2024 to 2040, 2,000 Green Play Ammonia<sup>™</sup> plants supplying locally. Locally Supplied, On Farm Storage Required. March 03, 2022

### Seven Strong Legs And A Beating Heart. The Rainbow Effect.

Proper and Improved use of Ammonia, Banded Deep No-Till. Industrial Heat and Process. On Site Green Ammonia Turbine Power. First Priority, 50% production goes to landowners. Stable Price, seven years. 50% of production Free Market. Supported Internally. Subscriber pricing at \$100 to \$300 per ton, Owned by Land Owners. Seven year contracts. Less is More. Zero Carbon Manufacture. Fossil Ammonia Blue or Gray is parked. Horizon to Horizon Zero Carbon Green Play. Future use not ruled out. Application Equipment, Ultimate Timing, Exactrix® The Beating Heart Land Ownership. Green Play Ammonia<sup>™</sup>

> North American Farmers Have Green Play Ammonia.™ Competitors are not able to follow. Lowest cost of production, driving land values. Strongest exporters with cleaner water and cleaner air.

- 1. Wind Combined Process
- 2. Solar Combined Process
- 3. No-Tillage Renewable Oil, Combined Process
- 4.Built 24/7, Locally, 10 plant backup.
- 5. Quick Build Out. Lower Interest Costs.
- 6. No Grid Connection. National Priority Secret.
- 7. National Security Star.
- Many optimum plants assure the food supply is stable.

- 1. Exactrix® No-Till Application Zero Carbon Fertilizer Products
- 2. Lowest production cost of all fertilizer programs, Placement is key.
- 3. Lowest Methane with application to pasture land.
- 4.Lowest Laughing Gas or Nitrous Oxcide emission.
- 5. Builds OM up to 1% in 10 years. Excellent Carbon Storage Sink.
- 6. Returns up to 12% to 25% more net margin.
- 7. Land values increase or stay stable. Oligarchs stay away.

# Green Anhydrous Ammonia, Zero Carbon, Lowest GHG emission.

### Contracts Available at \$100 to \$300 per ton for 7 years.

The first decagon plant supplying 24/7 at 10 local locations is subscribed at 50%.

# A Triple Play is coming now.

- This is your best chance in 60 years to participate in 2,000 small scale, optimized, Green Play ammonia plants. Plants owned by Farmers and Merchants on the Great Plains and the PNW. This is 200 decagon plants with central control.
- Don't forget, Green Ammonia is a 10X growth market. There is lot of room for Green Ammonia plants.
- Green Play Ammonia<sup>™</sup>, Yielder® NFuel and Exactrix® Global Systems is meant for Farmers and Merchants.
- Oligarchs will pull out and will fight to the end for their old fossil fuel. They must win your heart and soul at \$1,500 to \$2,000 per ton and hold back the supply. They can hold back the supply since they are regional monopolists. That may change with 8 State Attorney Generals headed into the mix looking for reasons to kick in Anti-Trust. In the US and Canada we have three fertilizer producers controlling the fertilizer action 80% of the time.
- Oil companies may not have enough money to clean up their mess. So federal help may be needed to clean up the bygone era. The new era is clean, lean and ready to meet your needs of a steady supply of Zero Carbon Ammonia at a reasonable price of \$100 to \$300 per ton for seven years.
- The ammonia battery is the pressure vessel quality stee tank. The insurable pressure vessels have been in service now for 75 years. They can be easily recycled back into the steel mill. These chemical batteries have low environmental impact. There are 220,000 ammonia nurse tanks in the USA.
- Your energy storage battery is a 30,000 gallon or 60,000 gallon white ammonia tank with impeccable safety records and insurable by Hartford Insurance Company.
- Ammonia as Green, Zero Carbon and is always noncarcinogenic and has the best safety record of all fertilizer and energy products.
- Back to the future with N costs reduced to 6 cents to 18 cent per pound range with a seven year look.
- Landowners are the big winners. Landowners get a triple play with more net margin.
- An exceptional period in your life time. Your chance to even the odds to your side of the fence.
- What are the odds? A triple play is what you realizing. This is one play in 486 games.

### The Triple Play of Ammonia is coming with Small Scale, Locally Built, Ammonia Plants from Exactrix® Global Systems, Green Play Ammonia™ and Proton Ventures.

At your farm site and locally built ammonia available within 7.5 miles to 2 hours of your farm. Producers must have farm storage on longer distances. 2,000 plants are planned by 2040 so you may see our flag flying close to your farm. Our brand is Green Play Ammonia<sup>™</sup>, Yielder® NFuel Energy.

Better quality service and a better quality product applied at 1% CV, deep in the soil without tillage. It is called Green Play Ammonia<sup>™</sup>, Yielder® NFuel Energy and built for 36,000 acre management zones in Nebraska, Colorado, Texas, Kansas, Dakotas and the PNW.

All plants are local at optimum scale with two employees. Application machinery is available to enhance your change. A triple play happens every now and then. It happens about 486 games in MLB. Only one unassisted Triple Play has every happened in the World Series.



Bill Wambsganss (far left) standing alongside the victims of his unassisted triple play (from center left to far right) – Pete Kilduff, Clarence Mitchell and Otto Miller.

### Exactrix owners are about to witness a triple play on their farms.

- 1. Improved soil quality, reduced crop production costs, and Green Play Ammonia is available to your farm the day it is built.
- 2. Zero Carbon fuel as NH3 is a much better energy source for your ammonia fired turbine and reciprocating engines. Tailored to grain dryers and ethanol heating needs to meet lower cost needs of heat in process. There is an improved payback for the small scale plants selling Green Play Ammonia back to the energy market. No grid connection is required, nor is it planned.
- 3. It is already happening on the Great Plains. A major clean up water and air occurs as Methane is reduced. Nitrous Oxide is reduced with Exactrix TAPPS and TAPPKTS plus Zinc applications in No-till Corn, Wheat and Cotton. The CO2 as Carbon is stored with a 1% jump in soil OM over 10 years in North America. This is equivalent to one year's emission of CO2 in North America. Our rivers and streams will no longer suffer when producers move to No-tillage, and add cover crops and winter crops to the rotation.

### Man Made Climate change can be reversed.

A true Triple Play is coming.....and it will be assisted. We want to help producers clean up the environment and improve land values using Exactrix TAPPS and TAPPKTS with Zinc. Your federal government is backing a lot of the plant construction with grants and loan guarantees.

**Some of the best thinking on planet Earth** comes from Exactrix Global Systems, Green Play Ammonia and Proton Ventures. These companies have handled, applied and built millions and now billions of tons of NH3. They are one of the leaders in North America building and applying Green NH3. The nitrogen efficiency will help drive land values. Funding comes from the DOE, Bank for Cooperatives and Landowners and Farmers. Merchants with direct ties to the local economy make big gains.

Local Merchants and agricultural processors take on better efficiency with locally built Green Play Ammonia<sup>™</sup>, Yielder ®NFuel Energy in Ethanol Plants, Renewable Oil Plants, Cement Plants with kilns, Asphalt Plants that need local clean energy for the Kiln. Lowest GHG Transportation at 85% Ethanol coming from Greener Corn Ethanol built with Zero Carbon heat and Exactrix TAPPS and TAPPKTS plus Zinc.



A new 2018 plant at York, Nebraska using a Single Train Compressor to make ammonia at 75 to 100 tons per day at \$80 million of investment using natural gas.

### Reciprocating Vs Centrifugal Compressor Ammonia Plants.

### Looking back allows us to look ahead.

Reciprocating Compressor Ammonia Plants make more sense by going local with wind, PV, and renewable oils.

- Here are the Energy Numbers,
- 42,134 BTU Reciprocating, Multiple Train Compressors, Vs
- 40,246 BTU Centrifugal Single Train Compressors per ton NH3 produced.
- Optimum scale plants can idle when necessary. Optimum Scale Plants have three sources of clean energy. Zero Carbon energy is delivered as a fungible product. Optimum scale Zero Carbon, Green Play Ammonia means lower and quicker investment is realized at much lower interest rates. And in fact the process has been improved by Proton Ventures and others in Europe building better and better Haber Bosch Processors and Haldor Topsoe electrolysers. There are now electrolysers that have reduced energy requirements from 25% to 30% in the last year. They are long term even more efficient as the competitive horizon heats up.
- For sure it was good enough for the time in 1962 to go to Centrifugal Plant production Methane Steam Reformation of NH3. And remember that was a New Era with N costs at 2 cents per lb. of N.
- There is no throttling back the centrifugal plants, Low idle is 70% of full throttle of the entire Single Train Compressor...other problems are lack of Ammonia storage with Centrifugal Single Train Compressors. Major plant shutdowns occur constantly as the plants are now 50 years of age.
- Centrifugal Plants created tremendous environmental problems with an oversupply of NH3. To take out the alfalfa rotation, the N cost was a major factor. The large energy companies proceeded with minimum storage at 2 cents per lb. N. No storage and cheap N did force the fall banding of nutrients in naked application techniques using shank and plow down tillage.
- The end of the beginning. The New Green Era is upon us by dropping fossil fuel power and moving to No-tillage farming using Zero Carbon, Green Ammonia.
- The ag economy is driven by producer economics. The fossil fuel economy will fade away by 2025 to 230 as producers find a way to use existing engines. The future is always found locally in politics and economics.



**A Critical Closure**, By 1987 a major mistake was made with Bureau of Mines and TVA National Fertilizer Development Center closure by the Reagan Administration. Too much grain was the so called reason. Too many mines were played out.

By 1990 The Showdown had begun, the wild, wild west of fertilizer started. The single train centrifugal compressors were developed by Kellogg, Brown and Root in 1962. This was the fate of ammonia, fossil ammonia was way too cheap and over applied due to lack of storage.

The NH3 manufacturing pattern of the Centrifugal Single Train showed up in Dodge City, KS. The KBR NH3 technology was an eventual environmental disaster. http://www.exactrix.com/Broadcast\_05\_17\_2019.html

It is not necessary to say KBR caused the problem. It was American and Canadian Greed of the Fossil Fertilizer Industry by formulating a system using Mega Plants over the large gas field without overall ample storage or improved delivery means.

**Circa a War Footing in Ukraine and Nuclear Power.** The advent of Mega Plant Fossil Fuel NH3 designs of the last 50 years of which there are 44 in the US, has created a national defense monster. The food supply is at risk if four plants are lost. The loss of ten plants would create a reduction of application by 50%. The worst case scenario is that the associated 2nd and 3rd tier nitrogen products would fall out of production first. The 2nd and 3rd tier products would be last to become available.

**The Fossil Fuel Energy companies did not increase storage when they recognized the problem.** The Fertilizer Industry came back strong by raising the rate of NH3 without supplying offsetting Lime applications. We are now living in an era of poor water quality and air quality. For sure the fertilizer industry has made a contribution to Climate CO2 emission along with Methane CH4 and Nitrous Oxide, N2O.

The KBR Single Train was cheaper per ton in Mega Scale plants but how can it be throttled. There was no full range throttle.... while reciprocating plants could shut down compressor lines or multiple trains to meet the demand.

So who drove us into this environmental mess? The Natural Gas, Fossil Fuel, energy people might be a good place to take a look.

The old multiple train compressor plants closed at Muscle Shoals. Electrical energy was no longer the way to build ammonia. The Fossil Fuel industry opened Pandora's box. Natural gas must become Methane to make ammonia. Fossil Ammonia takes about 2 to 3% released from the gas fields with another 33% lost in mining. Then natural gas must be processed to remove 18 different gasses. This is a very important part of all the methane gas processed and used in the US.

Too much of a good thing....Mega Thinking makes a mistake using Natural Gas and the KBR Single Train Compressor.

Machinery developed by KBR of Houston, Texas (\$5.6 Billion Rev,), Thyssen Krupp, (\$28.9 Billion Rev.) of Essen, Germany. The machinery created an environmental dumping ground around your country 50 years later.

**Centrifugal Single Train Ammonia Plants** without lots of NH3 storage do not work well.....and furthermore Reciprocating Ammonia Plant designs requires storage to supply NH3 on time. So the energy people pushed the pencil and decided on reduced storage needs by using tillage...store it in the ground. Build and consume it just like an automobile. "Freshly made and in the shade" works better for the oil company and not the environment.

**Shell Chemical Company started it all with shank tillage application of Ammonia.** The loss of alfalfa (30% of the land base) with plow down tillage and fall straw burning got worse in Washington State. The shank applicators required burning of straw residue to apply pressure reducing NH3. The soil erosion went through the roof by 1958. In some cases up to 200 tons per acre. By 1968 something had to be done as tillage was destroying the soils. No-tillage was coming. Yielder® Drills were the first to solve the problem of NH3 application without tillage.

# In fact Shell Chemical, Union 76 Collier and Phillips 66 finally headed on out and left the environmental problems behind them.

They could see it coming. They would need to cover liming costs since the soil pH drop was bringing yield robbing wheat root diseases. Diseases only found in low pH soils. At the USDA-ARS, award winning, root health scientist Jim Cook's career was made over the Acid Wheatland Soil decline. At least five plant root diseases were identified with acid soils. Furthermore even worse chemicals like Mertec and Topsin were put into use. See Footnote 1.

**Making no sense at all, the scientists finally confessed,** using chemicals to combat chemicals, the annual lowering of soil pH, all of which reduced soil life. It was time for nitrogen manufacturers to leave town in a corporate slash and burn approach. Moving to the next frontier, producers were lost. They could not afford to lime. They had no hero on their side even though Land Grants have proposed liming for 30 years.

Our chemical problems can be solved with conservation and soil amendments, (Lime, Gypsum) using crop rotation, cover crop, and deep banding at .6 application rates. The key to success of Green Play Ammonia is storage of NH3 on the farm. The fertilizer industry tried to steer around the problem with second and third tier products, Urea, Uran and Uan or 46-0-0, 32-0-0 and 28-0-0.

These nitrogen products are built for the third world. The nitrate and urea based products are loaded with carbon that bring the fossil carbon back into the mix. The Urea and the Uran are not efficient to the plant performance and are loaded with over 500 disease related problems of growing crops. There are green solutions for the drastic reduction of these salvage materials built from nitrates and carbon. No moe shortcuts are required in crop production.

In the era of the Oligarchs societies environmental problem has become critical to be able to store NH3. The GHG emission from second and third tier nitrogen products are non-players compared to Green Play Ammonia formulating Exactrix TAPPS and TAPPKTS vermiculated into narrow no-tillage nutrient bands deep in the soil at seven to nine inches. The practice gives 12% to 25% greater returns to the bottom line as compared to any other approach.

Advances in no-tillage and application technology, a discovery and admission that commercial fertilizer is not plant food...NPKS plus Zinc is a stimulant when properly applied. Reductions of 200% are easily achieved in No-tillage soils.

The Exactrix, Green Play Ammonia system goes Horizon to Horizon. It is called No-tillage with Deep Banding to control nitrous oxide and reduce runoff and loss of nutrients into the atmosphere.

Take a look at manufacturing technology in reverse. We are headed back to reciprocating compressor designs. What is the penalty? Looks like about 4% difference in BTU's between the two approaches....and as the producers gave all that extra NH3 to the environment for 4% difference in cost to build NH3.

Thanks to KBR compressors, Ammonia became too cheap and allowed over application without storage. The applications of NH3 had to be made six months ahead without band stabilization and protection from Nitrosomonas and resultant nitrification and denitrification. Nitrous Oxide potential went the wrong way.

#### It is time for political strength at the top.

If you want to rifle in on the problem it boils down to the Hedge Fund Managers and Fertilizer Industry managers operating without the influence and controls of the TVA. The Wild, Wild West of Fertilizer Management has been upon since the closure of the TVA and loss of the Farmland Plants.

Landowners, Farmers and Merchants can now get back in control.

A bootstrap operation to raise land values with a stable supply.

# TABLE 1 THE FERTILIZER INSTITUTE ENERGY USE SURVEY-CY 1979

# Natural Gas Sources For Ammonia Production

Anhydrous Ammonia Production

Block Flow Diagram

Natural

oxide

Urei

Ammon

# s Source and Type of Contract

Natural Gas C.		Intrastate Source		Total
Interstate S	33.3%	Firm	55.8% 5.0%	89.1% 10.9%
Firm	5.9%		60.8%	100.0%

Average Energy Consumption in Anhydrous Ammonia Production A. Reciprocating Plants: Based on 2,402,000 Tons Production\*

	1,000 BTUS/T of	Ammonia
Feedstock	Reformer Process	Other Process**

	Energy	Energy	Energy	Total
Natural Gas Electricity	21,521	12,957 632 204	582 4,460	35,060 5,092
Fuel Oll Imported Steam Other	276	-	1,416	1,416 276
Total	21,797	13,792	6,544	42,134

## B. Centrifugal Plants: Based on 11,450,000 Tons Production

	1,000 BTUs/T of Ammonia			
	Feedstock Energy	Reformer Process Energy	Other Process**	Total
Natural Gas Electricity Fuel Oil Imported Steam Other Total	22,368	14,542 215	2,181 708 (178) 408	39,091 708 37 408
	22,368	14,859	3,119	102 40,346

"All tonnage data refer to that of survey participants, not to industry-wide

"Energy such as electrical, import steam, fuel for turbine and engine driven

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Circa 1979. Prior to the Oligarch Era. Published 1982 by The Fertilizer Institute.

- Factoid: Ammonia was moving from 6 cents per lb. of N to 8 cents per lb. of N in the 1979 timeline.
- Is Anhydrous Ammonia too cheap?
- Is Anhydrous Ammonia a properly metered product?
- Can producers get in charge of the material like they used to be?
- Is nitrogen regulation required?
- If farmers want to keep using NH3 directly applied at low cost they must reduce the use of the material by making the NH3 and liquids highly efficient for top yields. Fall Banding, Anhydrous Ammonia as TAPPS and TAPPKTS plus Zinc combined with Snow on No-tillage soils go together hand and glove. Cover cropping is possible.
- · Should a liming cost be added at time of sale of Nitrogen raising cost of all types of Nitrogen?

Some Fertilizer organizations like Nutrien or CPS dealers can move the ball ahead with Exactrix TAPPS and TAPPKTS with Zinc at highly crop available liquid flows at 1%CV application rates.

Stabilized nitrogen with Zinc and Zinc Sulfate in homogenous bands of Exactrix NPKS plus micros provides a lockdown of Nitrosomonas and nitrification and denitrification (nitrous oxide emission).

The Exactrix result is 200% more crop available P and 166% more crop available N, plus uniform Potassium Thio-Sulfate (in some soils up to 4 to 8 times more crop available as a thiosulfate) and micros like zinc and manganese to lock up the copper cofactor in Nitrosomonas.

### Remember, "It Works Every Time."

"When Ammonia gets expensive compared to the commodity you must find a better way to drive land values." "You the producer owns the Green, Zero Carbon NH3 product at Green Play Ammonia."



October TAPPS and TAPPKTS plus Zinc banding with Exactrix®, A great technical achievement by Exactrix at 1% CV of TAPPS, at Grand Prairie, Alberta.

Stabilized Nitrogen with TAPPS and Zinc and TAPPKTS with Zinc. Highly crop available come spring and always ready to go work, unlike Urea and Solution 32 which move downward with the wetting front or runoff into the streams.

Exactrix TAPPS has 166% more crop available N, 200% more crop available P and stabilized with Thio-Sul® and Zinc.

You can study the Big N. http://www.exactrix.com/Broadcast\_06\_19\_2018.html

- Your fertilizer bill drops fast when you reach buffer pH of 7.4. Your great grandad may not be available to tell you what a high quality soil is.
- This pH is where life of our planet operates best from the Great Plains Buffalo, a coral reef, or the human bloodstream at 7.38 to 7.4 pH.
- Soils need 5 to 10 tons of high quality Lime in most cases. It may not be possible economically to go above 6.8 pH.
- Any extra amount of soil acidity below 6.4 pH will kill off bacterial colonies and allow fungus colonies to take over.
- Thus the story of the Palouse Hills and Prairie with very difficult fungal diseases that destroy yields of winter wheat and waste applied nitrogen.
- This is another reason why TAPPS and TAPPKTS formulators work well in Acid soils. The metals like Aluminum cannot tie up the placed P in TAPPS and TAPPKTS.
- Triple Super Ammonization, Exactrix TAPPS works well in 8.0 to 8.5 high pH soils where the metal calcium interferes with phosphate and in 6.0 to 5.5 pH low pH soils where by the metal aluminum interferes with phosphate availability.

Liming Recommendations				
Lime Recommend	ations (Lb ECC/A) <sup>1</sup>			
	Target pH = 6.8	Target pH = 6.0	Target pH = 5.5	
Buffer pH		- Ib ECC/acre		
7.4	0	0	0	
7.2	750	375	250	
7.0	1,750	875	500	
6.8	3,000	1,500	750	
6.6	4,500	2,250	1,125	
6.4	6,250	3,125	1,625	
6.2	8,250	4,125	2,000	
6.0	10,250 <sup>2</sup>	5,125	2,625	
5.8	12,500 <sup>2</sup>	6,250	3,125	
5.6	15,250 <sup>2</sup>	7,625	3,750	
5.4	18,000 <sup>2</sup>	9,000	4,500	
5.2	20,000 <sup>2</sup>	10,375 <sup>2</sup>	5,250	
Based on 6.67 inch sc incorporation (≈ 1/3 c When lime recommend arget pH of 6.8 = [ 25, All crops in Southeast I Alfalfa and clover in N Lime Rec if pH < 6.4	oil depth, Soil Depth is the dep 5f rate for &7 inch depth), dation exceeds 10,000 lb EC 520 - (6,360 × Buffer pH) + Kansas - east of Flinthills & sou fortheast Kansas	th of incorporation through C/A, we suggest applying (Buffer pH × Buffer pH × th of Highway 56	rotation. For No-Till systems, alfafa ar one-half rate, incorporate, wait 12 to 391)] × Depth (inches)	nd grass – assume 2 inch 18 months and then rete:
arget pH of 6.0 = [12,81	10 - (3,180 × Buffer pH) + (	Buffer pH × Buffer pH × 1	96)] × Depth (inches)	
All crops in Northeast I All crops in Central and Lime Rec if pH < 5.8	Kansas except alfalfa and clo Western Kansas	rer		
rget pH of 5.5 = [6,40:	5 - (1,590 × Buffer pH) + (B	uffer pH × Buffer pH × 9	8)] × Depth (inches)	
Cash flow/lime availab	pility problem areas in Central	and Western Kansas	Survey and the states	
lima Pacil oH < 55				



www.exactrix.com/EWAC\_2022.htm



www.greenplayammonia.com

### Developer, Executive Engineer.



Exactrix Global Systems 4501 East Trent Avenue Spokane, Washington. 99212 509-535-9925 office. 509-995-1879 cell.

exactrix@exactrix.com

Guy J Swanson

### Green Play Ammonia, Senior Project Engineer.



Green Play Ammonia Senior Project Engineer. 4501 East Trent Ave. Spokane, Washington, 99212 509 254 6854 509 944-1540 cell

www.greenplayammonia.com

Footnote 1, How Chemistry of Soil pH with the misuse of nitrogen creates more problems in the round robin of economic failure.

Notes on killing soil life, How to kill all soil organisms with non-selective fungicides.

Benzimidazole fungicides were introduced for plant disease control in the 1960s and early 1970s as foliar fungicides, seed treatments and for use in post-harvest applications. They possessed unique properties not seen before in the protectants. These included low use rates, broad spectrum and systemicity with post-infection action that allowed for extended spray interval.

All these qualities made them very popular with growers but also subject to misuse, such as poor spray coverage and curative spraying. The first case of resistance to benzimidazoles occurred in powdery mildew in greenhouses in 1969, one year after introduction. By 1984, resistance had been reported on many of the pathogens against which benzimidazoles are active (17).

The reason for the rapid development of resistance was that these fungicides were single site inhibitors of fungal microtubule assembly during mitosis, via tubulin-benzimidazole-interactions. The primary patent holders of this class were DuPont (Benlate), Merck, Sharp & Dohme (Mertec) and Nippon Soda (Topsin M). The current ranking of global sales is: carbendazim, thiophanate, thiabendazole.