

## Case Study: Liebherr Machines Bulle

### Eminox provides Stage IV exhaust systems for Liebherr's on- and off-road machines

One of the world's leading manufacturers of construction machinery, Liebherr Machines Bulle SA has selected Eminox to supply exhaust systems to achieve Stage IV emission standards. The joint initiative between Eminox and Liebherr will see over 10,000 machines a year fitted with Eminox's SCR (Selective Catalytic Reduction) technology. Liebherr specifically selected Eminox as they could fully support them with technical system development as well as the manufacture of the final products.

One of the key objectives was to keep the number of exhaust system variants to a minimum, while working within the limited space available for mounting the systems on a variety of machines. Eminox met these requirements by using novel system geometry and innovative urea injection points coupled with advanced mixing.

Paul Canwell, Project Manager at Eminox, said, *"This has been a real development partnership between the two companies, with each complementing the other in perfecting these systems."*

System development was supported by CAD (Computer Aided Design) CFD, (Computational Fluid Dynamics) simulations, acoustic modelling and back pressure calculations. Eminox's rapid prototyping capabilities meant that prototypes could be produced at each stage of development, and Liebherr could then test them on their own engine beds to confirm modelled performance.

Having designed and developed a range of systems to cover the whole range of Liebherr engines, Eminox's flexible cellular manufacturing capability means each variant can be manufactured efficiently, in response to future demands.

