RENEWABLE ENERGY IN THE ERA OF DISRUPTIVE INNOVATIONS

SIGVALD HARRYSON, PROFESSOR OF DISRUPTIVE INNOVATION
HULT INTERNATIONAL SCHOOL OF BUSINESS, SAN FRANCISCO
SIGVALD.HARRYSON@FACULTY.HULT.EDU

IEECCE, JAKARTA, 18.09.18

EVERYTHING IS SINKING UNDER THE CO2 EMISSIONS

THE SOUTH PEAK OF KEBENEKAISE HAS BEEN THE HIGHEST POINT OF SWEDEN FOR THOUSANDS OF YEARS, ALTHOUGH IT LOST ONE METER PER YEAR OVER THE PAST 20 YEARS DUE TO GLOBAL WARMING

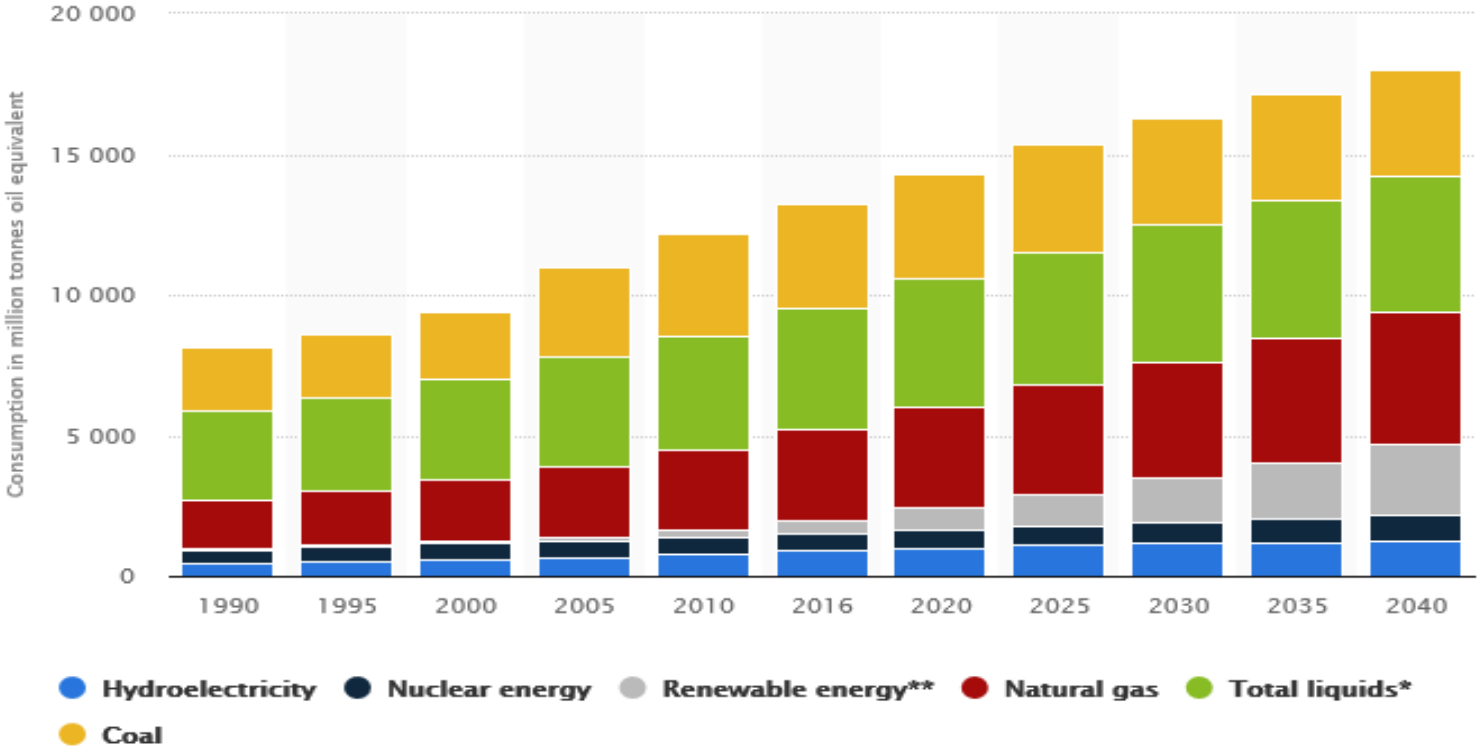
Source: Gunhild Ninis Rosqvist , Stockholm University

DURING 2018, THIS PEAK HAS ALREADY LOST MORE THAN 4 METERS AND IS NO LONGER HIGHEST IN SWEDEN

WE CONTINUE TO SET NEW RECORDS IN GLOBAL WARMING!

InnoVentum
power to the people

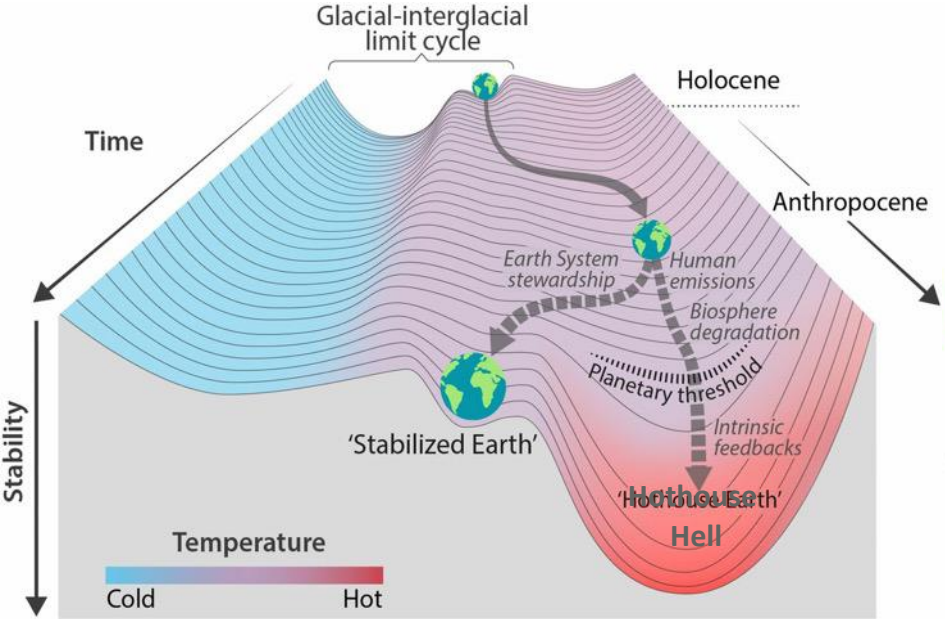
AND YET WE ARE PLANNING TO PRODUCE MORE CO2 EMISSIONS

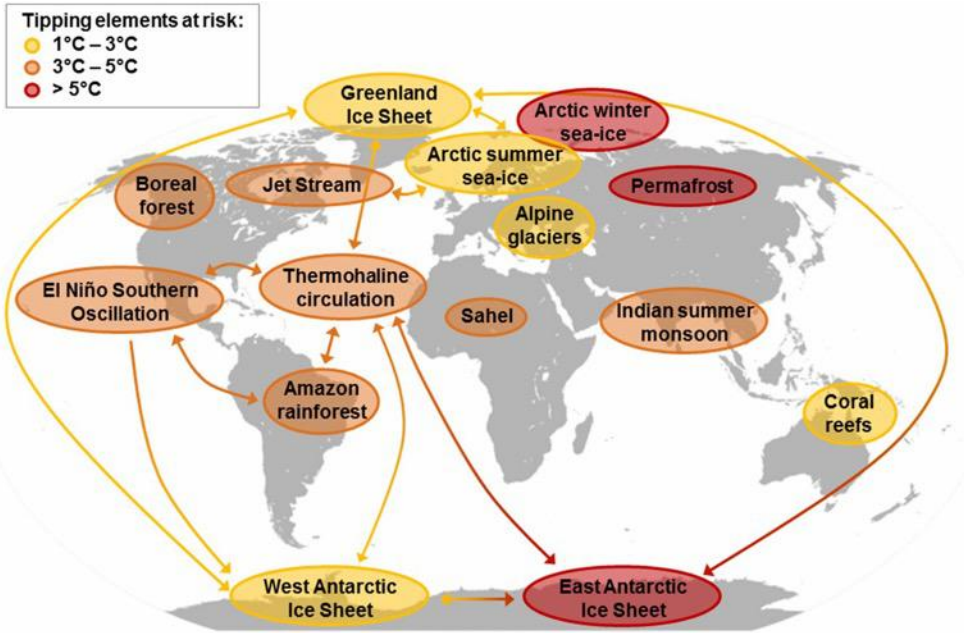


SOURCE: BLOOMBERG AND THE BOSTON CONSULTING GROUP

InnoVentum
power to the people

WE HAVE LESS THAN TWO YEARS TO CHOSE BETWEEN TWO PATHWAYS 1: STABILIZED EARTH OR 2: HOTHOUSE HELL

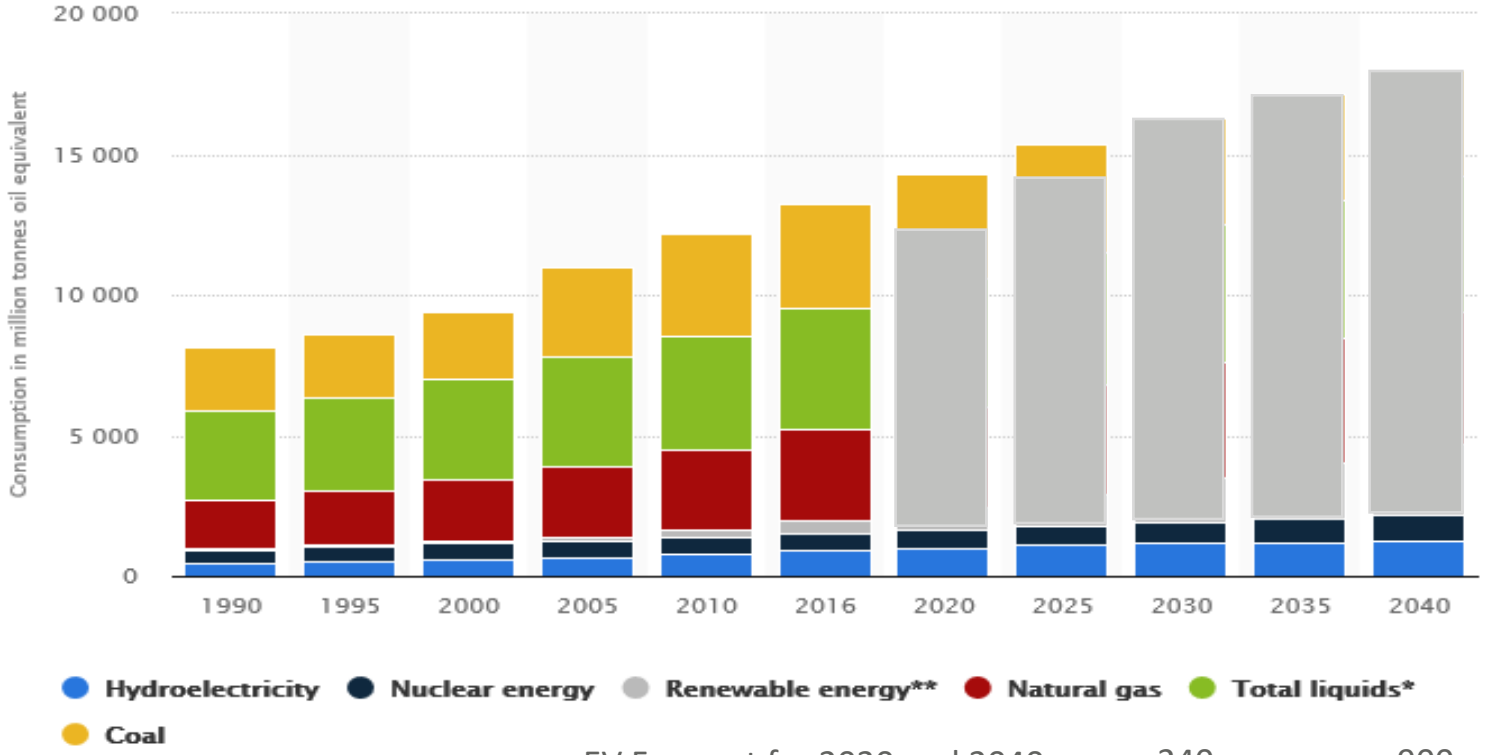




Years of research by Rockström, Ridchardson et al. (2018) now show that a global warming beyond 2°C will activate important tipping elements, raising the temperature further to activate other tipping elements TAKING US STRAIGHT TO HOTHOUSE HELL

InnoVentum
power to the people

WE MUST DISRUPT FOSSIL FUELS BY SCALING UP RENEWABLE ENERGY BY FACTOR 100 WITHIN 2 YEARS – MAKING IT EFFICIENT AND CLEAN



EV Forecast for 2030 and 2040
by Dave Turk, iea @IEECCE

240 mio EVs

900 mio EVs

InnoVentum
power to the people

COLLECTIVE HUMAN ACTION IS REQUIRED FOR DECARBONIZATION OF THE GLOBAL ECONOMY BY:

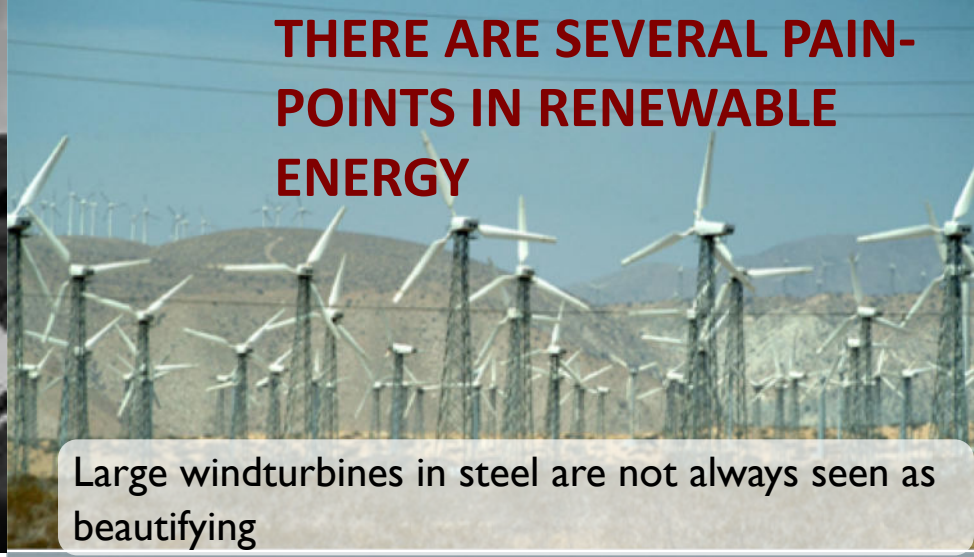
1. Enhancement of biosphere carbon sinks by **PLANTING MORE TREES AND USING WOOD IN CONSTRUCTION AND PRODUCTS** – AS OPPOSED TO USING CONCRETE AND STEEL
2. Behavioral changes to **MAKE PEOPLE EMBRACE RENEWABLE ENERGY IN THEIR DAILY LIVES – STARTING AT SCHOOLS**
3. **DISRUPTIVE INNOVATIONS ENHANCING ENERGY DENSITY AND RESOURCE EFFICIENCY** of all energy solutions due to scarcity of space and resources

WE BELIEVE THAT COMBINATIONS OF BEAUTY AND INTELLIGENCE ARE REQUIRED TO CATALYSE SIGNIFICANTLY MORE USE OF RENEWABLE ENERGY AND RENEWABLE MATERIALS ACROSS THE GLOBE

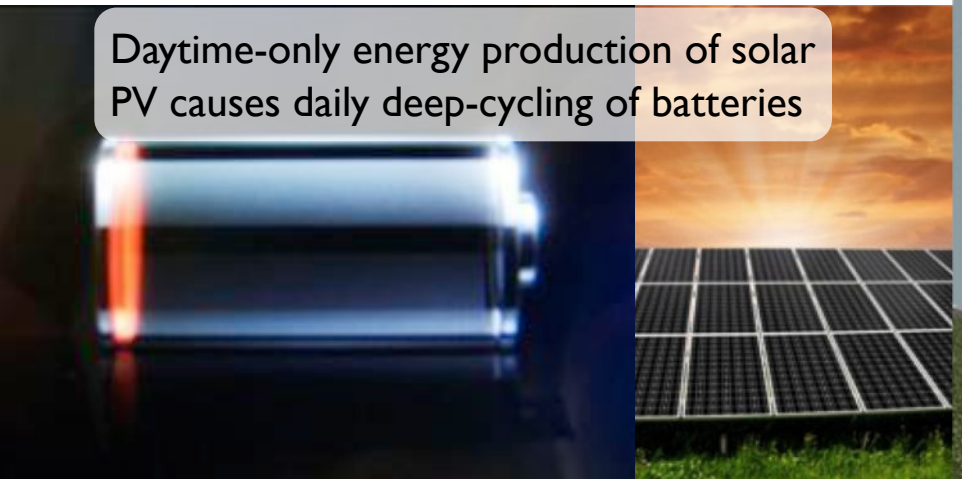
InnoVentum
power to the people

THERE ARE SEVERAL PAIN-POINTS IN RENEWABLE ENERGY

Noise from large windturbines



Large windturbines in steel are not always seen as beautifying

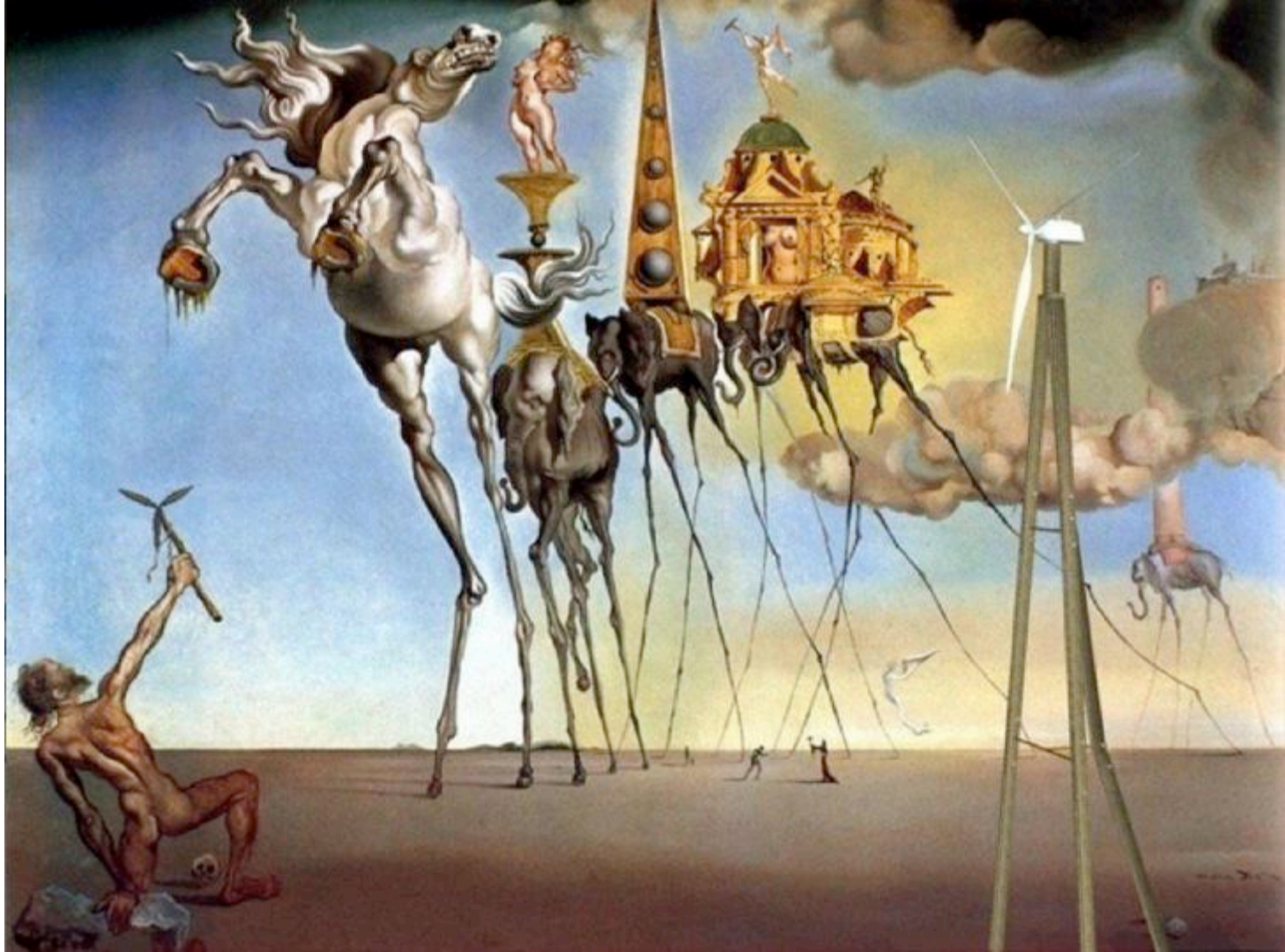


Daytime-only energy production of solar PV causes daily deep-cycling of batteries

Large windturbines in steel are not always able to handle extreme typhoons and hurricanes

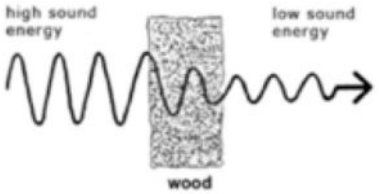
OUR USP:

SOLVING THE PAIN-POINTS BY BRINGING ART AND SMART BEUTIFUL DESIGN TO RENEWABE ENERGY

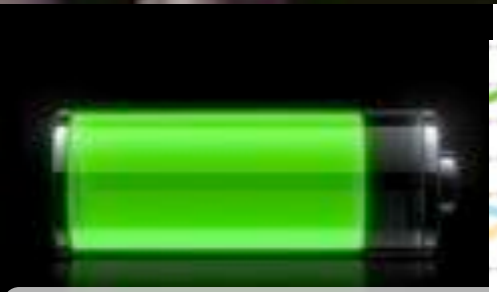


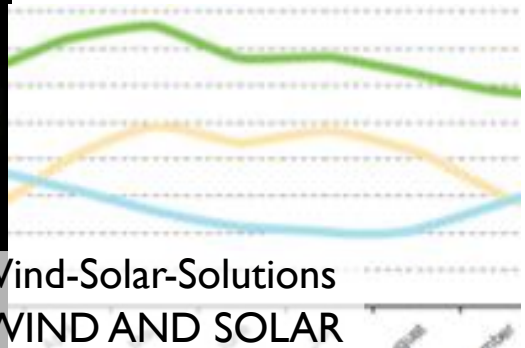
HOW WE SOLVE THE PAIN-POINTS

Wood reduces noise.
Steel magnifies noise

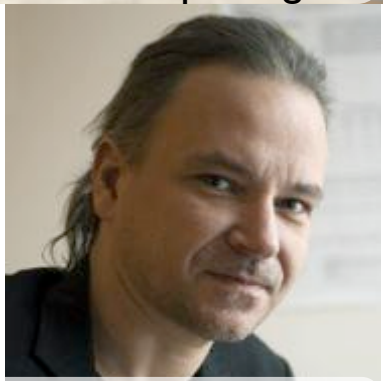


Our solutions have received design awards at HKBDW and "THE MOST BEAUTIFUL WINDTURBINE" award at CEM9 in Copenhagen





"Per weight unit, glue-laminated wood is 60% stronger than steel. In reality, wood is even more than 60% stronger, because of its flexibility. Steel is more brittle and less resistant against fatigue"
Professor Roberto Crocetti, LTH



Continuous energy from Wind-Solar-Solutions – ALWAYS COMBINING WIND AND SOLAR

Our solutions have been able to handle extreme typhoons and hurricanes while large windturbines in steel have collapsed

INNOVENTUM CO-CREATES THE WORLD'S MOST RENEWABLE ENERGY SOLUTIONS THAT ARE BEAUTIFUL AND SUSTAINABLE

Vision: By 2030 we are the globally leading brand for the world's most renewable energy solutions

Dual Value Proposition:
Beautiful and sustainable solutions with

- Exclusive Design for those who can afford
- Affordable Design for those who Need

FOUR CORE PRODUCTS ARE SOLVING THE PAINPOINTS

ENERGY ACCES/ MICROGRIDS

Dali PowerTower – 22.000 EUR

Small wind (5.5 kW) power station with tower-integrated solar installation (3,5 kWp, PowerTower) for off-grid and microgrid applications

Average annual production: 14.000 kWh

UTILITIES, EV-FLEET OPERATORS, HOTELS

Solar CarPort – 19.600 EUR

Solar PV CarPort (8.88 kWp) designed for urban smart grid applications

Average annual production: 10.000 kWh

SMARTGRIDS, EV CHARGING FOR ALL

Giraffe 2.0 – 55.000 EUR

Small hybrid wind (5.5 kW) and solar (8.88 kWp) power station and EV charger for smart-grid applications

Average annual production: 20.000 kWh

ECOFARMS, ECO-RESORTS

Dalifant – 88.000 EUR

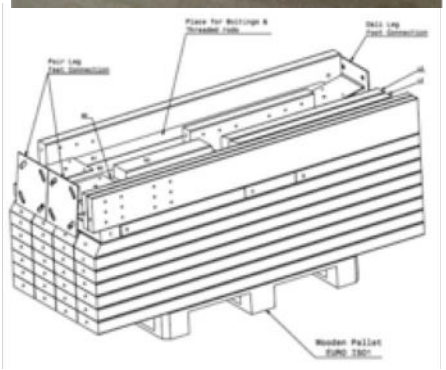
Small wind (11 kW) power station designed for Eco Farms with on-grid or smartgrid applications

Average annual production: 40.000 kWh

InnoVentum
power to the people

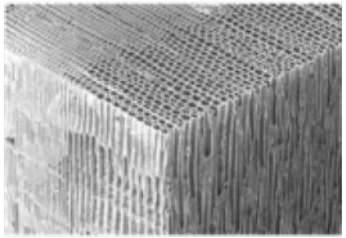
MODULAR DESIGN OF THE TOWER FOR EASE OF TRANSPORTATION AND STORAGE

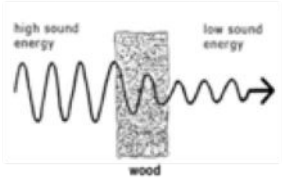
Packing volume of the 12 m tower – 2 m^3



QUIET OPERATION THANKS TO FIBRES IN WOOD AND MODULAR, MULTI-LEG DESIGN OF THE TOWER

Wood under the microscope:





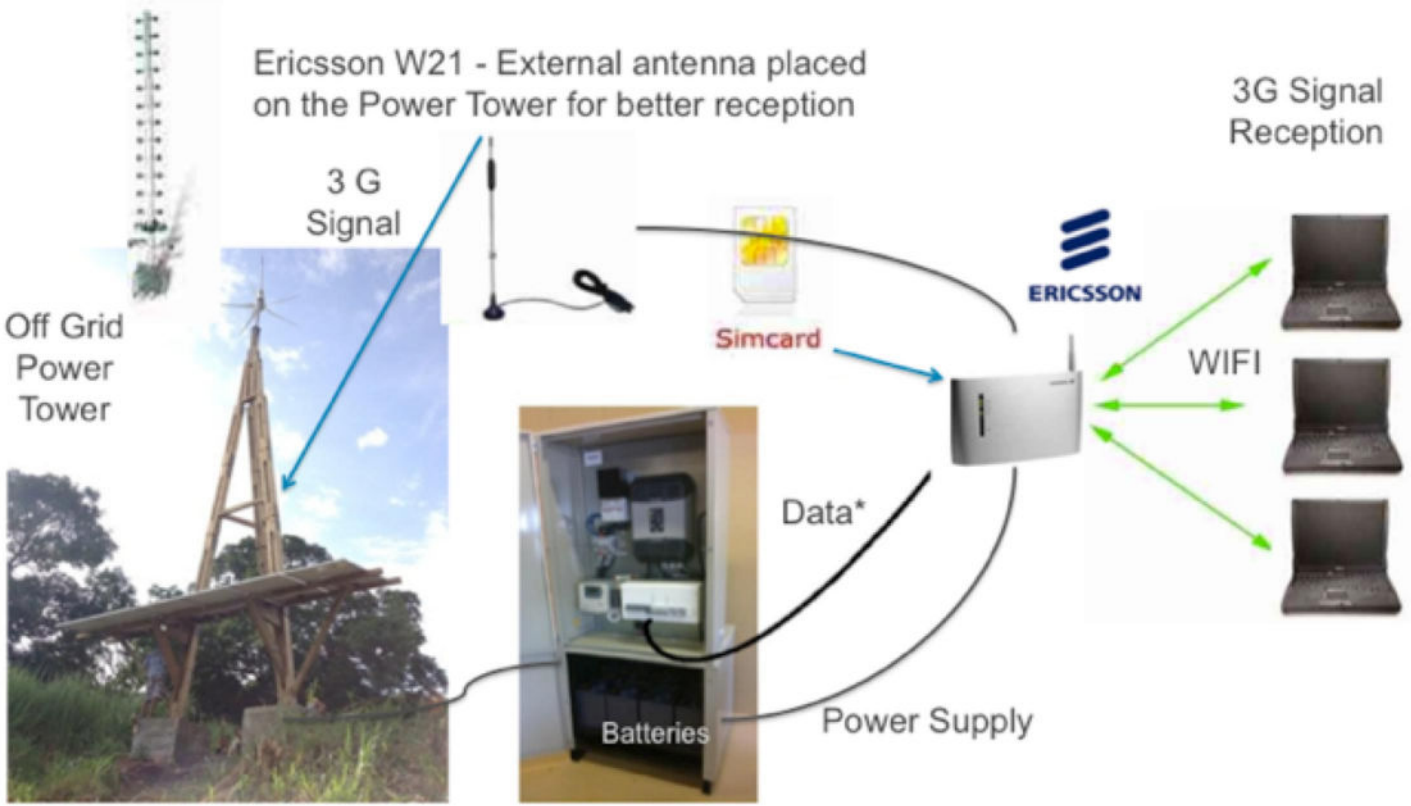
InnoVentum
power to the people

ERECTION WITHOUT A CRANE THANKS TO GLOBALLY PATENTED FUNCTION IN THE DESIGN OF THE DALI TOWER

EASY TO INSTALL AND MOVE THANKS TO SCREW FOUNDATIONS IN RECYCLED STEEL

InnoVentum
power to the people

THE DALI POWERTOWER WITH 3G CONFIGURATION TO GIVE CONNECTIVITY – IN ADDITION TO POWER



InnoVentum
power to the people

OUR SOLUTIONS HAVE BEEN ENDORSED BY A NUMBER OF ORGANIZATIONS AND OFFICIALS

Long-term agreement signed between InnoVentum and UNDP for the supply of the Dali solution

SIGNING OF MOU BETWEEN SWEDEN AND INDONESIA IN RENEWABLE ENERGY TRIPLE-HELIX COLLABORATION

EMBASSY OF SWEDEN

Swedish Ambassador to the Philippines Visiting Dali Installation with UN Officials

Barnmissionen

Children's Mission Philippines - Hills of Grace Foundation. shared InnoVentum's photo.
31 July 2014 ·

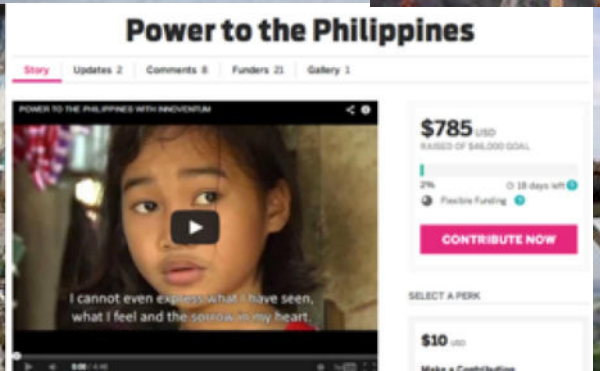
The first ever Dali Power Tower in the Philippines is now built on CMP Hills of Grace.
Thank you InnoVentum and Barnmissionen for this wonderful gesture.
The PowerTower is a solar and wind combined renewable energy source that will give electric power to some parts of the Children´s Village.

réseau des RES www.entrepreneurs-solidaires.ch

RES member Professor Deschamps provides funds for the installation of the Dali PowerTower solution in Madagascar

InnoVentum
power to the people

DALI TOWER INSTALLATIONS ALREADY GIVE ENERGY ACCESS TO REMOTE / HARD TO REACH LOCATIONS – ALL ISLANDS OF INDONESIA CAN BE REACHED WITH CLEAN ENERGY



Giraffe 2.0

Unique Design Co-Created with Dr Santiago Calatrava – the Great Mind behind Turning Torso

Giraffe 2.0
Installation Video
Click Here

THE WORLD'S MOST SUSTAINABLE ADVERTISING BOARD WITH A 3X5 METER LED DISPLAY POWERED BY RENEWABLE ENERGY

THE GIRAFFE ENJOYS EXTENSIVE DESIGN & TRADEMARK PROTECTION

InnoVentum
power to the people

THREE TIMES HIGHER ENERGY DENSITY THAN ANY COMPETING PRODUCT

- ✓ 655 W/SQM
- ✓ 1MWh/SQM/YEAR

- ✓ 40 SQM PV panels wrapped into 22 SQM Footprint
- ✓ Smart Angling Prolongs and Enhances Energy Delivery
- ✓ Wind-Turbine Adds Energy and Secures 24/7 Production DAY AND NIGHT

Annual energy output of the Giraffe 2.0 takes 3 EVs around the globe, while always staying online

InnoVentum
power to the people

GIRAFFE 2.0 AND SOLAR PV CARPORTS AT COP22 FOR UNIDO

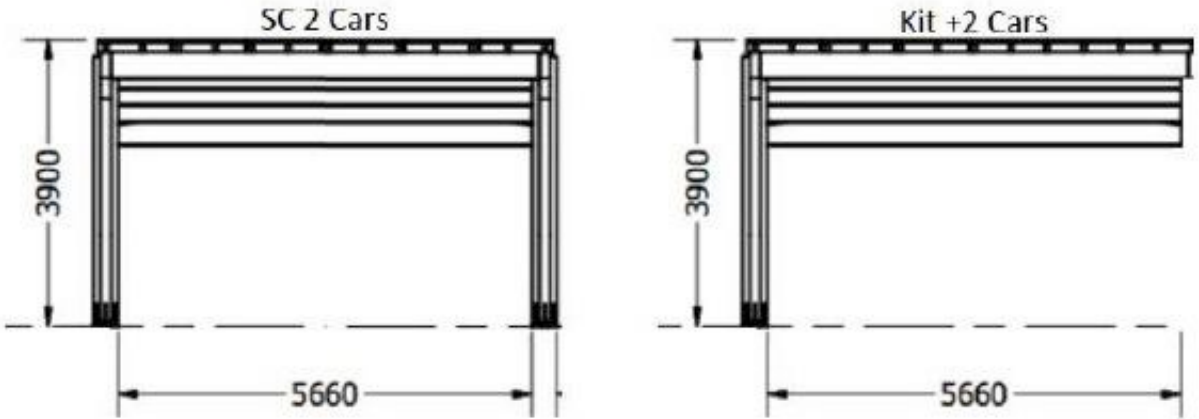
THE STAR OF COP 22

OUR SOLAR PV CARPORT CAN BE SCALED TO ANY SIZE

EXCLUSIVE DESIGN HIGH QUALITY SOLAR PV CARPORTS AT ATTRACTIVE PRICING WITH ENDLESS SCALABILITY

InnoVentum AB	
Price	19 600€
Dimensions (roof area)	43,54 m²
Power (kWp)	8,88 kWp
Cost efficiency (€/kWp)	**2 207€**

Scalability



InnoVentum
power to the people

Dalifant

Came as a result of scaling up of our initial small wind solutions

Dalifant 11kW small wind turbine installation video
Click Here

The Dalifant tower is design protected & trademark registered

EXTREME RESOURCE EFFICIENCY THANKS TO UNIQUE DESIGN

✓5 TIMES x ENERGY

- ✓ 5-fold improvement compared to Vestas and Enercon 3 MW in terms of kilowatt hours produced compared to the mass of materials used
- ✓ Exceptional sustainability thanks to the use of wood (offsets CO_2 emissions)
- ✓ Quiet operation thanks to the fibres in wood and multi-leg design

The Dalifant has received a grant for resource-efficient design from

VINNOVA

The Swedish Governmental Agency for Innovation Systems

InnoVentum
power to the people

NOMINATED AND AWARDED AS THE MOST BEAUTIFUL WINDTURBINE – AT THE CLEAN ENERGY MINISTERIAL CEM9 – HELD IN MALMÖ AND COPENHAGEN MAY 2018.

GROWING GLOBAL INSTALLED BASE ACROSS 10 COUNTRIES

InnoVentum
power to the people

SCALABILITY THROUGH COMPUTER NUMERIC CONTROL MANUFACTURING PARTNERS. OUR DESIGNS ARE ALWAYS MADE IN AUTODESK SW

AUTODESK
ENTREPRENEUR IMPACT PARTNER

TARGET SEGMENTS FOR INDONESIA

- ✓ Demonstrator Pilot with BPPT at Baron Technopark
- ✓ Eco Resorts and Eco Farms on Islands that are Not Grid Connected, such as
  - ➢ Raja Ampat in Papua
  - ➢ Sulawesi and West Nusatenggara
  - ➢ Rajanbat – Machatobi – Derawan
- ✓ RE100 Companies such as IKEA, H&M; Nike, Coca Cola and Adidas that can afford to be green and already care about our Planet
- ✓ Telecom Tower Operators using Diesel to Provide Connectivity

InnoVentum
power to the people

ABOUT THE FOUNDER (LEFT ON PICTURE) – CONNECT W SIGVALD

- ✓ Born on the Island of Senoren in 1966
- ✓ Worked in R&D at Tetra Pak in 5 Countries
- ✓ PhD on Japanese R&D Management in 1994 (Uni St. Gallen Magna Cum Laude) and on Knowledge & Innovation Management in 1999 (Göteborg)

- ✓ Manager at Boston Consulting Group, Principal at Booz Allen, Partner at ADL
- ✓ **Founded iKNOW-WHO.com in 1999**

- ✓ Founded InnoVentum in 2010
- ✓ Published 5 books and 10+ articles in leading journals, including *Harvard Business Review*
- ✓ Passion to make the impossible possible in areas that matter to the Planet

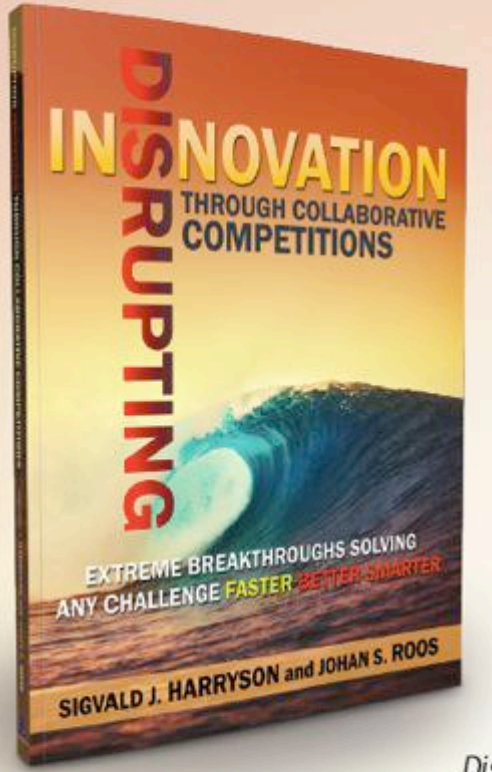
InnoVentum
power to the people

READ THE FULL STORY OF HOW THE INNOVENTUM DESIGNS WERE CO-CREATED BY ORGANIZING COLLABORATIVE UNIVERSITY COMPETITIONS TO DISRUPT THE WORLD OF RENEWABLE ENERGY

https://www.amazon.com/dp/0998485047/ref=sr_1_1?ie=UTF8&qid=1509086018&sr=8-1&keywords=sigvald+harryson

ORDER HERE

JUST PUBLISHED!



A disrupting approach to innnovation.

Until now, there have been four basic approaches to innovation: using your internal R&D experts; acquiring/buying the innovation; collaborating Keiretsu-style; and of recent note, crowdsourcing.

Now *Disrupting Innovation Through Collaborative Competitions* introduces you to an entirely new, proven methodology to innovate.

Collaborative competitions organize teams of academic or professional experts who both collaborate and compete to solve an innovation challenge within six months. The approach literally disrupts all the barriers to innovation that companies typically encounter: siloed researchers, ego-driven solutions that don't work, lack of ideation and cross-fertilization, unawareness of what you don't know, failure to harness the impact of external innovation partners, arrogance, and never-ending costs. In their place, collaborative competitions tap into the strong forces of co-creation, serious play, and rapidly bridge the exploration-exploitation gap.

Disrupting Innovation Through Collaborative Competitions explains in detail how to organize and conduct your own collaborative competitions. We walk you through the entire approach, step-by-step, from writing the brief, to finding the "best-suited" teams, to running the meetings, setting deadlines, using the appropriate venues, and rewarding two winners: the team that solved the challenge and the team that collaborated the most.


INNOVENTUM – COOL DESIGN
AGAINST GLOBAL WARMING