preserving the outer casing and overall costly balance of plant’s infrastructure. Doing so, we could spare on several cost streams like material, time and logistics, while increasing the overall plant’s efficiency!

Transportation’s challenge

In the race to CO₂ emissions' reduction, transportation is facing a huge challenge. Actually, global freight transport is responsible for 10% of CO₂ emissions worldwide. While many climate policies are aiming for net zero by 2050, this sector is still struggling to do without fossil fuels and is therefore difficult to decarbonize quickly.

Transportation, so as several industry sectors, where the shift to a new technology is linked to massive investment, sees retrofitting as one potential elegant and clean solution to assure the transition during the conversion period.

What can we expect from CCS/CCUS technologies

It is interesting to note that if retrofitting is common since decades in the power production sector, it is quite new in the automotive industry and still not done in serial production. Electric retrofitting is no rocket science at all and consists in making possible the conversion of a combustion vehicle into an electric one, by replacing the oil engine with an electric motor and a battery. Doing this process for light (urban) vehicles does not really make sense in a pure economic point of view. For trucks, heavy duty vehicles or tractors, the context is totally different due to cost aspects. Actually when a complete float has to be changed to an expensive technology (2 to 3 times more) than the old conventional but polluting one, the global cost argument (CAPEX) become decisive and an intermediate solution like retrofitting make all its sense. With its CCS technology, Qaptis is clearly part of this game by opening the way in this sector.

In the future, I see the marine transportation sector with their MW range diesel engines also as a very interesting market for this approach.

As you've seen, the potential is vast. The challenge now lies in deploying those solutions on a vast scale and, in particular, making far-reaching changes to the legal framework to allow this to happen. Economically viable game-changing solutions are waiting in the wings. This is a major challenge, but one that Switzerland is determined to meet through its policy of collaboration open to everyone involved.

As a summary, sustainability is no longer simply an objective; it is a necessity. Switzerland, with its commitment to clean technology, is forging a path to a greener future.

I strongly believe in this collective quest for a more sustainable society in which the circular economy, so as retrofitting innovative solutions, will guide us towards resilience, balance and a regenerative economy!

About CleantechAlps

Comprising more than 1,000 businesses, [CleantechAlps](#) is Western Switzerland's cleantech & sustainability cluster. Its network provides dedicated access to the cleantech communities so as potential industrial partners in the clean technologies and sustainability sector. CleantechAlps drives the Swiss innovation ecosystem towards the objective of Switzerland's being the leading Deep Tech Nation Cleantech in Europe. This network plays a decisive role in cleantech innovation and encourages key players to create the conditions most likely to ensure the development and growth of businesses facing the challenges of the energy transition and climate change. CleantechAlps mission is clearly to speed up the transition from the old fossil world the new decarbonized one !