ZT-AndTECH debut

ZTA, ZT-AndTECH Group and Zoltán Tamás ANDÓ

ZTA *has been engaged in the development and production of particulate catalyst carriers and catalysts for decades. ZTA has carried out dozens of adaptations to custom thermal power machines and waste recovery equipment, design (edited by parametric digital prototypes 3DCAD on request) and numerical digital simulation of material and energy flows and balances. He contributed to the implementation by editing the traditional and digital technical documents required to produce the prototype, production on demand with site supervision, measurement planning and measurement, and evaluation of measurement data.* ***ZTA*** *already has references in several market areas – heterogeneous (TRL) technological level 3-9 – (e.g.: flue gas filtration, catalytic after-treatment, catalytic on-glow, residual heat decarbonization and thermoelectric utilization, as well as in the field of waste and biomass standby renewable fuel pre-treatments, catalytic gasifiers and active autonomous building energy solutions):*

PARTICULATE FILTER, FLUE GAS AFTER-TREATMENT CATALYSTS (TRL 8-9)

Particulate filter catalysts for diesel, gas, gasoline, two- and four-stroke engines that can be retrofitted to vehicles. Diesel and gas power plant generator sets:

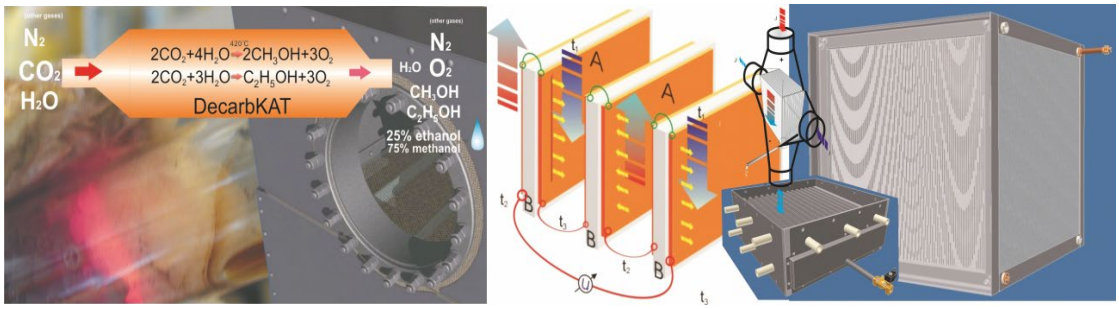
They are characterized by a passive CO_2 reduction of 15 to 25 percent due to ultra-low exhaust losses. Up to 99% PM, NOx, TOC, CO neutralization can be achieved. Compared to OEM flue gas exhaust cleaning systems, the "ZT-AndTECH" catalyst carrier based *on the self-developed "*ZT-AndTECH" catalyst carrier can be used in oxidative, reductive, redox and decarbonizing catalysts – placed in the FluidKAT, DnsKAT and RotoKAT type reactor boxes, which are *also developed in-house* – with ultra-low exhaust resistance (> at 1-9 mbar), even at sustained extremely high overloads, it can be extremely reliable, 25-30 years old 2-3 million km of operation. *(Cummins, Deutz, GANZ, Caterpillar, Rába, HATZ, Briggs & Stratton, Tohatsu, Mercedes-Benz, Seat, Kamaz, Trabant, Wartburg, Barkas, Stihl, SOLEX, Honda.)*

CATALYTIC CONVERTERS FOR COMBUSTION PLANTS (TRL 4 - 6)

Catalytic incandescent can be completely oxidized by catalytic oxidation below the formation temperature of nitrogen oxides, with an excess of air above soot formation and by catalytic oxidation that is orders of magnitude faster. In the case of catalytic on-glow, very small amounts (PM, NO_x, TOC, CO < 0–5) mgramm/nm^3 are formed of harmful substances. There is no need for catalytic aftercare and oxidation is more efficient. Coupled to GB-GANZ, HOVAL, FÉG gas boilers, a catalytic on-bulb results in a 35 – 39% reduction in energy specific CO_2.

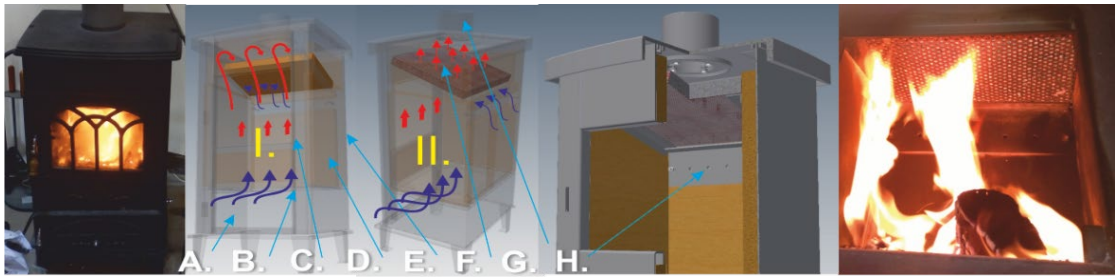
ZT-AndTECH debut

ACTIVE RESIDUAL HEAT RECOVERY EQUIPMENT (TRL 2-4)



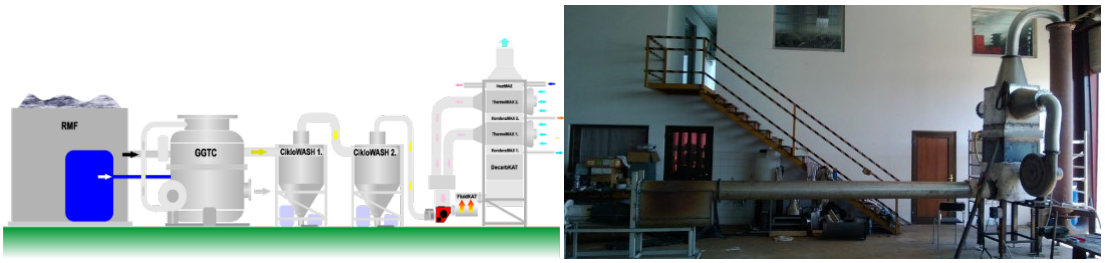
Chemical heat storage of flue gas residual heat, decarbonizing catalysts and their application. The residual heats are thermo-electric heat recovery, efficient heat recuperation and selective alcohol condensation.

DEFLECTOR CATALYSTS FOR COMBUSTION PLANTS (TRL 8-9)



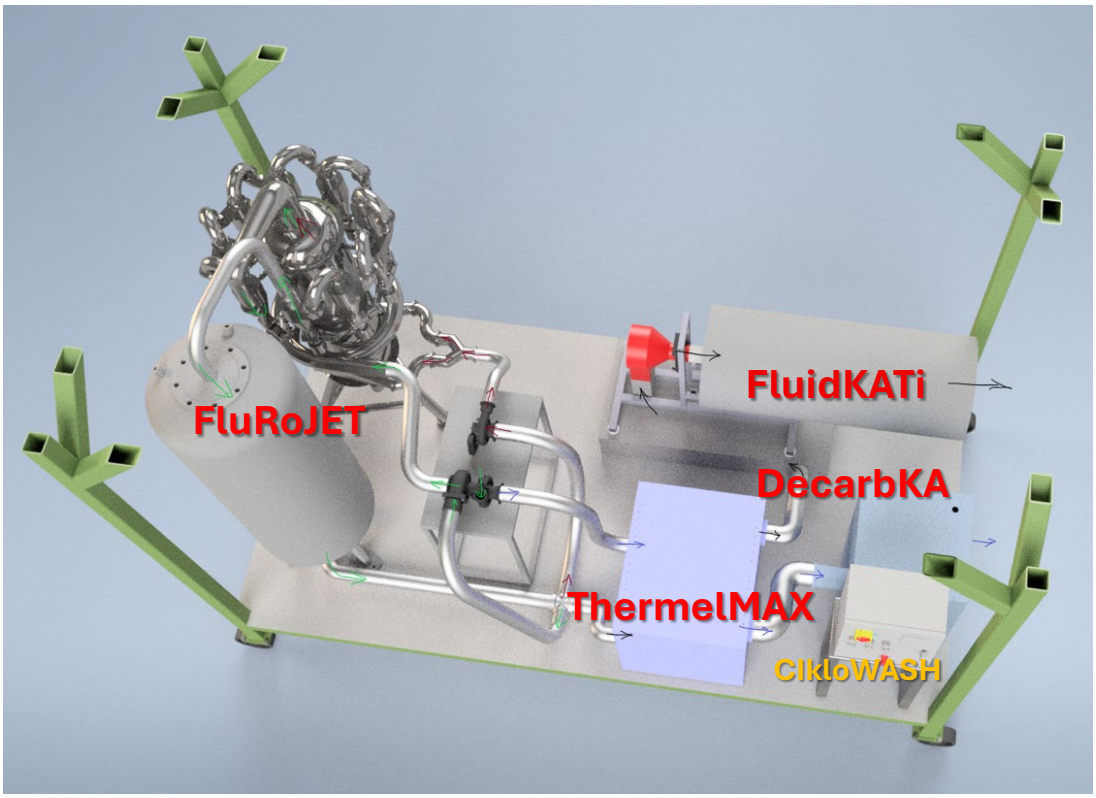
The retrofit fitted Deflector catalyst for the "Toldi" iron stove or the "MBH" pellet boiler allows for more efficient operation than OEM equipment. The infrared heater and catalytic overhead bulb increase the efficiency of heat release, achieving up to 45 – 65% complex passive energy specific CO_2 reduction.

Automatic pellet boiler with catalytic infrared gasifier.



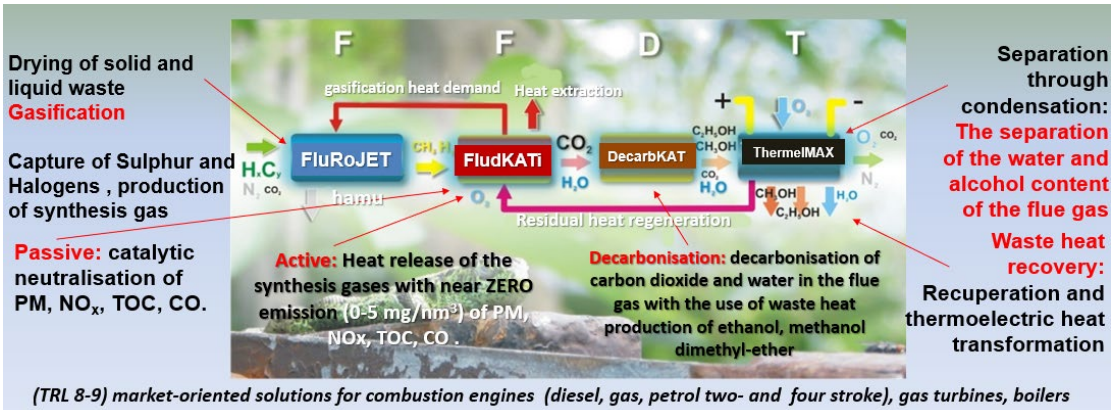
Catalytic incandescent can be completely oxidized by catalytic oxidation below the formation temperature of nitrogen-oxides, with an excess of air above soot formation and by catalytic oxidation that is orders of magnitude faster. In the case of catalytic flare, very small amounts (PM, NO_x, TOC, CO < 0–5) mgramm/nm^3 are produced. There is no need for catalytic aftercare and oxidation is more efficient. Coupled to GB-GANZ, HOVAL, FÉG gas boilers, a catalytic on-bulb results in a 35 – 39% reduction in energy specific CO2.

FFDT (FluRoJET-**F**luidKATi-**D**ecarbKAT-**T**hermelMAX) (TRL 3-6)



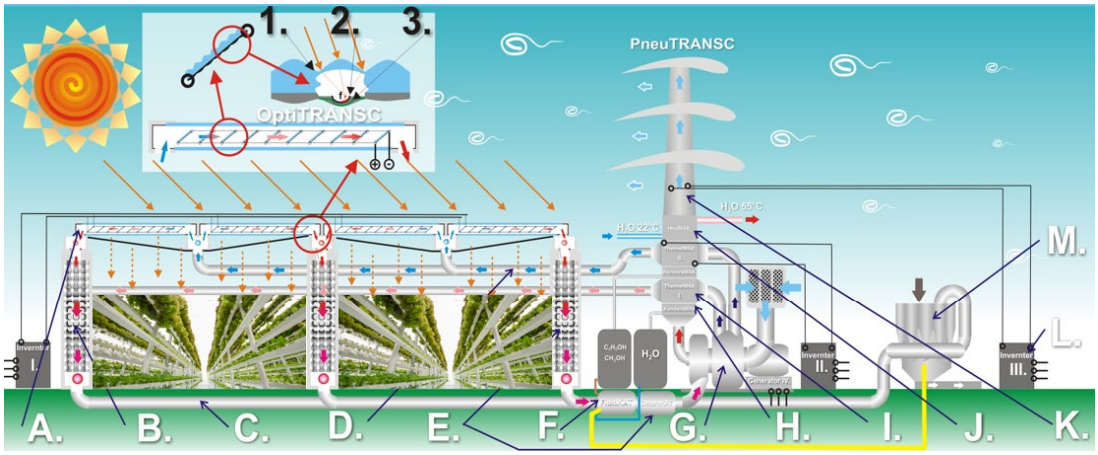
***FFDT**: **FluRoJET** Fluidized Bed Rotojet Micro Grinder, Catalytic Gasifier and Multicyclone Dry Particle Dust Separator. **FluidKATi** Catalytic on-bulb, flameless heat releaser.**DecarbKAT Catalytic Decarbonizer** Reactor, **ThermelMAX** Dry Cross Flow Syngas-Air Heat Exchanger CycloWASH Syngas Washer, Dust Particle with Fine Separator.*

Technologies for mechanical pre-treatment of waste at the point of origin and local renewable standby energy storage (waste shredder, sewage sludge, slurry atomizer), fluidized bed solar and wind-driven sterilizer technologies. Catalytic fluidized bed rotojet gasifiers and multicyclone dry and wet solid part (ash) separators for the storage and on-demand gasification of pre-treated energy renewable granules, assembled from syngas cyclone scrubbers.

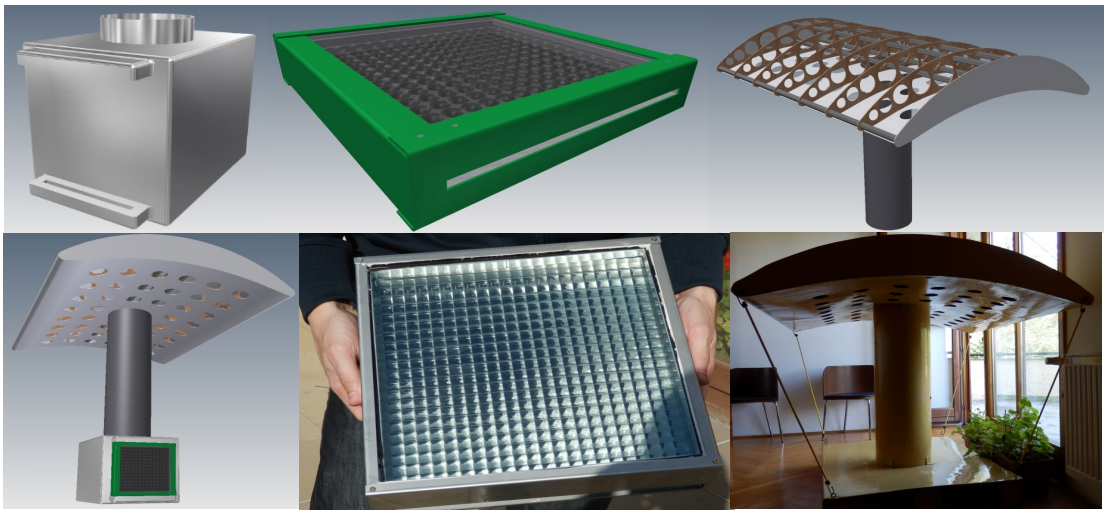


(TRL 8-9) market-oriented solutions for combustion engines (diesel, gas, petrol two- and four stroke), gas turbines, boilers

ACTIVE, AUTONOMOUS BUILDING ENERGY SOLUTIONS (TRL 3-6)



***A.**: optical transmission solar collector for full roof and side wall surface; **B.**: solid heat storage **C.**: air collection system **D.**: vertical crop cabinets with LED illuminated grow trays **E.**: nutrient solution with a controllable nutrient supply system on our tray **F.**: FluidKATi, catalytic overhead bulb, **G.**: e-turbo **H.**: DecarbKAT catalytic decarboniser, **I.**: ThermelMAX, thermoelectric heat exchangers **J.** : HeatMAX – DewKAT residual heat treatment absorption water separator, **K.**: pneumatic gear wind collector, **L.**: Inventer electric current regulator and converter, **M.**: FluRoJET dryer and gasifier.*



ZEEP (Zero Emission Energy Positive) Optical transmission - without moving elements - solar collectors, pneumatic (continuously variable direction, low (2-3 m/s) wind speed wind generators, wind energy utilization and solar cooling equipment. In addition, solid heat storage and thermoelectric heat recovery equipment.

RESTORING THE CLIMATE BALANCE IN A DIFFERENT WAY, WITH A GAIN
(THEORY, COMPLEX HOLISTIC CONCEPT)

A study summarizing the work of the last 32 years, "CARBON ECONOMY(ᵂ)WEALTH". Which is the formulation of the principles of complex decarbonization. Which is implemented in passive and active carbon dioxide conversion technology solutions. It culminates in the conversion of low-cost air mining machines with low CO_2 emissions suitable for the mass retrofit conversion of thermal power engines into active-autonomous buildings, and "Carbture" carbon-based structural materials. The feasibility study entitled "CO_2 Way Out^2 Differently, with Profit" is an action plan for the principles of "CARBON ECONOMY".

Budapest: 21 June, 2025

Zoltán Tamás ANDÓ