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WAVE-POWER-MACHINERY
(Dansk Patent nr. DK 176417 B1)
info@wave-power-machinery.dk
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BRINGES

Kbh. 27.AUG.2009.

FOLKETINGETS PARTIER OG E P U,

Christiansborg,

DK 1240 Kbh. K.

VEDR.: REN CO2-FRI BØLGEKRAFT = ET LØSEN FOR ENERGI-KLIMA & MILJØ.

Idet jeg refererer til tidligere fremsendt materiale i 2007/2008, er det mig hermed en glæde at kunne oplyse/vedlægge de seneste opnåede dokumenterede resultater:

1: Kopi af web-siden www.wave-power-machinery.dk
2: International PCT-Patentability pr. 21.Oct.2008.
3: Kopi af Engelsk National Patent: GB 2455240 A, som er det første af ansøgte patenter for England, Tyskland og U S A.
4: Kopi af e-mail fra Captain Graham Pfister,Canada.

Som det fremgår af e-mail fra Canada, er en prøve-model/prototype af bølgekraft-flåden noget højst ønskeligt, og næsten et MUST. Følgelig støtter jeg helhjertet alle danske politiske planer om NYE PRØVE-UNDERSØGELSER AF BØLGEKRAFT-PROJEKTER.

Som det fremgår af energiudregningen for bølgekraft-projekt OCTOPUS, i.h.t. www.wave-power-machinery.dk , så kan 1/een bølgekraft-flåde, á 10 M., producere mere EL-energi end samtlige Horn Rev's 80 store havvindmøllers EL-produktion. Derfor er potentiellet for bølgekraft virkeligt stort. Så stort at man umiddelbart har svært ved at tro på det. Men venligst iagttag følgende forklaring:

Bølge-klimaet på Horns Rev er kendt. Måden for energi-udregningen er kendt, idet denne er baseret på grundlaget for al energi-udregning: KRAFT x VEJ/DISTANCE.
Energiudregningen for bølgekraft projekt OCTOPUS er baseret på 12 flåde/bølgesænkninger af 1 M. pr. minut, og med et for-højet 15 tons indsugnings-ladetryk pr. bølge i opadgående indsugningstakt, hvilket bevirker konstant havbunds kontakt, samt giver flåden en forhøjet beliggenheds-energi-position i.h.t. havbundens modpres.
I et lukket hydraulisk kredsløb kommer olietrykket tilbage til afsender/flåden, hvorfor udregningens kraftudtag på 15 tons er et MINIMUM.

Det som man evt. kan tvivle på, er rigtigheden af omtalte
15 tons forhøjede ladetryk/pres i opadgående bølge.I denne
forbindelse venligst se vedlagte www.wave-power-machinery.dk,
hvor især afsnit FLOAT-FUNCTIONS, DESCRIPTION og ADDITIONAL
ENERGY EXPLANATION er yderligere forklaring.

15 tons samlet hydraulisk-ladetryk opnåes let med 8 cylindre,
idet trykket pr. cylinder jo er mindre end 2 tons, for sammen-
lagt at kunne give flåden et 15 tons totaltryk. Havbundens
samme 15 tons modpres bliver i nedadgående kraft-udtags-takt
let overvundet af 80 tons flådevægt/tyngdekraften. 80 tons
bliver jo ikke bare hængende i luften. Som et minimum_ vil der
således komme mindst 15 tons trykkraft tilbage til flåden
pr. bølge, til brug for en energi-produktion.

Det fantastiske ved hydraulik og væsker er jo, at disse IKKE_
kan sammenpresses. Dette forhold udnyttes således:
I indsugningstakten opfylder lavtrykstanken (efter energi-
produktion) cylinderrummet over stemplet med olie, og høj-
trykstanken leverer et ønskeligt regulerbart tryk, med en
MINIMAL men TRYKGIVENDE olietilførsel,hvorved man i energi-
udtags-takten (nedadgående bølge) får en hel meters højtryks-
olie tilbage, til brug for EL-produktionen. I projektets
energiudregning er der således kun brugt 15 tons tryk som
udregnings-grundlag, hvilket af ovennævnte grunde må anses
for et MINIMUM.

Således er ANVENDT BØLGEKRAFT ET LØSEN FOR ENERGI,KLIMA & MILJØ.

Med venlig hilsen,

WAVE-POWER-MACHINERY
c/o Bjørn Rothausen,
Refshalevej 200 Z,
DK 1432 København K.
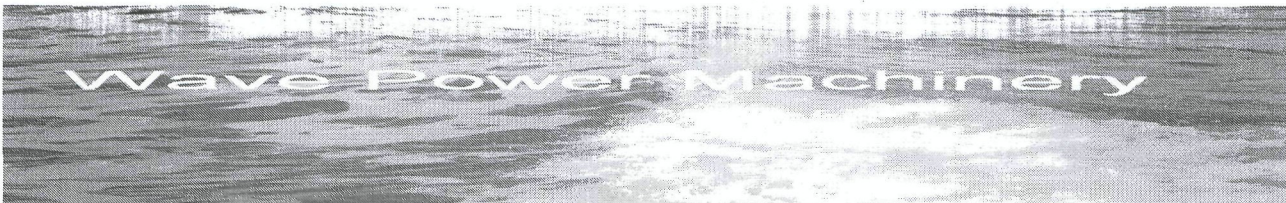------------------------

PS.: Planlagte havvindmølleparker
bør også have mulighed for EL-
modtagelse fra bølgekraft-værker.

(tlf.27195118. e-mailadr: info@wave-power-machinery.dk))

B.Rothausen

BILAG:
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www.wave-power-machinery.dk
PCT-PATENT ABILITY.
KOPI AF ENGELSK NATIONAL PATENT: GB 2455240 A.
KOPI AF E-MAIL FRA CAPTAIN GRAHAM PFISTER, CANADA.

| Preface | Drawing | Float Functions | Description | Technique | Additional Energy Explanation | Info |

WAVE POWER MACHINERY

CO2-FREE WAVE ENERGY – LOW COST OF PRODUCTION.
WAVE POWER FLOAT O C T O P U S. DIAMETER: 10 M.
WAVE-MOTOR 2400 HP. PER MINUTE, WITHOUT USING OIL,
BY 12 WAVE-LOWERINGS OF AVERAGE 1 M. WITH 15 TONS OF PRESSURE.
YEARLY PRODUCTION 603.000000 kWh. (603000 MW) (603 GW).

OCEANS of the WORLD are the greatest everlasting energy source. 70% of the surface of the earth is covered by sea.
The powers of the sea are enormous. As an example a ship of 10.000 tons will be lifted and lowered several times per minute, so easily done as if it was a tennis ball, often in a process of working of several meters.
By using those enormous powers we will never be in need of energy. But of cource, it must be done in cooperation with the powers of nature and on terms of the sea.

Wave-Power-Float OCTOPUS has increased loading pressure in stroke of suction in upward wave, helping float up to highest position.
Energy-take-out, via freely standing flexible counter-legs to sea bottom, in down going wave, why weight of float and gravitation are factors in energy calculation, POWER X DISTANCE.
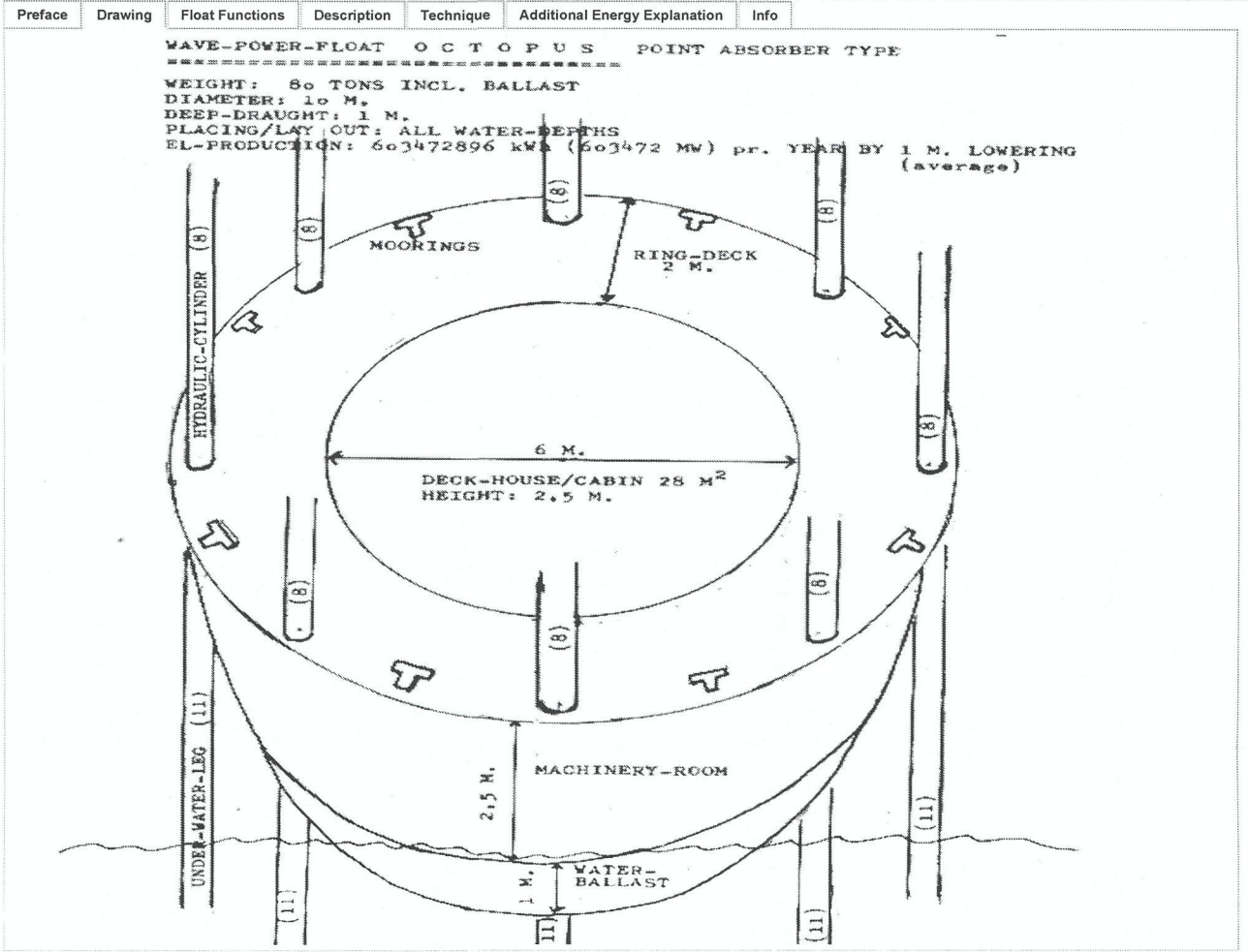Following pages will shortly show: DRAWING,DESCRIPTION and ENERGY CALCULATION of wave-power-float OCTOPUS. Danish PATENT: DK 176417 B1, which in above mentioned way is capable to produce large quantity of CO2-FREE ENERGY to LOW COST OF PRODUCTION.

Bjørn Rothausen

OBS !: SPONSOR/JOINT VENTURE COOPERATION IS WANTED.
PCT-INTERNATIONAL PATENTABILITY OBTAINED 21.10.2008
FINAL EXAMINATION WORDS: THE INVENTION IS INDUSTRIALLY APPLICABLE. SALE OF LICENCE/NATIONAL PATENT IS POSSIBLE.

Wave Power Machinery

Preface	Drawing	Float Functions	Description	Technique	Additional Energy Explanation	Info

WAVE-POWER-FLOAT   O C T O P U S   POINT ABSORBER TYPE

WEIGHT: 8o TONS INCL. BALLAST
DIAMETER: 1o M.
DEEP-DRAUGHT: 1 M.
PLACING/LAY OUT: ALL WATER-DEPTHS
EL-PRODUCTION: 6o3472896 kWh (6o3472 MW) pr. YEAR BY 1 M. LOWERING
                                                    (average)

MOORINGS

RING-DECK
2 M.

HYDRAULIC-CYLINDER (8)

6 M.

DECK-HOUSE/CABIN 28 M²
HEIGHT: 2,5 M.

MACHINERY-ROOM

2,5 M.

UNDER-WATER-LEG (11)

WATER-BALLAST

Preface | Drawing | Float Functions | Description | Technique | Additional Energy Explanation | Info

FLOAT FUNCTIONS

Wave Power Float OCTOPUS is built to cooperate with powers of nature in a harmonic way.
Consequently all installations and the process of working must be done logical and on terms
of nature-forces and local sea-conditions, and in following described way:

1: THE FLOAT WITH MOUNTED HYDRAULIC CYLINDER
is the moving part around the still-standing piston with contact to the bottom of the sea.

2: THE UNDERWATER LEG WITH TREADFOOT IS FREELY STANDING ON THE SEA-BOTTOM.
The leg is flexible and provided with an universal-joint to the treadfoot. Under installation the
leg is guided through the float in a greased guide-/gliding-tube, and afterwards it will be mounted
to the rod of the piston. By this the piston obtains contact to the bottom of the sea. In the local
sea-climate, lenght of the underwater-leg will be regulated according to waveheight and tide-water-
level, which is done by use of winch and wire to the tread-foot, which installation is located
in the machinery-room. Consequently cylinder-lenght must be made accordingly those local
sea-conditions.

**3: STROKE OF SUCTION IN UPWARD WAVE AND STROKE OF COMPRESSION WITH
POWER-TAKE OUT IN DOWNWARD WAVE.**
Those strokes happen automaticly, when change of space/volume in the hydraulic cylinder
above the stationary piston arise, and by this is making a new and different pressure, which
automaticly open/close one-way-valves in the hydraulic system.

4: INCREASED PRESS OF LOADING IN STROKE OF SUCTION IN UPWARD WAVE.
This function secures constant piston-contact to the sea-bottom, and is done by a larger lot
of oil from the low-pressure tank, and by a lesser lot of oil from the high-pressure tank, which
however makes the high pressure. The counter-pressure from the sea-bottom will help the float
up to highest position, because the cylinder is mounted to the float, and it will moreover give the
float an increased-energy-position according to the size of pressure.

5: THE GAS-COCK OF THE FLOAT.
This function is made by the regulationable increased press of loading in upward wave.
HIGH LOADING-PRESSURE = HIGH ENERGY-PRODUCTION.

Preface	Drawing	Float Functions	Description	Technique	Additional Energy Explanation	Info

WAVE POWER MACHINERY

WAVE-POWER-FLOAT O C T O P U S. POINT ABSORBER TYPE

FLOAT WEIGHT: 80 tons (incl. water ballast).

PLACING/LAYOUT: All water depths.

DIAMETER: 10M.

DEEP DRAUGHT: 1M

EL POWER: Generated by hydraulic pressure per lowering wave.
Increased loading pressure in stroke of suction in upward wave,
giving higher upper position/production.

HYDRAULIC SYSTEM:
1. 8 hydraulic legs, freely standing on sea bottom, and equiped
   with pressure strong cardan joints, which provides power
   transmission without friction.
2. High pressure tanks and low pressure tank(s), working as
   energy accumulators, caused of pressed airmass, and providing
   adjustable power transmission.
3. Hydraulic engine and generator.

HYDRAULIC EFFECT: 65%.

The float is planned placed on 10 M water depth by HORNS REV, where EL can be delivered via the Wind Mill Park. Waves are coming per
5 sec. Wave height 0,5 – 2,5 M. Waves per minute: 12.
It is expected to obtain MINIMUM 15 tons hydraulic pressure per 1M wave lowering, why below calculation is possible as per prescriptive
formula:
1 HP = 75 KG. M. Sec. = 736 Watt

Time for wave lowering: 2,5 sec. = T
Speed per m/sec. 1 sec/2,5 sec = 0,4 m/sec = V
Effect per sec. 15000 x 0,4/75 kg = 80 HP

Effect: per float lowering of 1 M by STEADY SPEED 15000 kg x 0,4 (V)x 2,5 (T)/75 kg = 200 HP
Per minut: 12 waves a 15 tons = 180000 kg x 0,4 x 2,5/75 kg = 2400 HP
2400 HP x 736 Watt = 1766400 Watt
Per Year: 928419840 kwh

HYDRAULIC EFFECT : 65% = 603.472896 kWh (603472 MW).

The calculation above is done by FORMAL FOR STEADY SPEED: The relation between distance covered and time is measured in m/sec or
Km /hour.
S = V x T where S is distance and V is speed and T is time.
Energy = Power x Distance = Power x V x T.

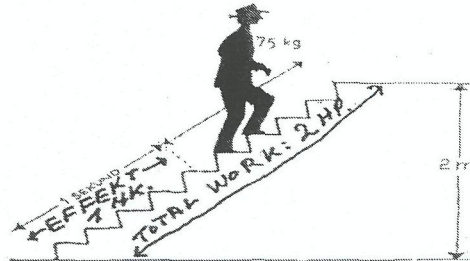| Preface | Drawing | Float Functions | Description | Technique | Additional Energy Explanation | Info |

TECHNIQUE

POWER, WORK AND EFFECT.

When a body is under influence of a power/force, and the body by this is moving in direction of the power, the power has produced a work. The size of the power is measured in kilogram, kg., and could for example be a nature force like the gravitation, or the force of pressure which is transferred to the piston in the cylinder of a motor.

The distance is measured in m. and the size of the work is determined to be <u>POWER X DISTANCE</u> and the unit of measurement will therfore be KGM. (kilogrammetre).

The illustration demonstrates the size of 1 HP. The person with a weight of 75kg climbs the steps of 2 m. in 2 seconds, and makes by this an effect of 1 HP. pr. sec. and a total work of 2 HP. in 2 sec.

Regarding power-machinery it is the work pr. unit of time which is of interest. This size of work is called the EFFECT, and is naturally stated in kgm pr. sec, but when this unit is of small size one will in practice state the effect in horsepower, HP. The relation between HP and Kgm. pr. sec. is determined to be:

$$1 \text{ HP.} = 75 \text{ Kgm. pr. sec.}$$

| Preface | Drawing | Float Functions | Description | Technique | Additional Energy Explanation | Info |

ADDITIONALLY ENERGY EXPLANATION

A float/ship will normaly in a climate of waves use the same time for its up and down
going movements, which is done by steady speed. Consequently energy calculation has
to be done by FORMAL BY STEADY SPEED, which formal is contrary/unlike formal by increasing speed, (the falling apple of Mr. Newton).
If you only want to know how much an energy system is able to produce, you simply multiply the force/weight in kg. by the meter distance and
divide the result by 75 kg.

By this you have a power take out in HP. 1 HP = 736 watt.

However if you want EFFECT CALCULATION in order to calculate the right size of the hydraulic system with hydraulic motor and
generator you will require ENERGY FORMAL by STEADY SPEED.
From dictionary:

$$\underset{1}{\text{ENERGY}} = \underset{}{\text{POWER}} \times \underset{2}{\text{DISTANCE}} = \underset{1}{\text{POWER}} \times \underset{3}{V} \times \underset{4}{T}$$

1 is weight/pressure.

2 is meter distance.

3 is a vector/size for speed pr. m.sec.

4 is total time of the power take out

In this way it is possible to describe the distance by means of speed pr. Sec. Multiplied by total
time. 3 V is important in order to calculate the size of hydraulic motor and generator.

Below is described 2 ways of Power Take Out:
1. POWER TAKE OUT IN UPWARD WAVE:
   Which is contrary to the direction of the gravitation, why float weight and the size of the power take out are factors, which will limit/reduce the
   distance in upward wave, and by this will reduce the energy production.
2. POWER TAKE OUT IN DOWN GOING WAVE:
   Where float weight and gravitation are factors in energy calculation: POWER x DISTANCE
   where energy take out has none or lesser influence because of powers from float weight and gravitation. It always pays to cooperate with
   powers of nature and especially gravitation.

If you think that energy calculation for wave Power Float OCTOPUS might be too high, compared to energy calculation from wind mills, then
remember what lecturer Mr. Peter Frigaard, University Of Aalborg Denmark has pronounced:
DENSITY OF ENERGY IN WATER IS 800 – 1000 TIMES HIGHER
THAN DENSITY OF ENERGY IN AIR.

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(54) Abstract Title: **Power machinery of waves**

(57) Method for getting of an optimum drift of a power machine of
waves, where the arrangement or the apparatus consist of one
or more upright standing legs (11 and 8) with an integrated
arrangement of piston (10) for transmitting of energy. The rod
of the piston (10 A) in the integrated arrangement of piston
(10) is loosed or free placed on the bottom of the sea (17). The
cylinder (8) for this is mounted on a float (14), where the
energy which has to be obtained from this, and has to be
produced in the legs (11 and 8), by and in the cycle of working.
Namely in the down going stroke of the power machinery of
waves. The cycle of working for getting of the most optimum
energy by the arrangement has to be established by a raising
of sucking in pressure, by help of a pressure, which has to be
accumulated in the belonging tanks (12) to the power
machinery of waves. The accumulated pressure has to be
made of the stroke of the energy producing cylinder (10 and
8).

GB 2 455 240 A
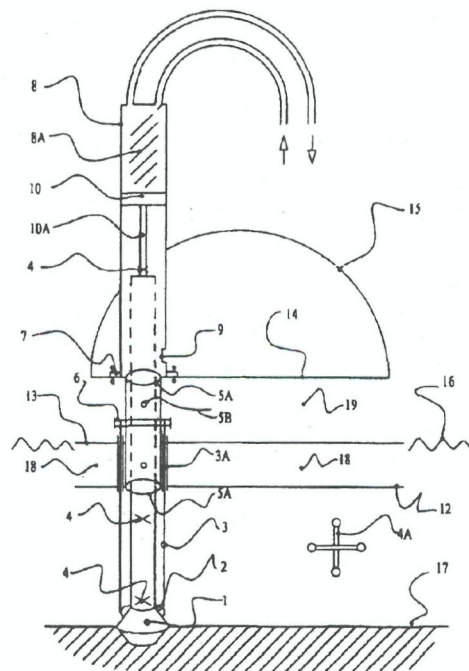
Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1 - 5	YES
	Claims		NO
Inventive step (IS)	Claims	1 - 5	YES
	Claims		NO
Industrial applicability (IA)	Claims	1 - 5	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The present invention relates to a method of operating a wave power station and it also relates to wave power machinery standing on one or more legs on the bottom of the sea.

The cited most relevant document was:
D1: US3126830 A

The method and machinery according to the amended claims filed 10-07-2008 is characterised by means to stand loosely and partly movable on the bottom.

D1 shows a method and a wave power machinery which stands on one or two legs with a foot on the bottom. The foot is moveably arranged versus the leg but sits firmly on a pivot or swivel arrangement in order to use upward forces.

The present invention is apt only to use downward forces.

Thus, the invention according to the amended claims is novel and not considered obvious to a person skilled in the art.
The invention is industrially applicable.

Til OPLYSNING:

D1 er et amerikansk projekt brugt til sammenligning.

Björn R.

Bjørn Rothausen

Fra: "Graham" <graham@trawlercatmarine.com>
Til: <info@wave-power-machinery.dk>
Cc: "'Graham Pfister'" <gpfister@manly.com>
Sendt: 18. maj 2009 00:39
Emne: Information

Hello Bjorn,

I discovered your wave power machinery information while I was online researching wave energy and I must say your information agrees with everything else I know about wave energy and I am very interested in knowing if you have progressed your invention by carrying out any prototype testing to prove its function ability and commercial ability to generate power.

I am pursuing renewable energy opportunities for a Group of Four manufacturing companies that I belong to, one of which I own and another I am the Operations Manager for. Two of the companies are marine industries and two of them are manufacturing companies while one is also a metal bending company with the ability to bend all metal shapes especially pipes up to 48" diameter which they do with an inductive bender for oil companies. Our lead company manufactures compressors to convert natural gas to CNG and this ability would allow them to develop the hydraulic compressors for your wave energy system.

We do have the ability to develop and manufacture your equipment and would be interested in finding out more about what stage you are up to with its development. We could be interested in building your product under license for sale in North, Central and South American areas. We are situated in Vancouver, Canada and also have manufacturing facilities in China and in Columbia, South America. We understand your need to protect your Intellectual Property rights and we would be happy to sign a non disclosure agreement before we ask more technical questions and do our due diligence on your systems operation.

Please let me hear from you and whether you have progressed your design further than what I see on your web site and what plans you might have that could include our Group operating in the Americas region for you.

Respectfully yours,

Captain Graham Pfister
President
TrawlerCat Marine Designs

No virus found in this incoming message.
Checked by AVG - www.avg.com
Version: 8.5.329 / Virus Database: 270.12.32/2117 - Release Date: 05/15/09 17:55:00