Radically innovative technology for efficient manufacturing of preforms for ceramic matrix composite (CMC) brake disks

Fact Sheet

Project Information

ROLL-IT

Grant agreement ID: 826760

Closed project

Funded under
H2020-EU.3.
H2020-EU.2.3.
H2020-EU.2.1.

Overall budget
€ 71 429

EU contribution
€ 50 000

Coordinated by
PETROCERAMICS SPA

Italy

Objective

Light-weight materials lead to a drastic weight reduction in vehicle components such as the braking system, improving fuel efficiency and vehicle performance. The low density of Carbon Matrix Composites materials makes them ideal for light weight braking systems. CMC brakes are 50% lighter than traditional cast iron discs and their adoption could save up to 25kg/car. They also reduce the braking distance by > 40%. However, they are very expensive. Their production cost (€500) and sales price (€700) is attributed to the multi-step batch production process that includes >7 manual steps done by specialized operators. That is why CMC brake discs
accounting for only 1% of the global market. Product quality is also not guaranteed in the current manufacturing process because of inefficient control of the Carbon Fibre (CF) topology which is only achieved by hand or machine positioning. Through this innovation project, we will make CMC brake discs affordable for more customer segments while improving their quality. ROLL-IT is a fully automated process that combines advanced additive manufacturing techniques with traditional sheet molding to enable a continuous forming process of near-to-shape preforms for CMC brake disks, exploiting an affordable processing route on the same machine. ROLL-IT will enable control of the CF topology and that of the material properties that mainly affect the disc performance. CMC manufacturer will benefit from a 600% increase in throughput, 40% decrease in carbo fiber content, 50% reduction in productions costs and a 70% reduction in scrap whilst car owners will benefit from improved mechanical properties of the disc and enhanced safety through a 40% reduction in braking speed. This innovation project will play a significant role in advancing our commercialization strategy. We anticipate a high uptake of ROLL-IT which will boost our sales and elevate PETROCERAMICS from a start-up status to a fully-fledged company.

Fields of science

Programme(s)

Topic(s)

Call for proposal

H2020-SMEInst-2018-2020-1

Funding Scheme

SME-1 - SME instrument phase 1
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<thead>
<tr>
<th>Coordinator</th>
<th>PETROCERAMICS SPA</th>
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<tbody>
<tr>
<td>Address</td>
<td>Viale Europa 2</td>
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<tr>
<td>Activity type</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
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<td>EU contribution</td>
<td>€ 50 000</td>
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