01 // WELCOME

Water direct injection valve

02// OUR TEAM MEMBERS

"Engineers from Aerospace, Formula1 and Defense and international experienced Managers"

STANISLAV KOPECEK
COO

Chemical Engineer with wide field of experience in Defense and Automotive

WOLFGANG TEICHMANN
CEO

International successful Manager

KAUS WEBER
Manager R&D

Innovator of KTW SYSTEMS Aerospace Engineer, Expert from DLR,Cologne

NORBERT KREYER
Projektmanager

Extreme succesfull career in racing and aviation Engineer Formula1

LAN LIN
GM Asia & Pacific

Sales Profi with a huge network

03// FAST SWITCHING VALVES

We redefine the terms „fast, flexible and realiable" for valves

03// PROBLEM

PROBLEM of Internal Combustion Engines

The discussion about the diesel engine is on everyone's lips. We hear every day about mistakes in the automotive industry, court rulings, diesel driving bans and falling sales volumes.

One knows that consisting technologies, as for example the selective catalytic reduction of nitric oxides with ammonia (about urea solution) or NOx storage catalysts are problematic: they are complicated, expensive or limited in the effect (operation window of the catalyst). Exhaust gas recycling reduces the NOx emissions.

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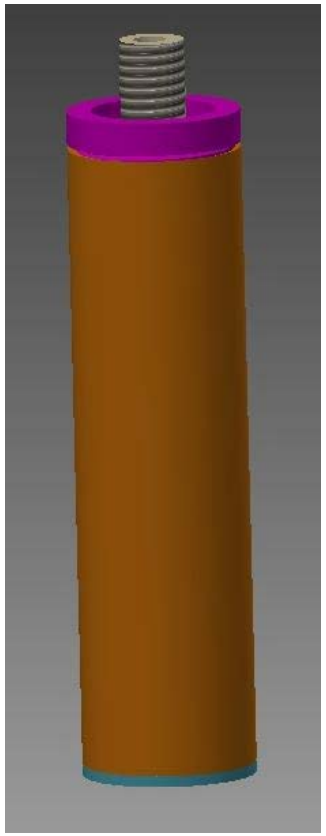
03// Solving the ICE

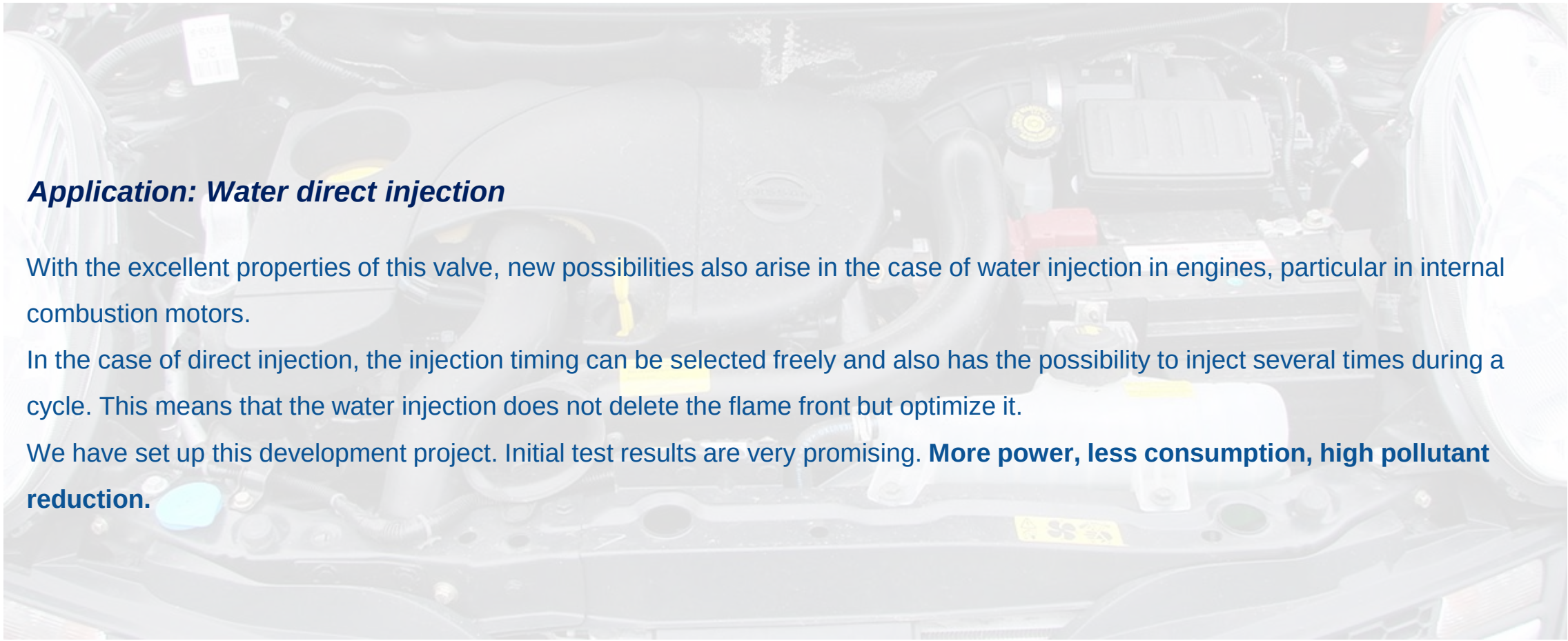
Application: Water direct injection valve

Development of a water injection valve for internal combustion engines

The project is the development of a separate injection system, consisting of valve, connection technology, valve control and interface to the motor control unit for the direct injection of water in fuel spaces of diesel engines to lower pollutant emissions and to raise the efficiency of the engine. The solution must be transformable economically.



03// SOLUTION



Application: Water direct injection

With the excellent properties of this valve, new possibilities also arise in the case of water injection in engines, particular in internal combustion motors.

In the case of direct injection, the injection timing can be selected freely and also has the possibility to inject several times during a cycle. This means that the water injection does not delete the flame front but optimize it.

We have set up this development project. Initial test results are very promising. **More power, less consumption, high pollutant reduction.**

03// SOLUTION

Application: Water direct injection; Positive Effects for Environment

Parameter	State of the art	New	Difference
Consumption	Depending from engine and speed		5-10%
NO_X Emission	ca. 100mg/km (Euro 6)	ca. 50-60mg/km	40-50%
CO_2 Emission	Depending from engine		ca.10%
particulate matter **HC+NOx** **CO**	4,5mg/Km (Euro 6) 170g/km (Euro 6) 500mg/km (Euro 6)	n.a. ca.120g/km ca.450mg/km	n.a. ca.25% ca. 10%
Increase in efficiency	40- 42%	42-44%	2-3%

03// SOLUTION

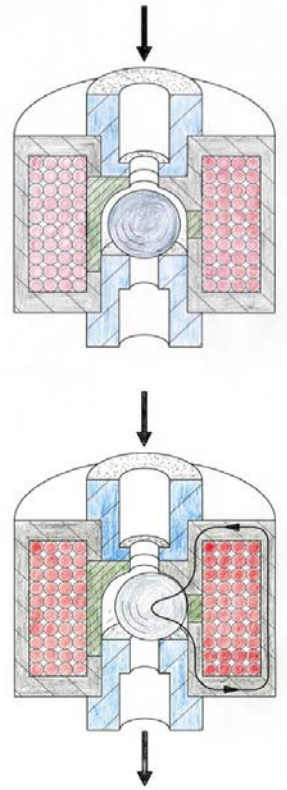
The only REALTIME VALVE on earth? - Unbeatable in reliability, flexibility and life time Here – as water direct injection valve which is corrosion resistant

Fast and **direct switching valve** with a **magnetized ball** as a closure element for gases and liquids.

The pressure difference between the valve inlet and the outlet keeps the ball in the valve seat. The ball is the only moving part of the valve. For the opening of the valve, a magnetic field is generated by the magnetic coil, which let force acts laterally on the ball and the ball rolls from the valve seat.

Without a magnetic field, the flow returns the ball back to the valve seat, the valve closes.

The **magnet system**, the **valve seat diameter** and the **diameter of the valve ball** determine the characteristics of such a valve, which can easily be adapted to different requirements by varying these parameters. This also results in a wide application field for this type of valves.



03// PRODUKT FEATURES & USP

EGG LAYING WOOL MILK SOW
Suitable for all gases and liquids, heat and cold resistant (plus / minus 200 degrees Celsius), usable for pressure control

LARGE DYNAMIC RANGE
100 nl / min to 5l / min in one component; dose range is 1,000 times higher as conventional valves
.

FAST SWITCHES ALLOWS HIGH FLEXIBILITY
extremely fast (1ms), direct and stochastic switching, which allows real time applications
.

WE LOVE PRESSURE
Pressure range from 0.5 bar to 1.000 bar

COMPACT DESIGN
Easy to clean, corrosion-resistant and requires no lubrication; regulating and self-locking in one (permanently technically dense)

FREQUENCIES UP TO 1000 HZ
By pulse width modulation the flow can be controlled linearly

WE DON`T LIKE FAILURES
No resonance frequencies

KTW SYSTEMS DRIVEN BY INNOVATION

04// THANK YOU

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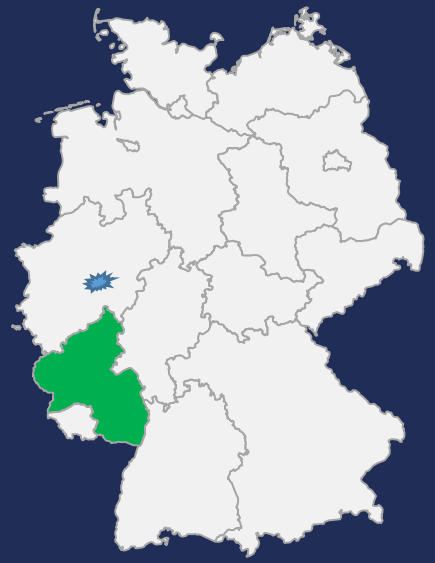

Get in Touch

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