

# M-STEKIO/BURNERWAY a new era for gas cooktop

M-Stekio/Burnerway is the best innovation for gas cooktop market in terms of technology as well as design. A burner revolutionary that defines a completely new aesthetics of the gas cooktop, thanks to the new grids and its technological heart.

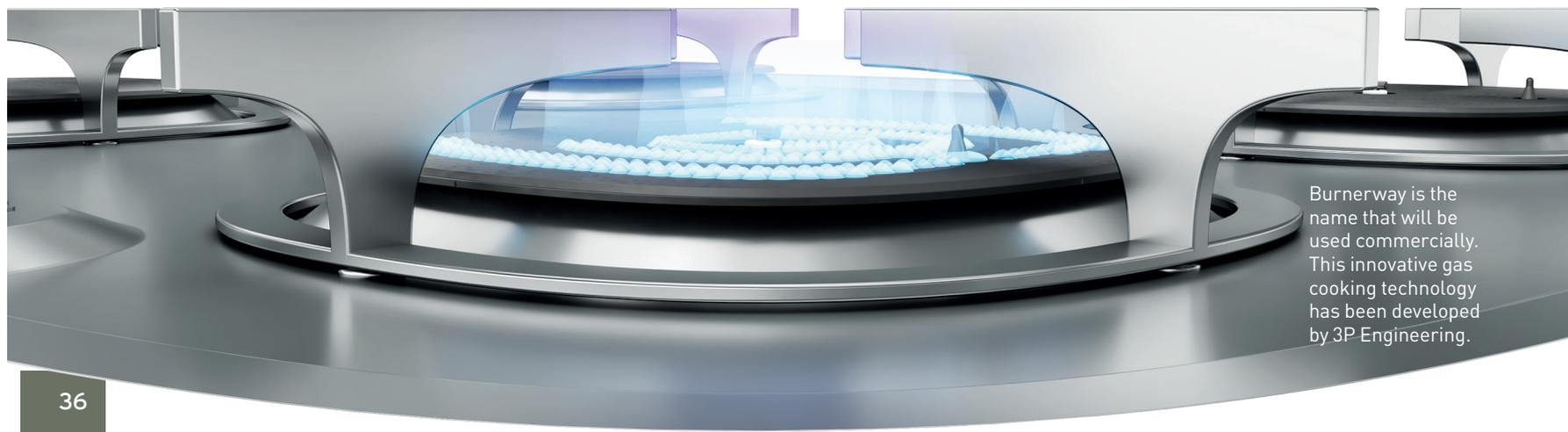
**E**stablished gas cooktop technology had been static for about twenty years: M-Stekio/Burnerway by 3P Engineering introduces an important innovation based on eight registered patents. 3P Engineering has started developing solutions for the gas cooktop market for over ten years producing studies and researches (76% of HR of 3P Engineering are engineers, and 24% are PhD). Since the beginning, 3P Engineering has managed M-Stekio/Burnerway Project to achieve a drastic reduction in fuel gas consumption: experimental data and tests are confirming the validity of the calculations made during the development of the project. The new kind of burners based on premixed gas and air completely inside it in a stoichiometric ratio reduce CO<sub>2</sub> of a -10%. In addition, the vertical “bed of flames” and the lower distance between the flame and the pot are able to reduce cooking time by 20%, thus increasing efficiency of about a 10%. It is important not only for the decrease environmental impact, but also for the energy saving that means a +20% energy autonomy, especially for yachts. The cooktop differs from standard hob on the market, not only for the aesthetic side. It has a best range of flame powers, thanks to three burners (rapid, semi-rapid, auxiliary) enclosed in a single burner, controlled by a native digital system: it replaces the standard analogical mechanical valves on the gas cooktop – looking like the traditional induction cooktop – which allows to choice and/or combine different levels of flame power in the same burner. Of course, it allows interacting with other appliances and electronic devices. The vertical flames give an average of -10% gas emissions and thermal radiation during cooking, for a better wholesomeness of the internal air of yachts, improving Indoor Air Quality, IAQ.

## Innovative technologies

The construction technologies necessary for the series production of the cooktop are deep drawing of sheet metal, laser cutting, drilling and welding, winding of electropilostats and assembly line assisted by robots. These are different technologies compared to those used in the market by competitors and allowing a high degree of automation and assembly of the cooktops. In addition, the construction technologies that are necessary for the series production of the M-Stekio burners are also linked to the eight industrial invention patents that distinguish M-Stekio, positioning it in the gas market as the most significant technological innovation of the last twenty years. M-Stekio has gained a world record in the gas cooking market reaching “SIL 3” in Safety Integrity Level Gas. It has been possible thanks to single safety valve for each burner and general safety valve on the entire hob, besides the Automatic OFF system, ensuring the best safety on yachts.

## Project partnership

3P Engineering has decided to involve the “Politecnico di Milano” from the beginning of the project in terms of industrial design, as well as with regard to the market analysis, exploitation and business plan. The reason of this choice is to be found in the opportunity of developing a product whose technological innovation was enhanced by aesthetic design, relying on professionals in the field. The aim of this collaboration was to combine the best gas cooking technology with the best design. The skills of the Politecnico di Milano has allowed 3P Engineering to work in team with their engineers who developed the technology and the eight patents on which is based the M-Stekio/Burnerway. Moreover, M-Stekio is a



Burnerway is the name that will be used commercially. This innovative gas cooking technology has been developed by 3P Engineering.



The aesthetic design of M-Stekio/Burnerway has been developed by Politecnico di Milano, one of the top ten universities for industrial design worldwide.

project selected by the European Commission for its innovative scope (the COSME Programme) and 3P Engineering's aim was to collaborate with an academic institution that has international appeal, as is the Politecnico di Milano. The activity carried out by the Design Department is related to the complete development of the aesthetic design of the cooktop, up to the realization of the mock-ups. M-Stekio was presented as a success case study by 3P Engineering at the Politecnico di Milano last October involving more than 100 designers to disseminate the innovation of the project.

### The contribution of the Politecnico di Milano

Politecnico di Milano is in the international top ten of Academic Industrial Design (QS World University Rankings by Subject, 2018). Design Department of Politecnico di Milano, in the person of Prof. Lucia Rampino, architect and PhD in Industrial Design, has been appointed as head of the M-Stekio design project. The team with which Prof. Rampino worked is composed by Federico Elli (designer), Venere Ferraro (researcher), Riccardo Gatti (designer) and Mila Stepanovic (researcher).

The first operation consisted in the investigation of the state of the art and the main development trends in the identified contexts of application, including yachts. In particular, the most significant products on the market were explored and a specific analysis on the typical users was carried out, to identify their needs and behaviors and future expectations.

On the basis of this research, opportunities and design constraints were identified, explaining particular interesting aspects: formal and symbolic requirements; elements related to the functions, user and context of use (including security requirements); technical and performance requirements. It is clear that users have to use the hob in very different conditions from the domestic ones and, above all, in situations of sharing and conviviality. The aspect related to cleaning, especially after use, is particularly critical in a small environment such as that of motor homes and yachts, in addition to the importance of positioning the hob in relation to the work space. The main design constraint consisted therefore in putting a complete



Prof. Lucia Rampino, architect and PhD in Industrial Design, has been appointed as head of the M-Stekio design project.



Michele Marcantoni, founder and co-CEO, and Rosalino Usci, co-CEO of 3P Engineering, at the presentation of M-Stekio mockups for yachts. M-Stekio is the name of the European project (COSME Programme) and Burnerway is the name of the product in the market.

cooking hob into a strongly reduced space, compared to the domestic one.

### The design of M-Stekio/Burnerway

The peculiarity of M-Stekio consists of identical burners in cooktops that allow a better use experience given by greater flexibility in the design path. Typically, in the cooking hobs, the knob acts mechanically on the gas pressure regulation tap: Burnerway, on the other hand, control the flame through a completely digital knob, allowing interfacing with various home automation and control systems, including the touch-screen, without substantial modifications. The M-Stekio technology has therefore allowed great design freedom from the point of view of human-machine interaction: the designer has been put in the ideal condition of being able to choose unlimited aesthetic solutions.

Furthermore, the M-Stekio/Burnerway, thanks to the optimization of the internal mechanical components, meets the standard requirements of industrial production, with a four burners model of size 560x480 mm, ensuring a perfect substitutability with the current ones. The top is designed for a high modularity of installation and, in its version with a covering panel, it allows to obtain a continuous work surface, above the hob. Furthermore, the burner's modularity and electronic control, without direct mechanical connections, allows any type of installation, from the most traditional square to the freestanding, up to the in line configuration. The

## HOW IT'S MADE

The official presentation of M-Stekio/Burnerway will be at Metstrade, 13-15th November 2018, stand 7.248. "Mobile STEKIO - Extreme efficiency digital gas cooktop for campers, caravans and yachts" has received funding from the European Union's COSME Programme (2014-2020) - GA n. 733513.

adoption of digital control paves the way for remote control, also through app. The interface can be positioned on the front or side-ways, even behind the fires, without the need to rethink the arrangement of the piping. The vertical "direct flame" allows a better energy efficiency, going to hit the irradiating surface of the pot and not, instead, by touching the edges. Better energy efficiency means faster cooking speed and less gas consumption.

### The advantages of M-Stekio

The creation of the M-Stekio cooktop is based on almost totally new components. However, this does not mean that the project is industrially onerous. Thanks to the high level of simplification of the system, in fact, the greatest competitive advantage consists in the reduction of components, especially the most expensive ones. The substitution of mechanical valves allows a substantial reduction of the complexity of the production system. A smaller number of components means better efficiency in assembly and construction of the hob. The wide range of power that can be supplied is another key factor for the industrialization: having only one burner for all the fires reduces the need of space and simplifies the assembly of the hob. Last but not least, compared to the life cycle of the product, in addition to improved energy efficiency, it is also obtained a better maintainability thanks to the lower number of components and their greater standardization.

### The economic aspects

Prof. Lucio Lamberti, PhD, Department of Management, Economics and Industrial Engineering (DIG) at Politecnico di Milano, Board member of Ph.E.E.L. (Physiology, Emotion and Experience Lab) and Director of International Relations MIP - Politecnico di Milano Graduate School of Business - has studied for 3P Engineering the current market conditions and, once defined the technical characteristics and innovative features of M-Stekio, has contributed in defining the unique selling points and, through a thorough analysis of the yacht market as well as of the competitors, the most appropriate business model to enter the market. The product presents some features that characterize it and make it somehow different from existing cooktops. In particular, two characteristics may represent a valid lever for a proper positioning of M-Stekio: on the one hand, the reduced thickness, which can increase the space available and/or create opportunities to place it in areas where thicker models cannot be installed; on the other hand, the electronic control of gas, which helps programming cooking times, optimizing use

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## The company

3P Engineering was founded in 2002, in Ancona, Italy, winning the "E-capital" Business Competition as an innovative engineering company. With a complete range of IoT-enabled products and services "Industry 4.0", 3P Engineering is an innovative SME that stands out for its know-how and cross skills, in line with the most advanced technological frontier. With the distinctive ability of a competence center, 3P Engineering creates continuous innovation with top performing solutions, such as products and business models of projects selected by the European Commission. 3P Engineering studies and identifies new development opportunities and best practices, interpreting specific needs to translate them into cutting-edge solutions in various market sectors through its four Business Units: Testing Laboratory (accredited by Accredia, n 1537, UNI CEI EN ISO IEC 17025:2005), Test Bench, Product Development, and Pre-Series.



M-Stekio/Burnerway represents a breakthrough in the field of gas cooktops, that are completely re-designed from both technical and aesthetic point of view. M-Stekio/Burnerway is at Metstrade, Amsterdam, 13-15 November 2018, booth 7.248.

(e.g., having fires consistent to the size of different pans without having too many sizes of the cookers – which are generally not available in this kind of cooktops), controlling intensity and may lead to a safer management of this very delicate part of the yacht. The business plan has been developed considering 3P Engineering as an innovative company and the essence of the value proposition is to supply the market with the most revolutionary gas cooktop. 3P Engineering is the right partner to bring to the market the innovation of premixed atmospheric gas burner, thanks to its specific gas expertise on this completely new technology compared to traditional production lines. A single code for the burner means to save time and costs thanks to the use of equal burners with the same code. In addition, M-Stekio construction technologies offer the advantage to robotize manual work with automation of the assembly process saving more than 40% of the assembly cycle time, cutting personnel costs, and optimizing time management of orders and warehouse. The target is leisure market, and the price will be coherent with its value considering that is the top of the line; the estimated initial number of pieces is based on an expected market penetration of around 1% at the beginning, with a progressive increase of market share in the following years.

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