

APPLYING NATURAL SCIENCE
TO ACHIEVE SOCIAL JUSTICE

an Introduction to *The Resonance*[®] Curriculum

The Resonance[®]:

Synchronization for totalPROSPERITY™ through Consilient Optimization

by

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CONCENTRIC Industries, Inc.

part of the

TECHNOLOGY & SOCIETY SERIES

an “*IDEN Science*” Publication

for CTAP @ Cedar Creek

in memory of

Dr. Dwight D. Bushnell

“your diligence, integrity and drive will not be forgotten”

“WHAT IF ... we think we have the answers, but it’s the questions we have wrong?

What if people aren’t the problem, but poverty is? What if air and water were cleaner coming out of power plants, factories and farms than going in?

TrueProsperity™ has a deeper purpose: to annihilate poverty.

Humankind’s gravest challenges are borderless: hunger, dehydration, pollution, disease and climate. So, let’s champion real, practical solutions that exist right now – let’s synchronize in **Resonance**® with TotalSuccess™ for ALL people AND the Planet.

This publication is a “HOW TO” Manual to make the world better. It introduces not just Science or a Business, but a MOVEMENT.

The resurgency has begun, and YOU can join it.”

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Center for Education and Training in the Application of
Natural Science for pure Energy, Food, Air and Water

* MAWCAWE is an acronym for “Medicine + Agriculture + Waste Conversion + Air + Water + Energy”

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INTRODUCTION – POLY CULTURE AND THE POWER OF CONSILIENCE

“The world is changing, but old ways can be modernized. This is the way of growth.”

- **Marijo Moore, Indigenous Author**

Energy, Food, Air and Water are serious. We cannot afford sloppy thinking. This manual represents the real politic – the skillful, ingenious, wise, prudent and sagacious worldview based on accurate science.

Upon diligent study of the consolidated materials presented in this brief manual, the proverbial “Economics versus Ecology” debate (often coined “Jobs vs. Environment”) will be rendered obsolete, effective immediately.

This claim is founded upon sound physics, chemistry, thermodynamics and mechanics.

The key to unlock these ‘secrets hidden in plain sight’ is a powerful tool called CONSILIENCE. Simply put, it means using an approach to solve multiple cross-discipline problems, simultaneously. From this day forward, to be a “polymath” requires only the desire to find better ways of doing things.

That means the science must also be viewed as a tool to achieve a performance-based and complete Quality Of Life (QOL):

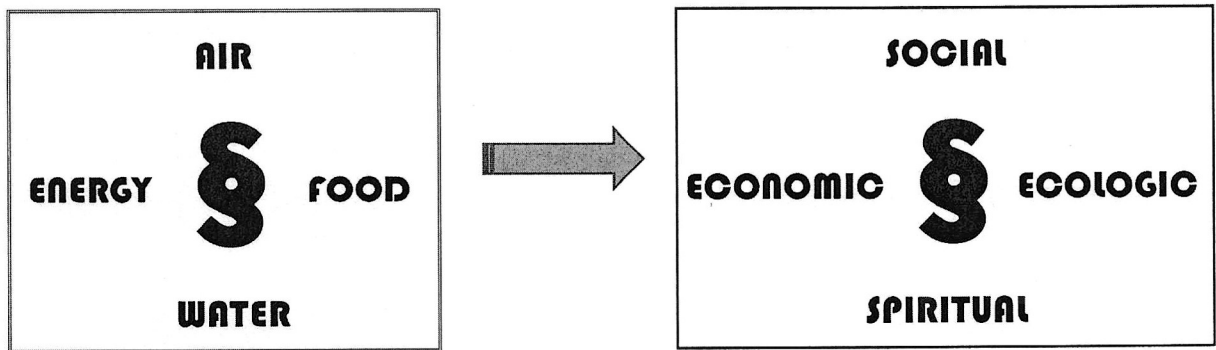


Figure 1 => **ONLY TotalSUCCESS™ Cultivates TruePROSPERITY™**

Because *TruePROSPERITY™* demands *TotalSUCCESS™* that is sustainable in all of its facets: if any of these results is missing, then growth is not durable and it will not last.

The real, patented, and proven engineering (applied science) tools presented in this primer “**Represent the Future of Energy, Food, Air and Water for the Whole World™**”.

What better time to foster technologies that simultaneously cultivate durable thriving, Economically, Ecologically, Socially, and Spiritually?

Who has the sagacity and courage “2S.E.E.”™ the Biggest Picture? Because these processes are the current standard-bearers for the vanguard of consilient innovation, they are the harbingers of the future of Energy, Food, Air and Water – everywhere. And that means they are inherently the best and most convergent pathways to enduring social victories and Spiritual freedom.

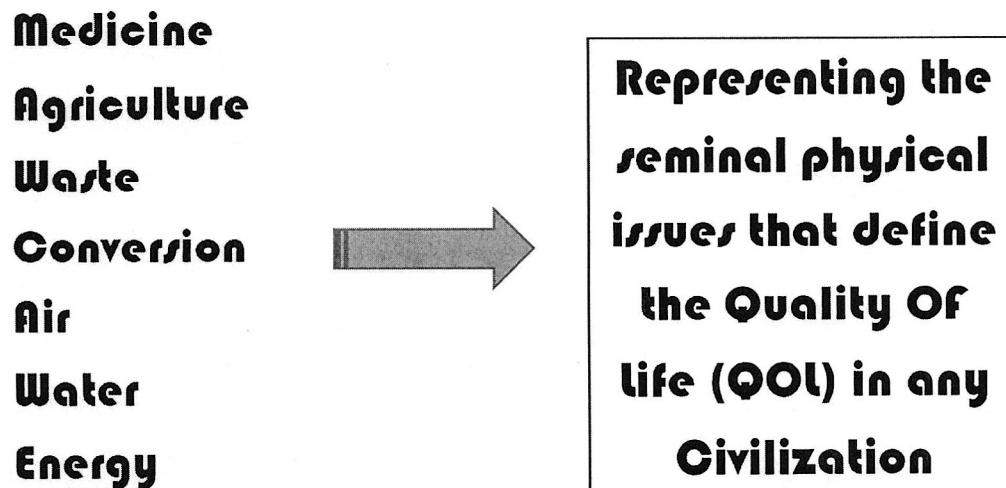
This introduction to *The Resonance*® curriculum will provide a basic understanding of the ‘science behind the solutions’. More rigorous engineering analysis of the Process Flow Diagrams (PFDs) included in specific patent files is left to detailed coursework within The MAWCAWE Institute and actual engineering, construction and operations work at CONCENTRIC.

The transformation of perceived multi-faceted problems into advantages that are sustainable requires only the understanding and application of the Truth of Abundance (the “*All Gain Sum*”™) that transcends the lie of lack (the “*zero sum game*”).

1. The MAWCAWE Institute

Center for Education & Training in the Application of Natural Science for Social & Spiritual Gains

“MAWCAWE” is pronounced like the tropical parrot, but it is an acronym covering the ambit, or scope, of consiliency:



Accordingly, The MAWCAWE Institute has been founded as a center for Education and Training for the Optimized Application of state-of-the-art, advanced Natural Science to most efficiently refine and generate the basic resources that serve all of humanity. In doing so, by this venerable cause, *The MAWCAWE* cultivates durable Social Justice and Spiritual Freedom by teaching cultures worldwide how to actively and effectively combat poverty.

So, science is the tool, and the end goal is TotalSUCCESS™ for People AND the Planet. This *Resonance*® curriculum at *The MAWCAWE* is proof that it is not only possible, but readily achievable right now.

2. CONCENTRIC Industries

The following corporate tree graphically shows the general scope of CONCENTRIC, a syndicated company with over a dozen process patents for real, “Bricks & Mortar” generation of ubiquitous commodities from ubiquitous fuels and wastes. The two (2) main divisions of CONCENTRIC are (A) NAUTILUS ENERGY ALLIANCE (NEA), and (B) KALOS FOOD HOLDINGS (KFH). “*The Seven Optimizations*”™ and ‘COGENCY SYNDICATED’ (CS) will be described in general scientific detail in this introduction.

Keep in mind that CONCENTRIC is an umbrella holding company that is structured to take on a turnkey “**E**ngineer + **F**und + **C**onstruct + **O**perate + **M**aintain” (EFCOM) role in the fleet of clean technologies.

One aspiration of The MAWCAWE is to bring up future generations to continue the “process of improvement” that is at the heart of the CONCENTRIC Culture of Innovation. The underlying philosophy is to simultaneously raise BOTH purity AND efficiency, thereby yielding MORE: more money to provide more jobs for more people with more families in more communities that are more clean and provide more opportunity for more thriving.

§ CONCENTRIC INDUSTRIES			
NAUTILUS ENERGY ALLIANCE		KALOS FOOD HOLDINGS	
HELIX	COALZERO®	THE GREEN & BLUE REVOLUTIONS™	
SYLVAN XYLEM	WOOD	AUROS	PHAROS
L.I.G.H.T.	GEOTHERMAL	<u>LAND + CATTLE</u>	<u>MARINE + FISH</u>
STEWARDSMITH	LIVESTOCK MANURES	<u>COMPANY</u>	<u>COMPANY</u>
BUSHNELL SCIENTIFIC	OIL & GAS CHPC	JMH	AIA
ATLAS	SCRAP TIRES	"DAIRY OF THE FUTURE, TODAY"™	ADVANCED
KEMIYA	GARBAGE & SEWAGE	FEATURING ...	INTEGRATED
"THE SEVEN OPTIMIZATIONS"™ 'COMMERCIALY-PROVEN, PATENTED PROCESSES FOR THE COMPREHENSIVE, ZERO-POLLUTION CONVERSION OF EVERYDAY FUELS AND WASTES INTO PURE ENERGY, FOOD, AIR AND WATER PRODUCTS'		SOSCO™	AQUAPONICS
		SUSTAINABLY	FEATURING ...
		OPERATING	AQUAZOE™
		SELF	"WATER OF LIFE"
		CONTAINED	
		OUTPOST	
COGENCY SYNDICATED A.I. + A.D. + M.D. + I.D. + P.R. + P.V.			

Figure 2 => **CONCENTRIC CORPORATE TREE**

"REPRESENTING THE FUTURE OF ENERGY, FOOD, AIR & WATER FOR THE WHOLE WORLD"™

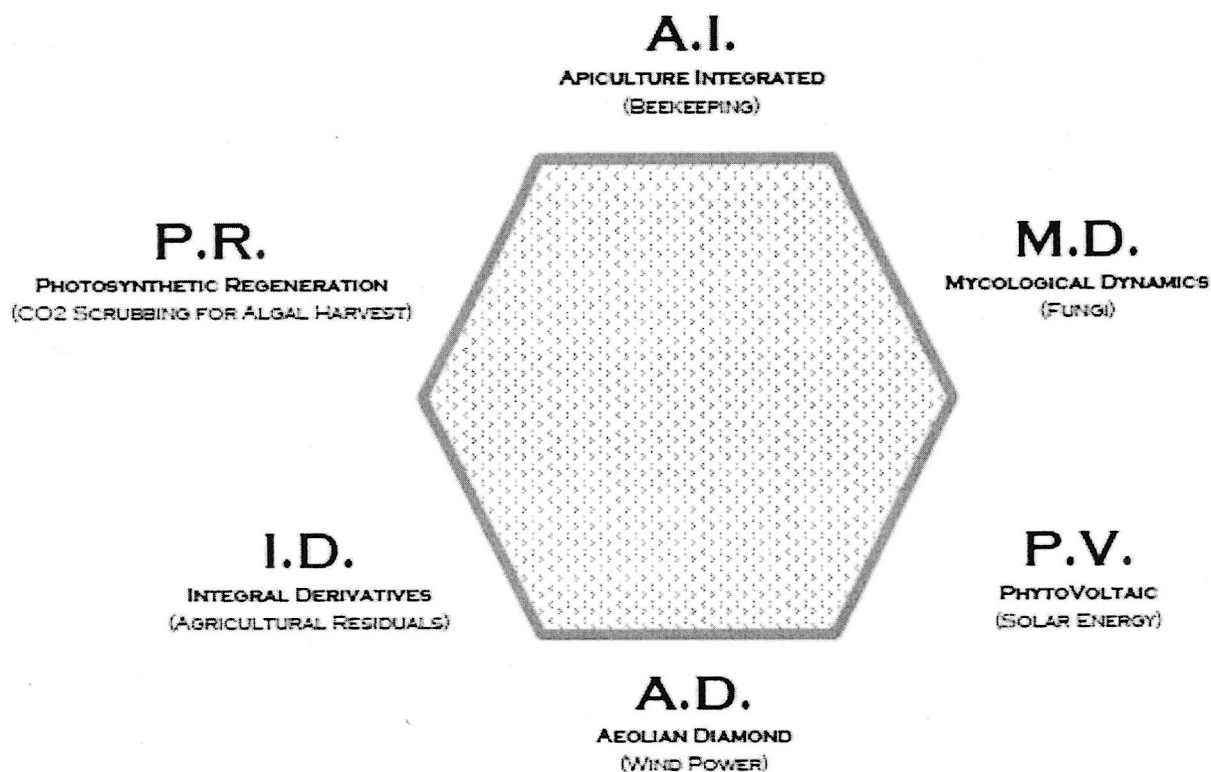


Figure 3 => **COGENCY SYNDICATED**

Consiliency illuminates synergy between disciplines, and CONCENTRIC's network of alliances includes in-house propriety, strategically outsourced, and enhanced operations to maximize efficiency, purity and profitability where status-quo methods leave society wanting.

In the following section, core NEA, KFH, and CS technologies will be described scientifically.

State-of-the-Art Technology

◇ NAUTILUS ENERGY ALLIANCE ◇

& The Seven Optimizations™

(1) HELIX / coalZERO®

Integrated Gasification Combined Cycle (IGCC) is at the heart of the HELIX ZEROemissions process that is suitable for all grades of coal from Anthracite to Bituminous to Lignite.

Instead of being combusted, the pulverized coal fuel is heated by steam in the absence of oxygen in an Entrained Flow Gasifier (EFG), and 40% of the 'coal syngas' is directed to gas turbine generators (GTG) whose exhaust energy is recovered in Heat Recovery Steam Generators (HRSG). The HELIX process then divides the steam from its high-pressure header to serve the process needs where $\approx 20\%$, each, of the total syngas and steam, has been sent to (i) AZOTE® (dry nitrogen fertilizer), and (ii) TURBONOL® (methanol, C_2H_3OH , liquid fuel), plus (iii) ZSD® (Zero Sulfur Diesel, $C_{16}H_{34}$, liquid fuel) fractionalization in FISCHER-TROPSCH *Gas-To-Liquid* (GTL) processes.

The remaining steam (nominally 40%) is throttled through a condensing Steam Turbine Generator (STG) to complete the IGCC power station.

Air Cooled Condensers (ACC) eliminate any water consumption, all char from the EFGs is usable as civil engineering substrate, and the trio of Selective Catalytic Reduction (SCR) for NO_x , Oxidation Catalyst (OxCat) for CO, and Photosynthetic Regeneration (P.R.) for CO_2 conversion into high-protein Spirulina algae, yield only pure Oxygen, O_2 , as residual, which can be bottled or released to generate Ozone (O_3) upon exposure to sunlight.

The thermally-optimized, Six Product HELIX system (Electricity + AZOTE® + TURBONOL® + ZSD® + Spirulina Algae Protein + Oxygen/Ozone) with ZEROemissions is over 60% net efficient, more than twice the industry-standard "burn & boil" coal plant in the mid-20%. The coalZERO® performance revitalizes the merits of this globally-abundant fuel that is still the "Black Gold" of progressive industrialization.

(2) **SYLVAN XYLEM**

Robust Downdraft Gasifiers are used to elegantly and efficiently transform wood and other lignin biomass (often high-performance carbon-sequestering 'Energy Crops' like bamboo, kelp, hemp, eucalyptus, etc.) into WoodGas. The gaseous fuel is scrubbed for tars before diversion to high-efficiency Combined Heat, Power & Cooling (CHPC) systems that start with spark-ignited reciprocating engine generators.

Residual ecoCHAR® is a high-value soil conditioner, and all engine emissions are converted to algal biomass via P.R. scrubbing for true ZEROpollution.

(3) **L.I.G.H.T. = Loop Isolated Geothermal Heat Transfer**

The L.I.G.H.T. system converts the earth core's thermal energy into pureELECTRICITY with no pollution or fuel consumption of any kind.

A high-temperature *Tomalloy*® caisson is set in a LIDAR-precise 3D-mapped vertical bore and fully sealed at the surface, unlike typical vented geothermal wells. Thermal Oil (e.g. *Thermanol*®) downcomers and risers are fixed to the inside of the caisson to facilitate heat transfer from the earth's $1100^\circ F$ magma, and the heat from the oil is transferred to water to form steam in heat exchangers at ground level. A condensing Steam Turbine Generator (STG) operates with an Air Cooled Condenser (ACC) for a totally dry system. The Architecturally-aesthetic and sound-attenuated power house is clean, quiet and efficient.

(4) **STEWARDSmith**

The STEWARDSmith "NO WASTE WASTED"™ process represents the world's most elegant and complete system for transformation of livestock manures and food processing wastes.

The Four (4) distinct facets of the STEWARDsmith process provide 100% utilization of typically problematic agricultural wastes: SOILsmith® + ENERGYsmith® + WATERsmith® + AIRsmith®. The comprehensive system uses a sequential array of HydroCyclone Separators, macerators, Anaerobic Digestion (Thermophillic, Complete Mix), ecoGAS® conditioners, Internal Combustion Engines (lean-burn), P.R. Scrubbers, and ElectroCoagulation chambers to yield (i) ecoFIBER® peat replacement, (ii) continuous Combined Heat, Power & Cooling (ecoCHPC®), (iii) eKoPaNoply® fertilizer, and (iv) Spyrogyra algae concentrated proteins.

(5) **Bushnell Scientific**

The backbone of PolyGeneration (making multiple products from a single fuel) is Combined Heat, Power & Cooling (CHPC). Bushnellian thermodynamics use uber-efficiency to generate Electricity + Heating + Cooling + Algal Biomass + pure Oxygen from any form of gaseous or liquid hydrocarbon fuel with ZEROpollution of ANY KIND.

Net efficiencies of 80%-90% are common in a variety of custom, “right-sized” industrial and commercial applications.

• SPECIAL APPLICATION • **The KHALIX® Process**

“Thermo-Catalytic Solvay Calcination and Carbonization of Continental Lithium Brine Residuals by Means of Ultra-High-Efficiency, Zero-Pollution Combined Heat, Power and Cooling (CHPC)”

The KHALIX® Process represents a novel natural scientific method for the ultra-efficient refining of Lithium.

By way of the strategic introduction of thermal energy and carbon dioxide from integrated Combined Heat, Power & Cooling (CHPC) operations into a Solvay Calcination & Carbonization system, previously problematic residual halogen salts are efficiently converted into value-added carbonate sodas.

Most notably, The KHALIX® Process’ unique ingenuity establishes a true zeroEMISSIONS system with zero wastes of any kind. Accordingly, The KHALIX® Process offers new and significant economic, ecological and social benefits on a global scale.

< Natural Scientific Irony: The Synthesis of Good from Apparently bad >

The primal claim of The KHALIX® Process is the conversion of presumed wastes from the refining of lithium brines and mineral reserves into value-added commodities.

The sublime irony of KHALIX® is epitomized by the fact that the two (2) core drivers of this restoration are, themselves, presumed villains: *Heat & Carbon Dioxide*.

Herein lies the patent uniqueness of the invention: a ‘negative’ times a ‘negative’ really is a ‘positive’ ... twelve (12) of them, to be precise, “The KHALIX® Dozen”:

The KHALIX® Dozen™

I. **< 6 CALCES >**

1. LITHIUM CARBONATE (Li₂CO₃)
2. MAGNESIUM SULFATE (EPSOM SALTS, MgSO₄)

3. CALCIUM CARBONATE (LIMESTONE, CaCO_3)
4. SODIUM BICARBONATE (BAKING SODA, NaHCO_3)
5. AMMONIUM BICARBONATE (BAKING POWDER, NH_4HCO_3)
6. POTASSIUM CARBONATE (POTASH, K_2CO_3)

II. < 6 SERENDIPITOUS PRODUCTS >

7. SODIUM HYPOCHLORITE (HYDRAZINE SOLID FUEL, $\text{H}_2\text{N.NH}_2$)
8. PLANT FOODS (MICROGREENS)
9. FISH VIA AQUAZOE® (ZANDER, TILAPIA)
10. ALGAL BIOMASS VIA P.R. (SPIRULINA SPYROGYRA)
11. ELECTRIC ENERGY (AC AND STORED DC)
12. THERMAL ENERGY (HOT AND/OR CHILLED WATER AND/OR STEAM)

(6) ATLAS

Scrap Tires, the bane of the waste industry, are rendered a valuable “Black Diamond” resource by the ATLAS process. Scrap vulcanized rubber tires are completely reclaimed via a streamlined sequence of (1) micro-emulsion with high-pressure water jet yielding pure carbon black, (2) anaerobic pyrolysis of residual tire-derived-fuel (TDF), and (3) scrubbing of syngas en-route to turbomachinery for a high-efficiency CHPC operation whose emissions are cancelled completely by P.R. scrubbers. Any residual char from the gasifier is collected and used in the manufacture of ecoNYX® construction tiles.

(7) KEMIYA

The name of the ‘changingMATTER’™ process is the word from which English derived ‘Chemistry’. KEMIYA boldly and simultaneously transforms BOTH Garbage (Municipal Solid Waste, MSW) AND Sewerage/Septage into (a) pure ELECTRICITY, (b) pure WATER, and (c) cement/asphaltic admixture.

The MSW is converted to heat in a Fluidized Bed Boiler (FBB), and the sewage goes through mechanical filtration, anaerobic digestion, sequential flash distillation (AMBIX-1), superheating (in a Once-Through Steam Generator, OTSG), steam turbine throttling, condensing, sequential flash distillation (AMBIX-2), and cooling before achieving Potable Water quality.

Filtered sewage joins the MSW fuel, and magnetic drums extract ferrous metal from bottom and fly ashes. Flue Gas is filtered in Electro-Static Precipitators (ESP) for particulate matter (PM-10), refined for NOx and CO via SCR and OxCat, respectively, and transformed to CO₂ sequestering algae in P.R. scrubbers. Air Cooled Condensing prohibits any water losses.

KEMIYA “Rule-of-Thumb” Sizing Metrics:

20 TPD of MSW to transform 60,000 GPD wastewater and generate 1 MW_{net} electricity

◇ KALOS FOOD HOLDINGS ◇

“The Green & Blue Revolutions”™

(a) AUROS Land + Cattle Company

JMH (Danish acronym for “*Land of Milk & Honey*”) uses the SOSCO® livestock facility design to produce milk and milk products (including “WheyMohr”® drinks, CASE® Cheeses, “GREAT” Yogurts®, WaMPum® Powders, and GleeDa® Ice Creams) in a circular, **6-section**, negative-pressure building where all solid, liquid and air wastes are drawn to a central STEWARDsmith plant that serves the entire Sustainably Operating Self-Contained Outpost (S.O.S.C.O. ®). JMH truly is the “*Dairy of the Future, Today*”™.

(b) PHAROS Marine + Fish Company

Advanced Integrated Aquaponics (**AIA**), represented by aquaZOE® (“*Water of Life*”) technologies, take advantage of low-cost heat, power and cooling at ALL CONCENTRIC plants to use vertical, super-efficient NUTRIENT FILM TECHNIQUE (**NFT**) *Fish + Flora* methods that yield high-quality foods (e.g. Zander perch + Stevia rebaudiana and other valuable microGREENS) using only 5% of the land and water as conventional agriculture.

This Vertical Farming in a Climate-Controlled, pest-free environment offers Year-Round Harvesting (on typically a bi-weekly rotation) that exponentially increases yield Quantity AND Quality. Because the produce is grown ‘*Closer to Market*’, reduction in transport costs, fuel usage and spoilage losses are all natural benefits of *Distributed Harvesting* (DH).

AQUAPONIC SYMBIOTIC™ has a double meaning within PHAROS: **First**, it is the integration of C.H.P.C. to provide the aquaZOE® aquaponics system with lowest-cost energy (electrical & thermal), and **Second**, the very nature of aquaponics itself, where the fish provide fertilizer for the greens while the plants effectively oxygenate the circulating water for the benefit of the fish.

In this way, both Thermodynamically AND Biologically, aquaZOE® represents “*life together*”. Because the biggest challenges facing food production are (a) Energy costs, and (b) Fertilizer supply and waste, the purposefully-integrated PHAROS operation represents best-in-world-class food cultivation.

By design, PHAROS empowers growing the entire Fruit & Vegetable Basket & Beyond.

◇ COGENCY SYNDICATED ◇

<1> **A.I. = Apiculture Integrated**

All aspects of professional beekeeping are optimized, including commercial pollination, venom, propolis, wax and honey.

<2> **M.D = Mycological Dynamics**

Strategic use of mushroom fungi is optimized in the form of Mycorrhizal Mycelium in soil amendments, and cutting-edge MycoRemediation/Detoxification as preliminary treatment before final processing in Sylvan Xylem or Kemiya systems.

<3> **P.V. = PhytoVoltaic**

State-of-the-Art coating of photovoltaic crystals with diatomic phytoplankton skeletons orient alignment with light/photons for increased solar cell efficiency. P.V. also utilizes thermal energy recovery for overall energy capture efficiency and optimization of photovoltaic conversion by reducing cell temperature.

<4> **A.D. = Aeolian Diamond**

Deploying biomimicry for teardrop (“school of fish”) configuration of modular Bernoulli Effect (no external moving parts) wind turbines integrated with manifold-driven Toroidal impellers for optimized efficiency, scalability, and null aviary (bird) impact.

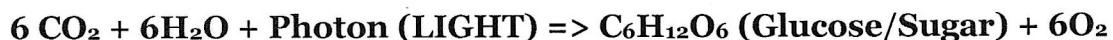
<5> **I.D. = Integral Derivatives**

Maximized Production, Sales and Marketing of agricultural waste products, residuals and remnants.

<6> **P.R. = Photosynthetic Regeneration**

Harnessing the ‘holy grail’ of food production (CO₂) that is “hidden in plain sight”: PHOTOSYNTHESIS*, by means of Closed-Loop Deep Cell Reactors (CLDCR) to rapidly produce edible, high-protein Spirulina alga.

**PHOTOSYNTHESIS:*



P.R. “Rule-of-Thumb” Sizing Metrics:

production of 180 gram/m²-day for a benchmark yield of 2,000 TPY/MW_{gross}

3. ***H.O.P.E.S.*** (example applications)

“Homelessness Opus & Prisons Enlightened for Sustainability”

The following real-life examples of opportunities to use consilience to align with real-life gains represent applications that are repeatable in thousands of worldwide locations. H.O.P.E.S. is real change because it is not just solving the biggest problems of a dysfunctional and unsustainable society, but it is MORE: actually creating TruePROSPERITY™ out of the ashes.

It is really something to start at the bottom and thrive. So, what are the three (3) lowest cultural points? Pollution, Homelessness and Prisons.

Hence, Homelessness Opus & Prison Enlightened for Sustainability via state-of-the-art systems that completely metamorphosize problematic wastes with ZEROpollution™ technologies while creating pure Energy, Food, Air and Water, and do so while not only costing society NOTHING, but actually increasing cash flow INTO communities. This is real Optimization in real *Resonance*® with real science to improve real society.

The following “ProFormae” tabulate the relevant financial performance metrics of integrated CONCENTRIC operations provided at NO COST TO SOCIETY under EFCOM turnkey agreements that are structured to (i) provide quality housing AND gainful work options to homeless and unemployed people, (ii) upgrade wastewater and municipal solid waste management systems that presently dump raw sewage into Puget Sound (State of Washington) and leach toxic runoff into ground water, (iii) cultivate meaningful-scale Sustainability & Opportunity for restoration in prisons, and (iv) do all of these things while building durable economic success.

APPLICATION #1 – Homelessness Reversal @ King’s Point in Seattle on Puget Sound

<u>CONCENTRIC System</u>	<u>Turnkey CAPEX</u>	<u>NOI (annual)</u>
KEMIYA	\$50 MM	\$30 MM
ATLAS	\$30 MM	\$15 MM
JMH / SOSCO (goat)	\$10 MM	\$5 MM
Housing living	\$30 MM	-
TOTALS	\$120 MM	\$50 MM
Simple Payback	2-1/2 yrs.	
ROI	30%	

APPLICATION #2 – Prison Productivity @ Walla Walla Penitentiary in Columbia River Basin

CONCENTRIC System	Turnkey CAPEX	NOI (annual)
KEMIYA	\$40 MM	\$20 MM
Sylvan Xylem	\$10 MM	\$5 MM
JMH / SOSCO (Jersey Cows)	\$20 MM	\$5 MM
Housing living	\$20 MM	-
TOTALS	\$90 MM	\$30 MM
Simple Payback	3 yrs.	
ROI	25%	

SYNOPSIS – IDENscience®

The standard of performance that permeates *The Resonance*®, the MAWCAWE Institute and CONCENTRIC Industries is the pursuit of Quality Of Life (QOL) that is only available by means of consilient innovation. If any facet of success (Economic, Ecologic, Social or Spiritual) is lacking, then it cannot be TotalsUCCESS™.

The upside is that when we synchronize our actions in *Resonance*® with complete and TrueProsperity™, we optimize technological solutions to solve social problems. The unprecedented scale and productivity of CONCENTRIC’s answers to the right questions are the world’s keys to “Pandemic Sustainability”.

The term “IDENscience”® has been coined to capture this return to the fundamental identity of abundance: **I**ntegrated + **D**istributed + **E**legant + **N**atural.

Integrated+ consiliently deploying multi-disciplinary solutions to multi-functional challenges

Distributed+ siting energy, food, air & water plants at the point of use, or waste production

Elegant+ holding to Ockham’s Razor by relentlessly pursuing simple, reliable answers to tough, relevant questions

Natural+ remembering that all science is first natural, and heeding the poetically cogent words of

the late, great musician and writer, NEIL PEART:

**“Science, like nature, must also be tamed,
with a view toward its preservation.
Given the same state of integrity,
it will surely serve us well.”**

NATURAL SCIENCE on ‘Permanent Waves’ © 1978, RUSH