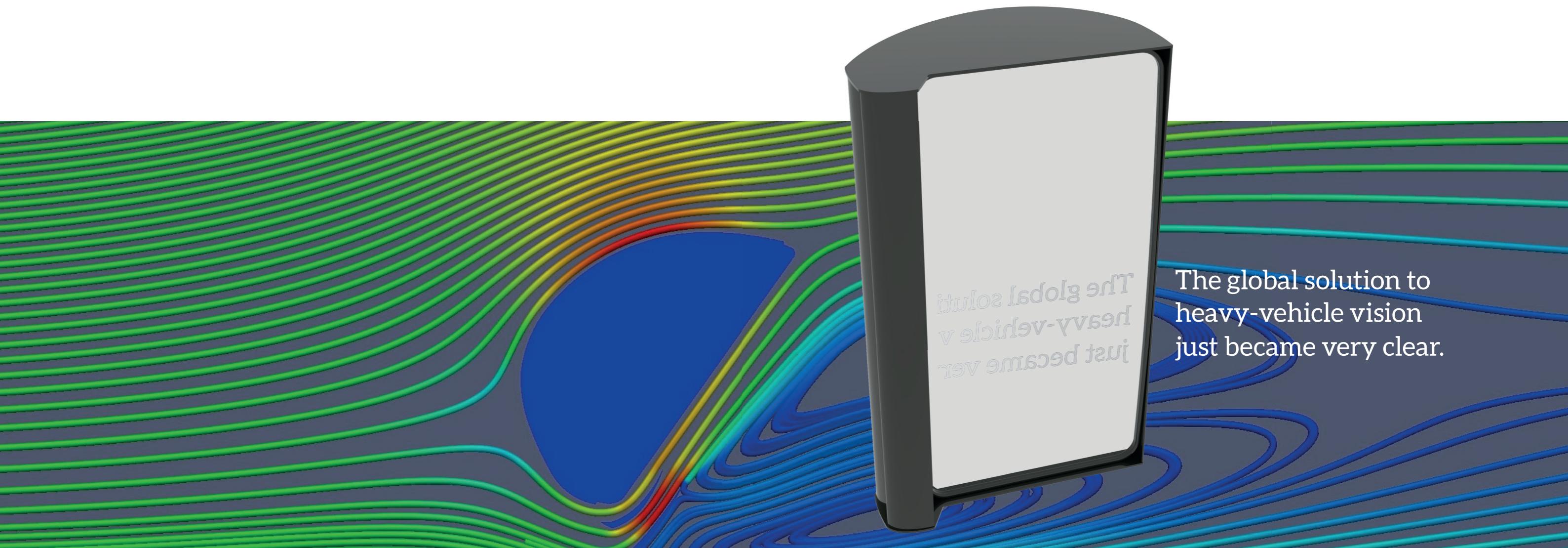


# reflect on €2billion

There are over €2 billion reasons  
for reading this brochure.



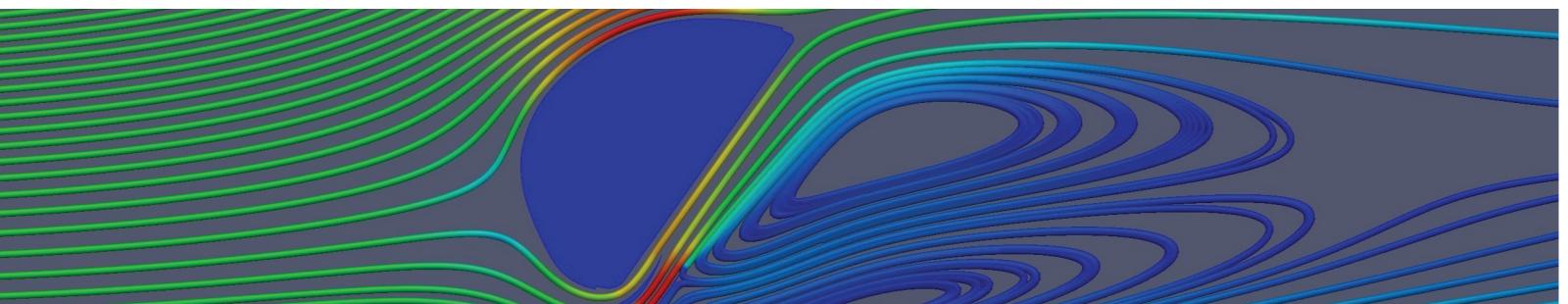
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**SEECLEAR**  
Mirror Innovation

**SEECLEAR**  
New generation safety technology

# the introduction



**"SeeClear's revolutionary use of AirDrive technology has the potential to transform road safety on a global scale".**

## the introduction

We proudly introduce one of the most eagerly awaited safety developments in heavy vehicle technology. Now, drivers will be in control of rear view mirror visibility - not at the mercy of it.

As any experienced driver will confirm, the risk of accidents affecting trucks, buses, agricultural or construction vehicles is high along the flanks of the vehicle and towards the back of the unit. It is no coincidence that these areas are also those that offer the most restricted visibility to the driver. This simple fact can all too often conceal catastrophic results. Serious collisions and an obvious threat to life and property are an ever-present hazard.

Therefore, the efficiency of rear facing mirrors is of paramount importance if the risk of accidents is to be adequately managed, preferably reduced or even eliminated. Until then, the operators and drivers of heavy vehicles continue to face a significant problem

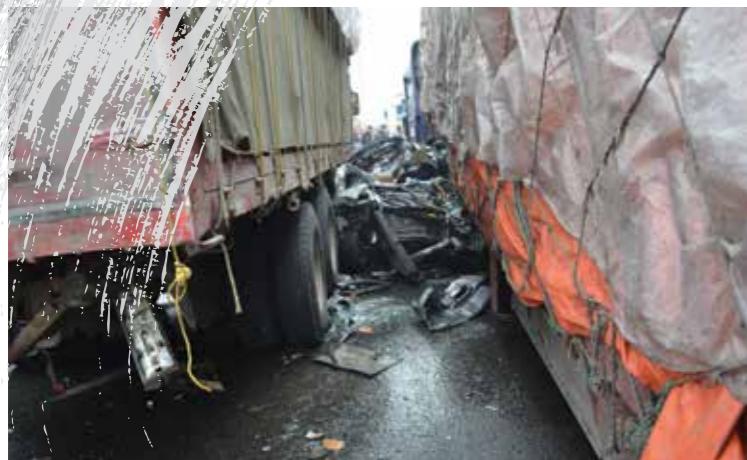
as well as a considerable responsibility - especially when the potential of human fatality is factored-in. The realisation that potentially unsafe vehicles operate globally serves only to emphasise the sheer scale of the issue.

However, on a more positive note, the size of the problem is matched by the extent of the incentives that await those who find and deliver a solution. The purpose of this document is to make you aware that a fully viable solution, and the moral and commercial rewards that will accompany it, are now available for your interest - and possibly for your acquisition.

### There are four compelling reasons for your consideration:

- The proposed solution will save lives, curb damage and win recognition.
- The commercial opportunity is significant and has been valued at €2 billion.
- However, €2 billion is nowhere near the complete story – there is more.
- Licensing arrangements and generous partner opportunities are available.

# the problem



What the driver cannot see, he cannot aim to avoid. Poor visibility is frequently cited as a crucial factor in accidents involving trucks and buses. The risks increase significantly in poor weather, particularly when pulling out, cornering, reversing or overtaking.



## the problem

While it is true that rear-facing mirrors offer the drivers an answer to the problem of poor all round visibility, in certain circumstances the mirrors can actually increase the problem.

This is especially likely when the operational environment is wet, dirty or dusty. For example, wind blown or airborne dust particles will quickly adhere to the surface of wet mirrors, reducing their reflective qualities and giving rise to viscous grime. In city centre driving environments, where ambient dirt and dust is a common feature, the mirrors of all vehicles are susceptible, particularly those passing near or entering construction sites.

Due to their tendency to bake and congeal dust, heated mirrors offer little benefit. In fact, the most common means of clearing dirty vehicle mirrors is to halt the vehicle and manually clean them with a damp rag – which is inconvenient, time consuming and unhelpful to delivery schedules, especially if the driver has to repeat the action several times during the working day.

As traffic levels have grown in recent years, the problem too has worsened. Following a string of fatal impact incidents in London, England, the

City's Mayor, Boris Johnson declared war on inadequately prepared vehicles, saying **"... HGV's not fitted with safety equipment will face charges."**

Naturally, the issue is not confined to vehicles in London, nor is it restricted to city centres. Trucks operating in the vicinity of any type of dust – farmland, mines, mills, sand dunes, timber yards, quarries, cement works, construction, demolition and landfill sites and so on, are at risk. Even emergency vehicles attending natural disasters such as forest fires, landslides or volcanic eruptions are vulnerable. As the scale of this near universal problem increases, so too does the damaging press and publicity that surrounds it. Negative public opinion towards heavy transport operators will pervade for as long as the issue remains unresolved.

### **"Trucks have now become killing machines"**

Sir Bernard Hogan-Howe, The Metropolitan Police Commissioner for London, England.  
Source: The Guardian Newspaper, 15 November 2013.



# the solution

Developed and tested by a broad team of specialist experts, the SeeClear concept is ground-breaking.

It gives control and visibility back to the driver.



## the solution

AirDrive technology enables mirrors be cleaned and cleared on the move. Improved visibility will result in safer manoeuvring and positive PR for operators - an effective mirror cleaning system is now reality!

In 2010, Tim Seeley, a Pan European truck driver with more than thirty years experience of driving in all weathers, realised that something had to be done about the lack of clear vision in the rear view mirrors especially in adverse conditions. Most aspects of HGV safety had improved immeasurably over the years but little had been done to improve visibility. The most recent being lens curvature, tints and heaters - none of which prevent rain or dirt from obscuring rear vision.

**"The risks taken when overtaking on motorways or reversing onto loading bays with the mirrors obscured, particularly by rain, has become unacceptable in the 21st century"**

Tim Seeley, Professional Trucker.

Tim discussed the problem with colleague Steve Abbs, a highly experienced commercial vehicle technician and Service Centre owner. Both men became absorbed in the challenge and with the search for a solution. After several attempts it became clear that they could solve the problem.

A third partner, Simon Croft, flew in from Japan to bring his organisational strengths to the team. The rest, is history.

Several prototypes were made, each a slight improvement on the last. Eventually, the team's work provided evidence enough to show that their thinking was not only sound but potentially world-class. The quest to find the first, effective mirror cleaning system - one that could be effortlessly controlled from the driving position - was over. SeeClear was on the road to realisation. Better still, the application is infinitely flexible. The product can be fitted on a variety of vehicle types, as original equipment on new vehicles or retro-fitted to existing vehicles. With a little help from his friends, Tim Seeley's visionary idea had become a global solution.

In a poll of 418 truck drivers asked "Do you think that an external mirror that could clean itself would assist your driving?" 95% of respondents said YES.

Source: Anglia Ruskin University, Cambridge, United Kingdom, April 2014.

# the product



Initially prompted by dangerous visibility issues affecting trucks, the SeeClear solution can also benefit agricultural vehicles, buses, coaches, heavy plant machinery and emergency vehicles.



## the product

Science has at last replaced the damp rag. SeeClear is a timely and effective mirror innovation developed by experts to meet the demands of the world's heavy vehicle professionals.

As with the best innovations, the SeeClear operational principle is simple. A continuous AirDrive stream is automatically forced across the mirror's reflective surface as soon as the vehicle commences forward motion. The effect of the continuous airstream forms a barrier and is sufficient to disrupt the settlement of loose dirt or dust particles, thereby preventing any dirt build-up from developing. Should an additional cleaning boost be required, the driver can manually intervene at any time using SeeClear's secondary system. This involves a conventional air and water jet from the vehicle's onboard supply, operated from the driver's position, to rinse the mirror thereby removing sudden or dried deposits of granular material. The Driver's intervention is quite literally fingertip controlled for maximum convenience, minimum distraction and total safety.

Following field trials the SeeClear product design was perfected in conjunction with the Department of Mechanical Engineering at Anglia Ruskin University, Cambridge, England, under the direction of Professor Hassan Shirvani, who is an authority on AirDrive Laminar Flow technology whose expertise extends to harnessing and maximising the Coanda Effect – one of the scientific principals behind the effectiveness of SeeClear.

### SeeClear benefits include

- Likely to address pending legislation and the demands of civic authorities
- Improves driver vision in wet weather – safer manoeuvring and reversing
- No need to stop and clean mirrors – less downtime, less risk to driver
- Safe, simple, sensible - two-tier auto AirDrive and manual systems
- Improved vehicle proximity safety, less risk of accidents, injury or damage
- Can be assembly-line fitted to new vehicles – newsworthy trade innovation
- Can be retro-fitted to existing heavy vehicles – solo or fleet opportunities



"All SeeClear technical specification and performance data is impeccably corroborated and confirmed."

# the evidence

## the evidence

By turning a simple idea into a world-class innovation through stringent neutral evaluation and impeccable scientific support, SeeClear is a clear winner, in more ways than one.

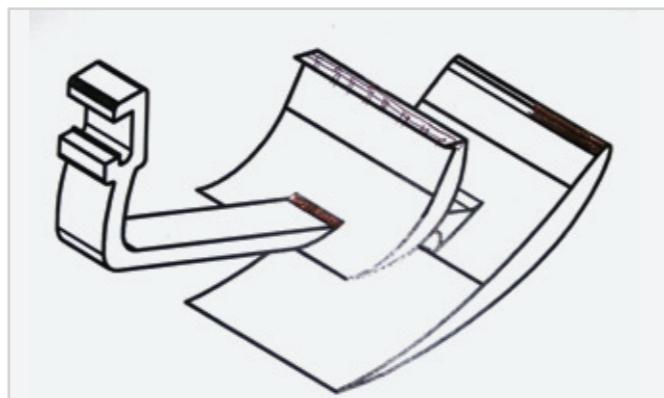
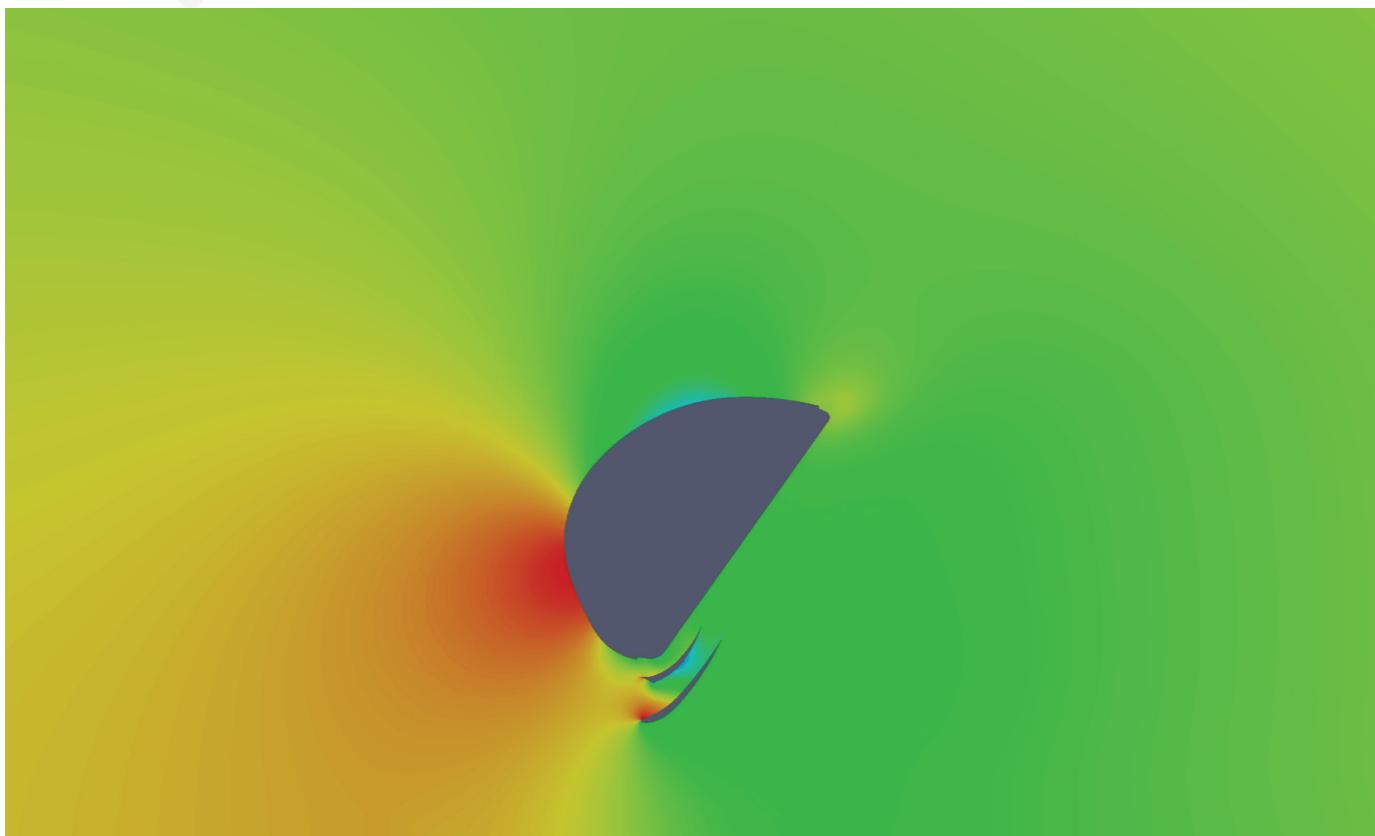
The operational pedigree and success of the SeeClear product proposition are firmly embedded in three well-established scientific principles. These are:

**Laminar flow** - In fluid dynamics, laminar flow occurs when a fluid flows in parallel layers, with no disruption between the layers. At low velocities, the fluid tends to flow without lateral mixing, and adjacent layers slide past one another like playing cards. SeeClear takes advantage of this technology.

**AirDrive** - is the dynamic air pressure generated by the vehicle's forward motion, which automatically directs air mass flow over the mirror's surface preventing the settlement of dirt particles. When combined with fluid, this has the effect of rinsing the mirror and removing any invasive dirt while the vehicle is in motion. The same principles are being examined for application into saloon cars, motorcycle helmets and other industries.

**The Coanda Effect** - describes the tendency of a fluid to be attracted to a surface. In this case it confirms the right angle of air (and dirt) disbursement across the glass mirror surface. For example, F1 race teams use the Coanda Effect to enhance the vehicle's aerodynamic properties by redirecting exhaust gases to run through a rear diffuser, thus increasing downforce at the rear of the car.

**Professor Hassan Shirvani** can perhaps be seen as the fourth scientific pillar to contribute vitally to the outcome of SeeClear. He and his team at the East of England's Anglia Ruskin University, Cambridge, are experts who understand precisely what it takes to develop a viable and reliable commercial product using science-based performance pathways. The ARU Team's formal evaluation document and development process, including the technical specifications and final results, can be found in the Appendix section at the back of this publication.



# the collaboration

## Key team contributors are:



**Steven Abbs**, the project's Managing Director. Steve has an impressive automotive career record, which includes time as a leading commercial technician for Mercedes. He heads Motor Aid, a successful independent British Service Centre.



**Simon Croft**, is the Project Leader and Director of Sales, Marketing and Business Development. Simon has interests in Motorsport, Aviation and Japan. He is also a Japanese language enthusiast and a director of Motor Aid Ltd.



**Tim Seeley**, the genius inventor whose creative ideas inspired the SeeClear project. Tim brings thirty years of first hand pan-European Truck Driving experience to the team, backed up by solid experience as a Mechanical Engineer.



**Hassan Shirvani**, Chief Design Engineer and Technical Advisor. Professor Shirvani is the director of research for his department at Anglia Ruskin University, Cambridge. He also leads his own research team of specialists in fluid dynamics and dynamic stress analysis (Automotive crash testing). Through the Royal Academy of Engineering, he was seconded to Rolls Royce Aviation at Filton, Bristol and worked on various gas turbine engine blade developments and manufacturing processes.



**Sathish Nammi**, the project's Low Carbon KEEP Associate at Anglia Ruskin University, Cambridge. His skills include Finite Element Analysis (FEA), CFD simulations, Optimisation and Computational Fluid Dynamics (CFD) plus Thermal Modeling and Stress Analysis.



**John Hawker BA (Hons)**, the team's Industrial Design Engineer and Innovation Mentor. John, MD of Design Technology Ltd. helped define the team's commercial exploitation strategy through licensing and advice with the Patent Process.



**Sarah Bell** manages the Essex Innovation Programme, a regional business mentoring support programme. Sarah works with innovative companies, helping to connect them and their ideas with viable market opportunities.



**Graham Broughton**, is the team's Business Mentor. Graham brings a wealth of Strategic skills, from former roles, including Marketing Manager, Panasonic UK and Vice President of Global Marketing at Bell & Howell Corp in the USA.



**Natalie Goodchild**, an undergraduate Marketing BA (Hons) student at Anglia Ruskin University, Cambridge. Natalie served as the team's Market Researcher, obtaining valuable questionnaire responses and feedback from HGV professionals.



**Jean-Luc J. A. Mauricette**, the project's Low Carbon KEEP Associate at Anglia Ruskin University. His skills include CAD modelling, computational fluid dynamics analysis and aerodynamic optimisation. Jean-Luc holds a BEng (Hons) in Mechanical Engineering, teaches Mechatronics at Anglia Ruskin University and is currently conducting PhD research on the optimisation of low Reynolds number aerofoils.



**Ehsan Eslamian**, the project's Low Carbon KEEP Associate at Anglia Ruskin University. His skills include CFD simulations, software and web development. Ehsan holds MSc degree in Aerospace engineering from Queen Mary University and is currently pursuing a PhD in Mechanical engineering at ARU.

## the collaboration

The development of SeeClear has been driven by a visionary team with a real understanding of the problem, crystal clear view of the solution and a unified determination to reach the right outcome.

From the outset of the SeeClear development, the team have sought to incorporate the right skill sets rather than risk the integrity of the project or its potential for international commercial success. The original team won a place on a Regional Economic Development Programme, which helped to accelerate technological development and also introduced to the project a raft of highly specialised

Business and Patent Advisors. It has been the collaboration of these individuals that has defined the quality and potential of the SeeClear venture.

**"Having access to a varied range of professional expertise has helped us bring the project to life and has added a distinctly sharper edge to our progress."**  
Simon Croft, Director, SeeClear Project Team.

**"Involving the right professional specialists at each step was always key to our plan."**

Steven Abbs, MD SeeClear Project Team.

# the opportunity



## the opportunity

SeeClear presents a significant Tier One opportunity. If fitted at the assembly line, estimates suggest the likely worldwide product return will exceed €2 Billion. Retro-fitting opportunities could be more.

The overarching aim of this document is to inform, attract and identify potential business partners for the SeeClear system.

Our key objective is to deliver the SeeClear product to market in order to realise its commercial potential and at the same time, to deliver the safety and performance benefits of SeeClear to road users worldwide. We both appreciate and embrace the notion of partnership and seek to form an alliance with an appropriate business suitor, preferably one with existing and proven component manufacture experience and high-level supply relationships as a Tier One or Tier Two Supplier within the Truck Sector and related spheres.

Potential partners may care to note:

**"We welcome proposals, based on trading royalties, derived from unit sales, against licenced use of the associated Patents."**

In addition to Licencing use of the Patent, potential Partners may also care to consider other options such as a working partnership or an

outright rights purchase.

**Interested parties are reminded that:**

- SeeClear is capable of realising an estimated sales value of €2 billion per annum from assembly-line vehicle sales.
- The potential Worldwide value of retro-fit opportunities is likely to be even greater.
- Application is not restricted to Trucks. SeeClear will also benefit agricultural vehicles, buses, coaches, heavy plant machinery, emergency vehicles and passenger cars.

### PATENT DETAILS:

#### 1st Patent

United Kingdom Patent Application No: 1309394.3  
Air Powered Mirror Drier  
Applicant: Rear Clear Limited

#### 2nd Patent

United Kingdom Patent Application No: 1504673.3  
Mirror Aerofoil II  
Applicant: Rear Clear Limited

# the next step

91% of professional Truck Drivers asked, agree that SeeClear will improve visibility.



## the next step

Discussions are invited: regarding Patent Licencing and the potential of SeeClear as a worthy addition to your product range. Please follow the suggestions below if you aim to be a part of the vision.

### An open letter to investors

Dear Colleague

My SeeClear partners and I welcome the opportunity to meet with all interested parties, under the auspices of a formal Non Disclosure Agreement.

Rest assured that we will come to the table with a clear agenda and an open mind and will welcome discussions focussing on the future production and commercial success of the SeeClear mirror innovation

As I write, technical specifications are being corroborated and confirmed. These will doubtless be available for your inspection as required. Should your interest lead us to a meeting it will be possible for us to present and demonstrate a full working prototype version of the SeeClear system.

My team and I will be interested to learn the nature of your business, its market position and your vision for this exciting opportunity.

Should you require further details or, if you wish to arrange a meeting, please contact project coordinator Simon Croft, who will be pleased to assist your enquiry. Simon's contact details are given at the end of this document.

Thank you for your interest in this landmark innovation and the opportunities it offers.

Steven Abbs,  
Managing Director, SeeClear

# appendix

## appendix

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SeeClear – has the potential to save lives and create change that will influence the global spectrum of heavy vehicle operations. We hope you will join with us for the journey ahead.

Please find additional information and contact options in the pocket opposite.  
Thank you.

