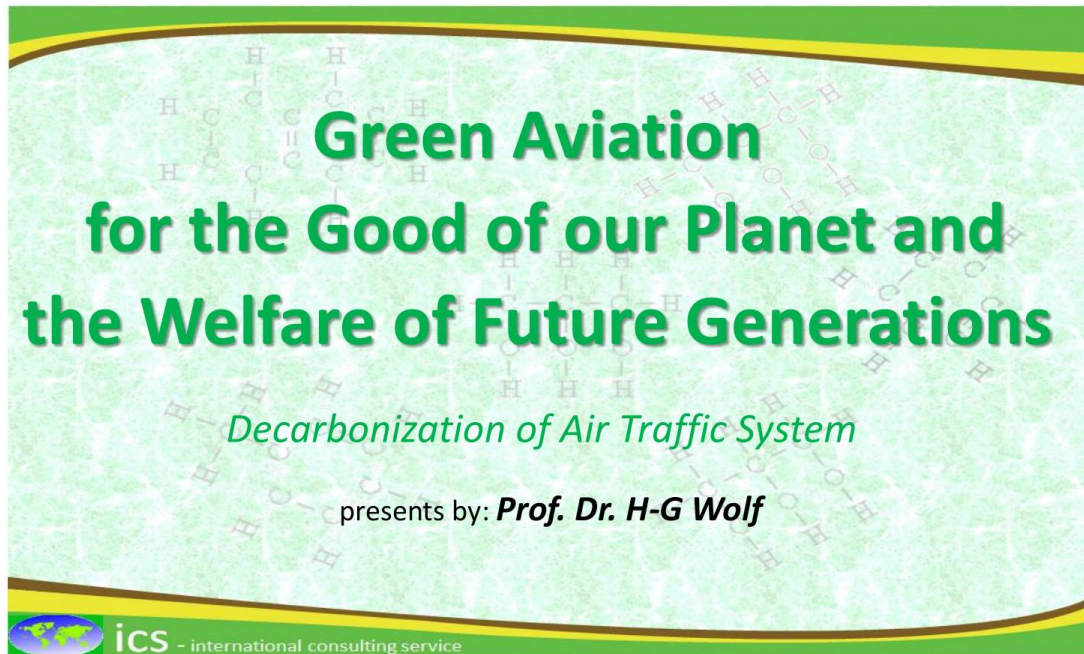


Deutsche Welle, Grosser Gremiensaal

Kurt Schumacher Str 3, 53113 Bonn

26.10.2017 9.00 Uhr

SL 1



Dear Mr. President Rudolf Doerpinghaus

Dear Ladies and Gentlemen

I am very pleased with your invitation and I am delighted to share your thoughts on a segment of global climate change.

I support your proposal on COP23

~~(Message to the Participating Parties of COP23, Bonn 2017,)~~

“About the Reduction of GHG Emissions in Aviation through Innovation and Technology”

SL 2



Agenda

1. Current situation and thoughts about the future air transportation system
2. Renewable energy fuel
3. Aerodynamic design
4. Speed limits for air traffic
5. Co-financing of implementation of new energy fuel

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Today we are talking about the influence of air transport and the need of its decarbonisation.

1. Current Situation and Thoughts on the Future of the Air Transport System

SL 3

We know that the reduction of greenhouse gases has long been on the urgent agenda of world governments and publicity.

The topic of climate warming is discussed on annual climate conferences and its target such as the 2-degree limit are set.

The aviation sector and its political supporters are also intensively discussing the debate on the sustainability of renewable energies, and in particular bio-kerosene, which has been going on for years.

The introduction of sustainable, climate-friendly kerosene based on biomass and renewable energies or renewable electric energy for the aviation industry is accompanied by a higher production cost than fossil kerosene and is not a self-sufficient phenomenon.

In addition to the change of fuel, as an aspect of the new orientation, it will be necessary to address further topics.

Please allow me share with you a few thoughts on this subject.

It is clear to me that there is a need for long discussion by the relevant political and economic bodies.

However, further activities are necessary for a serious realization.

During my several research visits to the islands in the Pacific, I saw with great clarity the impending negative effects of the advancing climate change.

By the end of this century, an average sea level rise of 0.45 to 0.82 meters is predicted. In some locations, the increase will be higher due to regional deviations and local factors.

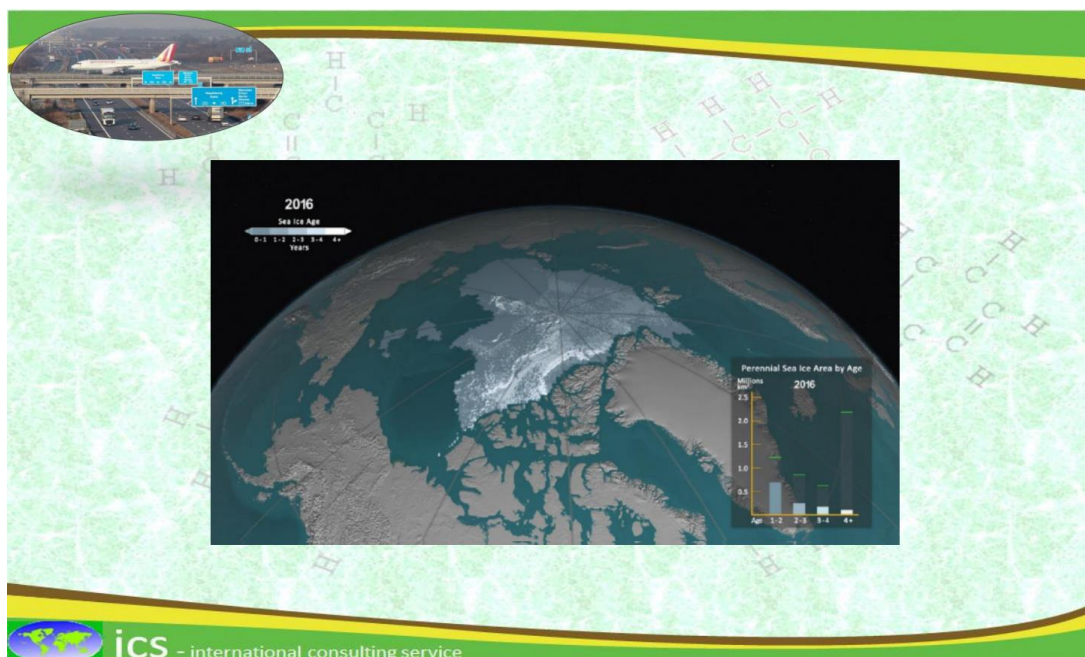
The development has serious consequences for coastal cities, river deltas, low-lying states and the charming island worlds.

500 million inhabitants are directly threatened.

What is the cause? Simply said, the water mass in the oceans is increasing steadily.

Table of ice-melting

LS 4



Ice melting - mass loss - area depression

2002 - 2011 Worldwide glaciers 275 billion tons/year

2002 – 2011	Greenland ice cover	215 billion tons/year
2002 – 2011	Arctic ice	147 billion tons/year
1979 – 2012	Antarctic sea ice	130,000 – 200,000 km ² / decade
1979 – 2012	Arctic sea ice	730,000 – 1,070,000 km ² / decade

(It corresponds to a decline of 9,4to 13,6 % pro decade)

Please take note, compared to the German area of 357,385 km²

This development accelerates the sea level rise!

The warming of the several water layers and the deep water layers leads to the expansion of the water.

Furthermore, the influence of warming on the flow patterns in the oceans is to be expected.

The water flow processes have an influence on the weather and on the frequency of weather phenomena. SL 5



The Pacific Ocean Islands are only very small GHG emitters, but it will be the first area to bring great sacrifices.

However, the world's first climate change refugees are from the Yupik village of Newtok in Western Alaska. SL 6

The world's first climate refugees live in a very small village in West-Alaska, in the Yupik-village Newtok!

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Rising temperatures transform the permanent frost ground in mud, the Ninglik swells up, winds the shore and destroys the riverbanks and shore.

In result, 180 villages are threaten with destruction.

The icepack, which protected the coast in case of a storm from erosion, has only a duration of few winter weeks before Newtok.

These people, they lose their house and property, they lose their island, and they lose their ground thanks to our hesitant action in the field of fight against the climate change. SL 7

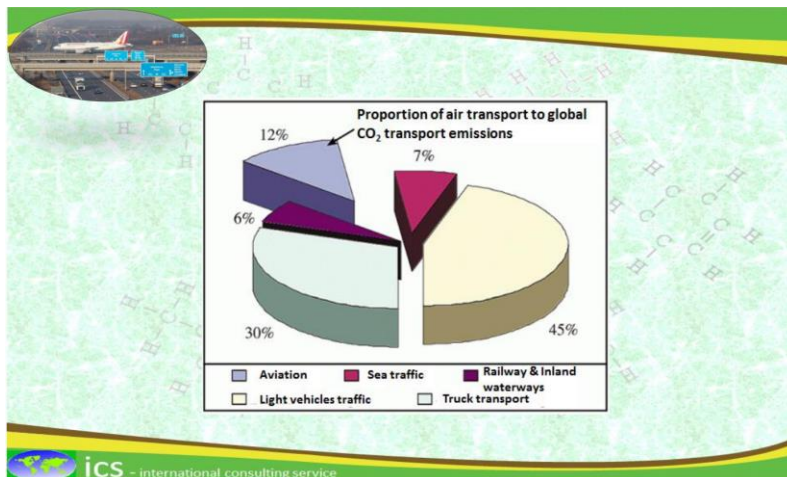
Climate protection requires reduction in the emission of greenhouse gases!

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We, the industrialized countries are the largest emitters to GHG.

The share of global air traffic is 12% of global CO2 emissions.

SL 8



The citizens from the industrialized countries and the rich developing countries have a very large share of the air traffic and not the islanders or the people from Alaska, the Amazon Delta or from the lowland of Bangladesh.

SL 9

Paradigm change

It is about the implementation of the climate paradigm for society and the economy with all the consequences from a political, economic and social point of view.

The goal of the paradigm change is to reduce the growing emissions of greenhouse gas.

The schedule is very demanding – second half of the 21st century.

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We, the human, must understand that a paradigm shift is required.

It is about the implementation of climate paradigm for society and the economy, with all the consequences from a political, economic and social perspective.

It is about the reduction of GHG emissions.

The findings of Paris and the latest IPCC report 2016 develop a distinctive picture.

On December 12, 2015, a climate agreement (Paris Agreement) was adopted in Paris to limit global warming to well below 2o Celsius, as much as 1.5o Celsius, compared to pre-industrial levels.

To achieve this, GHGs must reduce to zero between 2045 and 2060 worldwide.

Subsequently, part of the previously emitted carbon dioxide (CO2) must remove from the atmosphere again.

Questions: After the ratification, which supportive laws are made?

What kind of dynamic can we observe?

~~Die gesamte Finanzierung für Klimaschutz und Anpassung wurden auf 343 bis 385 Milliarden USD (2010/11/12 USD) geschätzt~~

~~All financing for climate protection and adaptation has been estimated at USD 343 to 385 billion (2010/11/12 USD)~~ **LS 10**

Global air traffic accounts for appr. 13% of all fuel consumption.

The German air traffic claims about 8,5 million tons of fuel.

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Financing for the developing countries is estimated between USD 39 and 120 billion (2009-12 USD).

However, let me turn back to air traffic.
 In Germany, around 8.5 million tonnes of aircraft fuel were consumed in 2016.

LS 11

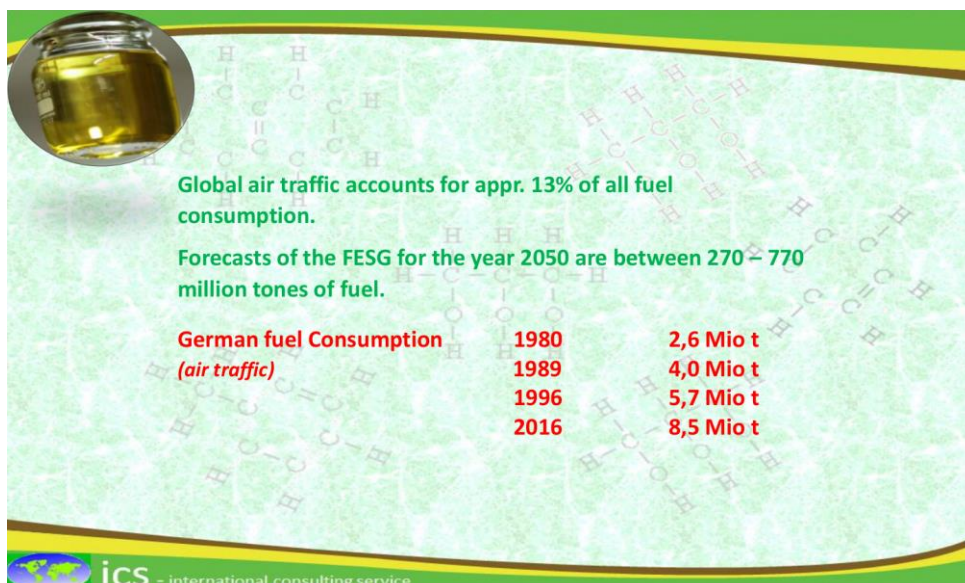


2. Fuel from renewable energies

LS 12

The global air traffic used approx. 13% of the total fuel requirement.

LS 13



2016 in Germany, around 8.5 million tons of fuel were delivered to aircrafts.

These aircraft fuels are based on carbon (in form of crude oil or gas) extracted from the earth.

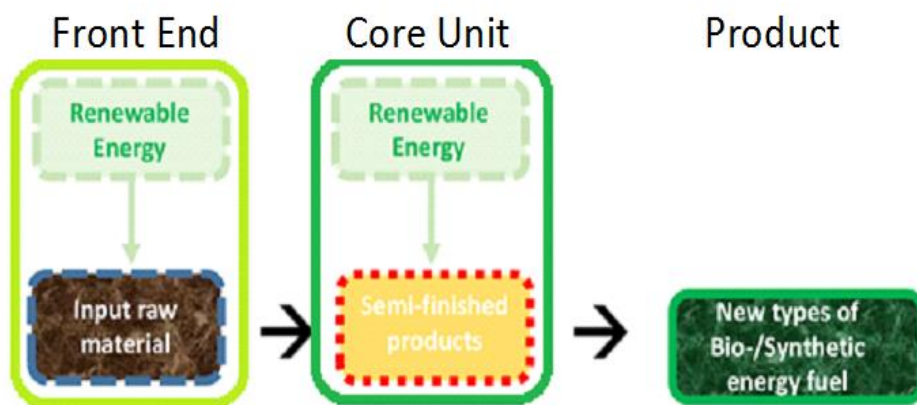
In addition, these fuels made by using traditionally produced electro energy.

On the other hand, green fuels are based on carbon/organic substances from natural or industrial wastes and are produced with green energy.

PtX Power to Green Energy

LS 14

CLPD/CTC (Catalytic Tribochemical Conversion)



Reactant and its main sources

1. CO₂ - Sources

Biogas plants- produce a mixture of 55-60% methane and 40-45% carbon dioxide (CO₂).

This CO₂ is currently released into the atmosphere as a waste product.

Using this CO₂ as starting material for the production of methane improves the climate by reducing of the carbon footprint.

Ambient air - CO₂ is used as a reactant, which is already present in the air. CO₂ emissions are filtered out of the air.

This method is currently irrelevant due to the increased costs and necessary unpractical technical steps and efforts.

Exhaust gas streams from industrial plants - The CO₂ can also be taken as a source directly from a combustion process.

- To operate the power plant already with EE gas and thus to introduce a CO₂ cycle.
- Power plant operation with conventional fuels is a potential source of CO₂ from a technical point of view.
- The possible applications for downstream CO₂ production are conceivable throughout the industrial sector.

2. Organic Waste - Sources

As long as we live, in our daily live we produce organic waste of different forms and properties.

The annual global organic waste would cover 12 to 15 meters of the Berlin area, every year!

This is not only a municipal problem!

It is a world problem!

From this amount of organic waste, it could be produced between 1.1 and 1.5 billion tons of green fuels every year.

To your mind, the FESG (aviation) forecast for the year 2050 explained that the yearly global aviation fuel consumption will runs between 270 up to 770 million tons.

SL 15

CLPD/CTC Fuel

Substitute of Energy Fuel made by Crude Oil!

4. Generation

CLPD/CTC Energy Fuel is made by organic waste.
1 Liter costs between 11 - 54 Euro-Cent.

Germany

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It means, the current aviation fuels up to 2050 can be substitute by CLPD/CTC green fuel of more than 2 times.

Already the 4. Generation of CLPD/CTC technology is build.

15 units are implemented World-wide.

One litre CLPD/CTC green fuel costs between 0.21 – 0.54-euro cent!

The plant capacities runs between 500 – 1,000 litres per hour.

It can be increased up to 100,000 litres per hour.

It is 100 % CO₂-neutral and 0 % of sulphur!(free of sulphur content)

Other green energy applications of aircraft movement

Ethanol – Brazil

LS 16

Ethanol

Substitute of Energy Fuel made by Crude Oil!.

Brazil's ethanol is mainly made from sugar cane.
It is the cheapest ethanol in the world.
1 liter costs 20 Euro-Cents.

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Brazil's ethanol is mainly made from sugar cane.
It is the cheapest ethanol in the world.
Onelitre costs 20-euro cents.

The disadvantage: Agricultural areas are deprived of the production of foodstuffs

Solar

SL 17

26. Juli 2016 - Abu Dhabi succesful world round trip

PAYERNE-BRUSSELS FLIGHT REPORT

Pilot	Andre Borschberg
Take-off time	13 May 2011 08:40
Time of landing	13 May 2011 21:39
Flight duration	12h 59 min
Average speed	27 kt
Average altitude	6.000 ft
Distance	630 km

It is a great satisfaction to fly without fuel, noise or pollution making practically no negative impact

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Solar Impuls - Bertram Piccard und Andre Boschberg

Round the world trip

from Abu Dhabi to Abu Dhabi (Al Bateen Airport - Royal Airport) 2013

Still it takes time to be ready for daily flights.

Hydrogen Hybrid Electric Systems

Good results, needs a new approach of marketing segments, size of aircrafts and so on.

3. Aerodynamic Design

SL 18

Development and certification of new aircraft takes 10 years at least.

The live time of aircraft runs to 35 years at minimum.

SL 19



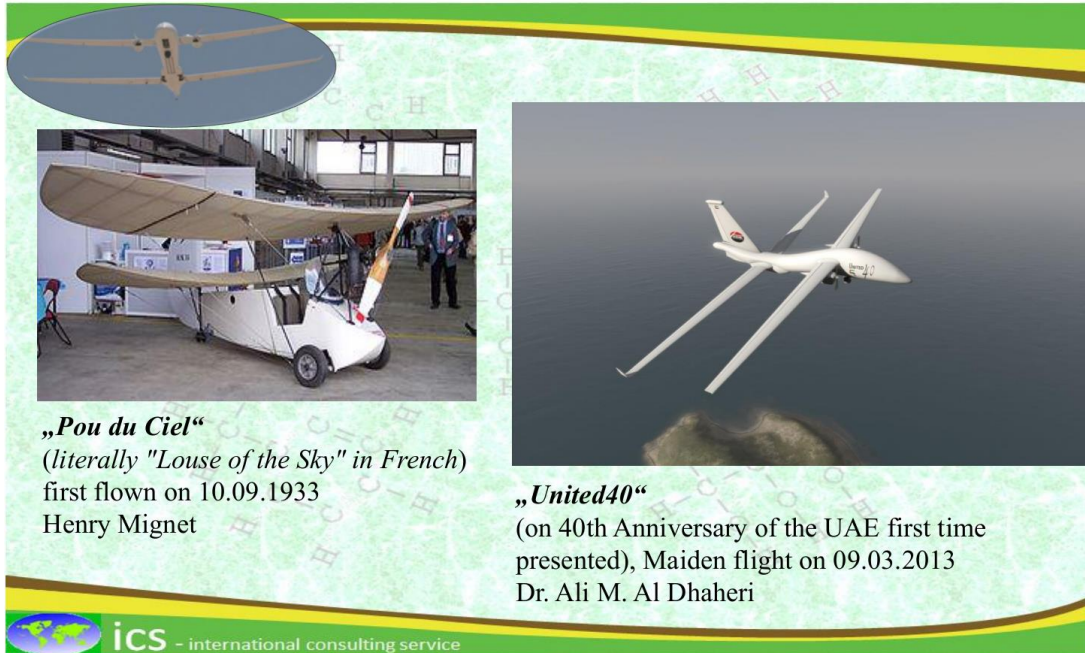
Ineffective flying aircrafts are still in use.

The main fuel consumption part of any flight is the take-off phase!

After a period of 50 years, the aerodynamic design has not changed significantly.

However, there was a milestone in September 1933.

SL 20 a



„Pou du Ciel“
 (literally "Louse of the Sky" in French)
 first flown on 10.09.1933
 Henry Mignet

„United40“
 (on 40th Anniversary of the UAE first time presented), Maiden flight on 09.03.2013
 Dr. Ali M. Al Dhaheri

Henry Minet performed his maiden flight with the first double-wing solution where the two wing pairs are horizontally displaced. (Front wings fixed on shoulder and rear wings down)

The large aircraft builders, such as Junkers, Heinkel, Dornier, Airbus, Boeing and others as well as various scientific institutions have not investigated and researched in this design.

Only a Bedouin from the tribe of Yabhani, Dr. Ali Al Dhaheri explored and find out the possibilities of this interesting design. **SL 20 b**

80 years after the maiden flight of Henry Minet started on 09.03.2013 Dr. Al Dhaheri his "United 40" for her maiden flight. **SL 21 a**



Oh, two years later there was an Airbus study available. [SL 21 b/ Video](#)

Advantages compared to one-wing-design

- Impact of the Centre of Gravity
- Improving load balance per kg/sqm of the wing area
- As longer the wingspan, than slower the stall-speed
- Reducing hp / kg
- Increasing flight endurance
- Shorten of Take-off and landing distance
- Better and stable flight performance – easy to handle

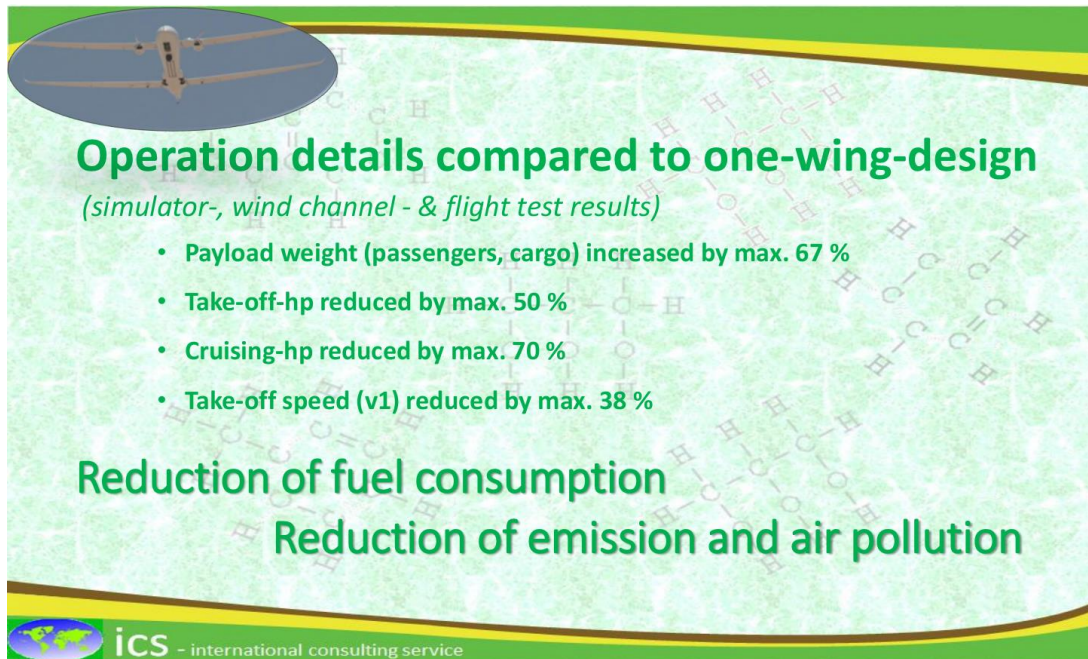
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Advantages compared to standard wing designs

SL 22

- Positive influence on the centre of gravity of the aircraft
- Improvement of load distribution per kg / m² (wing area)
- Reduction of the critical stall speed
- Reduction of the horse power / kg
- Increased flight time (endurance)

- Use of shorter runways
- Improved and stable flight characteristics - easy to fly



Operation details compared to one-wing-design
(simulator-, wind channel - & flight test results)

- Payload weight (passengers, cargo) increased by max. 67 %
- Take-off-hp reduced by max. 50 %
- Cruising-hp reduced by max. 70 %
- Take-off speed (v1) reduced by max. 38 %

Reduction of fuel consumption
Reduction of emission and air pollution

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Flight Operation details compared to standard wing-designs SL 23

(Results collected during wind channel- and simulator tests and successfully numbers of test flights)

- Load weight increase by max. 67%
- $HP_{\text{Take-off}}$ - reduction by max. 50%
- HP_{Cruising} - reduction of max. 70%
- Start speed reduction (v1) by max. 38%

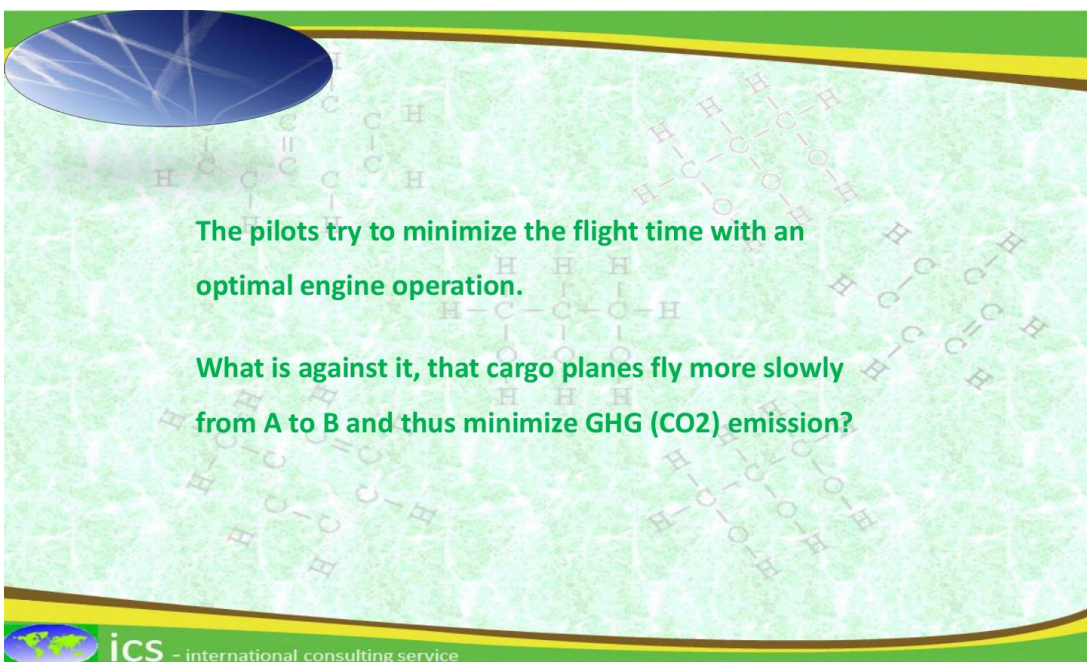
These results shows us, it is a very interesting design.

Really it is a new design, which reduced the fuel consumption.

By doing so, it is a solution to reduce GHG and of course air pollution.

4. Speed limitation in air traffic SL 24

Each pilot tried to minimize the flight time, with an optimum engine utilization. SL 25 / SL 26



However, what does it mean that cargo planes are moving more slowly from A to B and thus emit less GHG (CO₂ etc.)? **SL 27**

Cargo planes are based on passenger aircrafts (old /new ones) and can rarely use an optimal flight regime to fly slower and thus fuel-efficient.

Airplanes rarely fly the shortest distance between A and B

- defined air corridors and their traffic density
- international not maximally efficient control authorities prevent it.

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Cargo Aircrafts are based on passenger aircraft (old or new aircrafts) and can seldom use an optimal flight regime to fly slower and thus more fuel-efficient.

Aircraft rarely fly the shortest route between A and B.

Reason why:

- Air traffic corridors are not updated according the demand of intercontinental air traffic.
- The traffic density and number of slots are too high
- The international air traffic control authorities are not well organized between each other and hinder to organize an optimum air traffic.

SL 28

5. Co-financing for the introduction of new fuels

Financial needs to reach the fuel conversion is very high.

SL 29

Financial requirements for the change towards new green fuel

The total investment costs for the transfer to PtX in the transport sector lie in the range of 650 – 1500 billion Euros. In comparison, the GDP Germany 2016 amounts to 3100 billion Euros.

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The total investment costs for the transfer to PtX in the transport sector lie in the range of 650 to 1500 billion euros.

For comparison, Germany's GDP in 2016 amounted to 3100 billion euros.

Let us say we start with these investments in 2018.

SL 30

Start of investment - 2018

Total costs_{max} 1500 billion Euros
Investment/year runs to 46,875 billion Euro or 1,5 % of the current German GDP.

Total costs_{min} 650 billion Euros
Investment/year runs to 20,312 billion Euro or 0,65 % of the current German GDP.

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Inv. Costs_{max} = 1500 billion Euro

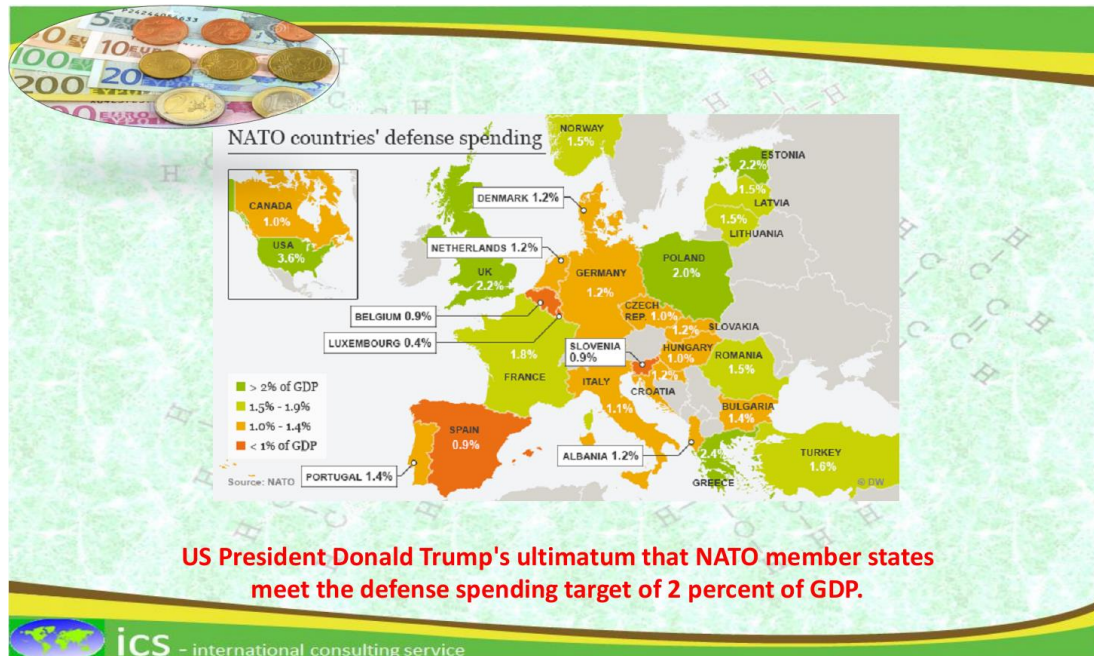
Yearly investment of 46.875 billion Euro 1.5 % GDP Germany

Inv. Costs_{min} = 650 billion Euro

Yearly investment of 20.312 billion Euro 0.65 % GDP Germany

Ladies and Gentlemen!

SL 31



Ultimatum of the US President Donald Trump that the NATO member states should invest 2% of the GDP for the defence!

From this is derived my demand to the governments for an extra financial contribution to the environmental protection!

SL 32



Demand for an extra financial contribution from the Government

0.1 % of Europe military investment (NATO) should diverted for R&D of new energy fuel, engines and implementation of renewable energy fuel refineries !

Reason why:

- If the climate change is not stopped the world does not need new weapon systems anymore.
- Military movements and operation needs energy fuel and is a big emitter of GHG

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At least yearly 0.1% of military investment in Europe should be invested annually for R & D of new fuels, engines and the installation of refineries for renewable energies!

Reason:

- If climate change not stopped, then we do not need any new weapon systems. Because the amount of CO₂ in the atmosphere will kills all lunge breathers.
- Military training, exercises and operations require fuel, and therefore are a large emitter of GHG too.

Conclusions:

SL 33

Conclusion

- Paradigm change towards a new Climate protection politic,
- Integration of all society class and institutions in the fight against the climate change
- Redirection of the financial means
- Defense policy is fight against the climate change also

→ We are only guest on our world ! ←

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- Paradigm shift towards a new climate protection policy
- Integration and containment of all social levels and institutions in the fight against climate change
- Provision of additional financial resources
- Defence policy is also fighting against climate change

SL 34

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One of **your country's strategic thesis** is:
Millions of tons of country wide waste => 0 ton of waste + MG Watt of Energy
 and could become reality for a better environmental future!

Let us work together!
 For the **ecological future** of your country and for the future of **our planet** Mother Earth!

Wir sind nur zu Gast auf dieser Welt

We are only guests in this world

Words from U. Busse

Der Mensch braucht diese Erde,

doch die Erde braucht ihn nicht,

Man needs this earth,
but the earth does not need it!

wer zuviel nimmt lebt gefaehrlich,

bringt sie aus dem Gleichgewicht

Who takes too much lives dangerous,
puts it out of balance!

noch seh'n wir das Licht der Sonne,

das die Dunkelheit erhellt,

Still we see the light of the sun,
which illuminates the darkness.

doch es ist schon 5 vor 12

und wir sind nur Gast auf dieser Welt.

But it is already 5 before 12
and we are only guest in this world!.

SL 34

Ich danke Ihnen fuer Ihre Aufmerksamkeit!

Thank you for your kind attention!