EXCEPTIONNALS ENGINEERING PROJECTS

TOME I

FIRST RED CATS EDITION
Monday, October 23, 2023

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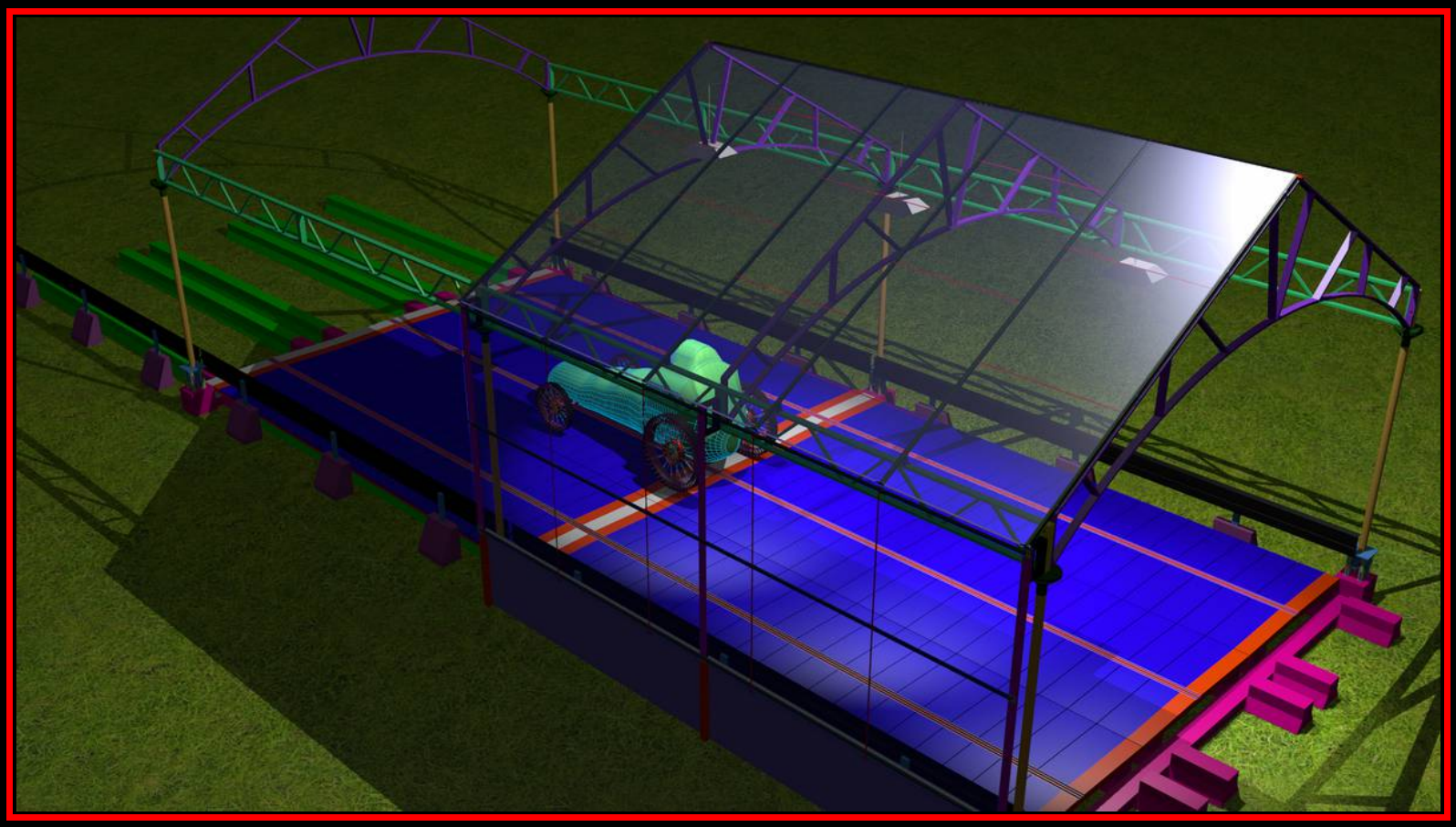
INDEX

PREFACE

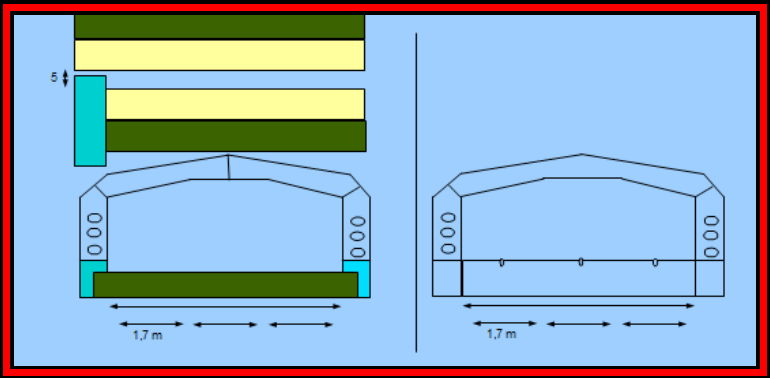
The topics are so varied that I leave you the care to visit them, a real preface will follow in the next edition, because I am in a hurry to publish this ...

It can be noted that the red color is used in abundance, in my works, it is because I do not have workers to apply textures, and for various reasons of revolt.

TRIPHASE HIGHWAY MAXIME SUPREME BLACK CAT

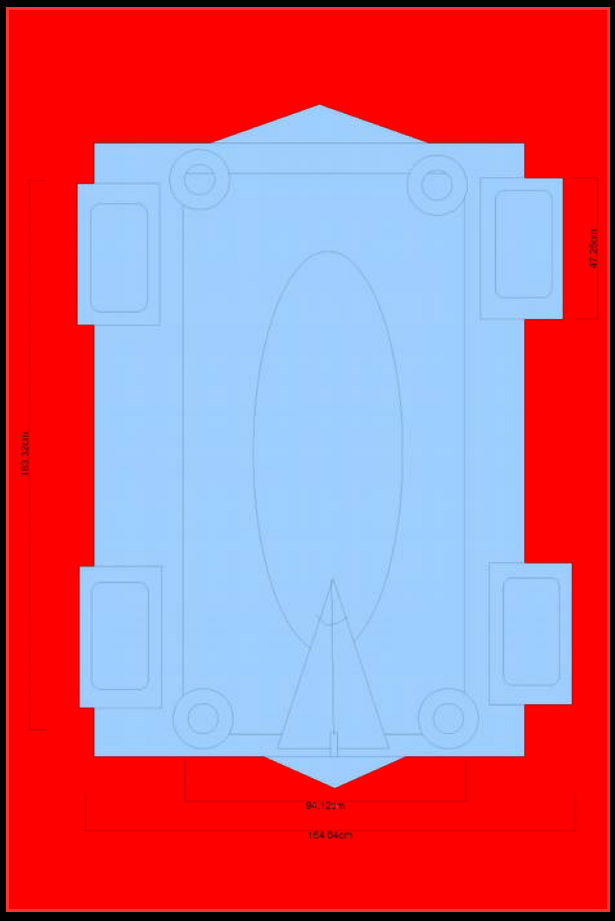


FIRST STEPS



It was towards the end of the reign of the ruthless George W. Bush Jr. that I took the initiative of the situation. The idea of designing a new highway system then crossed my mind. I had then some technological instruments, very average computers for the time and a software capacity limited to "open office" :(

So it was in my little apartment, on Charlemagne street in Montreal, that I began to get back into the fight. My mother's money was used to pay my expenses because I could not work anymore. Anyway, the idea of the electric highway made its way. Initially, I wanted something massive and solid, or even titanic. Then, in the context of the economics of building materials, I headed for a lighter version. That's when I got the idea of designing it extremely light, and moreover, removable and almost without mooring, which makes it so exceptional.

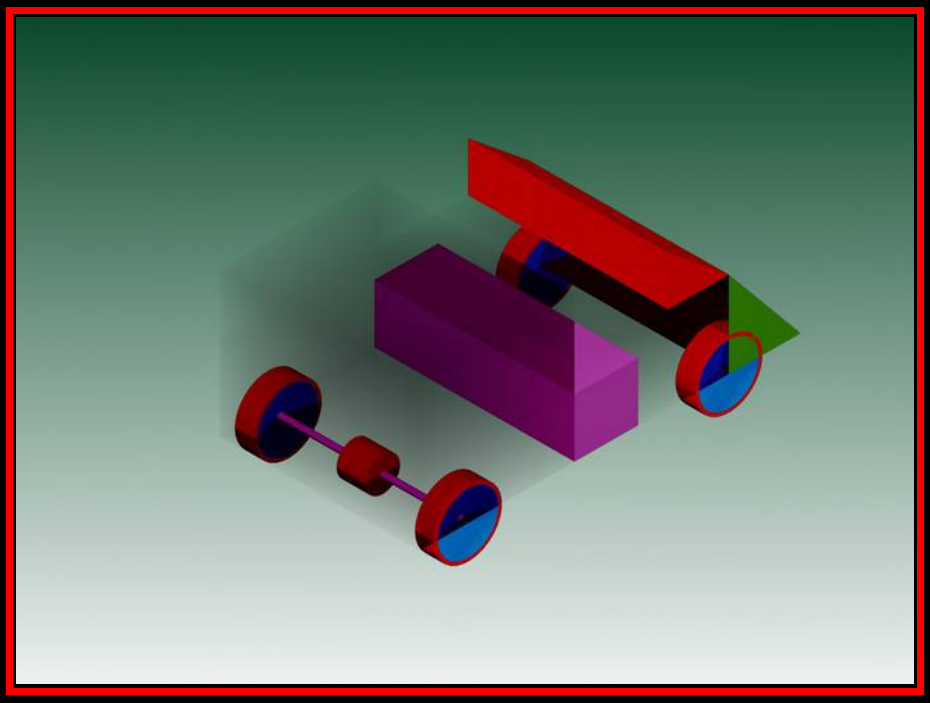


We can see against the first car model that I drew. It is small but today it would be huge compare to the concept car that I currently favour. I still had not developed the concept of a custom car, that fit the body, to push the energy and material economy to the extreme.

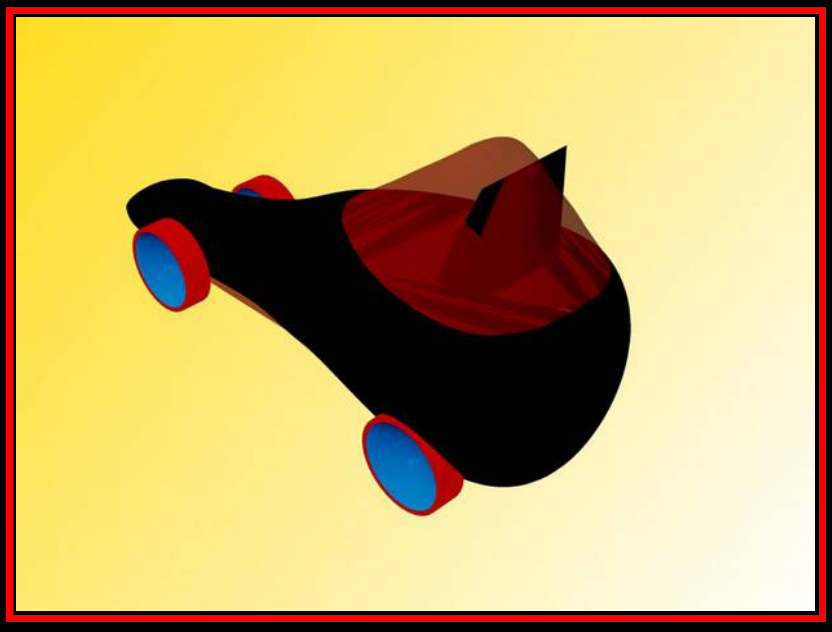
On the other hand, the system of "bearings" transmitter of current was already present. Then, in the interest of the peoples of Earth I am equipped with a more powerful software system, Autocad (hacked). System that I know since my childhood, with version 14 (hacked). By the way, version that was superior to those of current days. Today, I no longer use fraudulent software, here is my "mea culpa", sorry :) :() :)

So aiming the goal to Human nations to survive the end of oil era, we will need the lower electric consumption by more than tenfold, by that fact, this is my preferred concept.

THE VIPER MOBILE

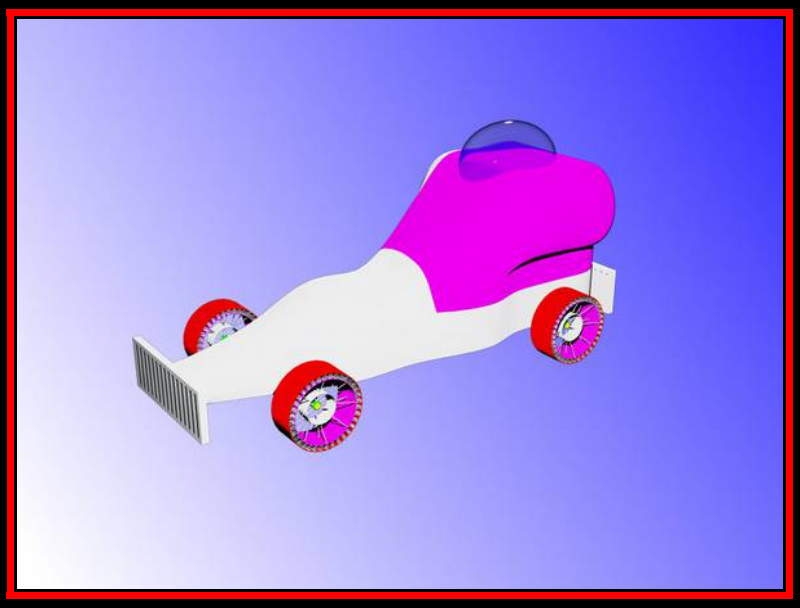


One of the first 3D drawings of the automobile of the future. This drawing was probably created to illustrate the three-phase electric motor drive, a much more economical system on large volume, than standard DC brush motor.



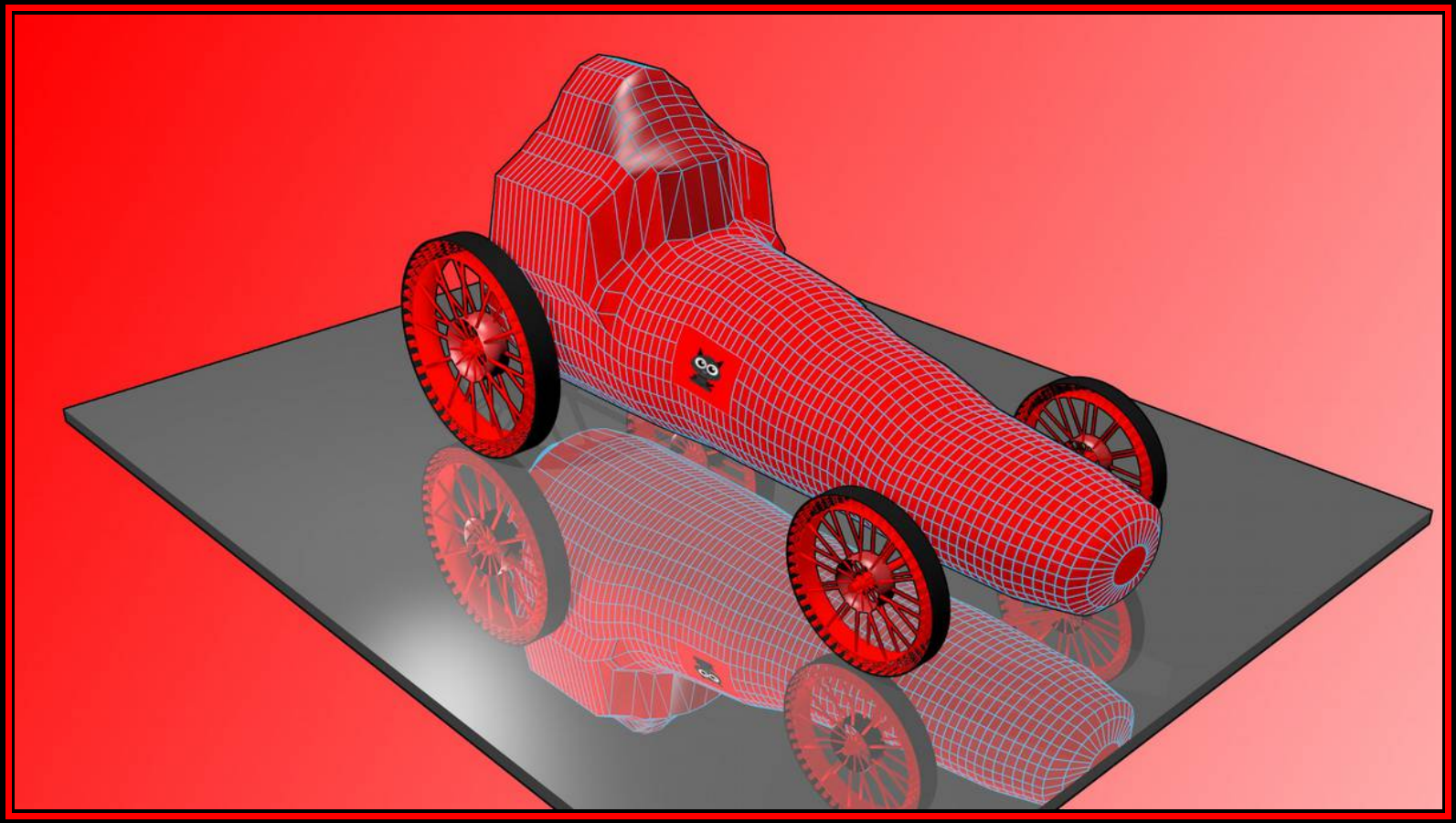
Here, you can see the first model made to adjust to the curves of the body. The interior is made of moulded "foam", from the owner.

THE VIPER II MOBILE



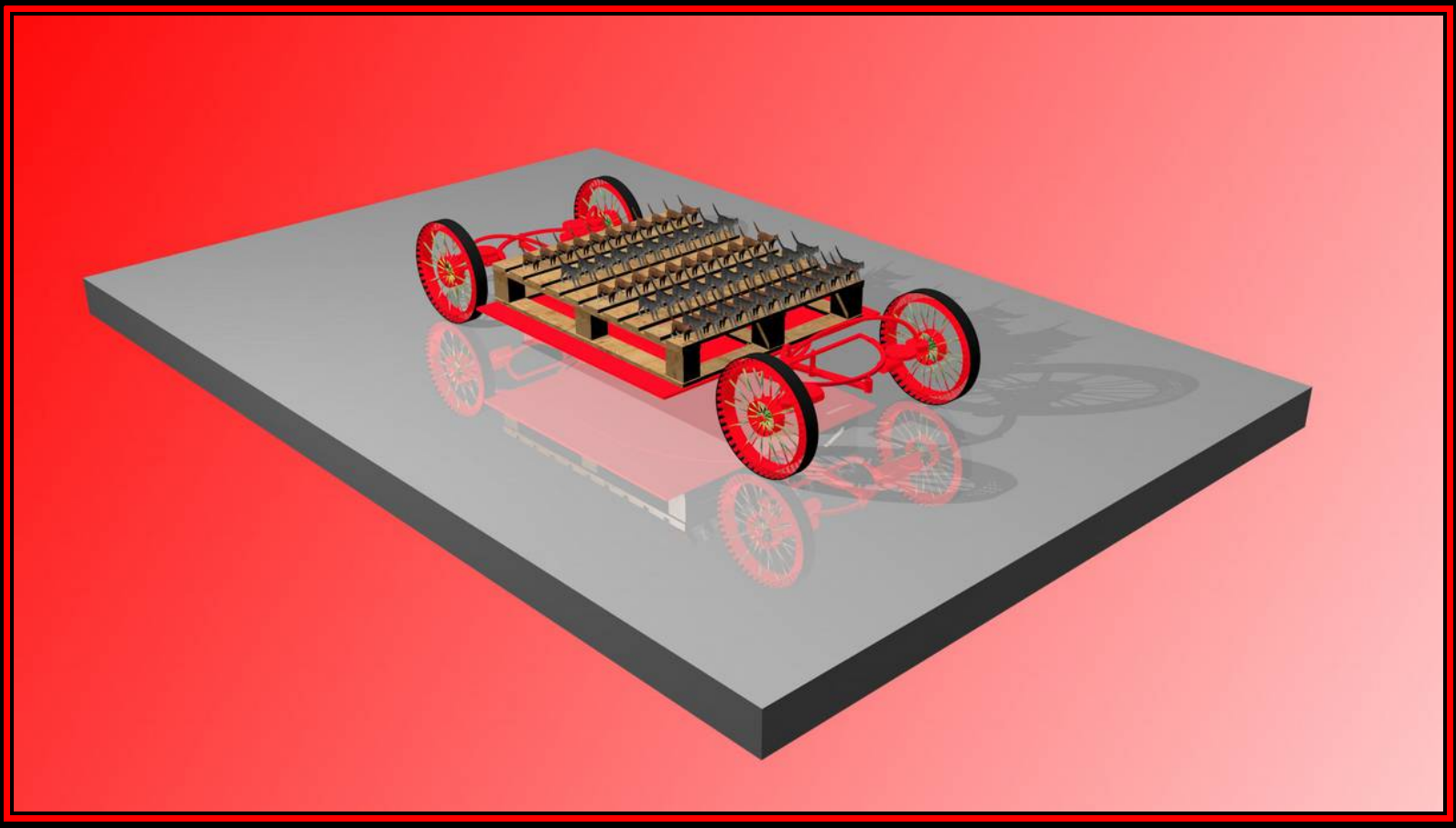
Here is my latest model, drawn in a hurry, but still very successful. Featuring the features of the previous models, but with a shape more suited to the curves of the human body. Space for the arms and head has been added!

SUPER EA CATS MOBILE



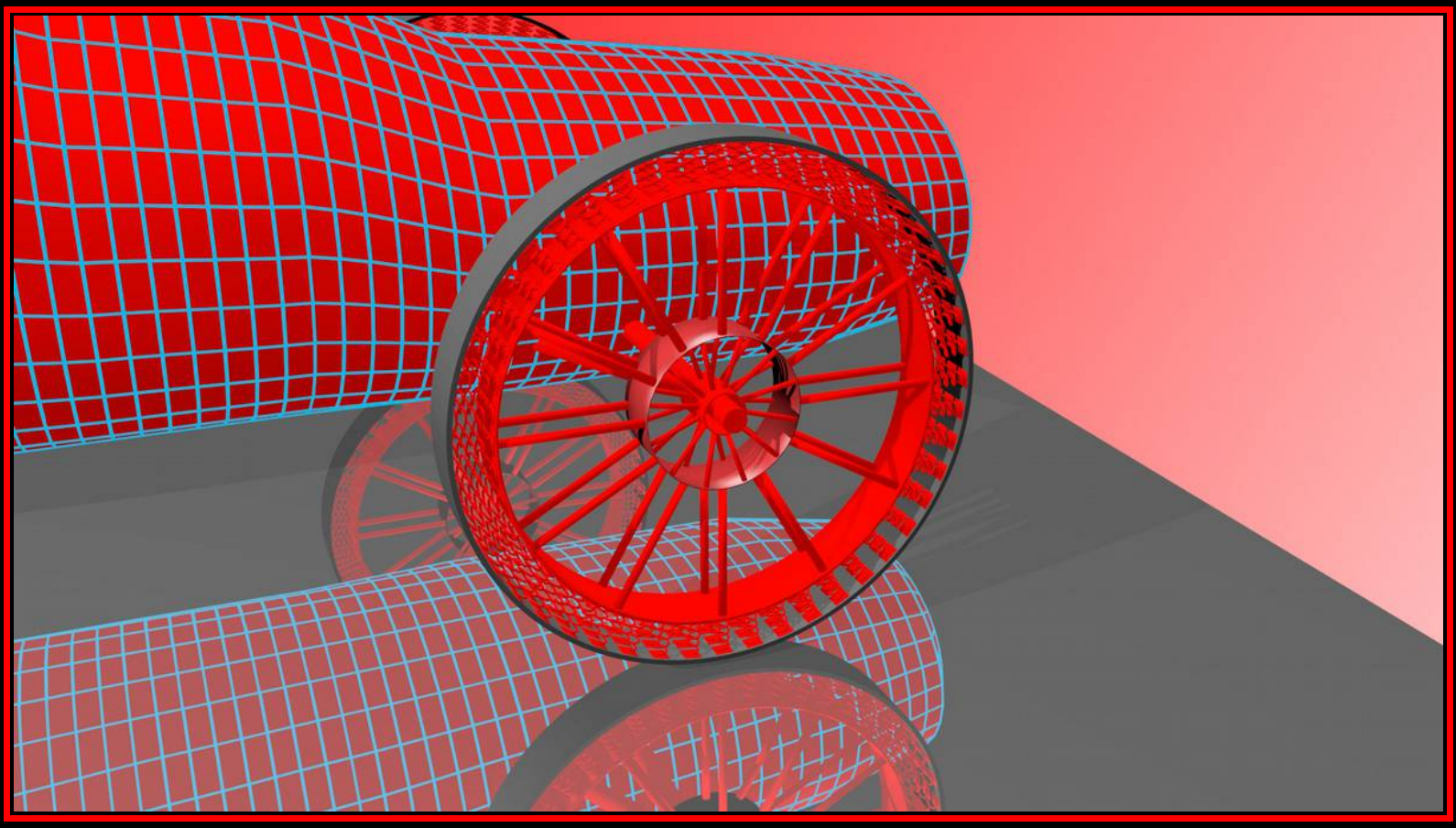
Can certainly reach high speeds, but limited to 60 km / h of my city highways by the dimensions of the wheels that are designed to save money. Bumpers also made their appearances on this model, drawn in haste also. As you can see, many improvements can still be made on this model, especially on the side of aesthetics. It will be done in the future, by companies, if such bodies still exist, who will manufacture and sell the different models. It should be noted that the somewhat excessive length of the model is to ensure better protection of the driver by adding a compression zone, even if those cars are self driven by software :()

EA CAT PALLET 1.0



Build for transportation of goods, with my new Disney direction system and a lot of cats.

WHEEL OF THE FUTURE

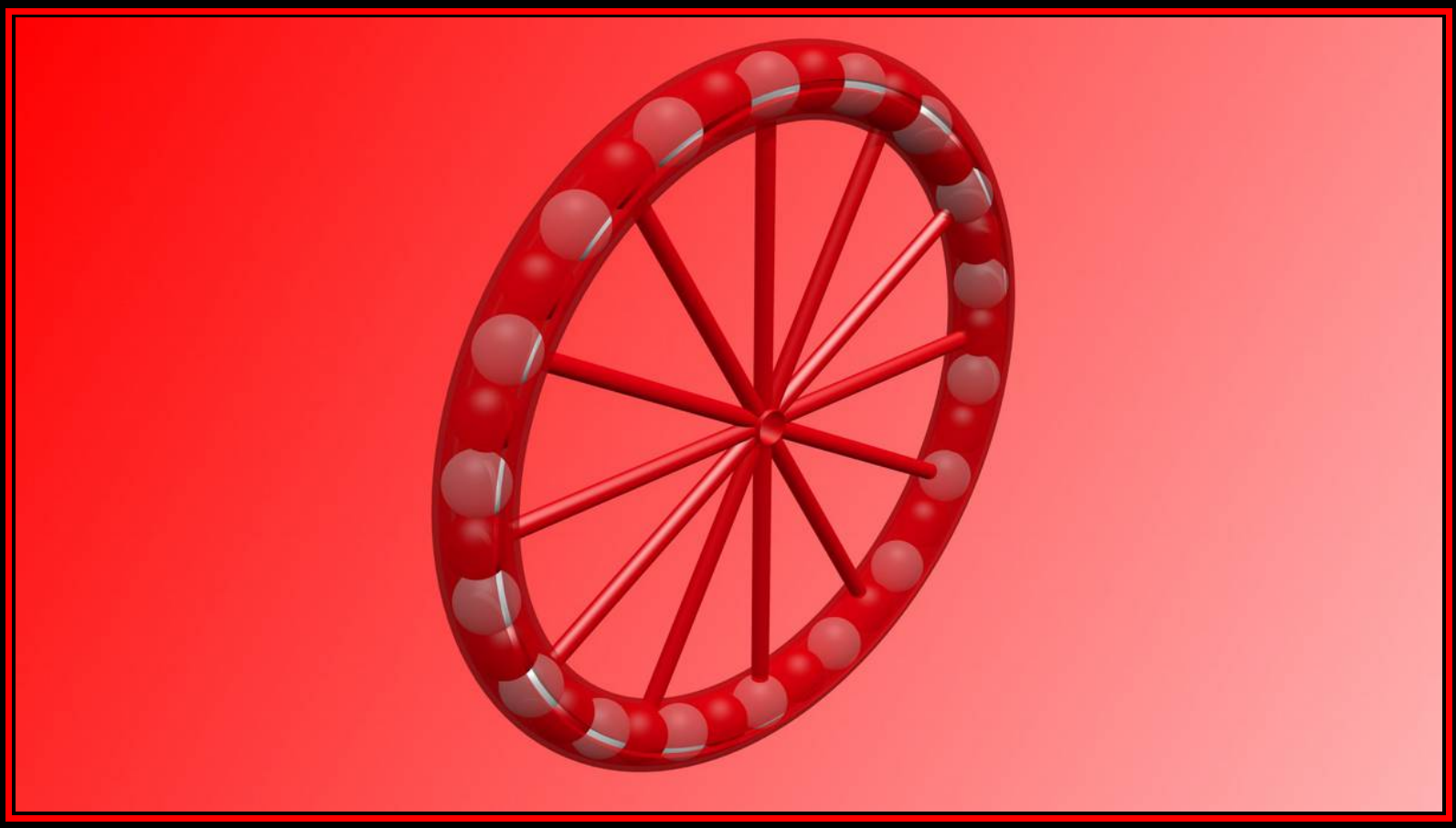


Now, I'm proud to present you ... The latest innovation in the evolution and discovery of the wheel, the wheel of the future! Extravagant, especially by its design and name, it saved the world from an endless accumulation of rubber. Indeed, the only plastic material being the tread in grey. Well maintained, the wheel should last for 100 years and even longer. The maintenance would consist, in addition to the spring yield strength checks, of the vegetable matter greasing of the metal components, if there is, because it could be all plastic, but I prefer metal to rebuilt them when it will be need, in fact plastic is difficult to recycle. Better than the self driven wheel, because having a lower inertia, it will be perfectly suited to three-phase electric motors.

The main ecological advantage lies in the fact that only the tread is thrown (largely on highway equipment). Given the low percentage of material rejection, it is possible to use materials of the highest quality such as titanium (or magnesium...) alloys (low inertia electricity saving during acceleration) and advanced plastics.

The central unit, in case you have not noticed, allows overdrive fasteners without overloading the axle.

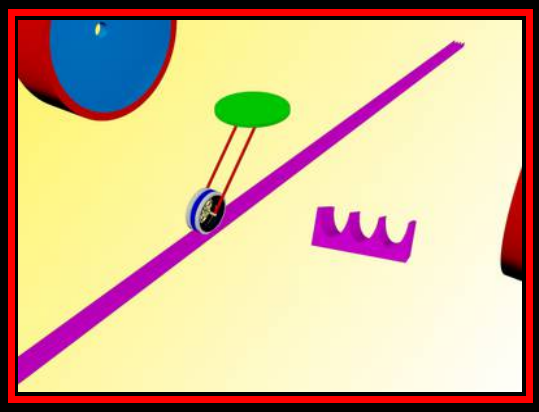
ELECTRIC BEARING EA SUPREME



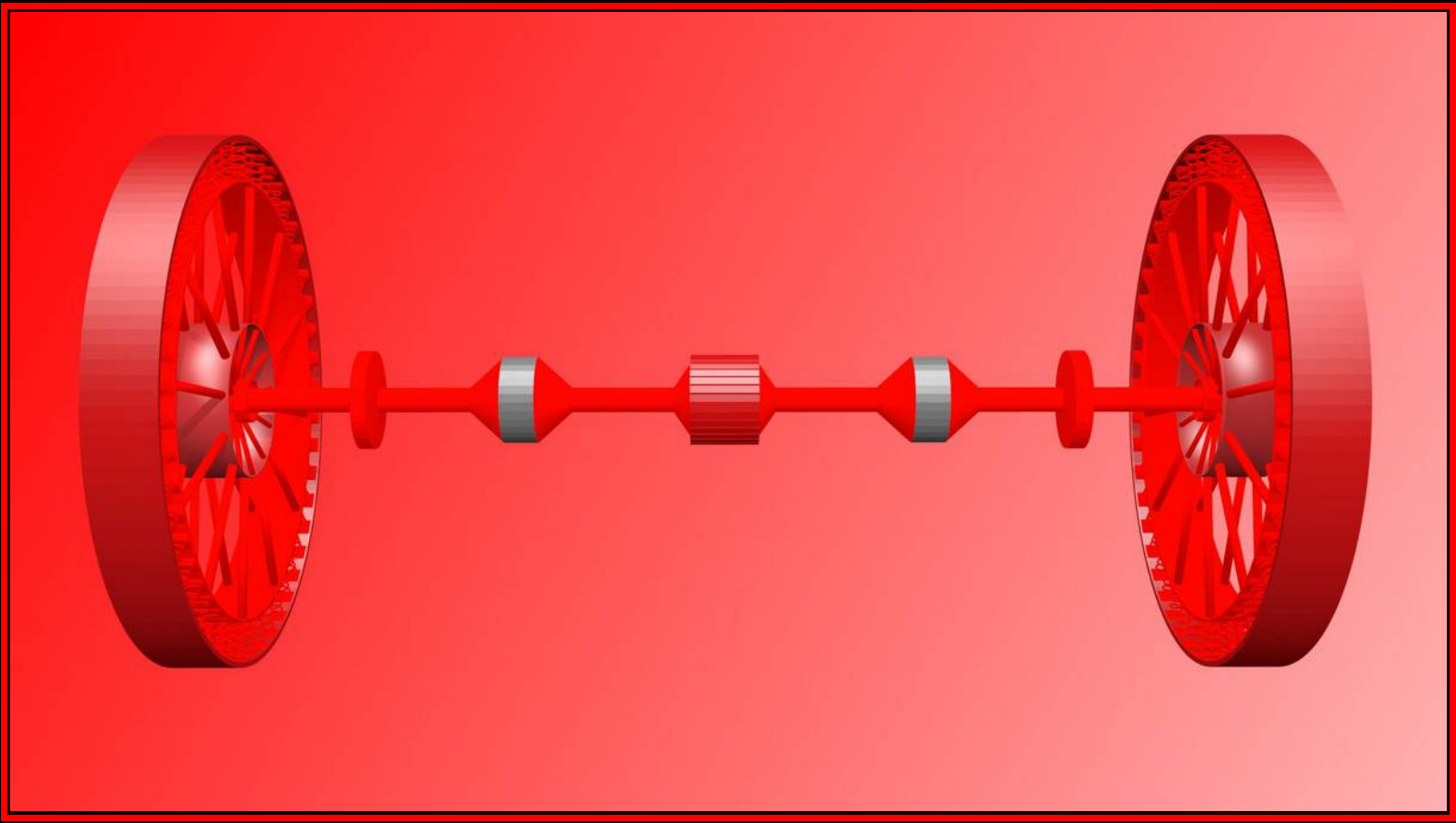
This efficient way of transmitting electrical power from the track to the car's engine is essential to the proper functioning of the electronic highway. The advantage over the conventional broom is obvious:

- Substantial reduction of static lighting effect
- more uniform contact, therefore lower resistivity
- adheres to the surface, using its shape and the magnetic effect of the current
- allows the use of three-phase current more easily, on a smaller width
- much less translation friction

Once the current is interrupted, it will be easy to lift it by means of a mechanism, in order to change lanes or leave the electrical highway in capacitor mode.



ELECTRIC DISTRIBUTION SYSTEM

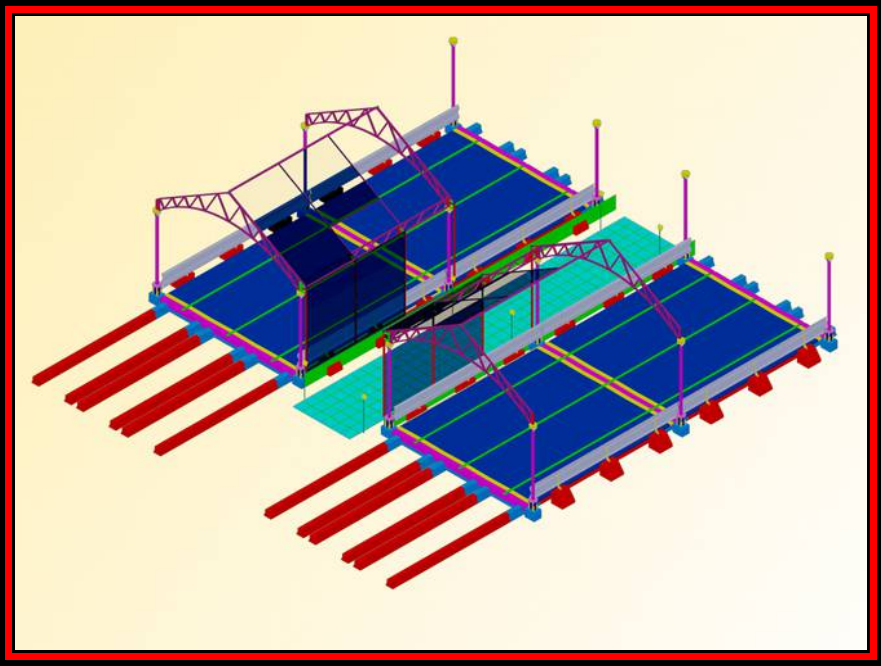


This system, which aims to save maximum energy, works to power the three engines of the cars. Either direct way, two alternative three phases engines, or indirectly the DC motor powered by a carbon capacitor. The said capacitor is recharged by the AC motors when reaching stable speeds powered by one of them. For this model of highway, based on the city of the future (see chapter "The city of the future"), the two stable speeds will be 30 and 60 km / h. Naturally, the AC current frequency will be obtained by the engine-to-wheel ratio, probably 60 Hz in the Americas and 50 Hz in Europe :)

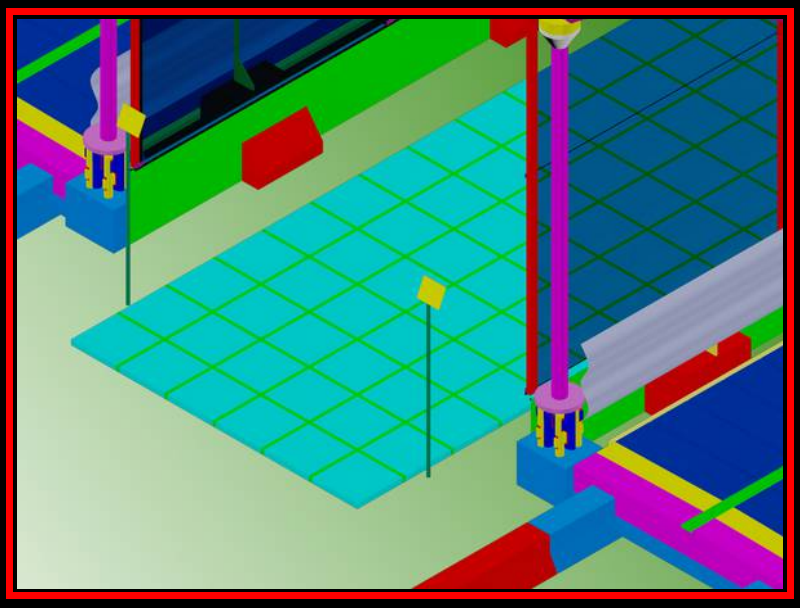
On the car side, see the picture above, in grey and red the two AC motors, in the center the DC acceleration motor, and on the sides the axle couplers. The design of the couplers remains to be done, but basically it will be that. One AC motor at a time and capacitor charge with the DC motor as "dynamo", or capacitor discharge and acceleration with the DC motor straight pipe :)

VROUM VROUM !

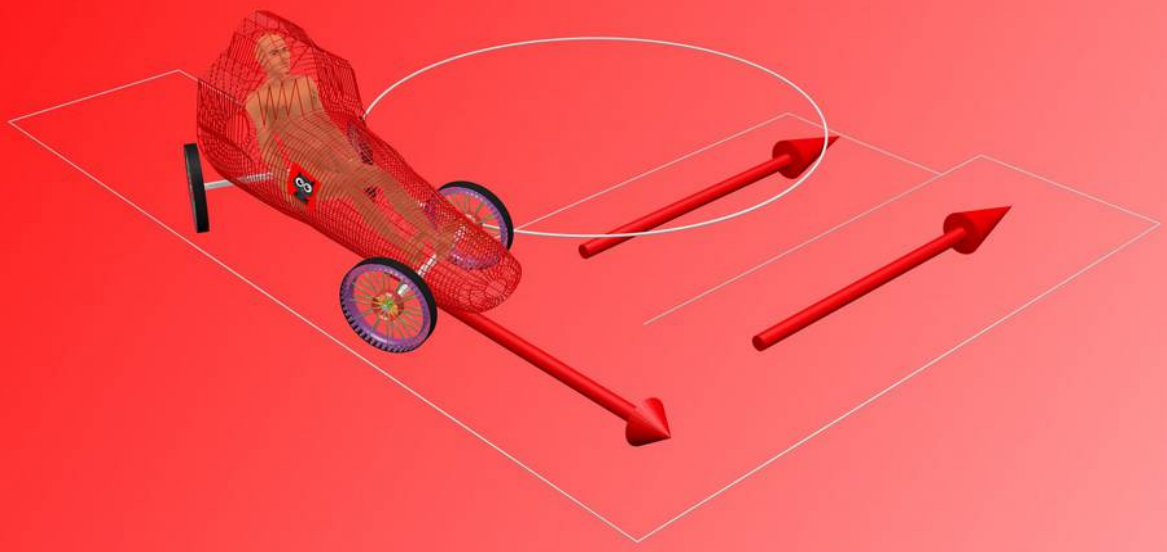
SIDES WALK



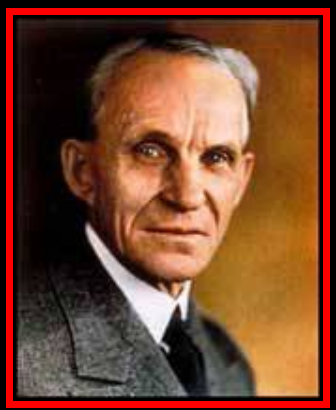
We can see, in this concept including a sidewalk, that it is possible to integrate the pedestrian as well as winter snow removal. The said snow removal will be done by blowing the snow backwards, and the collection could be done by small automated trucks. The trucks should then be half a pedestrian way. It is certain that the different versions of the highway will have to be adapted to their environment. In the same line of thought that the concept of the highway, the sidewalk is made here of cement plates, and will have to be levelled according to their use, once every 5 to 10 years. Labour is not cheap, but it is a renewable resource. The knowledge economy and ecology teach us that effort must not be saved in order to maximize the quality and life expectancy of our citizens :)



DOUBLE AXES OF TYPE HENRY FORD

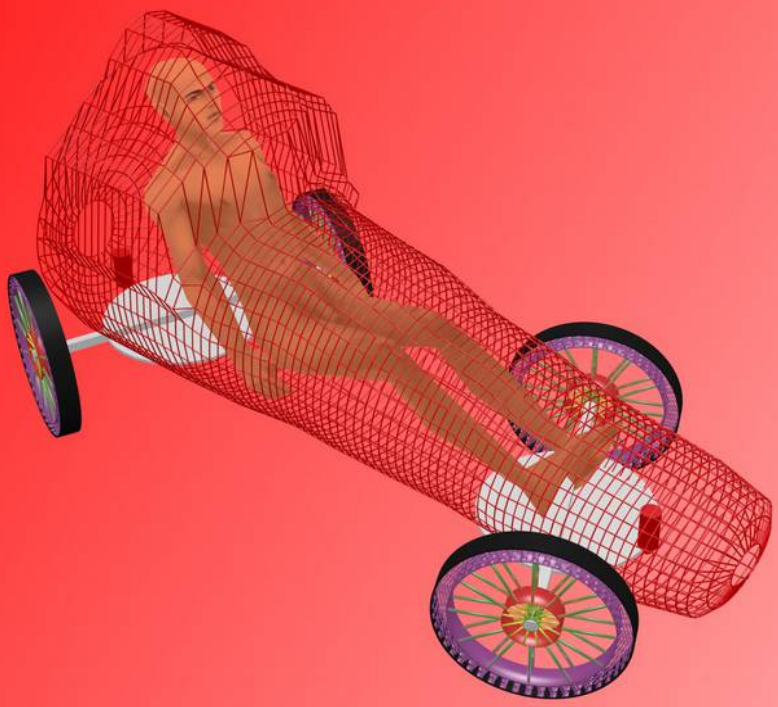


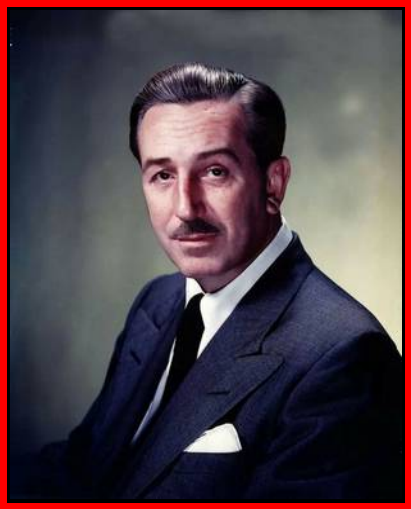
In honour of Henry Ford, I called this conventional "anti" system, which has two axes. It allows you to make shorter turns and save energy and rubber. I hope this appointment will not be erased from history ... Combined with the Disney management system, everything will be hell. In fact, this system already exist, but we don't know where it come from, so, why not to give it a name :)



DISNEY DIRECTION SYSTEM

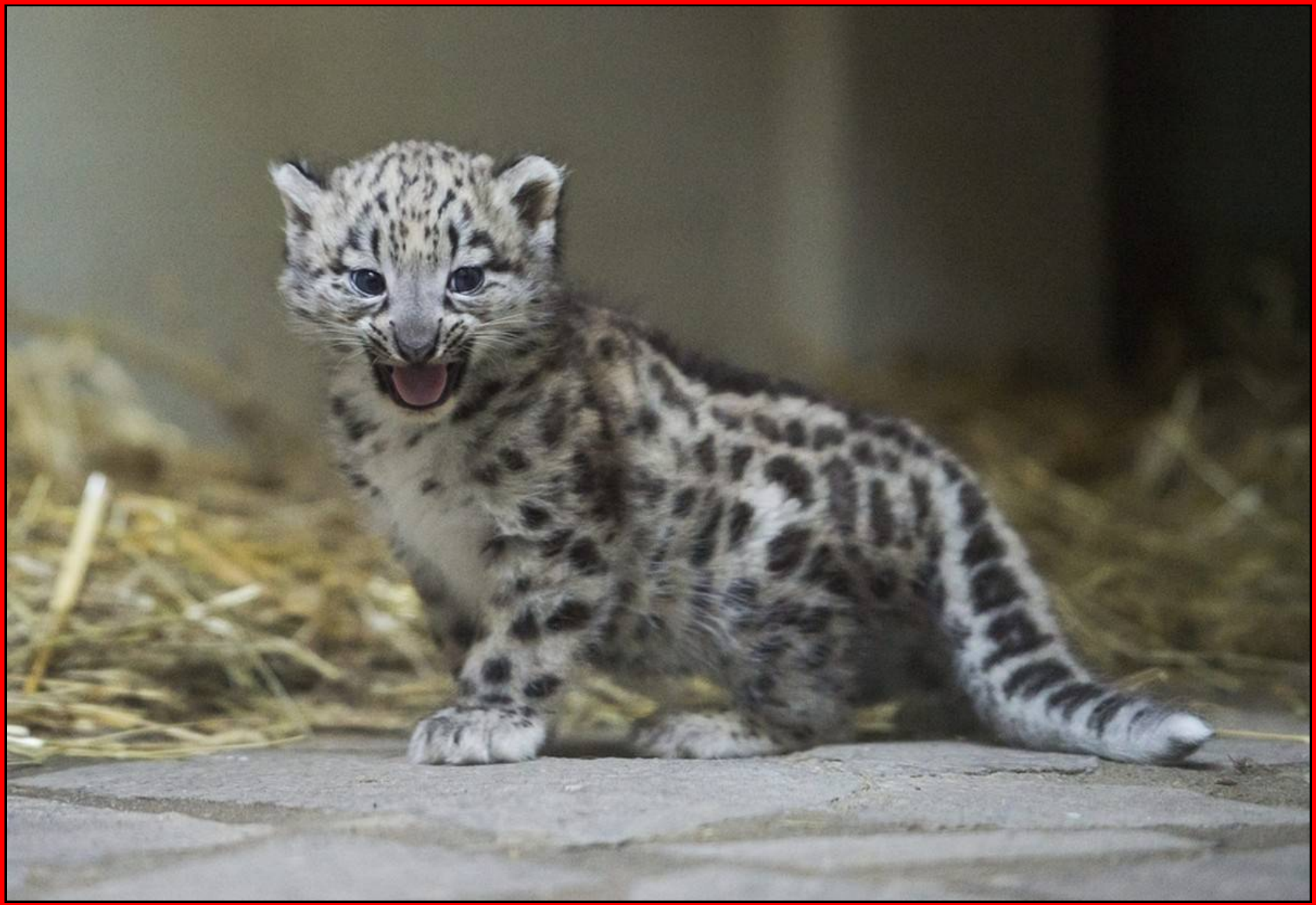
Maybe we can wake up Walt Disney so he can see this (to see in another book...):

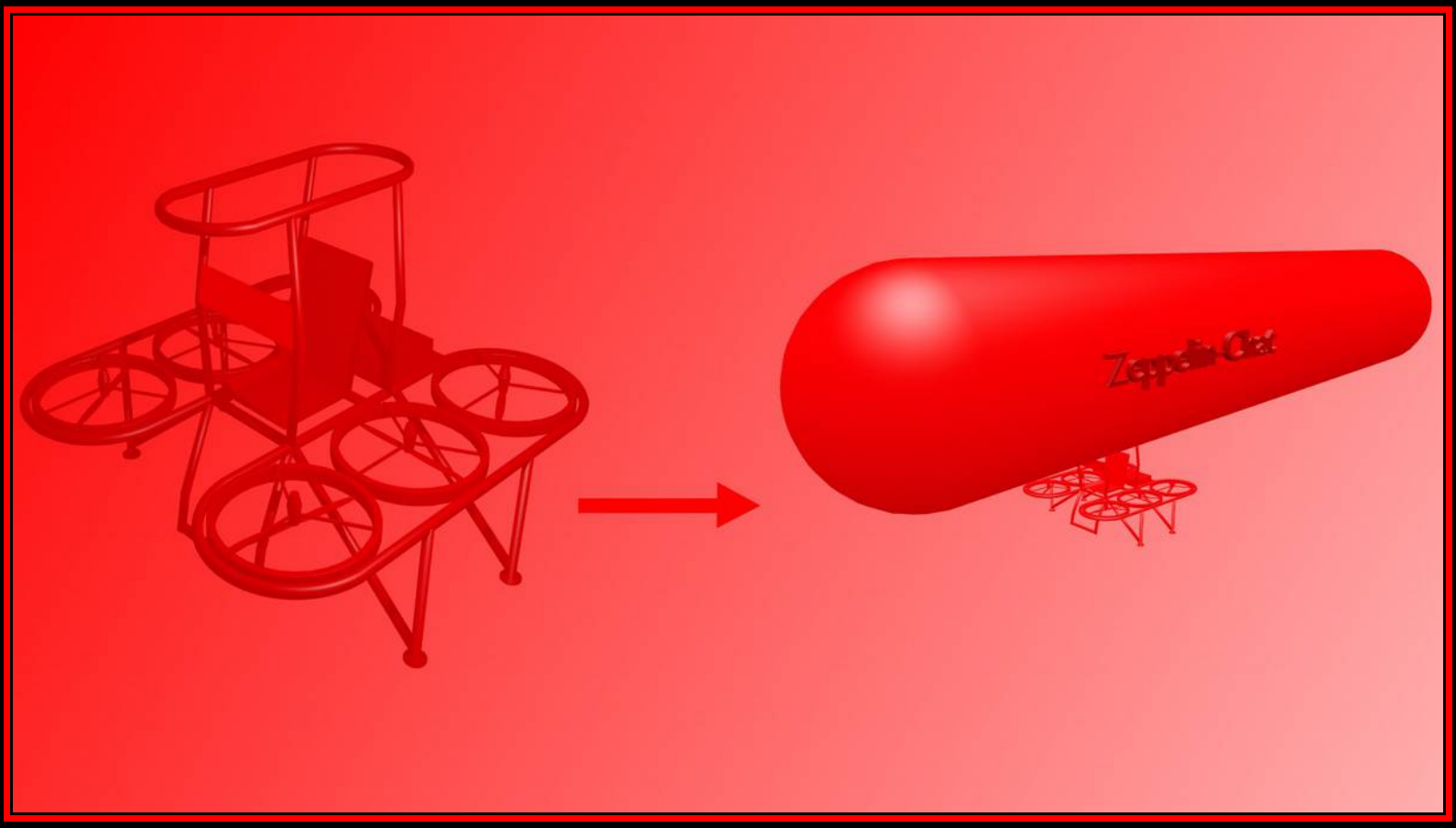




EDA COPTCHAT

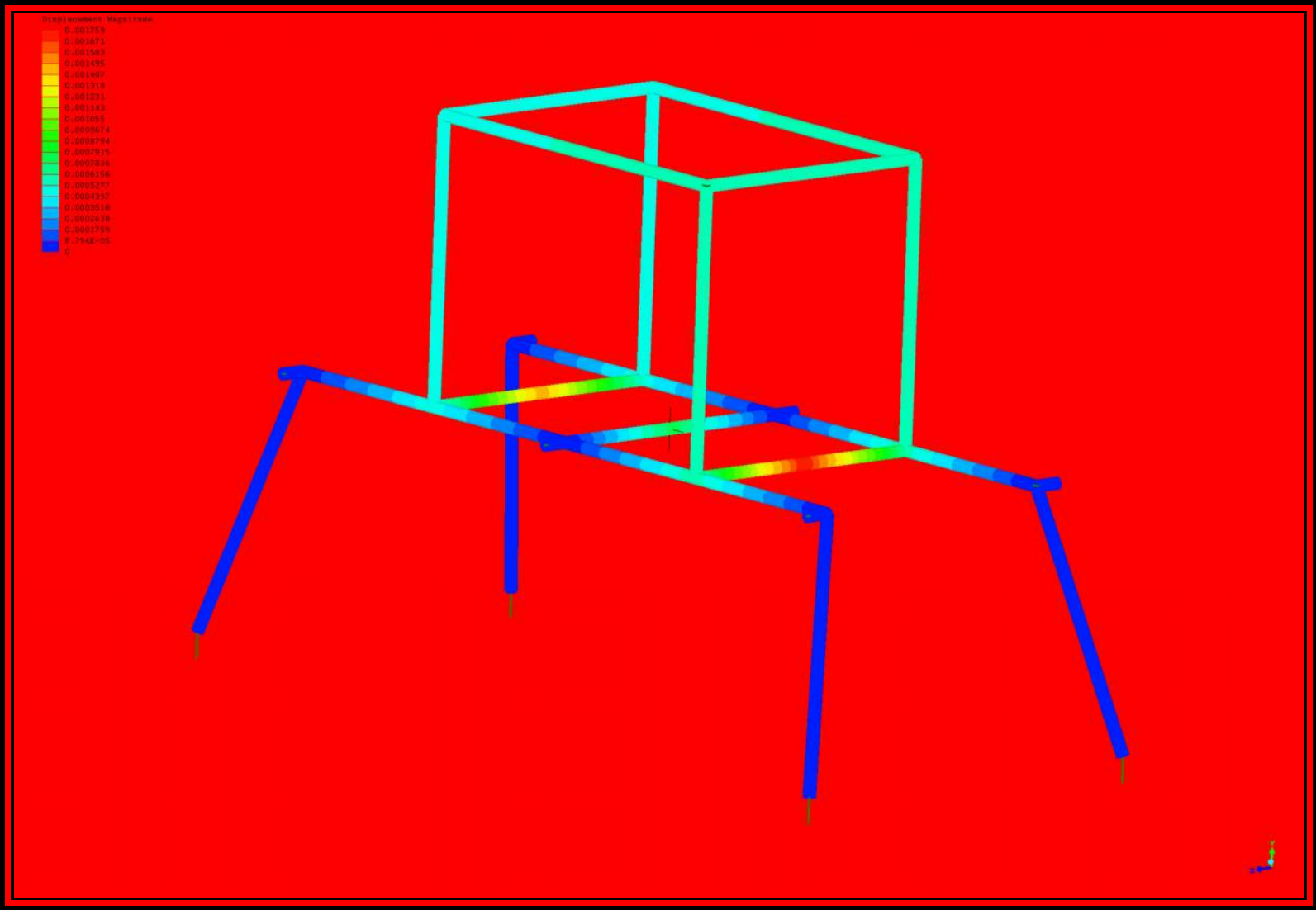
Here is my brand new electric Zeppelin hybrid helicopter model. It was designed to do some sightseeing in my new city type EA Supreme Cat. There may be several variations under the same theme, between the pure helicopter and the pure Zeppelin, all of which are very interesting.





We could discuss forever about those conceptions, but, simply, the wind-weight is the keyword...

STRUCTURAL ANALYSIS



Here is an analysis of a simplification of the EdaCopchat, in full flight, with a 90 kg passenger and a 75 kg battery. Built in chromium magnesium steel, this version weighs only 5-10 kg plus the passenger and the batteries and less the 40-100 m^3 balloon which represents a reduction of about 40-100 kg. It should be noted that the motors weigh only 10 kg in all. So, there are several possibilities, in terms of batteries, distances, speed, and flight time. Here are two options of LIPO batteries, founded on Alibaba:

I. 50 minutes of battery life, with only 100 recharge cycles, $ 5000
II. 25 minutes of autonomy, with 5000 recharge cycles, $ 1875

So we could easily consider producing them at a cost of $ 7,500 per unit. Helium is a rather expensive resource, but once gasified it occupies a very large space, so very little liquid would be enough for a balloon. As for speed, it will be of the order of 50 km/h, but we must keep in mind that the faster we go, the more there is an opposite force, which gives a graph that can be optimized thanks to to the test of the first derivative :)

The most important point: What will be the accumulation of harmful batteries over time in our dumpsites? The more recyclable a battery, the less effective it is, this time the equation is not clearly defined, to see...

EA SUPER CAT RADAR

Before defining completely what should be the perfect system, there are several elements to consider:

I. Topographical aspects
II. Extended area
III. Number of users

I will take an example, as usual, near my home: Montreal, Quebec, Canada. Problem of road transport very clearly defined. There are simply not enough bridges to cross on the island. The Champlain Bridge (replacement) will cost approximately $ 4.25 billion, or ½ million Eda-Coptchat. This transport capacity could be used for trucks and goods. 150,000 vehicles a day circulate on the Champlain Bridge, we could estimate the peak hours to 1/3 of this value. A fleet of 25,000 helicopters (two, go and back, each) with full maintenance and battery replacement would cost without interest (25,000 * 7,500 + 2,500 * 6) / 20 years = $ 10 million a year. The bridge will last at most 42.5 years = $ 100 Millions a year. But, it is necessary to count the system of radar, but this one would be shared by several bridges (not the cupolas).

TURBINE EDA COPTCHAT

In order to obtain a much larger range or usability during winter, I am currently analyzing the possibility of using turbines on the standard Eda-Coptchat. Far from being perfect, because combustion emits a lot of CO2, it does not require battery recycling, a process that is not 100% efficient. The turbine model that we see below, does not include the electricity generating part that I want to put in place, but gives a good idea of the dimensions and the mass required to do this. Some sources of information speak of 15-25% efficiency, for transformation into electricity. Nitro methane has a factor of 2.3X the power of gasoline, or 11.63 MJ / kg, at 15%, gives us 0.488 kWh / kg.

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Description of the AMT Netherlands Nike gasturbine with EPV layout.

Oktober 2014

The Nike is a "spin-off" of the AMT-NL Titan design and has been constructed from a single radial compressor and a axial flow turbine stage. The engine owns its excellent performance and superb power to weight ratio to a new diffuser stage. Since Oktober 2014 the Nike engine is avaivable with an "EPV" layout. The EPV is an device were **E**CU, **P**ump and solenoide **V**alves are intergrated in a aluminium casing. The EPV will be connected to the engine with a 50 cm long cable via a multi pin military spec. connector.

Specifications			All data at STP +/- 2%
Engine diameter	201 mm	/	7,9 Inch
Engine length	524 mm	/	20,6 Inch
Engine weight	9150 gram	/	20,2 Lb
System airborne weight *	11300 gram	/	24,9 Lb
Thrust at max RPM at S.T.P.	784 N	/	176,2 Lbf
Maximum RPM	61.500	/	61.500
Thrust at Idle RPM	40 N	/	9 Lbf
Pressure ratio at max RPM	4:1	/	4:1
Mass flow	1250 Gr/sec	/	2.76 Lb/Sec
Normal EGT (internal EGT probe)	800 Deg C	/	1472 Deg F
Max EGT	875 Deg C	/	1607 Deg F
Fuel consumption	1900 Gr/min	/	67 oz/min
Specific fuel consumption	40,36 gr/(Kn*sec)	/	1,42 lb/(lbf*hr)
Starting method	Direct kerosene starting system. (20-25 seconds starting time)		
* Total weight of; Engine,ECU,pump,LiPo battery,thermosensor, valves, mounting straps.			

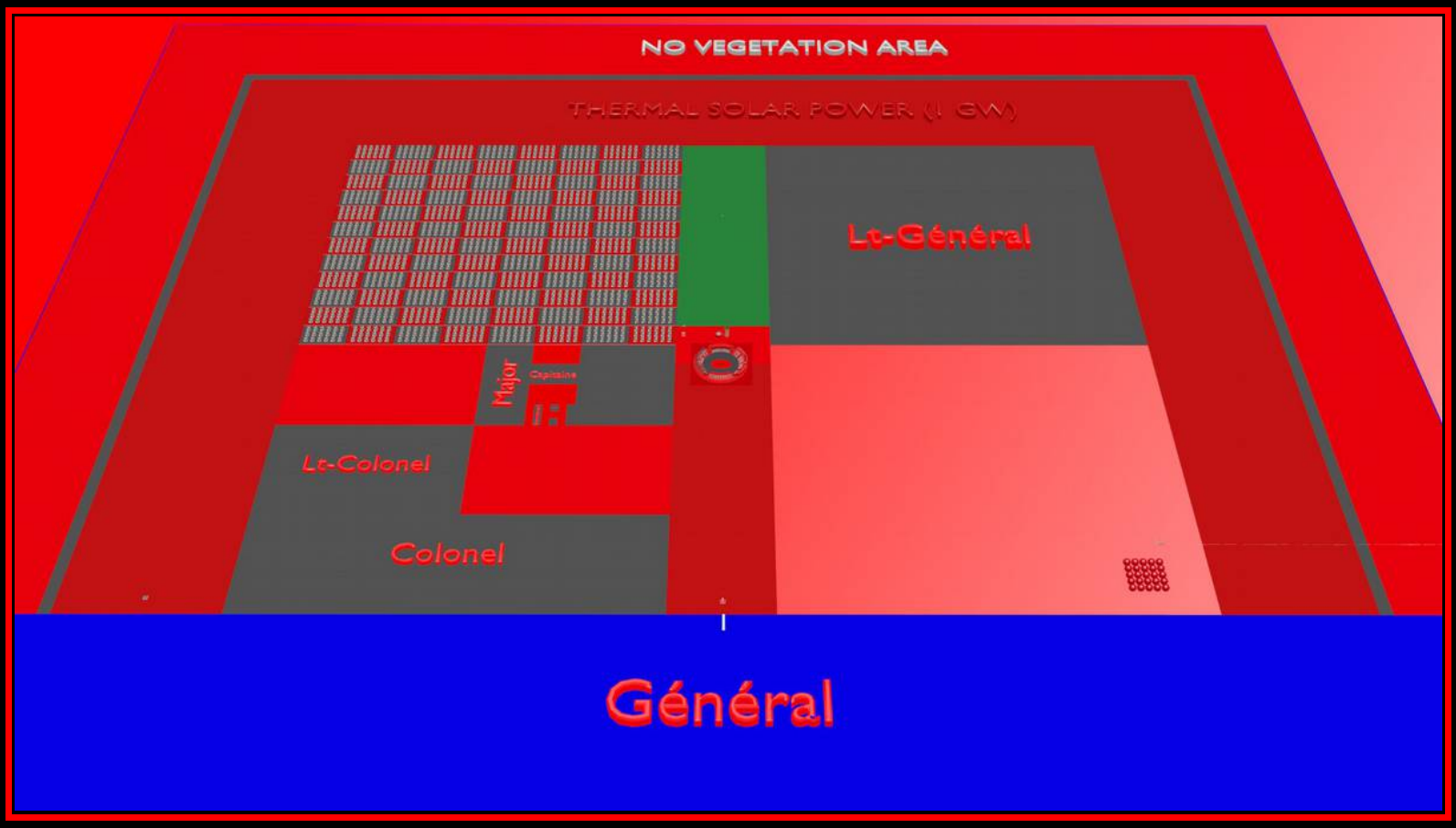
Operating conditions			
Min operation temperature *	- 25 Deg. Celcius	/	-13 Deg F
Maximum operating temperature	+ 50 Deg. Celcius	/	+122 Deg F
Maximum operating altitude	8000 Meter	/	26250 feet
Maximum operating speed	1000 Km / hour	/	620 Mile / hour
* With the use of LiPo batteries the minimum operation temperature is limited to -10 Deg Celsius.			

Engine control possibilities		
1 x RS232	Throttle and switch settings including special functions *	
2 x PWM between 1-2 milliseconds **	Thottle and switch settings.	(special functions * with puch button)
2 x Analog inputs 0-5 volt DC **	Throttle and switch settings.	(special functions * with puch button)
* Activation of prime function, igniter function, starter function, speed cool.		
** Specify at ordering with PWM inputs or Analog inputs for EPV layout.		

All specifications are subject to change without notice. S.T.P. : 15 Degrees Celsius / 59 Degrees Fahrenheit, Pressure : 1013 Mbar / 29.91 in
More information about the Nike engine and EPV layout are available at our website. www.amtjets.com/Nike.php

So to provide our Eda-Coptchat turbine, the 20 kW of electricity needed, it would take 41 kg of nitro methane per hour. We would thus make the 25 minutes of battery life "rechargeable" to 1.25 hours. For kerosene, mass of the turbine of the preceding page, would be rather, with the same% efficiency, 5 hours. The problem is that now the cost of Eda-Coptchat, is 32 500 USD for both options.

THE EA SUPREME CAT, CITY OF THE FUTURE



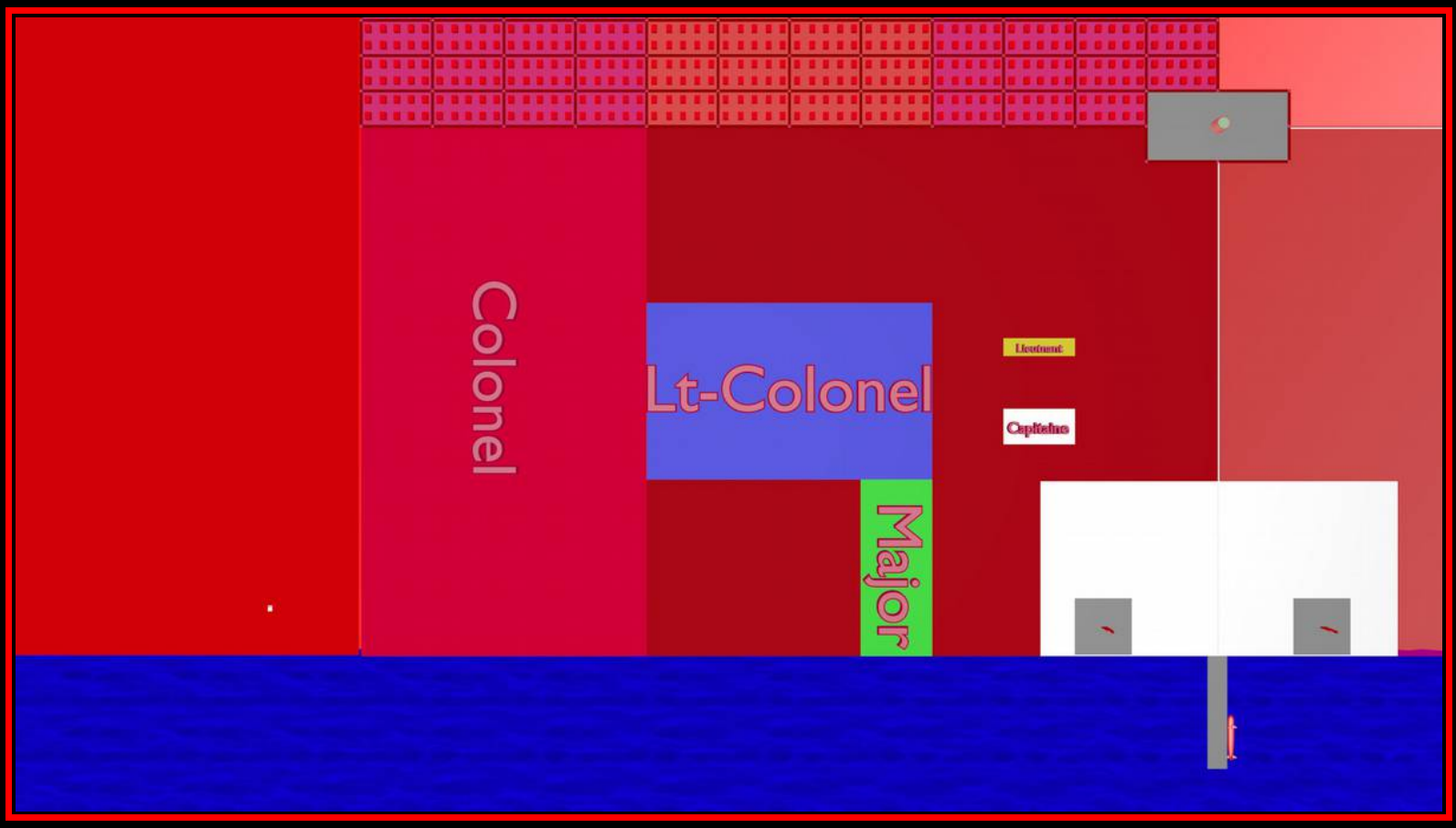
This is not my first version of the city of the future, the first was on Autocad, the next versions will be on blender for reasons of change in my policy on hacking, as well as the performance of "mesh" on the objects "CAD". In terms of locations, the possibilities are many, the first three sites that come to mind are:

The reasons for this choice:

- removal of polluted and stinking sites
- near pure water
- access to the ocean
- absence of unwanted weather


Sozi Marshall stocksy.com/1945151

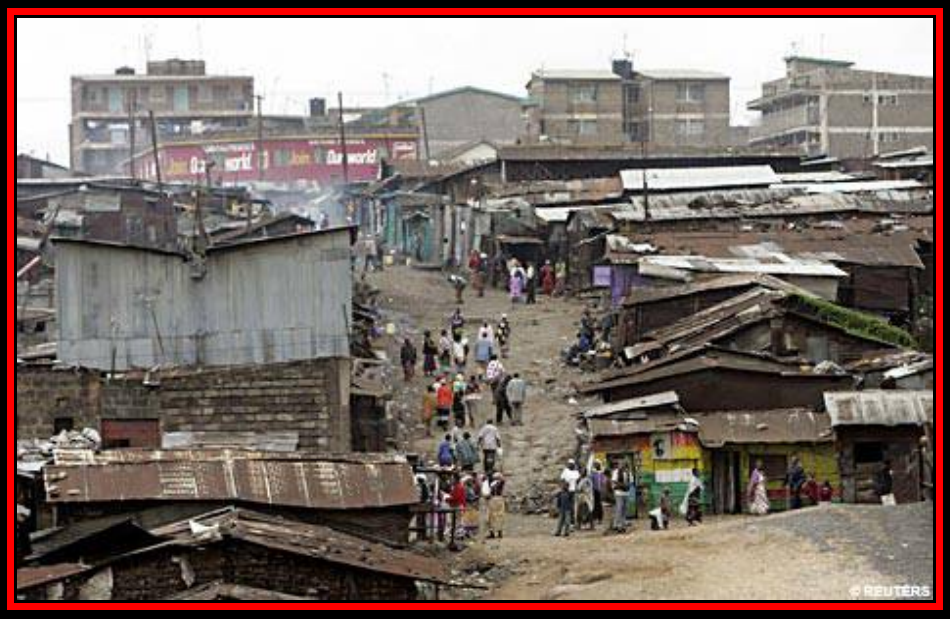
HIERARCHY



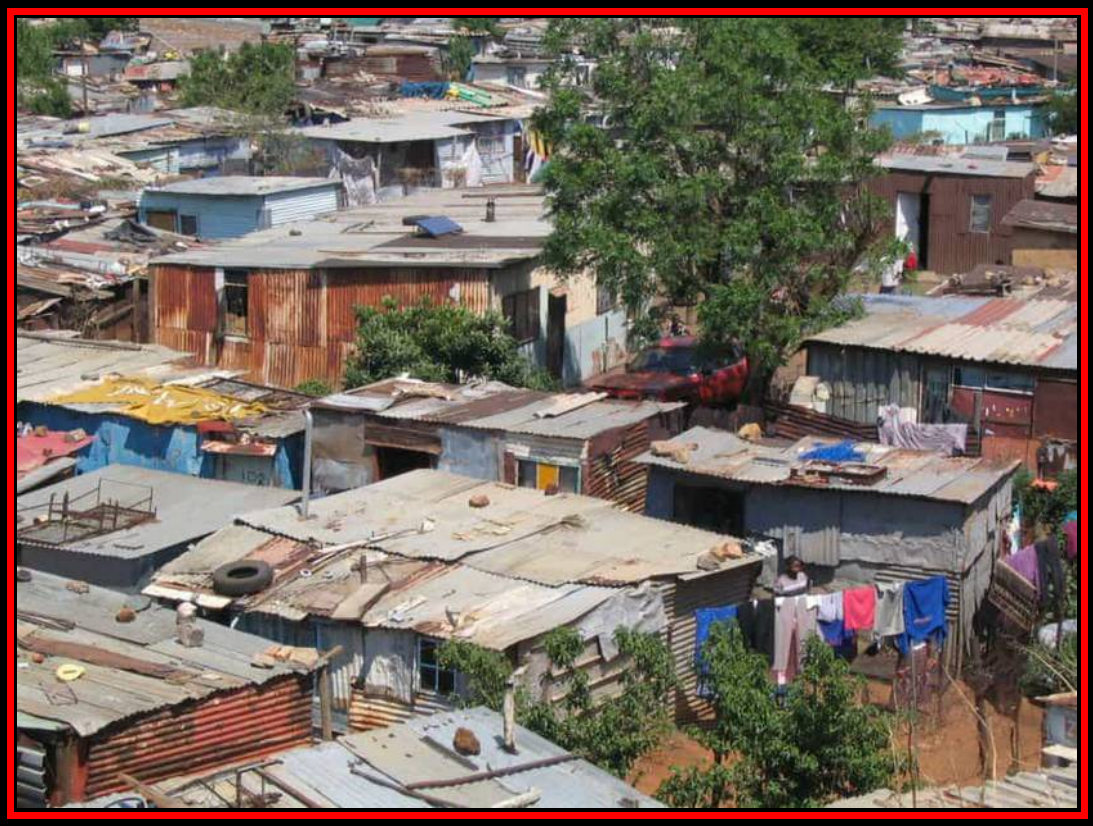
Whether or not the first cities of the future are governed by a military structure, a good hierarchy will be necessary. In the case of a structure as used today:

General: Responsible for a complete city (about 175,000 inhabitants)
4 Lieutenant-General: (about 43,750 inhabitants)
12 Colonel: (about 14,580 inhabitants)
36 Lieutenant-Colonel: (about 4,860 inhabitants)
144 Major: (1,215 inhabitants)
720 Captain: (243 inhabitants in an island of blocks apartments)
1 440 Lieutenant: (121 inhabitants)
6,223 Sergeant: (28 people in an apartment block)
14,400 Corporal: (14 inhabitants)

The staff, in red, works and lives in the center of the city, in the ultra-long wave antenna (or ultra short according to your personal opinion). I have here the idea of a military hierarchy, because everywhere on Earth, in the current conditions, this is what would be best for the first cities of the EA Supreme Cat type. We must understand that we face this:



Far from the standards that I advocate, for reasons of productivity, this city of Kenya is almost the norm on Earth, right now :(



Here is South Africa, zero comfort and productivity, on an area where we can not see the end without binoculars or even without a telescope. Far from harming only the infrastructure, how can they work every morning? Me, without giving unnecessary details, I get up and run 1.50 meters before starting my work, and this every day ... my room and my office: 9 ft X 9.5 ft :)

EA SUPREME CAT GALACTIC CITY

It is clear that all men have the right to work and live in a productive environment. Otherwise, refusing to work is necessarily equivalent to using slaves, so to be a slave attendant. What is good for others, is good for oneself ...

In the meantime, between the decadence of today and the utopia of the future, we must continue to evolve and build these cities of the future type EA Supreme Cat.

There will be several variations of the city type EA Supreme Cat, the one I am going to describe is one for the development of the conquest of the Universe (see galactic conquest book and post modern weapons). The primary objective of the citizens of this city will be to serve as a Gray matter and production tools for rocket launches (or other system of orbiting: in the future). So there will be two sub-entities, one for polar or semi-polar cities, and one for equatorial cities.

Polar cities:

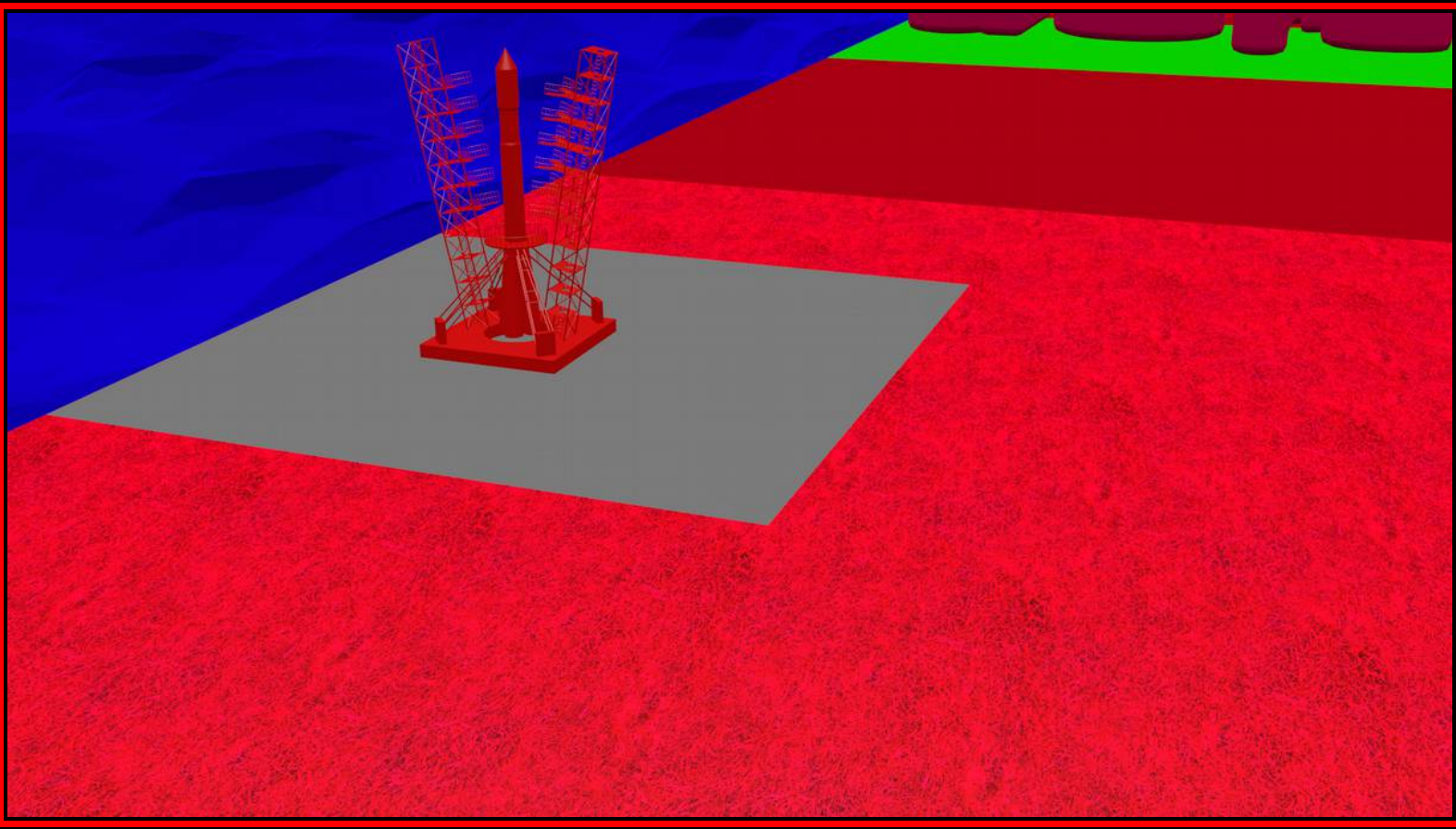
- Production of gaseous hydrogen by electrolysis of water
- Compression of precious gas for transport
- Development of space technologies and technologies
- Production and liquefaction of Oxygen
- Production of specialties from each of the different cities for the final assembly of the rockets
- Hypothetical command headquarters for galactic operations (maybe only one city will suffice for this purpose?)

Equatorial cities:

- Liquefaction of Hydrogen
- Heat maintenance of liquefied gas
- Rocket launch
- Rocket assembly

You guessed it, cities in the North (or South), will send their fuel and oxidant production to the equatorial cities, for rockets to be launched, even if recent developments, we even conclude that launches from cities in the North or South, would still be profitable.

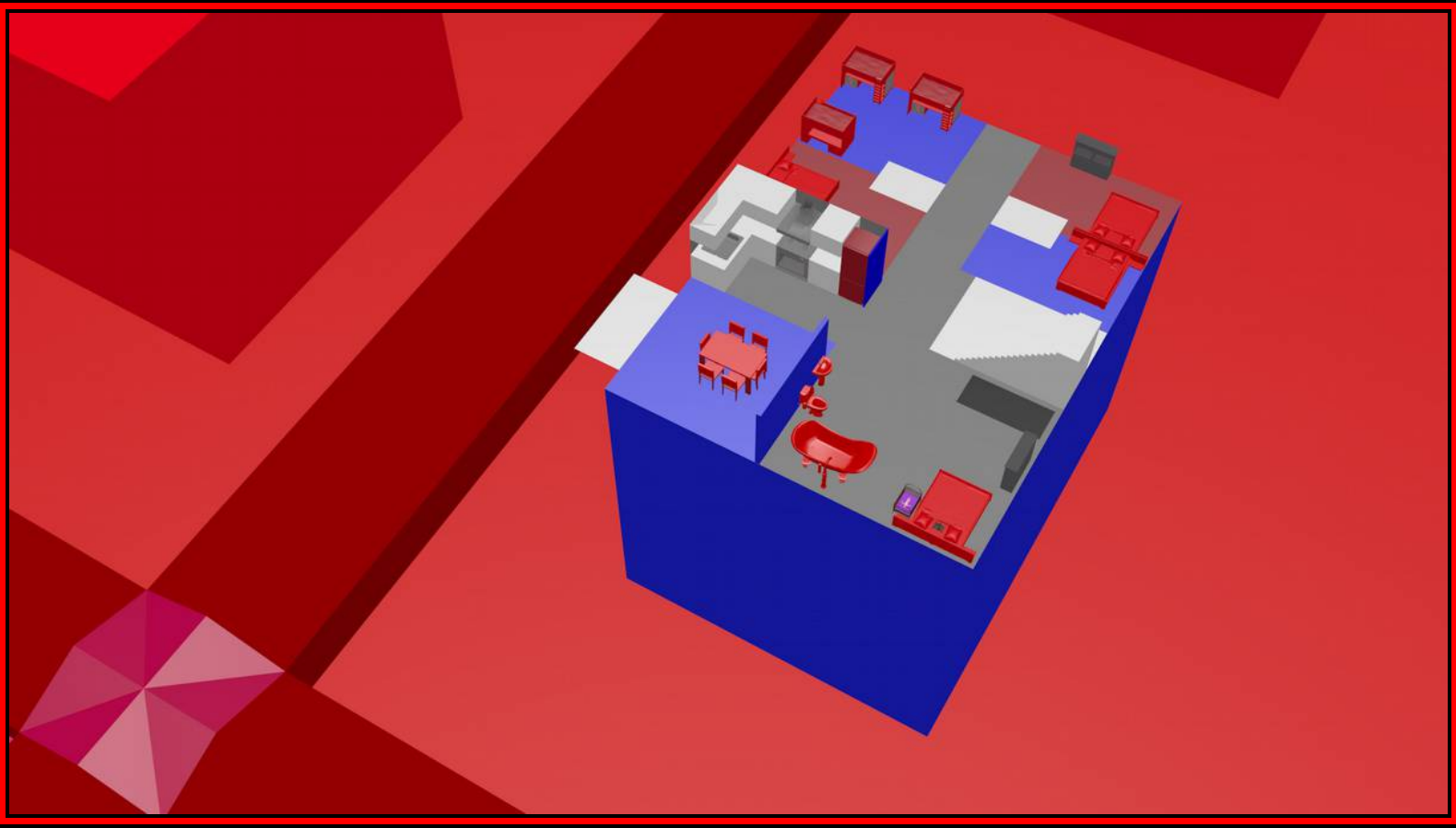
SOYOUZ WITH CAT INSIDE



Roughly, it takes 8 kg of fuel and oxidizer (H2-O2), to send in orbit (LEO) 1 kg of material. So the production of a city would send, with 750 megawatts:

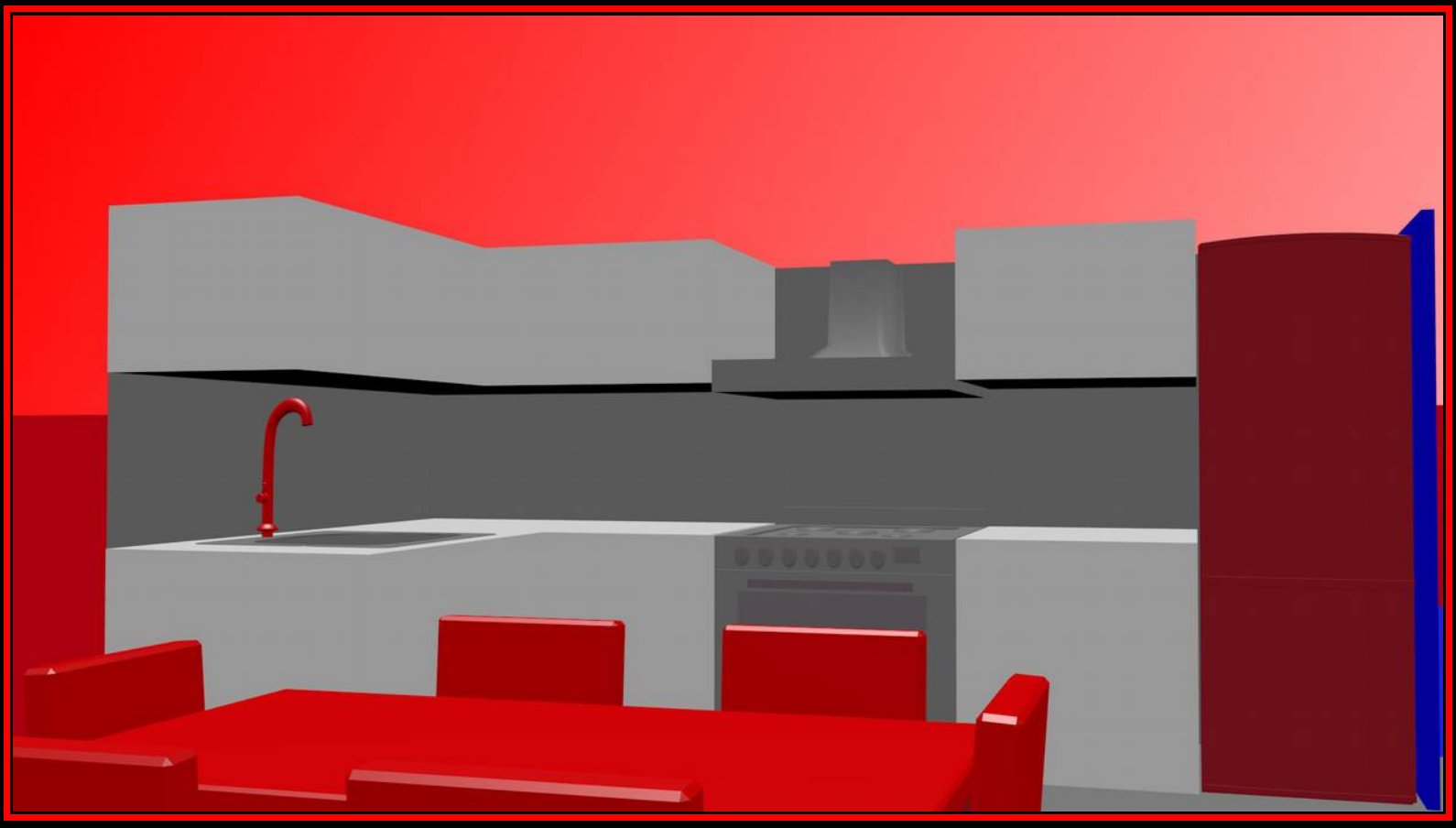
750,000,000 w * 365 days * 24 hours / 11,000 w * h / kg = 600,000 tons of equipment per year in low orbit or 100,000 tons in Martian orbit (Mars space X). Either the equivalent of 10 Martian bases or perhaps a Galactic vessel of the Maximus type, or 1/20 of an EA Galactic Cat Eternal attack ship :)

APPARTMENT EA CAT 1.0



Here is the design apartment EA Cat, you can notice that there is no wall for the bathroom, it's because Eva and Eda like that. There is a lot of possibility of development, like the addition of rooms for a family, on the same floor, in the basic design, there are two apartments for couples per floor. Similarly, single people will have to share a family apartment, for reasons of economy. So there could be four bedrooms, a living room, a washroom, a kitchen and a dining room, as well as a wonderful balcony to get some fresh air. Aside from plumbing, everything can be changed as needed. On the ground of 16 blocks apartments, there are two parking areas, for so-called modern cars, all connected to the road network which is itself connected to other cities by train, or by the Eva cat network (see the next chapter). As one possibility...

Here, we can see a view of the bathroom, it is noteworthy that the furniture elements are not my pen, but have been drawn by others. For reasons of initial cost, stainless steel may not be used in profusion, but in the future, this will probably be the case. The impact on the budget of the current nations, will be very important, but the addition of productivity, will make this project one of the most profitable of the Human History.

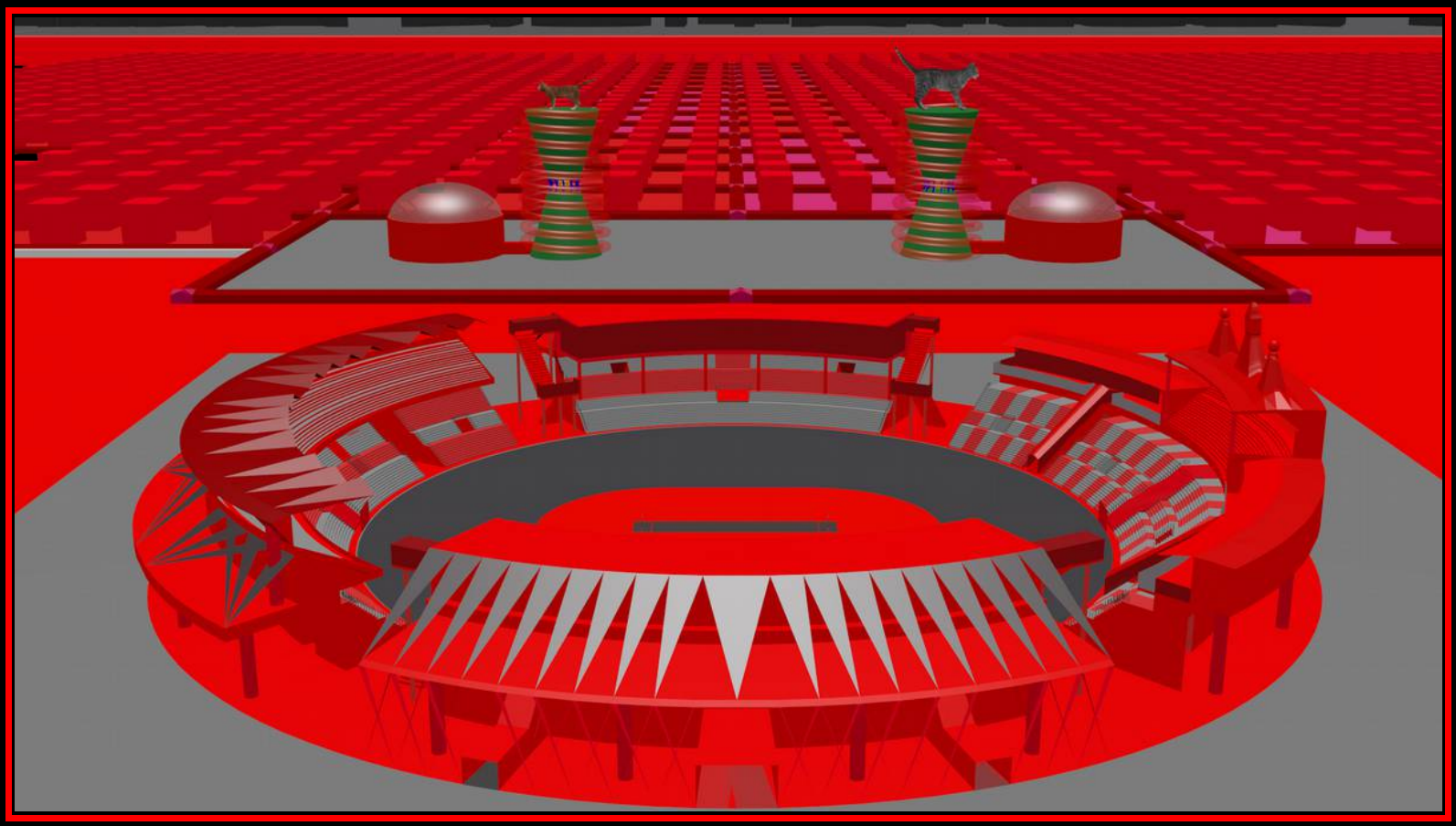


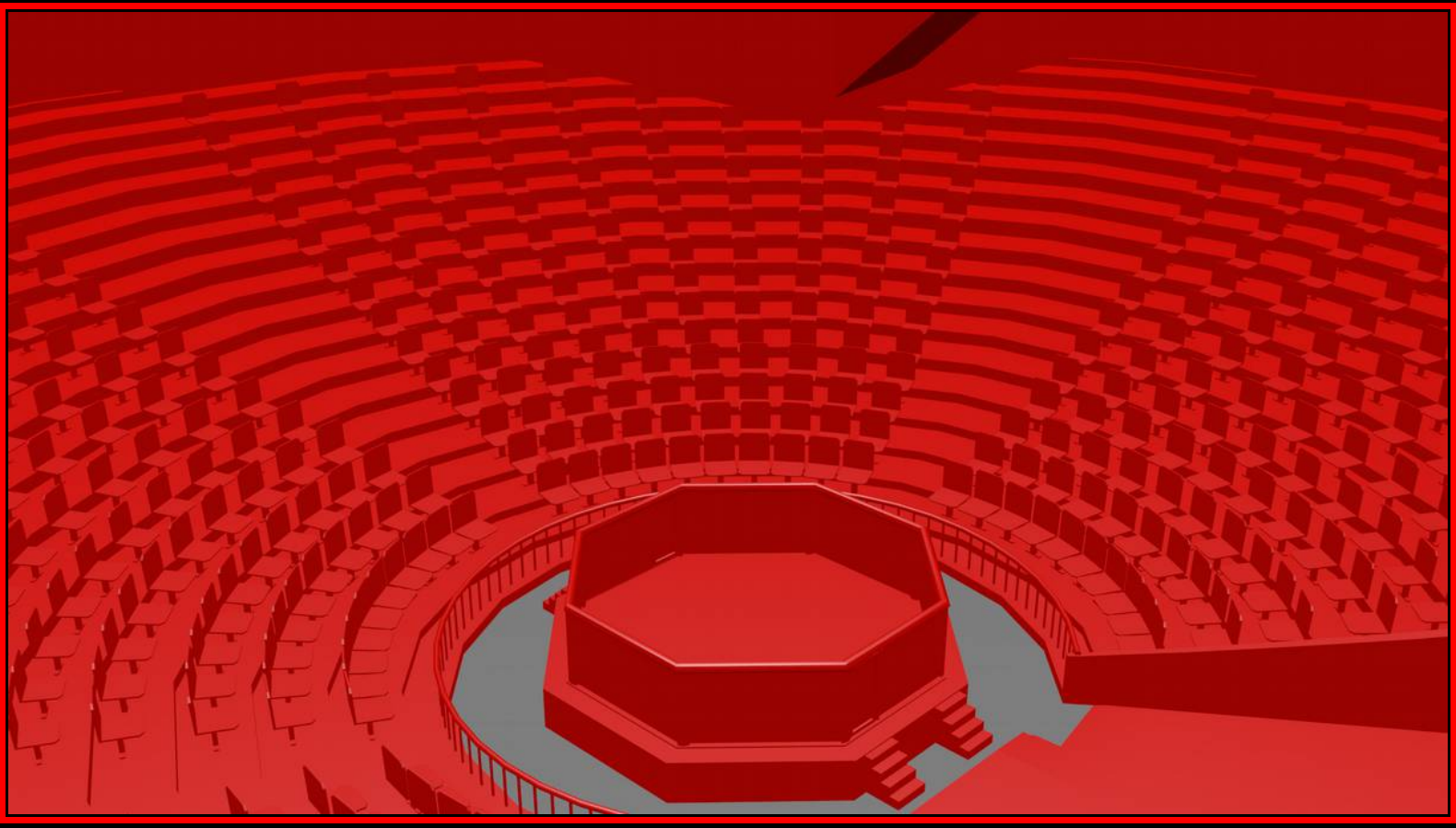
All this, looks very great, but do we have that money, or efficiency margin. I mean, if Norway build a city with 4 persons in every side apartment, we are close to twofold less capacity to produced goods at the same prices. It's difficult to administrate, what is our way of life, up to what level of proximity with our "friends" we are ready to accepted?

Of course, all those building could be reformatted, because the inside wall are in Gyprock, and only the perimeter and the plumbing are fixed. I will extrapolated more in a subsequent chapter...

EA SUPREME CAT DOWNTOWN

Here, we can admire a view of the stadium and the two antennas, in the center of the city, each of the two antennas is equipped with a small arena that can serve as theatre or anything else ...

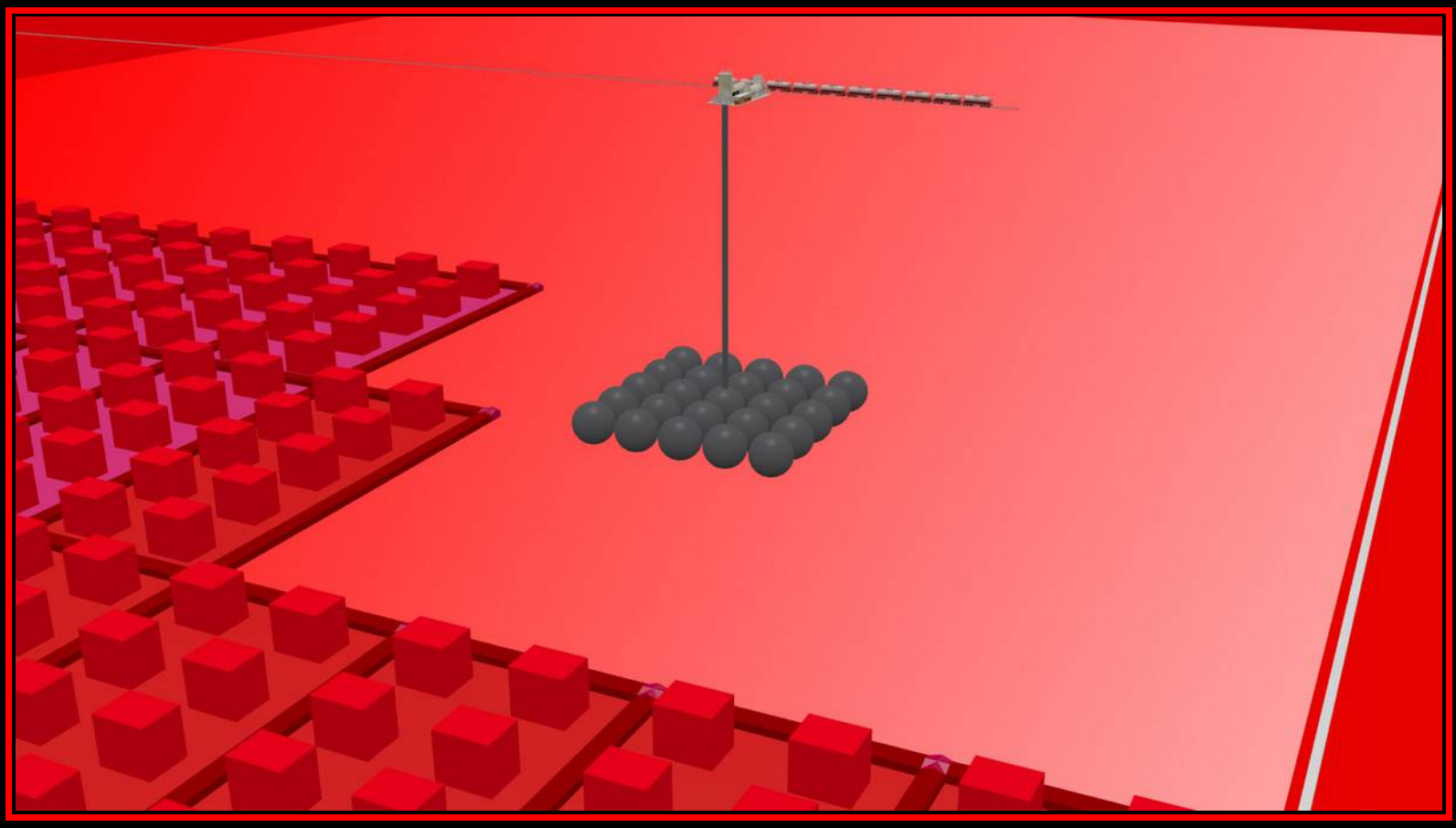




It is possible to replace the octagon with something more useful. For the antennas, they are giant to pick up the waves which would be very difficult for small antennas to capture. In order to create an independent and safe communications network between the cities of type EA Supreme Cat.

Communications are very important in a society, which is why there will be these two amphitheatres. Speakers will be able to follow one another, to discuss various problems related to production or social life. The ultimate battles will be banned, but why not some problem solving using boxing glove.

COMPLEXE INDUSTRIEL EA



Below, the reserves of hydrogen, oxygen reserves may be on the surface (not shown).

Here, we can see the Crescent Dunes array, there will be 100 km² of units for a average power delivered of 1 GW, in a desert city. A simplistic calculation, which gives a good idea of the efficiency of the system, gives me 90 watts per square meter, with a factor of 1:9 for the practical production, and with optimal location of 10 W/m² (desert = 10 W/m²), the lower we could achieved is about 1:25 (4 W/m²) in the optimal Northern Canada Hudson Bay. In addition to this system, there will be wind turbines in good quantity. I calculate that it would be possible to put on the perimeter of the city, for security reasons, one every 7 diameter of the rotor (that number was took on the net), for reasons of productivity, it's easy to understand. The wind power will be 500-1000 kilowatts, according to this configuration (the perimeter of the city). That is an estimated performance (roughly), at 5000 watts per meter.

One could ask me the following question: Why solar if the wind is more efficient?

- required area between each wind turbine line, the density is low.
- Purely ecological aspects, such as the protection of the forest and living creatures (bats)
- Both are necessary, for a security of supply issue, Hydrogen can be burned, but with a high loss on the initially calculated yield.

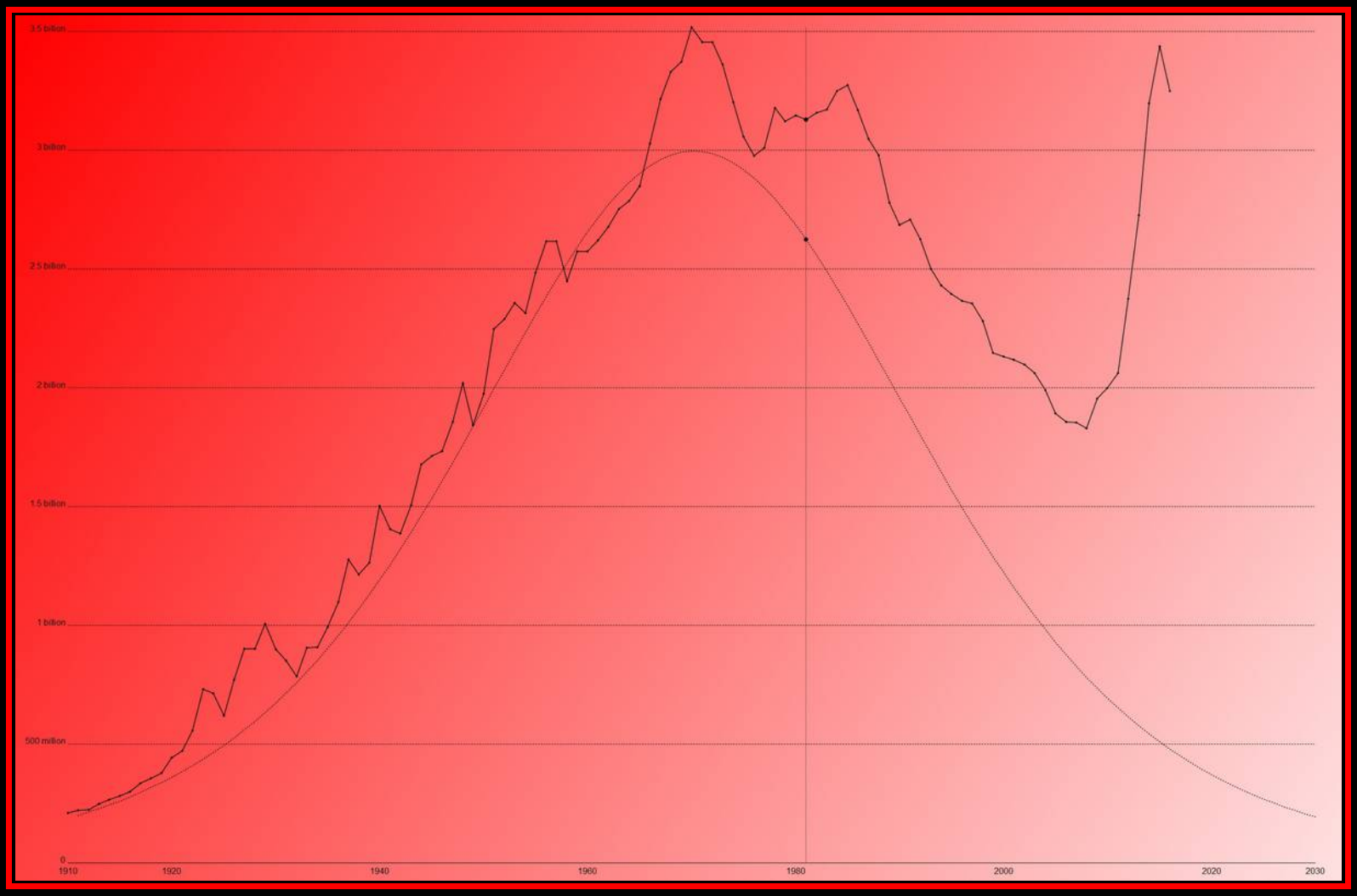
	Solar array (Crescent Dunes)		Wind turbine (125 meters)
Final Avg Power	10	W/m²	1,48
Power max	90	W/m²	4
Storage	900	Wh/m²	0
Capital	850	$/m²	25
Operation	10	$/m²	7

For a production of 1 gigawatt electric Net:

- Solar:
  - 85 Billions USD in capital to be invested
  - 100 km²
- Wind:
  - 17 Billions USD in capital to be invested
  - 676 km²

THE WHY OF THE HOW

Why it is required to build those cities? The best answer to this question is the final absolute oil crisis that is coming in, the best scenario, about 68 years :) And that scenario is achieved by complete burning of all fossil energy we could reached. And as I will show you, forget about nuclear energy. But, seriously, let's think about 21 years from now, because the appetite for energy of the new industrial countries of this planet is growing and that I dislike that theory:



The bell curve is the path that should be followed by theory :) :() :(

Shame on us, and this theory, we are almost death...

Let's consider surviving the final absolute galactic atrocity of our great Oil business men mathematicians, what could be done?

EXCEPTIONNALS ENGINEERING PROJECTS

First, let's remove the possibility of using nuclear energy as the leading force of our beautiful future :) :() :(

Wikipedia : 80,622,000 barrels of petroleum per day, worldwide. One barrels equal 120 Litre of liquid. And one litre of petroleum equal 38,6 MJ of energy. Without, our friends of petroleum companies, we could easily achieved:

80,622,000 * 365 * 120 * 38,600,000 = 1,36E20 Joules, with a "s" :)

That does not included increase in global demand and Gas and coal, that will be included later...

Wikipedia : Actual worldwide reserve of Uranium (including unconventional stock): 40 000 000 ton, with 2 500 000 ton that has been burn already, but not taken into account...

40E9 kg * 45,000 kw*h/kg * 3,600,000 Joule/kw*h = 6,5 E21 Joule

That gives us little less than 50 years of Uranium fuel to replace car consumption... Oil only :(

Wikipedia : 75,000 TW*h of coal and gas globally, and 37,777 TW*h for oil.

So, we must now divide this number by three: 50/3 = 16 Years, but, again, without growth...

Assumption of the worst energy case, but the better economic one: We the people of earth have the right of the same consumption of France and England :)

Now, we seriously have a problem, let's say few hours...

Base on correct understanding of our world: 600 Mtoe increase average every year for the recursive time that we have.

We may survive a little bit more: toe = 600 * 1E6 * 42E9 Joules to add to 6 E20 J of 2019 of consumption

Base on a survival of 52 years, including the fossil fuel:

(6 E20 + 52/2 * 600 E6 * 42 E9) * 52 years = 6,5 E22 J, fossil fuel reserve

Base on a survival of 3 Years, including the nuclear:

(6 E20 + (52+3/2) * 600 E6 * 42 E9) * 3 years = 5,8 E21 J, because I overestimate Uranium reserve

In conclusion, we could expect less than 3 years of non-renewable nuclear energy, after the clash, and that with 100% recovery and use, so more than 2°C of global temperature increase, after a 52 years. :(:() :(

With 350 Mtoe, gives those two numbers: 62 and 4 years... And with only 20% of fossil fuel: 16 and 5 years :(

 LI 

MAINTAINING ACTUAL ATROCITY

In order to achieved the complete destruction of all ecosystems by our actual way of life, without any concern about the underdeveloped countries of our, close to brown planet :)

We will need that amount of energy by industrialized countries:

Great Britain	66,4 Millions persons	125 GJ/(year*person)	8,30E+018 J/year
France	67	161	0
USA	329	290	9.54E+019
China	1400	93	1.30E+020
Russia	147	213	3.13E+019
Sweden	10	215	2.15E+018
Total	2019	1097	2.78E+020
2/5 of the world	3000	1650 (estimated)	4,17E+020 (estimated)

So, to sustain 4,17E20 J/year, how much of those wind generator and solar array, we will need, and that in USD, for the industrialized world and each of those country. Let's remember the reader that the cost for 1 GW of those energy production plant are, only in capital cost: 90 E9 USD for the solar, and 16 E9 for the wind turbine. Without any area of use consideration, for the world in 1/3-2/3: 40,7 E9 USD per GW.

One GW could gives in Joules for a years: 1E9 W * 3600 * 24 * 365 = 3,15E16 J. The experts are deceived, because we need 4,17E20/3,15E16 = 13250 * 40,7 E9 USD = 5,38E14 $$$, with a "S". 538 Trillions USD, in capital, that will have a duration expectation of 35 years. The final galactic stupid number is: 15,37 Trillions $ per year, to be retrieved from the economy...

Now, could you imagine the entire planet ?

THE MIRACLE OF INDUSTRIALIZATION FOR ALL

For every citizen of this planet, the energy consumption of France and United kingdom averaged. 7,5 Billions individual at a rate of (161 + 125) / 2 GJ per person = 1,07E21 J, that gives in USD of capital to be invested:

1,07 E21 / 3,15 E16 * 40,7 E9 = 1,39 E15, gives 1,39 Quadrillion USD

If you want that miracle and pay for it the last year before the crash, it will be in relation with the world GDP, a ratio of 1,39 E15 / 87 E12 * 100 = 1597 %.

In conclusion, we will need approximately, at least, 100 years to build those devices, that have a duration of about 35 years... We need to cut the energy spending by a factor at least tenfold, up to one hundred time less than actual spending.

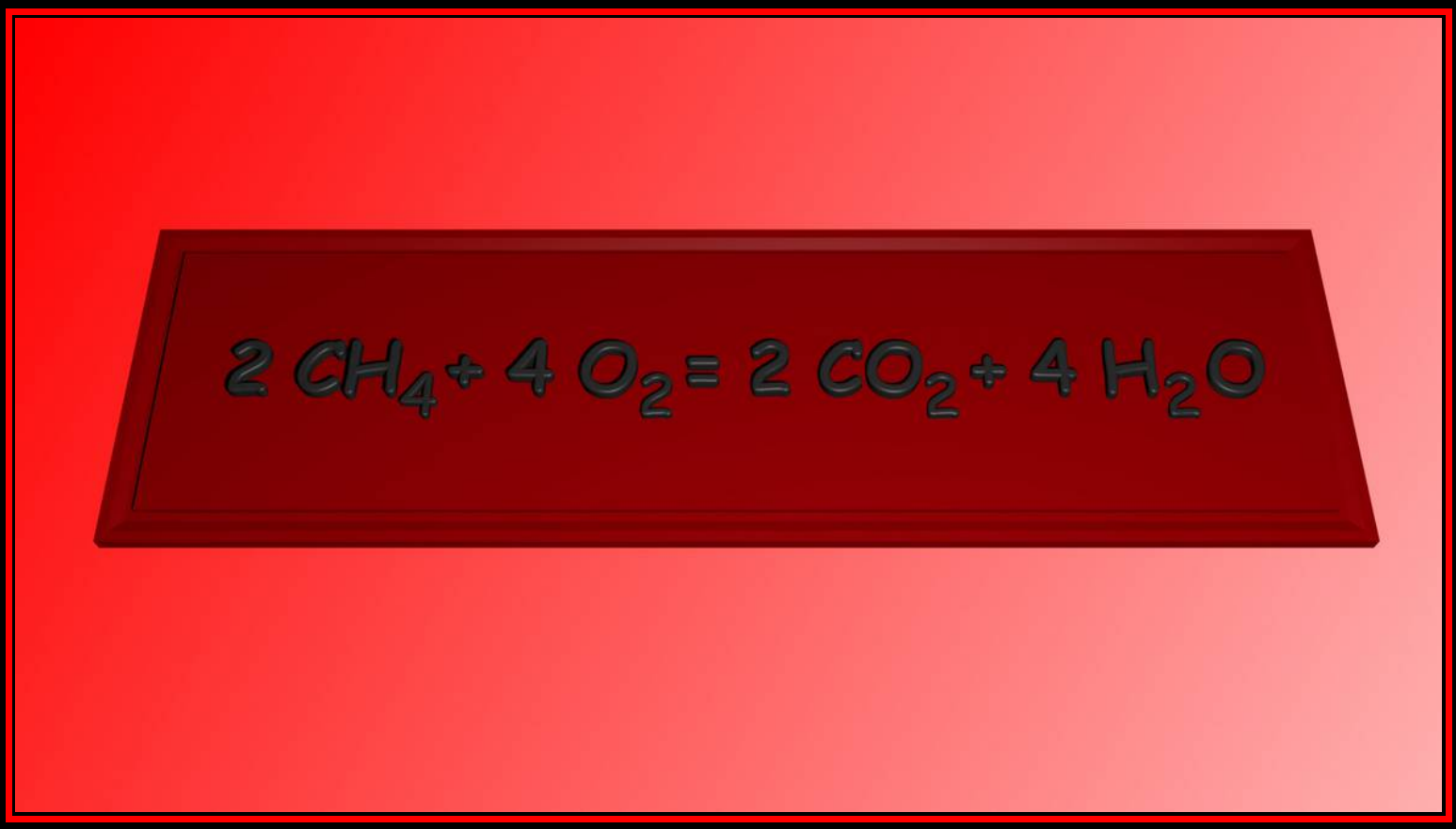
Second, how much synthetic fuel we will need after the clash? With the future probabilistic use of the MAGNIFICENT EVA CATS, and the FABULOUS TRIPHASE ELECTRIC HIGHWAY MAXIME BLACK CATS, in the EA CATS CITY OF THE FUTURE with the EXTRAORDINAIRY EDA COPTCHAT, the less achievable electrical invoice :)

But, unfortunately, we will still need the use of some fuel, for agricultural purpose, most certainly. Let's take a look at this part of Mars management book:

MANAGING ECOLOGY

You know that rocket launch, except for Hydrogen fuel, produce a lot of CO_2, and even worst. But what could be achieve within the time we will use free pollution devices. I will try, in this chapter to evaluate those damages, and try to fix it with some existing technologies.

CO2 PRODUCTION



This evil equation lead us to that calculation:

175,000 kg of methane per launch (very approximate)

1 mole of CH4 = 16 g/mole

175,000,000 (g) / 16 (g/mole) = 10,937,500 mole

1 mole of CO2 = 48 g/mole

10,937,500 (mole) * 48 (g/mole) = 525,000 kg of CO2

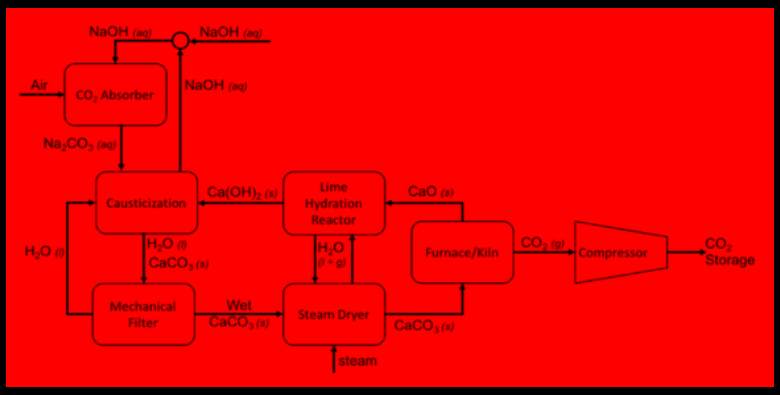
The demoniac launch of 10,000 rockets = 5.25 Millions tons of CO2, every two years

6,511 Millions tons per year, is the US disgusting rejection of CO2

The rockets launch = 0.081 %, it's too much, but relatively low...


John P Cla
amphibianphotos.c

CALCIUM CARBONATE REMOVER



Wikipedia:

Among the technologies studied for direct air capture (DAC), the use of aqueous hydroxide sorbents is one of the most promising approaches.[29] In this process, CO2 from the air is chemically dissolved into NaOH(aq) solution as Na2CO3; the Na2CO3 is then reacted with solid Ca(OH)2, which regenerates the solvent and produces CaCO3 crystals; lastly, heat is applied to the CaCO3 crystals to produce pure CO2 gas.[57]

Air is pumped through the CO2 absorber as the first step of this process.[57][58] CO2 absorber for DAC are designed either as a counter-current spray tower or as a counter-current thin-falling-film contractor to maximize the contact area between the air and the solvent and thus maximize the absorption driving force.[57][58] The solvent is regenerated in the causticization unit by reacting the Na2CO3 with Ca(OH)2, which also transfers the captured CO2 to the form of CaCO3 solid crystals.[57] A mechanical filter is then used to separate the CaCO3 crystals from the water.[57] Since the crystals come out wet from the filter, they are dried in a steam dryer.[57] Then the dry crystals are heated in a furnace to produce CaO and pure CO2 gas.[57] The CaO is then hydrated to regenerate the Ca(OH)2 used for the causticization reaction.[57] The pure CO2 stream is then compressed and ready to be transported for geologic sequestration, EOR, or other commercial applications.

1 M NaOH (aq) is a typical solvent concentration because this concentration is limited by the causticization reaction that regenerates the solvent and it is not too far from the practical maximum of 2 M NaOH.[57] The furnace/kiln can be powered renew-ably or by burning fuel on-site with pure oxygen produces in an on-site air separation unit.

NaOH is economically competitive with other absorbents--e.g., amines--used for DAC processes.[57] DAC processes are energy intensive.[57][58] Calcination (at the furnace) is the most energy intensive step of this process.[57][58]

That fuel could be used within regular fuel in a certain ratio, to run cars. The estimated cost for 1 litre equivalent is 1 USD, but it's not renewable electricity. So, I will apply a ratio of 2.0X on the required production of synthetic fuel, and wash my hand with the further use for this fuel :()

HEPTANE FUEL CONVERSION

At a cost of 2,000 $ per ton, minus the selling value of 1,000 $ per ton, we will have to pay:

Heptane: C7H16

C7H16 = 100 g per mole

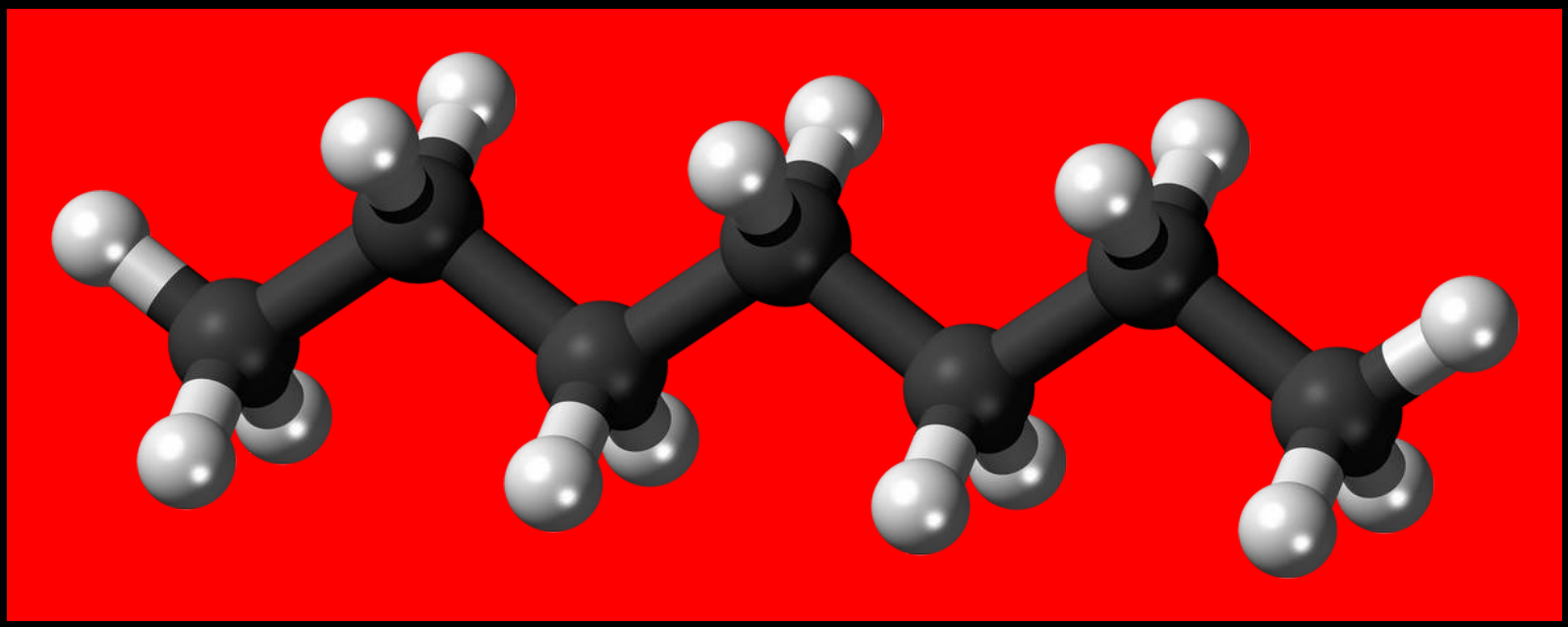
11 millions mole of CO2, gives 11/7 millions mole of Heptane

157,000 X 10,000 rockets = 1.57 millions ton of Heptane

±1,500 Millions litres of fuel

1.5 Billions USD per two year of conversion fees

10 millions barrel of fuel per two year produced



SYNTHETIC FUEL ECONOMY

Date	U.S. Total Distillate Retail Deliveries (Thousand Gallons)	U.S. Total Distillate Sales/Deliveries to Residential Consumers (Thousand Gallons)	U.S. Total Distillate Sales/Deliveries to Commercial Consumers (Thousand Gallons)	U.S. Total Distillate Sales/Deliveries to Industrial Consumers (Thousand Gallons)	U.S. Total Distillate Sales/Deliveries to Oil Company Consumers (Thousand Gallons)	U.S. Total Distillate Sales/Deliveries to Farm Consumers (Thousand Gallons)	U.S. Total Distillate Sales/Deliveries to Electric Utility Consumers (Thousand Gallons)	U.S. Total Distillate Sales/Deliveries to Railroad Consumers (Thousand Gallons)	U.S. Total Distillate Sales/Deliveries to Vessel Bunkering Consumers (Thousand Gallons)	U.S. No 2 Diesel Sales/Deliveries to On-Highway Consumers (Thousand Gallons)	U.S. Total Distillate Sales/Deliveries to Military Consumers (Thousand Gallons)	U.S. No 2 Diesel Sales/Deliveries to Off-Highway Consumers (Thousand Gallons)
1984	45671779	8215722	5538184	2555898	848083	3201600	648665	2944694	1763782	16797423	700788	1756077
1985	43058711	7728057	4463226	2440661	684227	3102106	523010	2786479	1698985	17279650	661644	1522041
1986	45124491	8098496	4542253	2681720	623004	3340813	583579	2850311	1949423	17926508	720880	1659365
1987	44719327	8179134	4299580	2823679	618193	2998681	562665	2850159	1864992	18172934	712822	1559873
1988	47576811	8518859	4294182	2562685	622736	3162575	720137	3095736	1991773	20038691	830614	1671387
1989	49788896	8648629	4277105	2725774	683683	3360092	887599	3240649	2258465	21131692	852839	1689651
1990	47826587	7277365	3986624	2593312	751450	3403400	763709	3104630	2064842	21360477	709232	1808646
1991	45210737	6775589	3767833	2309184	738618	3158477	594821	2879109	2046064	20485364	811705	1641560
1992	47261552	7291444	3771021	2312146	664408	3499518	540883	3172724	2218592	21374872	652507	1757788
1993	48290076	7287196	3689509	2130358	709404	3410827	550752	3000104	2154757	22758842	491320	2104299
1994	50423596	7232733	3774929	2269007	675228	3270227	663814	3141324	2189346	24442609	610474	2153153
1995	51469264	6859786	3630856	2238873	686750	3476472	597461	3428829	2339010	25576433	461740	2173054
1996	53379033	6910018	3603620	2288689	730676	3591383	657881	3446939	2490793	26958668	454443	2245922
1997	54366495	6531416	3314956	2309615	852015	3547699	636002	3277802	2573800	28614022	432621	2276548
1998	55305694	5819959	3233350	2462355	783719	3410801	840731	3180124	2595076	30150191	352189	2477199
1999	57573018	6302466	3338242	2477719	659039	3411623	816008	3239044	2419336	32062447	356602	2490492
2000	59601230	6830455	3706345	2330870	686454	3454861	1015100	3290507	2261422	33129664	306170	2589383
2001	59911345	6642941	3717862	2466456	747627	3584104	1343761	3039761	2044049	33215320	401236	2708228
2002	59342633	6376653	3293387	2384383	770682	3418452	750557	3245482	2078921	34308885	357359	2357872
2003	62005654	6927070	3686537	2394445	513511	3200809	1147727	3656657	2216921	35254441	415702	2591833
2004	62257934	6644939	3383061	2326604	472920	3189014	823380	3047491	2139643	37125239	358682	2746960
2005	63164569	6154461	3224216	2459711	472922	3215819	906976	3447630	2005564	38053129	268553	2955589
2006	62192027	4984826	2808786	2463676	636788	3261345	656355	3552430	1903138	39118301	327827	2478554
2007	63210781	5141642	2718674	2466906	774984	3202847	669951	3634512	1923981	39801744	363145	2512394
2008	62058006	5568066	2850895	2593750	1066688	3744936	615525	3229625	1983422	37528464	270975	2605660
2009	54100092	4103881	2785246	2159428	760877	2660024	581386	2759140	1912984	34147806	243728	1985592
2010	56093645	3930517	2738304	2045164	951322	2928175	548144	2974641	2002834	35582625	243242	2148677
2011	57082558	3625747	2715335	2179953	1381127	2942436	506603	3121150	2133395	36160308	246243	2070260
2012	57020840	3473310	2557543	2325503	1710513	3031878	461694	3118150	1768324	36343072	142696	2088157
2013	58107155	3536111	2471897	2271056	1751162	3026611	465334	3369781	1675521	37330008	146356	2063319
2014	60827930	3802848	2543778	2417898	2105058	3209391	717043	3670338	1593398	38533391	220601	2014184
2015	60884204	3983556	2601317	2009585	1177711	3248791	565337	3629862	2417303	39082476	151828	2016436
2016	60763307	3221208	2416689	2018488	882682	3457677	469716	3482462	2245318	40245221	109733	2214114
2017	62346708	3254081	2428663	2043369	1348268	3435842	411317	3414257	2185638	41405407	176261	2243605

132 MJ per Gallon, gives

~~US data:~~ ~~12 Billions USD per year (2017 survey) for agricultural purpose, only. The cost of diesel at that time was close to an average of 2,45 USD/ga, that gives in litres: 0,65 $/L and in Joule, 33,000,000,000 J/m^3, gives finally, the magic number: 50 Millions Joule per dollars. For, 2017 agricultural use, 6 E17 Joule, out of a total US fuel usage of 1,78 E19 J, a percentage of 3,4%.~~

	Nombre	Coût
Ville		
Appartements	49,152	$154,828,800
Stade		$8,000,000
Theatre		$1,000,000
Zoo des chats		$2,000,000
Hôpital		$30,000,000
Antenne		$1,500,000
Port		$4,000,000
Transport		
Helicopchat	10,000	$15,000,000
EA super chat mobile	110,000	$4,125,000
EA autoroute chat (m)	150,000	$30,000,000
Industrie		
Solar panels	75,000	$22,500,000
Eoliennes	2,500	$500,000
Rockets	1	$5,000,000
Appliances kit	1	$20,000,000
Helicopchat de police kit	1	$5,000,000
Hydrogen kit	25	$12,500
Infrastructure		
deforestation	25,000,000	$1,000,000
douve	20,000	$20,000
electric network	25,000	$250,000
compostage crottes	5	$100,000
Airport		$500,000
Railroad(200 km)	200,000	$30,000,000

BIBLIOGRAPHY

- WIKIPEDIA
- BLENDER
- AUTOCAD
- OPEN OFFICE
- ET AUTRES SI LA QUESTION SE POSE :)

C'est ça qui arrive quand on ne sait pas prendre de photo : Lumière venant du coté droit :)
Peut-être une autre fois :)