



Protomold® up to speed with new craze

Flame Offroadboards

German 'mountain board' manufacturer Flame Offroadboards is using services provided by rapid injection-moulding specialist Protomold® to help convert this rapidly growing sporting phenomenon into the world's most in-vogue outdoor pursuits accessory.

Who could have predicted that snowboards would sell in quantities approaching 5 million a year when the first bandana-wearing slope addicts were seen strapped to a skateboard without wheels in the late 1980s?

Nearly 30 years down the line, however, the quest for a challenge to fuel adrenalin in summer months has led to a new craze emerging in the Alpine region of central Europe. A tough new sport called off-road or mountain boarding is gathering momentum and demand is currently outstripping supply. For this reason, the 'street price' for a professionally manufactured board is currently around €2,000.

With the price tag proving prohibitive to many wanting to try the new sport, a young German entrepreneur called Albert Müller has launched a company called Flame Offroadboards with a mission to design and manufacture a revolutionary new range of boards that retail between €450 and €1,000.

To help the 36-year-old trained industrial engineer hit budget Mr Müller opted to target local suppliers, a move that would ease communication paths – a vital factor when developing a new product that will be subject to ongoing improvement and modification. One such chosen supplier is Protomold, which has its German headquarters at Mosbach. Both companies are now closely involved in the development and construction of Flame's innovative off-road boards.

The component central to the partnership between the two firms is the wheel rim, a crucial part in determining the 'ride' of the board.

“In the early development phase when ideas are not quite mature is where Protomold's services really comes into their own.”



“We have a unique axle design for our boards,” explains Mr Müller. “Standard skate axles are fine for straightforward runs, but at higher speeds on more rugged terrain, unsteady riding behaviour [speed wobble] is frequently encountered. The usual solution is to deploy channel axles, which provide greater 'track stability' and overcome these difficulties. We have taken the simplicity of the skate axle and combined it with the excellent running

characteristics of the channel axle.

“Because the axle is bespoke, the dimension from bearing to bearing is 37.5 mm for the Protomold-manufactured wheel rim,” he continues. “This is far from standard and there is nothing else like it on the market, so we didn't approach the established wheel rim manufacturers as none of their tooling would match our requirements.”

The shape of the wheel rim as the differentiating factor compared with other boards should not be underestimated here.

“Good riders use high tyre pressures up to 4 bar, so the

wheel rim has been conceived as a six-spoke design featuring six bolts in order to achieve the greatest possible rigidity,” says Mr Müller. “The structure is designed so that 8" and 9" tyres can be fitted, which centre themselves automatically. Riders prefer 8" tyres in freestyle and downhill racing, while 9" tyres are deployed for pathless terrain or soft, sandy ground.”

In talks with the sales manager of Protomold, Jörg Müller, it became clear relatively quickly that the innovative rapid injection moulding process favoured by Protomold would be favourable and lead to high quality results.

Various materials with long and spherical glass fibres were discussed for the wheel rims. Finally, a very hard, rigid material was agreed and a small number were produced. However, some wheel rims broke in extreme situations, prompting Flame to delay volume manufacture.

“We subsequently chose a new glass fibre reinforced, stabilised material with greater elasticity,” says Mr Müller. “This material is used for wheel rims on BMX bikes and new prototypes are being tested as we speak.”



If everything goes smoothly, Protomold will manufacture 5,000 wheel rim halves from this material – one of many that it holds on its extensive database of plastic materials.

The co-operation between Flame Offroadboards and Protomold has been ongoing for more than six months. Once Mr Müller uploaded his first drawing to Protomold's website, he soon received a call from Jörg Müller of Protomold who advised him to change the design of the mould ejection angles.

This piece of small, but crucial, advice convinced Albert Müller of the commitment Protomold was prepared to invest in his business project. It led to the start of a vibrant and productive customer relationship, and Protomold has since been involved in the manufacture of board bases, some of which have been produced from plastic to help minimise weight and costs.

Mr Müller says he would easily have had to put four or five times as much money on the table for conventional mould tools from another supplier – and without the flexibility afforded by the Protomold process.

“In the early development phase when ideas are not quite mature is where Protomold's services really comes into their own”, concludes the company boss.