

SKL Economics

Introduction:

The electrification of humanity is the singular event in human history that quite literally had no cultural or experiential antecedents and it can be argued that it has shaped modern civilizations more profoundly than any other specific influence, but electrification by burning coal came with a hidden price that seems to mount each time our circumstances are examined more deeply.

Now we find ourselves on the verge of a second wave of electrification that will be profoundly disruptive to an existing order that is increasingly at odds with the natural world and all its inhabitants. This second wave is both a source of hopefulness in a fraught time as it breaks the link between carbon emissions and electricity by producing power at a price point no carbon based method can match, and a sense of caution because the potential short term economic consequences require considerable contemplation.

SKL is an acronym for Sven Kullander Leonardo, it's a seventh generation iteration Energy Catalyzer, Ecat for short, in a series of inventions, by Andrea Rossi, which started with what seemed to be a LENR variant based on Nickel Lithium Hydrogen interactions that were highly exothermic. The second stage of development was marked by a fresh insight that resulted in plasma based devices and a commercial product, the SK, which produces heat for industrial purposes.

The SKL is a breakthrough device that produces electricity directly from a plasma that is apparently the result of a newly discovered physics, the device has the potential to revolutionize human culture and solve the looming CO2 induced climate issues before us.

The first order of economic analysis is introspective in the sense that Leonardo Corporation, having succeeded technically with the SKL, now has to make a lot of fundamental value choices about how to go about altering the existing order without crashing various various economic mechanisms before they can be replaced with the new fire.

There has been certain tension at E-Cat World between parties that would have Leonardo plunge headlong into the fray by rushing a badly needed product to market and other parties that suggest a more measured pace that prioritizes establishing long term product reliability over immediate product placement.

There is a way to do both those things at once.

Ephemerization:

The most empowering thing Leonardo could do now is to apply SKLs to building more SKLs for internal use in every application of the manufacture of SKLs from building production tools to fabricating parts and assembling finished products. The office and electronics, granting sufficient

power quality, should run from SKLs in the power room. Vertical integration would ideally eventually extend right to the bottom of the supply chain in the extraction and refining of all the pertinent elements to their processing into industrial precursors to the transport and installation of products in situ. Every successful application is a doorway to fresh markets.

Leonardo should be the first SKL powered corporation for compelling reasons; any issues can be addressed immediately and the lessons learned can be put into effect in timely fashion without exposing the potential customer base to the kind of experimentation the software industry is known for; the customers won't get the product until it's iron clad ready and the brand building can begin in the best possible way.

Applying the SKL internally also buys some time and space to deal with the implications of technical success in a more fulsome way before finalizing strategy and tactics about issues as diverse as product scaling to the value choices about which enterprises and entities are gifted with first mover advantage; and what the implications of that are.

I think it will become important to closely define the moral and ethical base from which some challenging value choices will be made. For example they may find themselves turning to the medical concept of triage as applied towards serving the greatest long term planetary good before we turn the corner on a number of looming concerns.

Buckminster Fuller gave a name to the historical trend of humanity to accomplish ever more with ever fewer resources, he called it ephemeralization and we are about to experience this process in over drive.

If past is prologue, the wealth newly created in the medium and long term will dwarf the short term pain of stranded assets that lies ahead for some. That pain will principally descend on those oil producing nations that only gave lip service to economic diversification and democratization while they had the means and for the carbon industries that knowingly and provably did harm on such a vast scale that the reckoning will unfold over generations yet to come.

Power or Hardware:

Warren Buffet uses the term 'moat' to distinguish companies that have gaped the competition and established an insurmountable economic advantage; in his eyes this is the strongest indicator for long term success of all the metrics he uses for financial analysis. The internal application of the SKL can create a financial 'moat' around all of Leonardo Corporation's activities by lowering input costs while building a rock solid foundation for very rapid proliferation when all the parts are properly in place.

The Norman Schwarzkopf approach rather than George S. Patton, if you will, by way of analogy.

The simplest way to maintain the 'moat' around Leonardo, so that it can grow rapidly, is to sell power rather than hardware. If past guesstimates still have merit the direct capital costs to Leonardo per watt of electricity will come in at a fraction of industry norms and run costs are low enough to be ignored except as a bookkeeping entry.

If the hardware is sold at reasonable but generous manufacturing margins, think Apple, the financial structure of the energy business will fracture in short order and precipitate a chaotic crisis in a very significant element in the global economy that just happens to be foundational to our civilization.

An orderly transition to a new energy economy is in everyone's best interests as kicking the props out from under a highly leveraged world at or near the top of a very long secular bull market begs for unintended consequences; most of which will be regretted in hind sight.

Selling power rather than hardware can lead to an orderly transition through setting a single metric; by adapting the price of power to the evolving situation that develops as the exponential curve of product placement unfolds you can signal the financial markets and carbon based industries with guidance on price trends and how long their window to unwind from stranded assets and loan obligations is.

You'll note that the banking and investment community has already arrived at a broad consensus about the long term viability of the carbon business by eliminating their exposure in the stock markets and selling off vulnerable loan positions over climate concerns, carbon taxes and legal liabilities all well before the SK series could've been seen as a consideration in those calculations.

Earlier this month Blackrock joined Climate Action 100+, an investor initiative to ensure the world's largest corporate emitters of greenhouse gases act to lessen their carbon footprints, the group includes more than 370 global investors that collectively manage more than \$41 trillion in assets.

"Climate change has become a defining factor in companies' long-term prospects," Blackrock chairman and chief executive Larry Fink said in his annual letter to chief executives. "But awareness is rapidly changing, and I believe we are on the edge of a fundamental reshaping of finance."

Raising money for carbon projects on all but the shortest of time horizons, and on the surest of bets, will be next to impossible the moment the banks and investors take Leonardo's products seriously; and you can rest assured it won't take them long to cast a very cold eye on a dying industry crippled by liabilities.

Triage:

When the dust settles the stark new reality for companies burning coal to make electricity is that their only intrinsic value is the node links to the grid and the land base under them. They are already under tremendous public pressure to pay commensurate carbon taxes and soon to be tried civil cases based on successful actions against the tobacco industry will indicate what their financial liabilities for past behavior are going to look like going forward.

Coal is no longer competitive with natural gas, solar, or wind power and now a new technology has arrived that is so efficient as to make coal a quaint part of history; the window for coal is already closing in the first world, the rest of the world won't be far behind.

Gas fired electricity has enjoyed an economic advantage over burning coal ever since fracked gas prices under cut coal prices and carbon taxation models recognized that carbon intensity is an important

metric. That advantage is about to vanish and their best hope may be that the ongoing project to build an SK powered direct replacement turbine is successful. Climate triage suggests that their window should be longer than that of the coal-based plants but short of switching to SKs or SKLs while that window remains open their asset values will also be reduced to the node connections to the grid and the underlying land value.

All the carbon producers are about to undergo a painful revaluation of in-ground reserves and restricted access to further capital and watch as their stock prices and political influence wither away. Their business decisions will circle around how much corporate pain they are willing to absorb before succumbing to the winds of change and either joining the revolution with what capital remains or fading away in a miasma of broken dreams and promises.

Unlike coal and gas powered plants renewable's costs are all front loaded, when the installation and hook up phases are complete ongoing loan payments, land lease payments or mortgages and taxes are the significant run costs. With renewables the power producing assets will endure and continue operating for some time even if the current ownership does not; as price pressures from the SK series climb renewable's infrastructure valuations will trend downwards with the diminishing cash flow and at various points forced financial restructuring will be a recurrent theme as stranded assets are acquired by other operators at nominal cost after massive write downs.

As a corollary, financing for fresh renewables project will vanish when these trends become clear to all.

Climate triage suggests that once renewable assets are in operation the ongoing climate impact is a net positive relative to the carbon burners, and that because the front loaded costs can be successively depreciated to the point at which a business case can be made for their acquisition they will be the last of the current power producers to succumb to progress.

Over the medium term valuations for various sub systems of the distribution grid can be expected to diverge as well. The sub systems that will depreciate the most steeply in value are the long distance high tension lines that will become redundant as a more modular future unfolds. Localized micro grids that optimize load balancing and minimize new infrastructure expenditures will tend to hold value until such time as individually owning SKLs become the norm and the grid too becomes an anachronism.

Geopolitics:

Certain O&G and coal producing nations that have based their entire economies on carbon and failed to diversify the balance of their economies are also the least equipped to deal with the wave of change about to break over them. They share a number of characteristics in that they are largely corrupt kleptocracies with huge discrepancies in wealth distribution where the leadership has oppressed the populace with iron-fisted police state tactics intended to render their citizens powerless and deny them a share of the wealth and the benefits of a modern education and a social safety net.

Their rulers largely lack the inclinations and political skills and the will to guide their nations through the creative destruction that lies ahead. Their cowed populaces lack the resources to alter their

destinies short of armed insurrection when conditions eventually deteriorate to the point of desperation. These same nations have often exported their dysfunctionality internationally through financing the deliberate undermining of more developed nations and regional enemies and those tactics will leave them with few friends to turn to once the money runs out.

In the long run, access to Ecats will offer those populations an opportunity to rebuild their economies from the ground up and grant them the choices that will allow them to survive and eventually prosper in a restructured society on a healthier planet.

Norway stands in glaring contrast to these dissolute nations in the path of its development and current attainments from the same fortuitous placements of geological wealth. Norway is actually likely to embrace Ecats and could very well be a substantial source of capital, through their very well managed sovereign wealth fund, when the full implications of Ecat technology sink in and they decide to lean in to help build a viable future.

The 1 trillion USD sovereign wealth fund has already divested of most of its O&G assets on the basis of a very deep analysis of the industry's looming liabilities, and the implications of climate change politics going forward. Destroying the ecosphere in the name of quarterly profits has become a corporate albatross and carbon taxes have become the order of the day because it is a strategy that demonstrably curbs carbon emissions.

The fund itself presents an interesting example in financial modeling and it operates under strictures laid down in legislation under simple principles. The royalty cash flow from O&G production flows into the fund where it remains under active management and the profits from the fund's investments are expended in developing Norway's thoroughly modern infrastructure and reducing the tax burdens of civilization on the populace to as low as zero during periods of high oil prices and high fund return rates.

There is a potential lesson in this on how to democratize the benefits of Ecats.

The idea of selling power rather than hardware arises out of Leonardo Corporation's stated aim to sell power, in the form of heat from the SK, priced at 20% below the prevailing market rate.

Prior analysis strongly suggests that at some presently indeterminate point the discount priced electricity from the cumulatively disseminated SKs will become the market maker for power pricing. This in turn represents a considerable responsibility that, in my view, would benefit from voluntary binding mechanisms for demonstrating accountability as do more traditional market markers for stocks, bonds and commodities.

One concrete demonstration of a concern for the greater good would be to put a royalty on the gross electrical sales to be deposited into a trust structure that actively manages the capital and uses the profits from that activity to, for example, electrify the rural third world.

Consider that while Norway's oil royalties have a restricted window in time, for obvious reasons, SKL electrical sales will go on and on and on.

One way to view such an ever accumulating pool of capital is as a substantive savings account for humanity to provide a financial cushion for when we're enmeshed in the creative destruction ushered in by the age of robotics and artificial intelligence while struggling to rebalance a damaged ecosphere.

If this strikes you as over statement, consider that Blackrock chairman Larry Fink plainly states that the risks posed by climate change are the most significant he's seen in four decades of finance. "We don't have a Federal Reserve to stabilize the world like in the last five or six financial crises that occurred during my 40 years in finance. This is bigger, it requires more planning, it requires more public and private connections to solve these problems."

Partners and Strategic Alliances:

It may well emerge that beginning this leg of the Ecat saga in a conducive political jurisdiction is a singularly critical decision; from this perspective Sweden represents the ideal choice even if it was solely based on sentiment in honor of Sven Kullander, the recently deceased head of the department of physics at the University of Uppsala, who made significant contributions to a technology that now bears his name.

There is also certain irony at work as Sweden has an ongoing structural electrical distribution problem that is inhibiting the economy that could conventionally take a decade to solve even if all the parties could agree on what to do, SKLs are timely.

The second oldest university on the planet was set up 500 years ago at the command of a Swedish King as a result of his early enlightenment as to the benefits of seeking knowledge through empirical inquiry as inspired by the Renaissance. The University at Uppsala ended up playing a pivotal role in the first wave of electrification as a mind equivalent to Tesla's resided there and is locally regarded as the co-founder of that new era.

The then King committed Sweden to the rapid electrification of his nation and the development of the technically literate, highly educated citizenry that propelled Sweden to the forefront of a 120 year wave of innovation as they consistently excelled through a meritocracy based on engineering genius, innovation and goods manufactured to the highest attainable standards.

ASEA was founded in Sweden in 1883 as a manufacturer of generators and electric lights and went on to electrify that nation. In 1987 ASEA merged with a Swiss company of the same vintage and a developmental arc that bore a striking and uncanny similarity to ASEA, the new company, with combined income of \$18 billion US and 160,000 employees, was named ASEA Brown Boveri Ltd. or ABB for short. ABB has been a Fortune Global 500 company for the last 24 years and both branches have been consistent leaders in developing new electrotechnical products and systems for 140 years.

ABB is the world leader in robotics for manufacturing, distributed control systems, machine and factory automation systems, flexible manufacturing and smart machinery, electric motors, generators, drives, automotive battery charging, inverter technology, electrical propulsion systems for ships, and complete large scale turn key power generation and grid distribution systems.

ABB maintains these leadership positions, in part, through an acquisition strategy of paying cash for leading companies with technologies and corporate cultures that integrate seamlessly into their grand vision. ABB also has an incubator program designed to identify the next genius engineer/inventor; this semi-independent division has a very generous budget which is currently over 3 billion US a year.

ABB has stayed with the same old school business practices that have served so well for generations and they generally have a lot of cash kicking around in times of transformation so that they can seize compelling opportunities, they've recently liquidated some substantial assets at the top of the business cycle and that may indicate preparation for their next transformation.

ABB first came to the attention of the ECW readership when Rossi dropped their name in regard to automating the manufacture of Ecats and this prompted considerable speculation about a deeper relationship.

ABB sold all its O&G assets back in 2000 for reasons best encapsulated in a quote from their mission statement:

"At ABB, we are committed to writing the future of safe, smart and sustainable electrification for everything from industry and buildings to infrastructure and transportation. Our vision is to achieve a zero-emission reality not only for the future but also today."

If ABB is not Leonardo's business partner they definitely need an invitation to the SKL presentation, as does the Finnish Sovereign Wealth Fund as well as the beleaguered Volkswagen Group and Swedish lightning rod Greta Thunberg.

There is a staunch environmentalist that probably has more ties in the global financial community than any other human being and who consistently puts his money behind his principles, he's also running for President.

Micheal Bloomberg's terminals are the globally ubiquitous tool of the stock and bond and futures and commodity markets, the momentary data flows are mind blowing and everything runs on vast server farms that gobble electricity, the man needs SKLs.

Micheal Bloomberg also has a personal net worth of 50 billion USD as a result of his business acumen and leadership skills; Micheal Bloomberg could develop a bond trading bourse for short term interest bearing bonds, backed by the cash flow from the installed SKL base, in his sleep. The immediate reach would be global and if the transaction fees and minimum bond purchase amounts were set low enough there could be a broader participation in the rewards of the second wave of electrification across the economic classes.

Micheal Bloomberg would be universally trusted to set the bond conditions, do the due diligence to demonstrate the Ecat user's solvency, set credit parameters for the bonded cash flow and act as a market maker for what can be a multi-trillion dollar business at maturity. Futures trading, and even an electrically backed international currency as was suggested by Buckminster Fuller decades ago, are potential adjuncts to the bond business.

Micheal Bloomberg, or his representatives, should receive an invitation to the presentation.

Invite Jay Inslee, the pragmatic environmentalist Governor of Washington State which hosts Microsoft, Amazon and Boeing. Inslee has by far the most robust environmental plan in America and its application in Washington State is already making money, as intended, for everyone involved; it is economically sound, scientifically valid and exhaustive in its analysis of both problems and concrete solutions.

When Inslee withdrew from the race for the Presidential nomination he offered his plan as an open source document to the rest of the field; every other Democratic contender fully adopted his plan as the goal of any new Democratic administration. Needless to say Jay has a lot of friends in the Democratic party and is held in high regard in the manufacturing, tech, scientific and environmentalist communities.

The potential to transform third world village life with a community scaled SKL installation complete with satellite up-link and WiFi and AI based agricultural, educational and administrative modules and hardware to automate the functions of minimalist government is enormously powerful. With cheap power, one can scavenge water from the air in drought stricken regions and make the deserts bloom; with cheap power one can establish a decent productive life in the planet's harshest environments.

There are some very wealthy and well connected people for whom the problems of the impoverished masses of the world are a daily concern such as Bill Gates and the Clinton Foundation; invite them to the presentation.

Thirty years ago Europe struck a grand bargain with Russia when they decided to integrate Russian O&G production into the European economies in the hopes that this step would bind the former enemies together with economic ties that would lead to a broad political rapprochement. As Europe's dependence on Russian energy deliveries grew, Russia used that leverage to extort political gains by threatening to cut off O&G shipments.

Ecats represent an opportunity for those European nations to free themselves from a deeply tainted relationship that has hindered their ability to cleave to their own values and choices in the face of various forms of Russian aggression. Invite representatives from the affected nations to the presentation.

Invite representatives from METI. Somewhere in Japan, SKs have been under beta testing for almost a year now, it's high time the rest of Japan learned of it.

Invite representatives of Climate Action 100+, they have \$41 trillion under active management.

Invite all of these people with their resources and vision and sell them on a now realizable dream that enlists their aid in shaping a viable and more prosperous future for all of humanity.

The potential to put their collective economic, political and cultural leverage behind a worthy cause in which everyone's interests intersect is immense and it could cut right through a lot of petty obstructionism. Denmark shifted from 90% coal fired electricity to 80% renewables in a single decade once the political will to stop breathing the dirtiest air in Europe coalesced; if they can do it, we all can do it.

In Conclusion:

One way to view the deployment of Ecats is to borrow an ecological metaphor and view Ecats as a dominant invasive species that is being deliberately 'seeded' with partners and strategic allies from around the world with the aim of including them in the ranks of the Ecat powered enterprises inside Buffet's 'moat'. The cultural and economic synergies enabled by SKL technology will create a new center of gravity, and the influence of this will radiate out from this thriving core until 'inside the moat' includes everyone.

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