

Open-Innovation - References

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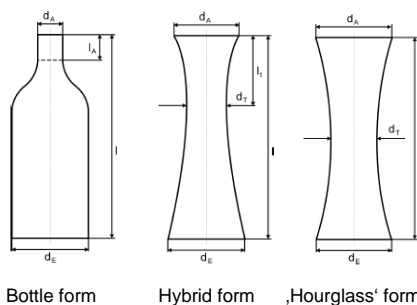
PreLaTec Precision Laser Technologies –

A Start-up Firm Dedicated Exclusively to Technology Development in Collaboration with its Industrial Partners

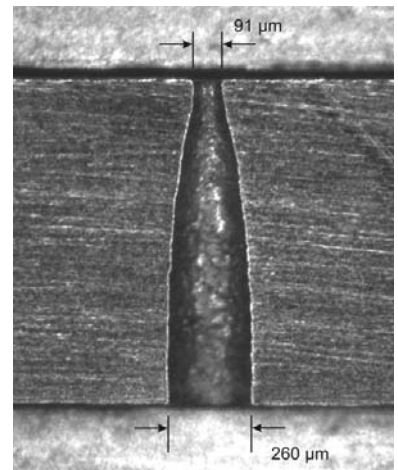
The Technology

PreLaTec develops a new process for laser drilling of diesel fuel injectors allowing very new geometries. The process is capable of drilling ports of a defined geometry for fuel injectors for a wide variation of port shapes, with a minimum diameter of approx. 80 μm (fluid exit) and maximum diameter of approx. 300 μm (fluid entry). Drilling time of such whole is below 10s with high reproducibility.

PreLaTec opens the door to new degrees of freedom in Diesel engine optimisation



Bottle form Hybrid form 'Hourglass' form



Current state-of-art technology yields either cylindrical or conical port shapes with more or less straight walls, no matter whether mechanical drilling, EDM, ultrasound or laser drilling are employed. This does not allow to produce conditions which come even close to ideal for atomising a fluid sprayed from such nozzle. The critical requirements are minimal flow resistance resulting in low pressure loss, high flow velocity and, in particular, continuous laminar turbulent flow conditions at the nozzle outlet. Nozzle shapes as shown in the above pictures are much better suited to achieve these requirements. It is thus expected that the optimisation of the injection nozzles can reduce further Diesel consumption and improve the environmental performance significantly.

Organisation and Management

Company

- Limited company set-up in 2008, dedicated to technology development.
Shareholders:
 - Key researchers and knowledge developers
 - Group of private investors with industry background
 - i.con. innovation as the managing partner of PreLaTec
- Team with long-standing experience in the development of laser drilling systems
- European Patent EP 1660269 "*Method and Device for Drilling Holes Using Co2 Laser Pulses*" covering both manufacturing technology and hole geometry

Joint Development Network

Joint development with 4 partners, institutionalised through a set of multi-lateral collaboration and exploitation contracts:

- University of Jena, Institute of Material Science and Technology as research partner
- IAI industrial systems B.V., Eindhoven, part of Docdata N. V. Both firms started as spin-offs from Philips, and joint under the roof of Docdata, together with 600 employees. IAI is responsible for system integration.
- IAV GmbH, Gifhorn, a leading engineering firm for the automotive industry with 3000 employees. IAV is responsible for validating product functionality of the injection nozzles.
- Laservorm GmbH, Mittweida, an SME specialised in Laser manufacturing machines and responsible for industrialisation of the technology.

Milestones

- Research and development of the Laser drilling technology (nearly finished)
- Development of industrial systems (ongoing)
- Validation of product utility: ongoing tests in collaboration with OEMs to validate the optimization potential of nozzle geometries concerning fuel consumption, lower emission rates, etc.
- Market entry (planned launch beginning of 2011)

Financing

- Core technology development financed by private investors together with public risk capital

WeGaNet – A Strategic Research Network of the German Electroplating Industry

Strategic Research Objectives

WeGaNet aims at new technological solutions to secure the economically and ecologically sustainable development of the industry sector. This includes advanced coatings with new functionalities and optimised life-cycle performance (in particular in terms of energy and material consumption), advanced coating processes offering better adaptability and controllability as well as increased resource efficiency, and new definitions of the supplier and customer relations to optimise production across the value chain.

This strategic objective is being translated into concrete technology development goals, one challenging goal being the development of self-repairing galvanic coatings based on active nano-particles, included according process technology to produce such coatings and adapted measurement and control techniques.

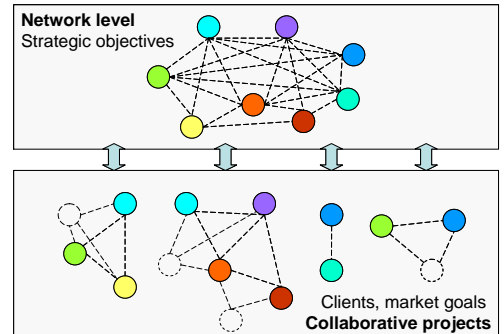
Organisation and Management

Network

- Initiated in 2009, the network presently comprises some 15 active members, including
 - electroplaters,
 - suppliers (chemicals, process equipment, measurement & control),
 - research institutes, and
 - DGO, the industry sector's technical association.
- Common denominator: motivated companies with common problems, willing to share knowledge
- Horizontal and vertical integration:
 - Broad industrial relevance, addressing basic problems of a sector
 - Value chain integration to avoid typical interface problems
- Open network raising growing interest from surface technology companies as well as their customers.
- Long term cooperation agreement ensuring confidentiality, rights and obligations.

Management

- The network is being co-ordinated by DGO, with continuous management support from i.con. innovation since its inception.
- „Hands-on“ management directs both the network’s strategy and the joint planning and implementation of R&D projects:
 - **Strategy:** a clear medium to long term orientation, with concrete implementation roadmap
 - **Implementation:** concrete, individual projects in line with overall strategy, based on ideas from network members and with more short-term, measurable results
- Hence, network management secures that Networking is indeed being transformed from “Not working” to a successful implementation of Open Innovation.



Financing

- Public funding is used to co-finance the technology development projects