In its 15 years of existence, FlowMotion has been involved in many different aspects of solving flow problems within the industry. With a solid background in aerospace engineering, the people of FlowMotion think and work as they have been taught: always looking for an optimum compromise. As an engineering and consultancy firm specializing in liquid, gas and heat flows for industrial applications, FlowMotion provides their clients with fundamental knowledge of fluid dynamics. Using advanced computational techniques, the aim is to have more efficient industrial applications.

THE EARLY YEARS
FlowMotion was founded in 1996 by Roy Mayer and myself from the fascination we had for fluid dynamics. Our study at the faculty of Aerospace Engineering was the first introduction into the world of aerodynamics, which is itself one form of fluid dynamics. Fifteen years ago, our first project was to optimise the sail of the Aeroskimmer, a new idea for a high speed sailboat. This project was closely related to our roots, which is airplane aerodynamics, but we couldn’t foresee the broad range of industrial applications we would get involved with later on. Over the years topics varied from mini CPU (central processing unit)-fans to large ICT data centers, from hot-air ovens to industrial freezing installations, from natural-draft cooling towers to pneumatic system components.

Since the start of FlowMotion our office has been located at the laboratory of Aero and Hydrodynamics of the faculty of Mechanical, Maritime and Materials Engineering. The late Professor Frans Nieuwstadt, who was head of the department at that time, supported us from the very beginning, and his personality, knowledge and 100% dedication has been an inspiration for us which we will always remember and treasure.

RUNNING A COMPANY
When we started our company we looked at the industry through engineering eyes. With no specific training or experience apart from the few business oriented courses offered at the TU Delft, we started FlowMotion, and have learned by doing. While you can pick up useful tips and methods from business books and well known business advisors such as Mahan Khalsa, some things can only be learned from experience. If someone wants to start a company like we did, it is very important to start from the bottom up and learn everything step by step. In addition to being critical on the daily technical work, it is also important to pay attention to the business related side of things. One very important lesson we can give: listen! It is not about you or your company, but the customer. Supporting the customer and helping them succeed is the most important task you have.

PASSION FOR THE JOB
Focused on materials which naturally do not have a definite form such as liquids and gases, fluid dynamics is a basic science for technology which underlies many natural phenomena and industrial processes. However, technology development programs are often focused on systems instead of processes. Understanding of processes may lead to far larger gains in efficiency or cost reduction.

Turning the customers expertise into practical solutions is the most important task of our company’s engineers. We translate flow properties such as pressures, temperatures and veloci-
ties into product related properties such as efficiency, size, speed etc. This translation demands a thorough understanding of fluid dynamics and this requires a commitment to innovation and an understanding of the practical day-to-day requirements of the particular industry. Full preparation before every project ensures that any advice given will remain of value for the client in the long run. Since the world of fluid dynamics is extremely broad, there is always an opportunity to learn something new, which keeps the work interesting. Another nice aspect of the work is the visits to our clients to see their world. The travels may vary from sailing in the gulf on a dhow, to flying to Trinidad to visit a cooling tower or talking to a local bakery to solve their heating problems. The combination between science and the real world makes our job very special.

General knowledge of fluid dynamics helps solve many problems, but often a more scientific approach is needed to get more in-depth knowledge of the problem. This then requires experiments, as well as computer simulations, to gain more insight. Some of the experimental work is done in the laboratories of the TU Delft but most of the analyses and designs are performed using Computational Fluid Dynamics (CFD) with which many computer models have been developed and adapted to suit the various industrial applications. The extensive use of CFD enables the company to analyze existing designs and to evaluate a wide range of design alternatives without the need for costly experiments or prototypes in the concept phase of development projects. As product life cycles become even shorter, the increased requirement for innovation has made access to new skills, ideas and techniques much more important than simply knowing the basics. Establishing a network of engineering consultants has become an effective way to share new knowledge quickly and to implement it directly into ongoing technology development programs. Being a member of such a network, which also includes leading universities, FlowMotion acts as a transit point for fundamental science into industrial practice. In this way, CFD in particular has become available to industries that used to rely on expensive and time-consuming trial-and-error methods for their product development programs.

LOOKING TO THE FUTURE
When we started in 1996, the CFD software had 500,000 cells maximum and cost a fortune for the license. Today, CFD software is much more advanced and cheaper: it is possible to run a case with over 50 million grid cells on a parallel computer with free software. In the near future, one of the aims of FlowMotion is to spend time and effort to extend and improve our CFD knowledge and infrastructure. On the practical side, a small flow laboratory will be established in Delft in order to perform measurements in a more effective way for the customer. Prototypes or full scale models will be tested in our lab instead of by the customer.

Over a period of fifteen years we have worked with more than 150 different companies, from very small to multinationals. Each project is treated with the same passion for fluid dynamics as we had at the early start of the company. We believe that the in the future customers will keep surprising us with the importance fluid dynamics can have in solving their problem.

References
www.flowmotion.nl