MD news

M.D. Micro Detectors Magazine n°8 - 24/05/2016 - English edition

8

NEW VIBRATION SENSORS

METALLIC LARGE FRONT ULTRASONIC SENSORS DISTANCE UP TO 8M

CUBIC MINIATURIZED INDUCTIVE

sps ipc drives

Electric Automation
Systems and Components
International Exhibition

Micro Detectors

Italian Sensors Technology

EDITORIAL

PROUD OF BEING M.D.

2015 has also been filed as a successful year in which we consolidated the growth trend of M.D. Micro Detectors, from all points of view.
The results we have achieved so far are coming from the identification and development of five key strategic levers:

1. Technology and Quality, which have distinguished M.D. Micro Detectors products since 1971;
2. The Human Factor, namely the working culture, professionalism, knowledge, commitment to the company and its goals, the total willingness to accept challenges: all elements that characterize a large number of people who make up the M.D. team;
3. Our Organization and application of Lean Thinking principles, which have enabled us (and increasingly will have to do so) to enhance the characteristics of a medium size company like ours, first of all the speed of action and communication and the speed in making decisions;
4. An Integrated Company (the concept of " Made in M.D."), namely the fact that from development of new products/application solutions to delivery to the end customer, everything is done by our staff in our facilities. This integration has allowed us to:
   - increase production capacity;
   - reduce Time to Market both for new products and for customizations;
   - keep both production and development processes under complete direct control
   - have total and direct control of Technology and Quality
   - increase speed and efficiency;
   - have a high level of flexibility and reactivity.
5. Investments made: as of 2011 we have invested very significant figures in goods, services and people. New products, machinery and equipment as well as improvement of our operational sites and new professional profiles: all aimed at making "more and better".

M.D. Micro Detectors now has a precise, well defined and appreciated identity and visibility on the market. We are a small-medium size company, which is perceived as very positive and is respected. We are considered as a dynamic company that does so much, in a fast and enthusiastic way. This is an intangible asset that we need to feed more and more.

The main results we obtained in 2015 were the following:

- Revenue grew as well as all performance indicators were constantly improved. The new products and customization of catalogue products are bringing a major contribution to this growth, also the rationalization and reorganization actions carried out in recent years are now proving to be strategic;
- We produced 1.3 million pieces with a higher productivity than 100% and the On Time Delivery reached the 100 %;
- We have developed Nr.13 new products and realized Nr. 143 customizations of catalog products;
- We have invested a lot in all company areas. It is worth mentioning that we have purchased a second SMT line, an automatic optical inspection machine (the first one in our more than forty years history), the fifth laser trimming machine, we moved and expanded four production lines and we have strengthened the safety of our headquarters in Modena.
- From January 2015 we are part of the I/O Link Community;
- The work on the new Products General Catalogue has been carried out and finalized at the beginning of 2016;
- For the first time in our history we attended 4 exhibitions (SPS Parma and Nuremberg, SIAF Guangzhou, Hispack Barcelona);
- Within the Trainee Program, we welcomed 21 interns who have performed more than 2,500 hours of training;
- Micro Detectors Iberica recorded a remarkable turnover growth. We have also expanded and renovated our office to make it more functional and welcoming;
- In China we have operated a deep reorganization and we are pursuing the growth path both for the coils for inductive sensors and as regards the sensors.

Last but not least: during 2015 we welcomed more than 80 delegations from customers, suppliers or partners of our Company at our headquarters in Modena. We believe make us see up close, to show who we are, what we do and how we do it, is one of the more effective business cards towards any partners.

We believe that this period of deep economic and social crisis can also provide excellent opportunities. No longer words time: now, more than ever in recent decades, only the facts are worth. And who is able to produce facts, and the right facts, has great opportunities.

We believe that in an era in which we tend to relativize many things, the time has come to clearly propose strong and simple work values. That the time has come to emphasize with force and conviction our own identity and what we believe in.

In a historical period when any information channel is almost exclusively broadcasting facts of crime or news of negativity burden, we want to be the spokespeople of positive values, enthusiasm, audacity in dealing with smile on our lips, a clear mind and inflamed eyes all the critical issues, which our work and life are exposing us to on a daily basis.

That's the way we are: we are convinced that the results come through efforts and sacrifices. We think that most successes are achieved by means of the capacity and the quality of people, organizations, products and services, but also thanks to those features once again becoming extremely decisive such as commitment, industriousness and the willingness to fight. We think that even the most adverse situations may arise positive consequences. As Eric Greitens says, we also believe there is a path through pain to wisdom, through suffering to strength, and through fear to courage.

We are ambitious people, used to playing to win, doing so to achieve positive results and building things of

great solidity and durability, at the same time we are terribly human: sometimes we make mistakes and we are ready to accept even the defeats, because we are convinced that to excel you must live with your mistakes and learn from them to do better and better. Who does nothing never gets wrong: the key thing is miss as little as possible and learn from your mistakes.

2015 was a positive year for our Group. Finmasi Group posted a marked improvement both in business volume and in all economic and performance indicators. The Group is solid and in all companies we are pursuing strategies and projects based on a strong business and industrial vocation and on a medium-long term vision but without ignoring maximization of short-term results.

2016 will surely be another tough year, to face with great enthusiasm, courage, commitment and professionalism, qualities we have shown so far.

Enjoy M.D. News Nr. 8 with all the new products we offer as well as the news about M.D. Micro Detectors and Finmasi Group.

Enjoy your reading everybody.

GIACOMO VILLANO
C.E.O.

EXÉ 1985
RISTORANTE & PIZZA GOURMET

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IN A REALLY UNIQUE PLACE

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HAPPY 25TH ANNIVERSARY MICRO DETECTORS IBÉRICA! (1991-2016)

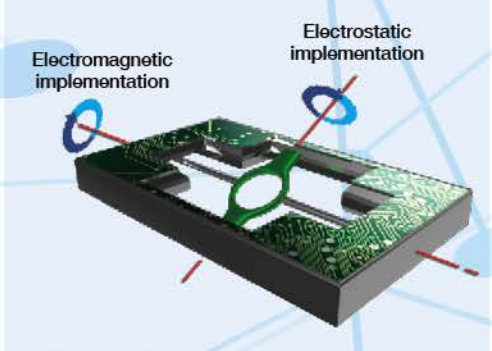
MEMS TECHNOLOGY: INCLINATION AND VIBRATION SENSORS

The VBR and INC sensors families proposed by M.D. Micro Detectors are both based on MEMS accelerometers, Micro Electro-Mechanical Systems (Fig.1): in particular the VBR sensor uses the acceleration information to monitor all the accelerations (and therefore vibrations) of the machine, while the INC sensor uses the gravitational acceleration to measure the angular position of the machinery to which it is bound.

MEMS are able to pick up information from the environment by translating the physical quantities into electrical impulses, processing such information. You can measure various kinds of phenomena: mechanical (sound, acceleration and pressure), thermal (temperature and heat flow), magnetic (intensity of flow) etc.

The main advantage of MEMS technology, however, is the ability to perform the same functions of detection, processing and implementation that are traditionally made by means of much more bulky and expensive devices. Precisely for this reason, with a tiny silicon chip it is possible to realize a pressure sensor, an accelerometer, a gyroscope and so on.

Figure 1



The potential uses of VBR and INC sensors are varied; below you will learn some of the common problems of automatic machines and then you will see how the new sensors proposed by M.D. Micro Detectors can be helpful to the resolution of these critical issues.

VIBRATIONS ANALYSIS – VBR SENSOR

In general, the movement of shafts, engines, belts and gears can generate oscillations which, in some cases, can be the source or symptom of problems (Fig.2). If vibrations exceed certain limits, the machine can be damaged with time.

The main causes of vibration are the following:

- Imbalances: a defective element within a rotary component generates vibrations when the component rotates around its own axis, generating centrifugal forces. With increasing speed of rotation, the effects of such centrifugal forces will increase with consequent greater wear of bearings and transmission shafts. Such imbalances can be caused by manufacturing defects (machining errors, defects of molds, etc.), maintenance problems (weights not balanced, deposits of dirt, not detected deformations, incorrect assembly, etc.) or breakages during normal working cycle (damage to blades or impellers, gears, etc.).
- Misalignments/oscillations of shafts: in the case where the shafts (for example of an engine and a pump) are not mounted correctly,
- some oscillations may be generated, which can lead to shaft damage. The most common causes of this problem are: thermal expansion, incorrect assembly, improper maintenance, etc.
- Wear: normal wear of bearings, rollers, gears and drive belts can cause abnormal vibrations which, if not detected in time, can result in serious breakage.
- Slacks: the loosening of screws and bolts during normal machine operating cycle can create displacements from their holder. The thus generated vibrations can exacerbate the problems already arisen by other causes and produce serious damage to the machine.

The effects of vibrations can be severe and costly to remedy:

- unforeseen wears, thus needing anomalous machine stops outside of the normal scheduled maintenance;
- generation of noise, resulting in the deterioration of working conditions;
- decrease of the machine productivity;
- worsening of product quality;
- sudden breakages, with consequent production stops.

The new shock and vibration sensor VBR series allows monitoring of all the accelerations (and thus vibrations), thanks to the 3-axis MEMS accelerometer fitted on it, allowing the company to remedy the problems described above.

This product user friendliness is its main strength, because, contrary to current proposals on the market, it does not require control units and/or post-processing software. The VBR sensors have been designed on purpose to be easy to use and therefore they do not require any special training for operators. All this implies that the VBR is a highly competitive solution also from the cost point of view.

Figure 2

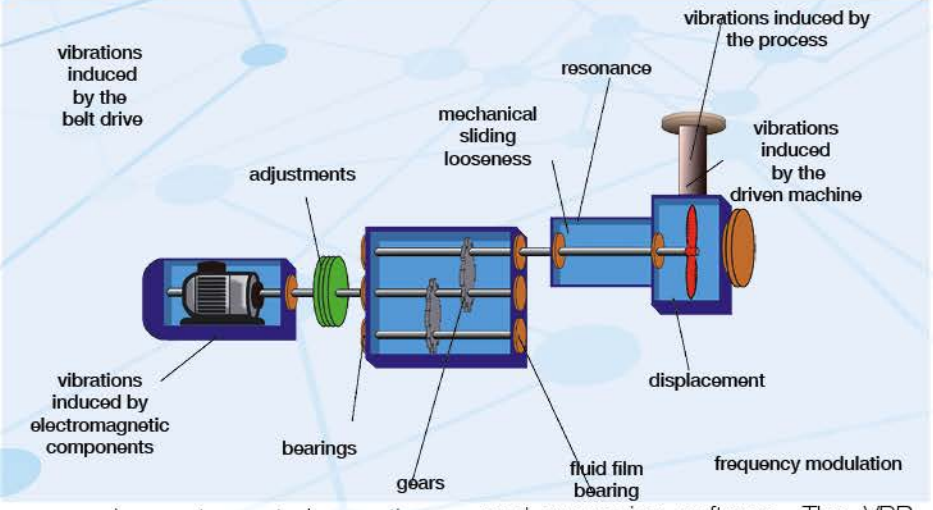
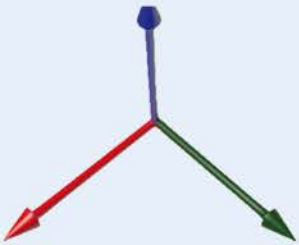
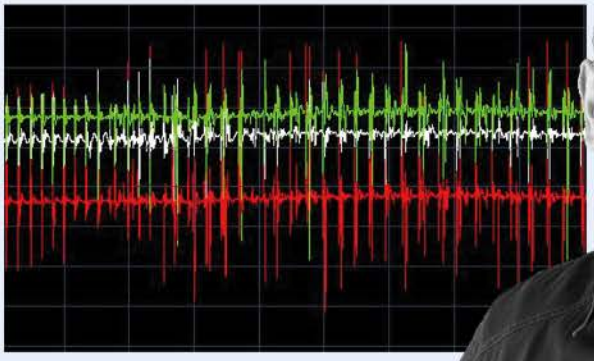
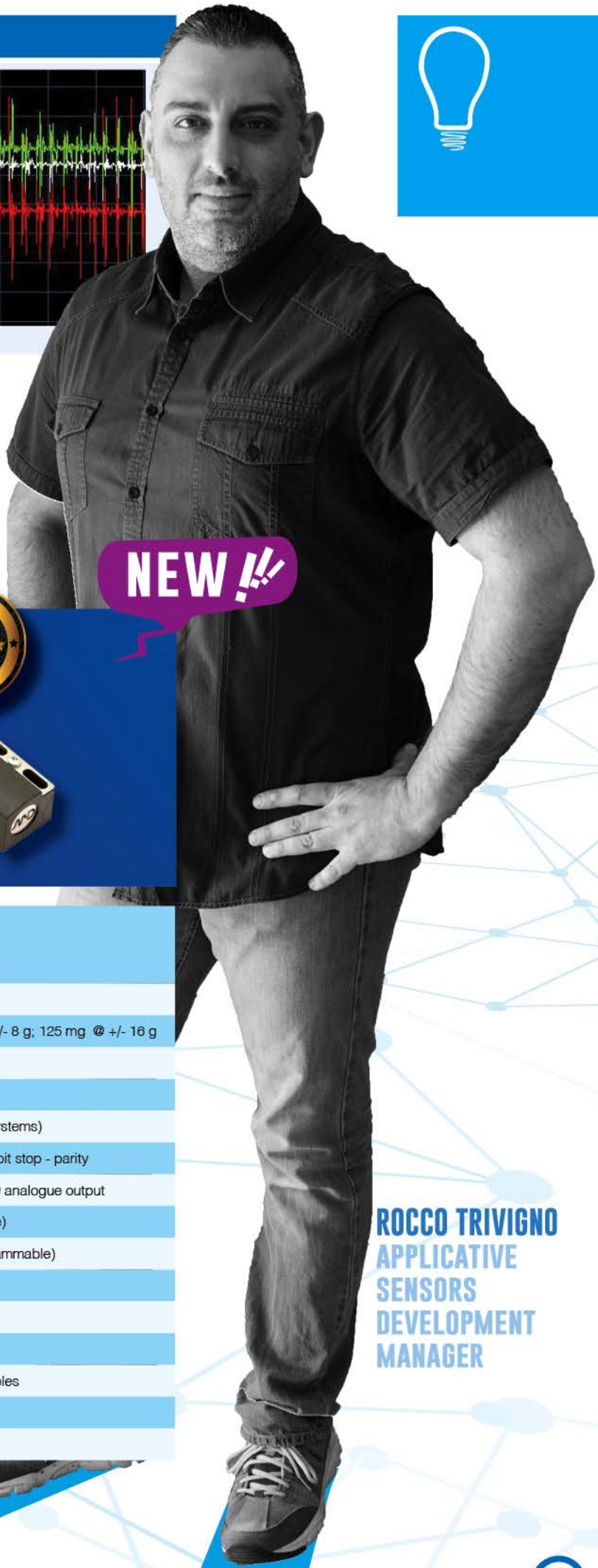


Figure 3





The sensor, which is sold together with an intuitive and easy to use software interface, provides the information to a processing unit (i.e. PC and PLC on RS - 485 bus) and it is also able to process the embedded data (Fig.3).



VBR Series
Vibration Sensor

features

- M18 housing
- AISI316L stainless steel housing
- IP67 protection degree

operating voltage	24 Vdc +/- 20%
operative range	+/- 16 g (MAX)
resolution	15.62 mg @+/- 2 g; 31.25 mg @ +/- 4 g; 62.50 mg @ +/- 8 g; 125 mg @ +/- 16 g
detection axes	3 (X, Y, Z)
frequency range	0…400 Hz
technology	MEMS (Micro Electro-Mechanical Systems)
digital output	RS-485 (addressable) 57600 Baud rate - 1 bit stop - parity
resolution digital output	16 bit @ RS-485 (complementary to 2) 12 bit @ analogue output
voltage analogue output	0..5 V / 0..10 V (programmable)
current analogue output	4..20 mA / 0..20 mA / 0..24 mA (programmable)
temperature range	-25° C...+ 70°C
protection degree	IP 67 (EN60529)
housing material	AISI316L PA12
connections	cable 5 poles / pig Tail M12 5 poles
dimensions	M18
weight	100 g

ROCCO TRIVIGNO
APPLICATIVE SENSORS DEVELOPMENT MANAGER

Example: - Shock control –
By selecting the desired scale value (from a minimum of 2g to a maximum of 16g) it is possible to configure a threshold value (128 levels), beyond which the sensor can self-propagate the alarm and prevents any damage to the machinery.

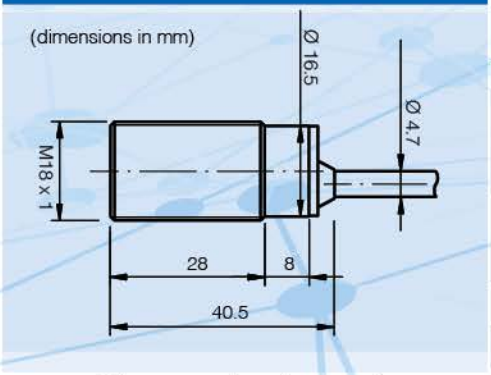
The main features of this sensor are:

- programmable operating range: ±2g, ±4g, ±8g, ±16g
- Reference axis: 3 (X,Y,Z)
- Frequency range: 0 … 400Hz
- Fully programmable in all its functions, thresholds, alarms and node addresses
- 1 output RS485 (addressable with max 128 nodes)
- 1 analogue output (programmable voltage or current)

The sensor analogue output can be set as follows:

- Normal: the analog follows the normal acceleration trend. In this mode, the sensor does not consider any possible set alarm levels;
- Toggling: each acceleration exceeding the set values of amplitude and duration causes an alarm condition. The analog output value then toggles between the minimum and maximum values;
- Impulse: each acceleration exceeding the set values of amplitude and duration causes an alarm condition. The analogue output value changes from the minimum value to the maximum value and it is kept high for a time of at least 5ms, and then it returns to the minimum value.

VBR Series



The "normal" mode allows you to monitor the progress of acceleration over time.

The "toggling" and "impulse" modes allow to have an alarm signal when some particular acceleration values are exceeded. The machine can then be stopped upon occurrence of an alarm event.

The VBR sensor enables you to:

- increase the productivity and the efficiency of a machine, reducing unforeseen machine stops as well as power consumption due to higher frictions;
- improve production quality, by decreasing the material consumption and any possible production defects due to unforeseen vibrations;
- increase lifetime and safety of the working environment, by decreasing the noise and avoiding possible dangerous breakages;
- schedule an effective policy of preventive routine maintenance, decreasing the extraordinary maintenance costs;
- improve the spare parts inventory management.

INCLINATION CONTROL – INC SENSOR

The position information, and then the "feedback" of machinery, turns out to be one of the elements at the base of industrial automation. The continuous technological evolution has led to push more and more the machinery performances to the limit and therefore the sensors must adapt. Just based on this philosophy the INC sensor is born as it performs the work of an encoder but with distinctly different performance and size.

The INC sensor is able to measure any angular position with respect to the gravitational attraction: it is therefore an inclinometer (Fig.4).

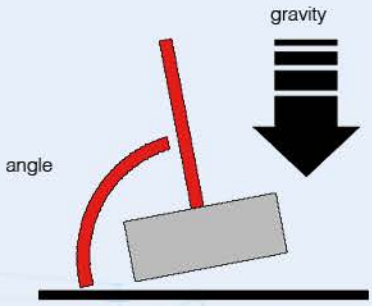
Also in this case the applications are manifold, but we are showing below an application example to simplify the description of the product.

operating voltage	24 Vdc +/- 20%
operative range	360°
resolution	angle 0,025 @ RS485
detection axes	1
frequency range	< 3 ms
technology	MEMS (Micro Electro-Mechanical Systems)
digital output	RS-485 (addressable) 57600 Baud rate - 1 bit stop - parity
MEMS digital resolution	14 bit
analogue output digital resolution	12 bit
voltage analogue output	0..5 V / 0..10 V (programmable)
current analogue output	4..20 mA / 0..20 mA / 0..24 mA (programmable)
temperature range	-25° C...+ 70°C
protection degree	IP 67 (EN60529)
housing material	AISI316L PA12
connections	cable 5 poles / pig Tail M12 5 poles
dimensions	M18
weight	105 g (cable version)

How can be the "scissor" lifting systems leveled without creating any mechanical/hydraulic link between the devices?

It's enough to connect INC sensors along the lifting brackets!

Figure 4



Using the angular information it is possible to indirectly find the height at which the single lift system has arrived and then automatically align all other facilities (Fig.5).

The INC sensor results are suitable for all applications where it is necessary to measure and/or detect angular variations (even small ones).

The main features of this sensor are:

- programmable operating range: 360° (or lower)
- reference axis: 1
- angular resolution: 0,025°

Figure 5

- 1 output RS485 (addressable with max 128 nodes)
- 1 analog output (programmable voltage or current)

The sensor analogue output can be set as follows:

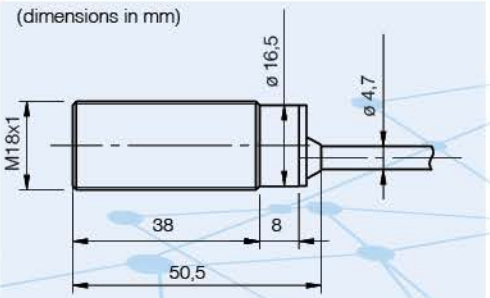
- normal: the analog returns the information referred to the angular position in a linear way;
- alarm: the analog only returns the information of out-of-range (MIN or MAX).

For both sensors, VBR and INC, M.D. provides free of charge software for an easy and instant programmability of all functions as well as for a status analysis of the machine. Moreover, to facilitate the installation on the machines, M.D. can supply with two support brackets designed on purpose: ST - 18 V (for axial fittings) and ST 18-S (for longitudinal mounting).

VBR and INC are high-tech sensors, easy to use and born to solve complex applications.

Once installed you will not do without them!

INC Series



ULTRASONIC SENSORS : CONTINUOUS DEVELOPMENT

The ultrasonic sensors introduced on the market for the first time in 2010 are for M.D. Micro Detectors one of the leading products of their catalog. M.D., at the moment, is the only Italian manufacturer of this type of sensor intended both for the industrial automation market and for other markets on which until a few years ago the company had limited access (measuring levels, agricultural machinery, etc.).

The Ultrasonic family is the one where for sure M.D. has invested more, both in terms of technical development (thanks to the constant technological improvements), and commercial (various marketing tools are available to help customers in understandin the main applications of this product type), and the manufacturing one (creation of a new and larger production area in August 2015).

Starting with the families in the standard M18 body, and particularly from UK6 family (M18 short body), M.D. decided to renew their products in order to cover even more applications than the ones already solved by the current configurations. The wish to grow, the positive approach to reach the goals established by the M.D. Managing Board and the strategic and structured path running for 5 years now, could not exclude the ultrasonic range. For all these reasons a real attack plan has been put in place to make even more performing the ultrasonic sensors both from the product pont of view and the service one.

The increased voltage supply from 15-30V to 10-30V allowed to solve all those applications where the sensors are normally battery powered (agricultural vehicles, vehicles for the roads working, etc.).; in the same way, the extended temperature range from -20 °C to + 60 °C to -20 °C to + 70 °C enables our customers to use the products in some "harsher" environments (temperature issues), while keeping a stable behavior of the sensor due to this thermal compensation over the whole temperature range. In the analog models, the new electronic configuration we have introduced, enables a greater accuracy at the extremes of the range output either current or voltage. The versions in metal housings(made of AISI 316L stainless steel and laser marked) have exactly the same performances of the plastic versions. The same improvements have been foreseen in the UK1 family (M18 standard body), on which are also implemented the Sync and multiplexing options to allow the "side by side" installation and avoiding any cross talk. Always with the purpose to enlarge and solve all possible applications, according to how the sync pin is connected, people can enable either the option of synchronism (where the synchronized sensors operate simultaneously and this option can be used with surfaces placed on the same distance from the same sensors) or the Multiplexing one (where the sensors emit / receive the acoustic wave in a consequential way and they can also be used where the surface to be detected is not at the same distance to all connected sensors). We repeat to all of our customers: being the "late comer" in this technological field, M.D. gained the advantage to present a real advanced product, easy to use and easily "customizable". The ultrasonic sensors of M.D. Micro Detectors are in fact based on a microcontroller platform, absolutely not rigid and which can be modified according to the demands coming from the market. The combination of our strengths "enthusiasm, speed, efficiency" made this family the best that M.D. could create.

The development of course will never stop and in the next few months we will focus on the M30 sensors (UT1 and UT2 families), to introduce also on these lines the improvements described above and which have already been introduced in the M18 family. Not to be considered as last update but we want to stress, moreover, that the ultrasonic families, starting with the UK1 (then will follow UK6, UT1B and UT2F) are the first ones on which we will be implementing the I/O Link

UK1 and UKR1series

M18 cylindrical direct diffuse & retro-reflective Ultrasonic Sensor
UK1 with Teach-In button

features

- **Models with digital programmable output**
- **Models with current or voltage analogue outputs**
- **Adjustable Hysteresis function: model with programmable double digital outputs, specific for levels**
- **Working area adjusting (window teach or single point teach) by Teach-in button suitable for all models for a fast coming into work**
- **Multifunction LED indicator: output type, adjustment procedure, NO/NC selection and reverse analog output slope**

IO-Link CE cULus Ex

communication, bringing in this way M.D. Micro Detectors in the center of the Fourth Industrial Revolution, the so-called Industry 4.0. The sensors may not be considered only as components used to detect objects or to measure distances, but they will be considered intelligent devices able to manage and transmit the information and data inside the"future" factories.

What we have described above will involve all catalog products but as well known from our customers, the M.D. style in the last years has always been to be the ideal partner, close to the customer's service: not only for the fast answers and delivery but also for its ability to follow his needs by solving their specific applications using customized products, which are now for us our pride and a way to be closer to the customers. The ultrasonic sensor M.D. Micro Detectors has been designed and developed to satisfy our "predisposition." And for this is that over the last few years there have been versions of product for special applications (such as for example the product for the level detection of pellets and woodchips within civil and industrial burners and presented in the sixth edition of ' "MD News ") which by the time covered more and more needs. We have listed below some of these customized versions, where you may find the most suitable solution also for you:

- PRE-adjustment made directly in our manufacturing lines based to specific range required by the customer.
- Enabling / disabling of the teach button.
- Reduction of the analog or digital output response time.
- Ultrasonic transducers covered with a protective layer of PTFE or Parylene, to reduce the effect of potentially contaminating agent for harsh environments applications.
- Change of nominal distances and reduction of the blind area on the basis of customer needs.
- Dedicated wiring.
- Mechanical Modifications (as for example the introduction of smooth bodies) in order to adapt the sensors to the required application.
- ATEX variants.

The possibilities are, therefore, numerous and have a sole common factor the solution, together with the customer, of applicative issues to increase the production efficiency of the processes of our partners.

Visit our website and contact our sales department for more information or to arrange a meeting also with the opportunity to visit our factory and the new production line of ultrasonic sensors!

ALL ULTRASONIC SENSORS ARE DESIGNED AND PRODUCED IN M.D. MICRO DETECTORS

JESSICA GALANTUCCI
BRAND LABEL AND SUBSIDIARIES MANAGER

UK6 series

M18 cylindrical short body direct diffuse & retro-reflective Ultrasonic Sensor UK6 with Teach-In button

WARRANTY 3 YEARS

SHORT BODY !!!

features

- M18 diffuse sensors with short housing
- Digital output
- Analogue output

IO-Link CE cULus Ex

UT and UTR series

M30 cylindrical direct diffuse & retro-reflective Ultrasonic Sensor with Teach-In button

features

- M30 ultrasonic sensor with standard housing and with large front with high performances and high sensing distances
- Adjustable hysteresis function: models with double digital programmable output specific for level detection
- Models with voltage or current output: programmable slope to optimize resolution
- Adjustable working area (window mode or object mode) by Teach-in button on all models for a quick and easy installation
- Two multifunction LEDs: orange LED for adjustment procedure and output type and green LED for target alignment
- Plastic and AISI 316L stainless steel housing, plug M12 or cable exit 4 pin

IO-Link

UH series

Cubic through beam ultrasonic sensors

features

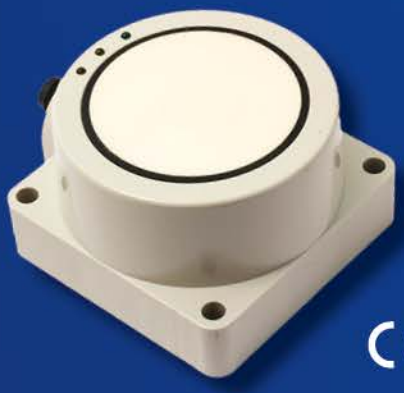
- Total protection against any type of electric damages
- LED indicators: yellow (output activated)
- Plastic housing

QU series

Cubic through beam high range ultrasonic sensors

features

- Working area adjusting by external Teach-In to avoid tampering of the sensing distance
- Current or voltage analogue output
- Complete protection against electrical damages
- Plastic housing



FC8 series

Ultrasonic fork sensors for label detection

features

- Ultrasonic fork sensor for transparent labels, any opaque material with connector
- M8 4-pole
- Teach-in models with dynamic and remote teach
- Ultrasonic technology
- Small size easy to locate; aluminum case
- NPN and PNP, Lo/Do total configurable
- Width slit detection 3 mm; depth slit detection 69 mm
- Maximum switching frequency 1,500 Hz

ALL FUNCTIONALITIES YOU NEED

			1 PNP or NPN	1 analogue output 4-20 mA or 0-10 V	2 PNP or NPN	1 analogue output 1 PNP or NPN	1 analogue output 2 PNP or NPN	Retro Reflective	Sync multiplexing
M18 short body	plastic	40...300 mm	●	●				●	
		80...800 mm							
		80...1,200 mm							
	stainless steel	40...300 mm	●	●				●	
		80...800 mm							
		80...1,200 mm							
M18 standard	plastic	50...400 mm	●	●	●	●	●	●	●
		100...900 mm							
		150...1,600 mm							
		200... 2,200 mm							
	radial plastic	50...400 mm	●	●	●	●	●	●	●
		150...1,600 mm							
		200... 2,200 mm							
	stainless steel	50...400 mm	●	●	●	●	●	●	●
		100...900 mm							
		200...1,500 mm							
		200...2,200 mm							
M30 standard	plastic	250...3,500 mm	●	●	●	●	●	●	●
	stainless steel	350...3,500 mm			●	●	●	●	●
M30 large front	plastic	350...6,000 mm			●	●	●	●	●
	stainless steel	NEW! 600...8,000 mm			●	●	●	●	●

TIME OF FLIGHT TECHNLOGY AS FURTHER SUPPORT OF PHOTOELECTRIC SENSORS IN PACKAGING INDUSTRY

IMPLEMENTATION AND BENEFITS FOR FINAL CUSTOMERS

In the previous issue of MD News we presented the first sensor realized by M.D. Micro Detectors using Time of Flight technology.

The first product launched on the market was realized in a miniaturized cubic housing and it is equipped with two programmable outputs PNP/NPN/ PushPull – NO/NC. The positive feedbacks we received from the market so far and the constant drive to innovation which M.D. Micro Detectors has been showing in its development in the last years have promoted the continuous growth of time of flight family. In fact, this yearwe plan to launch a second version with analogue output and display, enabling the user to receive an immediate feedback about any distance detected by the sensor, and another long range version both with digital and with analogue outputs.
In this presentation we want to focus on the potential applications of the sensor, which we described technically in the previous issue of MD News..

The extremely compact housing (30x20x10mm) and the ability to measure objects up to contact with the optical face allow the sensor use in several applications, especially where space is reduced.

Contrary to what usually happens in the field of cubic miniaturized sensors (particularly in triangulation sensors), the spot of this sensor is not sharp.
Therefore, this sensor is particularly suitable for all those applications in which the target does not have a smooth surface.

The expansion of the area "illuminated" by the sensor helps "mediate" the surface of the target, and then be able to measure, for example, the level of liquids and granules (pellet, plastic materials, cereals, flour, etc.).

Spot size is typically 40% of the distance from the detected area. Since the light pulse diverges by a 25° angle approx., the optical path has a very accentuated conical shape.

The Time of Flight sensor TFM1 BY M.D. Micro Detectors can be for example used on packaging machines for the detection of objects having irregular shapes and reflective, translucent or transparent surfaces. The sensor based on Time of Flight technology works in fact in direct diffusion, emitting an infrared signal that reaches the target which is then partially reflected: the time taken by the signal multiplied by the speed of light returns the information relating to the distance traveled by light and consequently to the distance from the target.

Thanks to the very divergent corner, TFM1 sensor detects food packages without difficulty – for ex. packages containing chocolates, coffee pods, ready-touse food (such as

risottos, creams, etc.) squeeze yogurt, etc.

TFM1 sensor can also be used onother applications for:

- reading cans of metal with different heights in order to properly pack them;
- measuring levels in machines for the production of ice cream, yogurt, etc. in order to adjust the mixing rate;
- detectingcorrugated pipes used for the realization of electrical installations in which the sensor is used as a background suppression;
- diffuse detection of transparent bottles.

These are just few examples of the potential and versatility of the product launched by M.D. Micro Detectors on the market. Its main technical features are summarised in the table below.

NEW!!

TFM Series
Time of Flight sensors

features

- **Compact Body**
- **Digital output**
- **2 programmable ranges**

CE

operating voltage	24 Vdc
operating range	Programmable: 0..180mm (white 90%); 0..600mm (white 90%)
resolution	1mm @ range 0..180mm; 3mm @ range 0..600mm
accuracy	+/- 10 mm
hysteresis	2mm @ range 0..180mm; 6mm @ range 0..600mm
switching frequency	< 10Hz
technology	ToF (Time Of Flight)
digital output	2 digital programmable outputs: PNP/NPN/PushPull
digital resolution	8 bit
emission	LASER Infrared (Class 1)
spot dimension	Divergent (25°)
temperature range	-10°C... + 50°C
protection degree	IP 67
housing material	Plastic
connections	4 pin cable; 4 pin M12 Pig Tail
dimensions	21x12.8x31.2mm

ROBERTO BOSANI
R&D MANAGER

INDUCTIVE SENSORS:

A COMPLETE RANGE FOR ALL APPLICATIONS

M.D. Micro Detectors develops and manufactures Inductive sensors for industrial automation for more than 40 years with a wide range of models from Miniaturized Inductive sensors to cubic housings, as well as very specialized versions for the food and beverage industry and models with analog outputs.

M.D. Micro Detectors produces around 800,000 inductive sensors a year. Overall Six Production lines fully compliant to the Lean Manufacturing principles are dedicated to this specific product family. The entire production process is performed at M.D. facility to guarantee a total control of technology, quality and procedures performances involved. The coils are manufactured at our Chinese subsidiary M.D. Micro Detectors (Tianjin) Co, LTD. The Quality and technology of our products is supported by an excellent service which key points are promptness and flexibility.

M.D. is one of the few companies Globally that develops and manufactures miniaturized Inductive sensors with high performances in the diameters from ø3 up to M8 size as well as miniaturized inductive sensors with cubic housing.

The key benefits of these models are:

- High switching frequency (up to 7 kHz)
- High stability with changing operative temperature
- Laser marking for proper identification of the product also after use in harsh environments (available on all cubic and cylindrical housing with plug connector exit).
- Enhanced working distance

For most common applications M.D. offers an extensive range standard line of sensors from the diameter Ø6,5 up to M30 size.

The main strengths of these models are:

- Decoupled voltage output. Thanks to this feature it's possible
  1. to drive a device working at different operating voltage than the one of the sensor (for instance a sensor working at 24 Vdc that drives a TTL input)
  2. to create simple logic outputs configuration (AND, OR, NAND, NOR) as well as cascade or parallel connections between multiple sensors.
- Thanks to the several configurations accessible (NPN/PNP – NO/NC) these models allow to rationalize numbers of items needed for stock for less common versions.

Besides its standard portfolio M.D. can offer customized products dedicated to the customer or to the individual application. Ranging from basic modifications (cable length or dedicated connectors, housings of non-standard size, custom labels with the logo and the part number of the customer) to the most demanding ones where the development of a brand new product is needed.

We have focused so far on our commonly named standard products but the innovative boost that is driving M.D. over recent years consents to outline a strategic plan focused both on the renovation of its standard products and at the same time to develop its top level high-tech inductive sensor lines.

In the coming 2-3 years M.D. will introduce on the market: the analog output sensors (both voltage and current output), Factor 1 and Weld Field Immune sensors, sensors able to detect different kind of metals working at the same distance (no correction factor) and to work close to the welding areas, triple distance Inductive Sensors and full metal models (with active sensing front made of metal instead of plastic).

In addition to all of the above there is the possibility to introduce for some versions the IO-Link connection feature to make "smart" even the Inductive sensor and … ready for Industry 4.0.

By combining our expertise acquired during 40 years of Research and Development in various sensing technologies (Inductive, Photoelectric, Ultrasonic, Area sensors and safety devices) M.D. can be your unique

AA1 Series

Ø 3 mm cylindrical miniaturized

features

- Stainless steel smooth housing
- Ø 3 mm
- Yellow LED: output activated
- PUR and PVC cable and M8 plug models available
- IP67 protection degree

sensor partner.

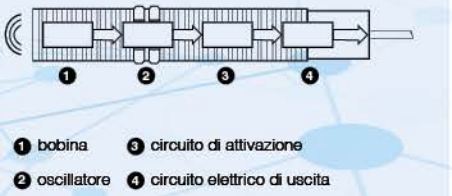
The Inductive Sensors are composed by a coil, an oscillator, a trigger and an output circuits that create an oscillating electromagnetic field.

The oscillating electromagnetic field by getting closer of a metal object reduces its width up to a fixed threshold when the trigger circuit makes the output active. When moving forward towards the object the width increases until at a given threshold limit the trigger circuit switches the output again.

Inductive Sensors are the most suitable solution for contactless detection of metallic objects.

These sensors are actually made to detect only metallic targets and are unaffected by the presence of oils, water and powders. Thanks to their housings and different configurations developed by M.D. Micro Detectors, these sensors are very

Figure 1



resistant and designed for a long lifetime and assure a high stability over the full temperature range of the sensors.

Our sensors can be used in various application fields as follows:

- Ceramic Industry
- Wood working Industry

ALL PROXIMITY SENSORS ARE DESIGNED AND PRODUCED IN M.D. MICRO DETECTORS

- Packaging Industry
- Food & Beverage Industry
- Agricultural Machineries
- Textile Equipments
- Glass Industry.

AB1 Series
M4 cylindrical miniaturized

features

- Stainless steel threaded body
- M4 diameter
- Yellow LED: output activated
- PUR cable 2 m
- IP67 protection degree

NEW!!

MINI!!

WARRANTY 3 YEARS

GIOVANNI DI LORENZO
PRODUCT MARKETING
PROXIMITY AND ULTRASONIC SENSORS AND ACCESSORIES

AC1 series

Ø 4 mm cylindrical
miniaturized inductive sensors

features

- Smooth stainless steel housing
- Ø4 mm diameter
- Yellow output LED 360° visible
- Availabe 2 m PVC cable models or M8 connector models
- IP67 protection degree

AD1 series

M5 cylindrical
miniaturized inductive sensors

features

- Operating voltage: 10...30 Vcc
- Output current: 100 mA
- LED output indicator
- Totally protected against electrical damages
- Cable and M8 plug output
- Stainless steel housing

AHS series

Ø 6.5 mm cylindrical
miniaturized inductive sensors

features

- Miniaturized dimensions: Ø 6.5 x 20 mm (cable) / 30 mm (plug) lenght
- Operating voltage: 10...30 Vdc
- Output current: 100 mA
- LED output indicator
- Cable and plug M8 output
- Totally protected against electrical damages
- Steinless steel housing

AES series

M8 cylindrical
miniaturized inductive sensors

features

- Miniaturized dimensions: M8 x 20 mm (cable) / 30 mm (plug) lenght
- Operating voltage: 10...30 Vcc
- Output current: 100 mA
- LED output indicator
- Totally protected against electrical damages
- Cable and plug M8 output
- Steinless steel housing

IL5 series
5 x 5 mm cubic
miniaturized inductive sensors

features

- Complete range of cubic inductive sensors IL8 series: 5x5x25 mm
- IP67 protection degree

IL8 / IL9 series
8 x 8 mm cubic
miniaturized inductive sensors

features

- Complete range of cubic inductive sensors:
  1. IL8 series: 8x8 mm with sensing head at the top
  2. IL9 series: 8x8 mm with sensing head at the centre
- IP67 protection degree

AH1-AH6 series
Ø 6.5 mm cylindrical
inductive sensors

features

- Extremely reduced dimensions
- Metal housing (stainless steel)
- LED status indicator 360° visible
- IP67 protection degree
- ATEX models, cat. 3, available on request
- Complete protection against electrical damages
- Standard and long distance models
- Standard and short body housing

AE1-AE6 series
M8 cylindrical inductive sensors

features

- Extremely reduced measure
- Metal housing
- LED status indicator 360° visible
- IP 67 housing protection
- ATEX models, cat. 3, available on request
- Complete protection against electrical damages
- Standard and long distance models
- Standard and short body housing

AM1-AM6 series
M12 cylindrical inductive sensors

features

- Wide range of models: standard, short body, long distance
- Output: cable, M12 and M8 plug cable exit
- Models with 2, 3 wires
- ATEX models, cat. 3, available on request

AK1-AK6 series
M18 cylindrical inductive sensors

features

- Wide range of models: standard, long distance
- Output: cable, M12 and plug cable exit
- Models with 2, 3, and 4 wires
- ATEX models, cat. 3, available on request
- Models with complementary output (NO+NC)
- Complete protection against electrical damages

AT1 series
M30 cylindrical
inductive sensors

features

- Wide range of models: standard, long distance
- Output: cable, M12 and plug cable exit
- Models with 2, 3, and 4 wires
- ATEX models, cat. 3, available on request
- Models with complementary output (NO + NC)
- Complete protection against electrical damages

PFM1 series
M12 cylindrical inductive sensors
for food and beverage applications

features

- AISI 316L (DIN 1.4404) stainless steel housing
- LED status indicator
- IP67 – IP68 – IP69K protection degree
- ATEX models, cat. 3, available on request
- Complete protection against electrical damages
- Standard and long distance models

PFK1 series

M18 cylindrical inductive sensors
for food and beverage applications

FOOD!

features

- AISI 316L (DIN 1.4404) stainless steel housing
- LED status indicator
- IP67 – IP68 – IP69K protection degree
- ATEX models, cat. 3, available on request
- Complete protection against electrical damages
- Standard and long distance models

ECOLAB Diversey
for a cleaner, healthier future

IP69K

PM3 series

M12 DECOUT®
cylindrical inductive sensors

features

- Wide range of models: standard, DECOUT output
- Output: cable, M12 plug cable exit
- Models with 4 wires
- ATEX models, cat. 3, available on request

PK3 series

M18 DECOUT®
cylindrical inductive sensors

features

- Wide range of models: standard, long distance, DECOUT output
- Output: cable, M12 and plug cable exit
- Models with 4 wires
- ATEX models, cat. 3, available on request
- Special models with double enclosure immersion proof (IP 68)
- Models with complementary output (NO+NC)

WHY CHOOOSING M.D. PRODUCTS

- QUALITY
- TECHNOLOGY
- PERFORMANCES
- EASY TO USE
- SOLID AND LASTING
- CUSTOMIZED
- EXCELLENCE IN SERVICE

WHY CHOOSING M.D.

- 100% MADE IN ITALY
- A LEAN COMPANY
- HIGH TECHNLOGICAL AND QUALITATIVE STANDARD
- OUTSTANDING SERVICE
- HIGH PERFORMANCES, INNOVATION, SPEED,VERSATILITY
- HIGH CAPACITY IN CUSTOMIZING THE PRODUCTS
- M.D. STYLE: A UNITED TEAM WORKING WITH PASSION

THE WAIT IS OVER : THE NEW PRODUCT CATALOGUE

At last here we are! The new Product General Catalogue is now available, the result of a team work carried out by Marketing Communication, Product Marketing, Research & Development and Sales.

With more appropriate words: at last our, but above all Your "New Product General Catalogue" is available.

This document has been conceived, designed and physically carried out by M.D. Micro Detectors' staff and is the result of a great Team work.

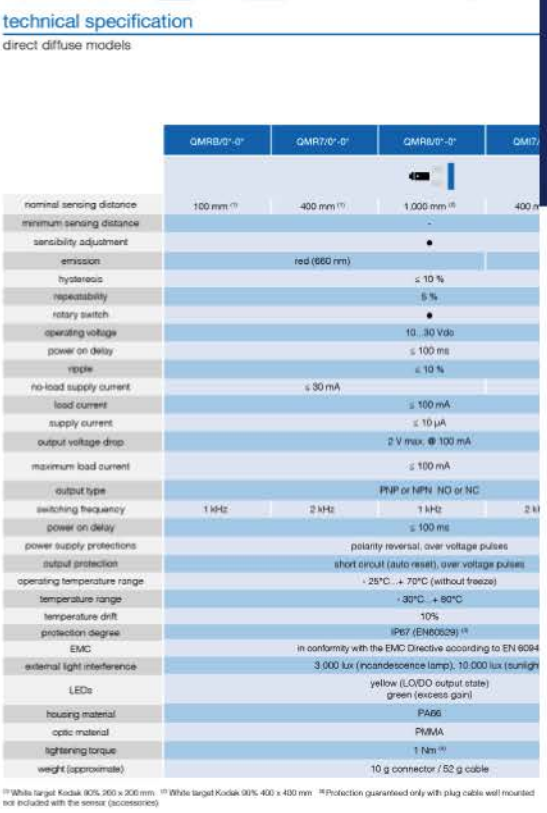
Our New Product General Catalog comes in a completely revamped version and fully aligned to current technical and graphical standards. This indispensable sales and reference tool is available both in hard copy and in electronic form.

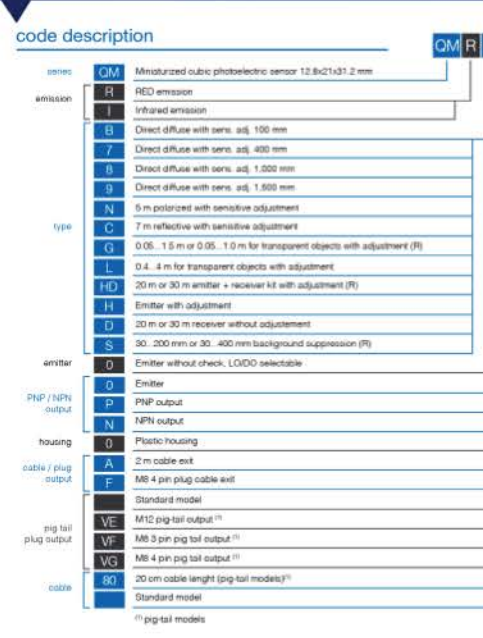
The New Product Catalogue of M.D. Micro Detectors is a weighty tome of over 750 pages, created in slavish obedience of technicians' and salespeople indications, that is to say coming from those who interact and keep daily contacts with customers and therefore know their needs at the best.

It is also the result of a rigorous work of benchmarking of competitors' catalogues, in order to align this tool to market standards.

Below we highlight the main changes implemented, and the logic that we have planned and practiced to realize it:

1. The catalog is published in one volume, rather than several catalogs for each market segment as done in the previous versions. The uniqueness of this book as well as its printing is done in a format and weight of paper that enhances the relevant usability making it a user-friendly tool.
2. The graphics have been updated and aligned to the latest marketing tools as well as in line with a coordinated company image. The catalog is made in four-colour and has been enriched with a large amount of colour images. The previous catalog was in two colors and with black and white pictures.
3. The catalogue will be available in four languages; at first in Italian and English languages. In a few months it will be available in Spanish and Chinese, too.
4. Each catalog will be monolingual and not bilingual, as for previous version, for a total customer oriented disposition, in order to make it easy to read and understand for users.
5. The catalog has been standardized in all its parts: language, words, drawings, curves and arrangements of elements.
6. The catalog has been completely revised in all its technical details: all values have been checked and re-calculated. All drawings and curves have been revised and drawn again.
7. The catalog has been updated by adding all new M.D. product ranges including the new born Applicative Sensor family. This recent category now contains other products, which were previously part of different families, but here better represented (such as FC4 models).
8. The catalog can also be updatable in real time, because, as for all technical and marketing documentation made by M.D. Micro Detectors, it has been realized and managed only by internal staff.





9. Show, don't tell: the new catalog uses different symbols not for a mere aesthetic reason but for an easy reading; thus any user can find all indications needed in the most intuitive and fastest way and at the same time an easy comparison between our products as well as their features can be made.
10. Enjoy the future: the catalog is just one stage of a major renovation path that we have been carrying out since 2011, and that will continue for a long time. The renewal of the website will be the next step. In this perspective, all data, drawings and pictures have been organized and classified in order to be entered on the website according to a logic of dynamism and accessibility.

M.D. Micro Detectors General Catalog has been an important investment under all points of view. It is part of a strategy focused on our aim to increasingly become a benchmark in the Industry of sensors.

Ask our salespeople for getting a copy or else send an enquiry to the following email address: info@microdetectors.com.

FRANCESCO ZAPPARDINO
MARKETING COMMUNICATION SPECIALIST

FEDERICA SALA
MARKETING COMMUNICATION SPECIALIST

M.D. PEOPLE: INTERVIEW WITH SIMONE TURCI AND MATTEO BARANI

In today's business systems, in addition to the importance of products, quality, organization and performance, the quality of people is essential, meaning their preparation, approach to work and involvement in the company's development and in the working environment.

Hereby the series of interviews with people who made M.D. Micro Detectors history and who represent it every day still goes on. In this issue we give voice to two professionals, Simone Turci and Matthew Barani, who have been proudly leading M.D.'s banner on the market for years.

SIMONE TURCI AND MATTEO BARANI: INTRODUCE YOURSELVES!

ST: I am 39 years old and live in Modena where I was born. I graduated in electronics and telecommunications at Technical Institute Fermo Corni in Modena, and I got a University degree in marketing and business administration at Modena University. I can say I am an outgoing person with a sunny disposition for meeting people as well as an enterprising and curious nature. These features of my personality lead me in personal life to continually look for new things, travels, friendships, sports and other interests, while in my job they allow me to never rest and depart from routine, thus always looking for new challenges with a constant determination always supporting me. This is the reason why, after having worked for M.D. Micro Detectors since September 2002, from beginning of this year I left my role of Sales Manager for Northern-Eastern Italy and took a new role: Sales Manager for the European market which is a great new challenge.

MB: my name is Matteo Barani, I am 31 years old and I also live in Modena, where I was born, that is an area where genetic code of people is characterized by spirit of initiative, working culture, passion for challenges and for pleasurable things of life. I followed a course of study focused on the economic world, at the Technical-Business Institute J. Barozzi in Modena, until I received my University degree in economics and international marketing from Modena University.
I have worked in M.D. since 2007 and from 2010 I have covered my current role of Sales Manager for Northern/Western and Central/Southern Italy. I love being in society and getting in touch with people and I am ambitious and proactive. I like my job very much and I carry it out with great passion and determination.

WHAT DO YOU THINK ABOUT THE CURRENT SITUATION OF ITALIAN AUTOMATION MARKET IN GENERAL AND IN PARTICULAR OF SENSORS?

ST: Italian automation and sensor market suffered greatly during the economic downturn of 2008-2009, showing a great contraction in this two-year period and so far it has not fully recovered from this event, and the market becoming more and more competitive and selective. The Industrial automation trend, however, has recovered in the last two years (even if the pre-crisis growth rates are a distant memory) thanks to the export of industrial machinery, in particular to the developing countries.
The industrial sensor market is still very competitive with aggressive pricing, due to the excess of supply over demand, a condition shared by many markets.

MB: Italian industrial automation market has year by year become more and more important in the local economic context, because it is one of the few fields with a growing trend on a stable and ongoing basis. All this thanks to many companies, who are producing a high level of technology and worldwide have become a benchmark, driving this field of growth in a very real sense. The sensor market, on the contrary, was been seriously affected by the 2008/2009 crisis, which introduced new dynamics in this market actually making it much more competitive and difficult.

WHICH PROSPECTS CAN YOU SEE FOR THESE MARKETS?

ST: The automation market (and consequently also the sensor one) has high rates and speed of evolution. These features lead to a widening gap between the competitors who invest and put development at the base of their strategies, compared to those who decide to stay afloat following short term strategies. I believe the result will be "a real natural selection" of players, with a gradual exclusion of unstructured companies for this type of competition.

MB: Prospects are positive in general, industrial automation is one area in evolution and still under development, although the underlying context is always very competitive for the large number of players on the market. The uncertainty that reigns in the world economy will make the sensor market increasingly challenging for companies because of the poor visibility of customers; to counter this dynamic manufacturing companies will increasingly need to invest in their facilities to improve their level of service and reduce response times at all levels.

HOW IS M.D. MICRO DETECTORS PERCEIVED BY THE LOCAL MARKET TODAY?

ST: In 2001 M.D. changed their brand from DIELL, which identified their products in the past, to the current one. Despite this historical change, on the Italian market their products as well as the company was still being identified as DIELL, together with a picture of a company with excellent products from a qualitative point of view and performance, but operating at a local level, very static in its technological know-how, limited in its development and with a highly reduced communication level.
In the last five years M.D. have changed their strategy and have been completely modernized. This change has touched all company departments and resulted in a wider product range, a global expansion and a total transformation of the factory ensuring speed and efficiency to the market. All of these changes have erased the memory of the old brand and also allowed the Italian and global markets to identify M.D. as a solid, global reality, as an innovative company able to adapt to changes very quickly.

MB: With the new company policy M.D. has pursued for several years

now, it is today perceived on the market as a dynamic and innovative company, strongly oriented on customer needs, highly flexible and competitive.
Another aspect that the market perceives loud and clear of M.D. is the high level of quality and reliability of its products, something that has always characterized the company on the sensor market.

WHAT ARE THE STRENGTHS AND EXCELLENCES OF M.D.?

ST: M.D. has a range of products as industrial sensors with high technological content, with quality standards reaching the highest levels in the market, and a speed of development and deployment of these products which is unique in their field, as well as the ability to make them suitable for the specific customer's needs in a precise and rapid way. The high technological content of our factory also allows to maintain a high flexibility in all those activities making up their business processes, to better meet the demands of this ever-changing market. In the Area Sensors and Cylindrical Photoelectric Sensor fields, products that M.D. first invented and launched on the market, our company still has the most complete and performing range, therefore recognized today as a market-leader.

MB: The strengths of M.D. are certainly those brought out from the reorganization process carried out in the last years, that is fast response time to market demands, very quick decision making and high flexibility; this very flexibility, understood as the ability to satisfy customer requirements both in terms of product and service, is increasingly becoming the trademark of M.D., on which the company is building its growth and its development.
Speaking about products, M.D. is historically a leader on the field of the M18 photocells and proximity sensors. M.D. has also added new lines of high quality products to these traditional products, such as Area Sensors and Ultrasonic Sensors with complete ranges, excellent performance and competitive prices, thus reaching an important position even on these new sectors.

WHY BUYING M.D. PRODUCTS?

ST: There is not only one reason for choosing M.D. products, there are many aspects, such as high-performance and speed of deliveries, their quality reliability, a widespread sales network prepared to give a first level support, a production system based on the principles of lean manufacturing, which allows to fulfill the most special requests in a very short time, all at a very competitive price.
MB: Customers who choose to buy M.D. find in us much more than a normal customer-supplier relationship, but a real partnership, which is evident in the way M.D. follows its customers: maximum attention to customer requirements, on time deliveries and ability to meet any kind of urgent demand, high-quality products that do not cause any problems on the field, high flexibility meant as the company's capacity to develop customized products based on customer needs.
We believe another aspect that values our brand is the "made in Italy": a customer who purchases from M.D. knows that the whole process concerning the product, from development to production, is done in our Modena facilities.

WHICH ARE THE WINNING PROFESSIONAL FEATURES THAT TODAY ANYONE INVOLVED IN SALES MUST HAVE?

ST: The seller's role is always twofold: on the one hand they must be an integral part of the company, sharing values and way of working, know in detail the products and at the same time all processes to be able to better transfer them outside.
On the other hand they must always be in the market, know the customers and their needs be in contact with them in order to be able to give them the right products and

MATTEO BARANI
NORTH-WEST AND MID-SOUTH ITALY SALES MANAGER

SIMONE TURCI
EUROPE SALES MANAGER

solutions. The difficulty of this work today is to manage a flow of information which becomes broader and more dynamic. The winning feature is the ability to convey, thanks to new technologies, this large flow of information from one side to the other, all in the shortest possible time.

MB: Who takes care of sales in a company like M.D. cannot afford to be a simple seller. The M.D. product is typically chosen by a technician, then a deep technical knowledge of the product and its manufacturing processes is a crucial aspect. The seller must increasingly play a role as a "consultant " for the customer, they should be able to give advice according to their experience and also guide in choosing the right product for every application.
Another decisive aspect, in a sector evolving so quickly, is the presence on the market, that is be as much as possible in contact with the customer and above all be able to respond quickly and effectively.

After the start of economic crisis in 2008, how did the professional approach change for those people involved in the development of sales?

ST: The crisis started in the last months of 2008 has caused to the sales world an imbalance between supply of products compared to market demand. Therefore to continue to be active and come out winners in a market where the number of players is increasing, salespeople had to change their approach and method of work, becoming faster in responses, being more present on the market and more determined to capture customers. Most of the negotiations is based on the small details of offers or on the applications and the seller must master them in a safe and precise way. The difficulties have increased a lot in this field, but thanks to this the professionalism of those who stay on the market is now much higher.

MB: The crisis of 2008/2009 has introduced new elements of competitiveness on the market, making it much more complicated. The professional approach of those involved in sales should increasingly go towards the development of a partnership with the client; the seller must be able to convince the customers that the company behind is ready to support their any needs. The speed at which today the market moves requires everybody increasingly tight deadlines. This implies that the seller's training must be of a high standard, as the customer has no more time to wait for answers or information.

What do you like most about your job?

ST: Our work is far from simple, it requires a lot of preparation, great knowledge, special attention and study of market dynamics, a continuous updating on products and applications, with a constant focus on results that must reflect the investments made by the company. It has many good points such as the constant contact with people, the strategic choices in negotiations, organizational autonomy both for visiting them and for promotional sales as well as for facing new and different challenges every day. The greatest satisfaction is to acquire a customer after years of courtship, thanks to the perseverance and determination in our work.

MB: The thing I like most about my job is the continuing challenges the market and the company raise for you every day. Our work is extremely dynamic and leads you to stay in touch with people, a decisive aspect for those who play our role. Another very fulfilling aspect is the acquisition of new customers, since the dynamics of purchase/change of supplier are very complex and long.

What do you like most about M.D. Micro Detectors?

ST: M.D. is a company with 45 years of history, but also with a young and very enterprising spirit and attitude as well as a positive atmosphere among colleagues. In our company everybody helps each other sharing the work synergistically, making group, and here you can breathe a lot of desire to do. Those who love their job and carry it out enthusiastically can find in M.D. a company able to encourage them and make them grow professionally. Our CEO always says that he has never been bored, not even for a day in many years of work for M.D., and I could say the same thing: this is what I like most about M.D.

MB: M.D. is a company giving great opportunities to anyone involved in sales, putting at their disposal a fast and flexible structure, a quality product package and a great autonomy of action. These features allow us to strongly believe in the company we represent as well as to be effective on the market. Another aspect I like about M.D. is the team spirit that reigns among colleagues, same spirit allowing us to work cohesively with passion to reach the goal.

What is M.D. approach to the market?

ST: M.D. market approach is completely focused on the customers. M.D. pay a lot of attention to their needs, taking utmost care in providing an outstanding service level, a high product quality standard, a wide mix of products that we can customize to meet our customers' expectations and needs. In a difficult and competitive market like todays, our mission is to provide innovative solutions, which can satisfy the customers' application needs 100 %.

MB: M.D. approaches the market aiming to satisfy all customer requirements, from service to product. The relationship we are trying to build is a true partnership, where M.D. can be at customers' disposal to reach their total satisfaction.

Make a summary of your professional experience in M.D. Micro Detectors

ST: I came in M.D. in 2002 with the idea to take care of marketing, but after only six months I have been moved to the sales. Initially this change worried me, but I faced my new position in a positive manner and with time I can say I made the right choice. Over the years I have always worked in sales in the Italian market, becoming its manager in 2008. Today, after 13 years, M.D. is giving me a new challenge: to develop the European market; I am very happy to have accepted this new task, with the aim to export my experience, gained on the domestic market, also abroad.

MB: I joined M.D. in July 2007, first to support the Marketing Department. After six months I was given the option to switch to sales and so I started the adventure on the territory of Emilia. Since 2010 I have covered the current role of Sales Manager for Northern / Western and Central / Southern Italy, supporting and coordinating my eight agencies on that territory.

WHAT ABOUT YOUR OPINION ON FUTURE SENSOR TECHNOLOGY DEVELOPMENT?

ST: The sensor technology is constantly evolving, so it is not easy to make forecasts. To date the direction taken is towards smart sensors such as cameras and vision systems, more and more focused on measurement such as time of flight and ultrasonic sensors, using connection systems where more information can be transmitted. At the same time, the standard sensors will not disappear; on the contrary, they will keep their share which is still in development. Some application areas will decrease their use, while new ones will raise, resulting in adaptation of this sensor technology to the new markets.

MB: The sensor technology is still rapidly evolving: one of the most developed aspects in recent years is related to communication systems, such as field bus and I/O Link. This development will influence and is already affecting the sensor technology, especially for those high-performance products, since the market will increasingly need sensors able to communicate with these systems. Another emerging trend is the need of an even smarter and evolved sensor, able to measure, as the applications on the market are becoming more and more "extreme" day by day.

WHAT WOULD YOU RECOMMEND TO A YOUNG PERSON WHO APPROACHES FOR THE FIRST TIME TO THE WORLD OF WORK?

ST: The main qualities to break into the world of work are always the same, the humility and the desire to learn.
In a world of complicated and precarious work like the present one, my advice is not to be afraid of challenges and difficulties, but, on the contrary, it is necessary to face them with enthusiasm. It's important not to be resistant to changes, indeed, find in them the energy to grow; it is essential to be able to turn problems into opportunities and above all to find a job you like, and get passionate about it.

MB: The decisive aspects that young people must show to enter the world of work are of course the desire to learn and the willingness to sacrifice, as well as to put passion in everything you do, humility and determination to achieve the result. It is essential to do a job you like, so that you can perform it in the best way, as it is not a burden but a passion.

WHAT DO YOU RECOMMEND TO THOSE WHO WANT TO FACE THE CHALLENGE OF SALES IN THE WORLD OF SENSORS FOR AUTOMATION?

ST: My advice is to be curious. Curious to understand the sensors performances and to know the relevant applications. This is a competitive world, yet very diverse and this allows us to know very different industrial sectors, to face ever new issues and applications. By means of good work culture and spirit of enterprise you are able to enter a world where you can't get bored, and where you have the opportunity to know many fields of industrial production.

MB: the advice I can give people who want to engage in the sales of sensors in industrial automation is not to be discouraged by the difficulties in this sector and by the extreme variety of commercial and technical dynamics they will have to face. This sector is very complicated and you have to reach a high preparation to deal with, but the rewards you can gain in this area are really huge.

NEW UT5: DETECTION RANGE UP TO 8 M

NEW!!

The ultrasonic sensors market has been growing for several years at a very attractive rate. This technology, thanks to its versatility, is increasingly used in different industrial applications.

Long gone are the days when ultrasound technology was considered too complex, expensive and used only in rare and extremely difficult cases.

The knowledge of the extensive application capabilities of this type of sensors is spreading. The market and its applications are increasing thanks to a greater knowledge of the inherent benefits of this type of product, as well as for its greater accessibility from an economic point of view.

M.D. Micro Detectors, for many years has been at the "cutting edge" of this field, offering an extensive range of sensors easy-to-use, reliable and resistant to any type of environment.

The application areas in which there is the greatest growth in the use of ultrasonic devices are:

- Food & Beverages
- The wood processing sector
- The glass processing sector
- Agricultural Sector
- Printing Industry
- Material Handling
- Level Detection
- Packaging
- Parking
- Vehicles for the cleaning and maintenance of roads.

The M.D. sensors are particularly robust, and suitable for operation even in the toughest conditions and they can be used in any context mentioned above.

With this in mind, and highlighting particularly the technological advantage, M.D. Micro Detectors have decided to broaden their range with the new UT5L model, an ultrasonic sensor with particularly high detection distance. In totally metal body (AISI 316L), its firmness and resistance see it particularly suitable for level measurement and to detect most importantly distances up to 8 meters.

The newest member of the family ultrasonic M.D. was presented for the first time during the 2015 SPS exhibition in Nuremberg. Thanks to its compactness, robustness and ease of use, it has been an immediate success and this is why, from "simple bet" (a concept that gave its birth), it immediately turned into a great product catalog.

Having no limitation on the type and consistency of the material to be detected, colour, transparency level or state, UT5L ultrasonic sensors can be used anywhere. Typical applications of this new series of sensors are:

Figure 1

- Agricultural field to facilitate the protection of orchards from pests. Normally, in fact, are used some chemicals to protect the trees, and they are distributed with dedicated sprayers. With the traditional method the risk, in fact, is that the sprayers continue to spray pesticides "continuously". The task of the ultrasonic sensor is to identify the spaces among the trees and to stop any inappropriate use of chemicals.

Figure 2

- In vehicles for waste collection, where ultrasonic devices must resist to harsh conditions also linked to weather conditions. The uses in this field are varied: the control of the lifting and positioning of the containers with respect to the vehicle, ensuring a certain flexibility to avoid any manual intervention by the operator; the controlling of the filling level within the same vehicle, etc.

Figure 3

- Detection of the coil diameters in the winding and unwinding of paper, metal machines and plastic material.

Figure 4

- Levels Measuring in grain silos, water, oil or polymer materials. Its independence from colour, type of material and the surface to be detected, make it the best product for both precision and reliability with all types of material.

Furthermore, the adjustable hysteresis function allows to detect the level of overflow in an effective, economical and immediate way.

Figure 5.

- Position Control of a truck in a loading/unloading area.

Figure 6

These are only some of the applications in which the sensor UT5L proves to be the most suitable and accurate device for the constant and continuous monitoring of long distances, both in the digital (with adjustable hysteresis therefore particularly suitable for the measurement of levels), and analog versions.

All models are available the Sync function (named as Sync) and Multiplexing: sensors with Sync function are activated simultaneously through a sync pulse and this working mode eliminates the effect of cross talk that generates interference among the different devices.

The Sync option works optimally in the case where the sensors and the target are placed at the same distance. In the case of multiplexing sensors are activated sequentially. In this case you can have different distances between sensor and target and the cross talk is eliminated thanks to the consequential operation of the different products.

Our organization is ready to illustrate the features of this product to any interested parties.

FRANCESCO MARZO
R&D PHOTOELECTRIC AND ULTRASONIC SENSORS

MARCO MESSORI
PHOTOELECTRIC AND ULTRASONIC SENSORS R&D RESPONSIBLE ENGINEER

PATRIZIA MANGANIELLO
R&D PHOTOELECTRIC AND ULTRASONIC SENSORS

UT5 series

M30 Cylindrical Ultrasonic Sensors with Teach-In button

8 M DETECTION RANGE !!

features

- **Large Front M30 ultrasonic sensor with high performances and High detection range capacity**
- **Models with mixed digital and analogue outputs to better optimize the item numbers.**
- **Working area Adjustment by Teach-In button**
- **Adjustable Hysteresis Function: Model with double digital output adjustable specifically on detection level application**
- **2 LED indicators: LED**

maximum working distance	8,000 mm
minimum working distance	600 mm
sensing range	600...8,000 mm
beam angle	15° ± 1°
switching frequency(digital output)	1 Hz
response time (digital output)	500 ms
response time (analogue output)	600 ms
hysteresys	1 % of the total detection area
repeat accuracy	0.5 % of the total detection area
resolution	0.1%
linearity error	1 % of the total detection area
temperature range	- 20°C...+ 70°C
temperature compensation	●
operating voltage	12 - 30 Vcc; 15 - 30 Vcc: for models with voltage analogue output (0-10 V)
thermal drift	± 5 %
ripple	5%
leakage current	≤ 10 µA @ 30 Vcc
output voltage drop	2,2 V max. (IL = 100 mA)
no-load current	≤ 50 mA
output current (digital output)	100 mA
minimum load resistance (analogue voltage output)	3 k Ω
adjustment set point	Teach-In button
time delay before availability (digital output)	≤ 500 ms (digital output); ≤ 900 ms (double digital output)
time delay before availability (analogue output)	≤ 1,400 ms
electrical protections	overvoltage pulses, transient
output electrical protections (digital output)	short circuit (auto reset), overvoltage pulses
output electrical protections (analogue output)	overvoltage pulses
EMC	conforming to the EMC Directive according to EN 60947-5-2
protection degree	IP67 (EN 60529)
housing material	AISI 316L
front end material	epoxy resin (glass loaded)
storage temperature	- 35°C...+ 70° without freeze

Sanvitale Transport and Shipping S.r.l. is leader, dealing for over 35 years with transportation and shipping all over the country and Europe.
Born in 1972 in the industrial port of Ravenna, they developed their expertise in road transport of non-dangerous goods, such as iron and steel materials, building products, fertilizers, timber, carpentry and plastics.
Sanvitale Transport and Shipping, with a young and motivated team, offer to their its customers the best in terms of service in the transport and shipping industry, guaranteeing:

- Punctuality
- Professionalism
- Efficiency
- Dynamicity
- Security for all deliveries
- Reliability

The operational management of the Company is based on the continuous specialization and research in the entire sector of road, with the aim to keep pace with the times. Sanvitale Transportation can boast effective and efficient organization, with a wide range of vehicles that can quickly solve any type of requirement, offering the customer flexible and customized solutions.

sanvitale
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LEAN ACADEMY: FOCUS ON THE VISUAL MANAGEMENT

In this tutorial we highlight our application of Visual Management with special focus on the content of an extremely effective tool which is the Visual Board. For M.D. Micro Detectors, Visual Management means Simplification and Effectiveness.

Figure 1

VISUAL MANAGEMENT PS2 LINE

1		190				1	1		
2		190							
3		190				1	1		
4		190							
5		190				1	1		
6		190				1	1		
7		190				1	1		
8		190				1	1		
		1520				1	11		1296

The tutorial series with which M.D. Micro Detectors highlights their application experience of Lean Thinking methodology adds a new chapter. It is our intention to continue to share the contents of an absolutely positive experience which we have been living for some years. In our opinion, this work methodology provides European manufacturing companies with a competitive argument of great potential. Lean Thinking is the appropriate tool to cope with the critical issues faced by Italian manufacturers. The objective difficulties which they are confronted with, in terms of labor costs, taxation, heaviness and invasiveness of the "public machine" can be offset by the existence of technology and product quality, together with the exaltation of a service level which greatly increases the efficiency, speed, flexibility, reducing waste.

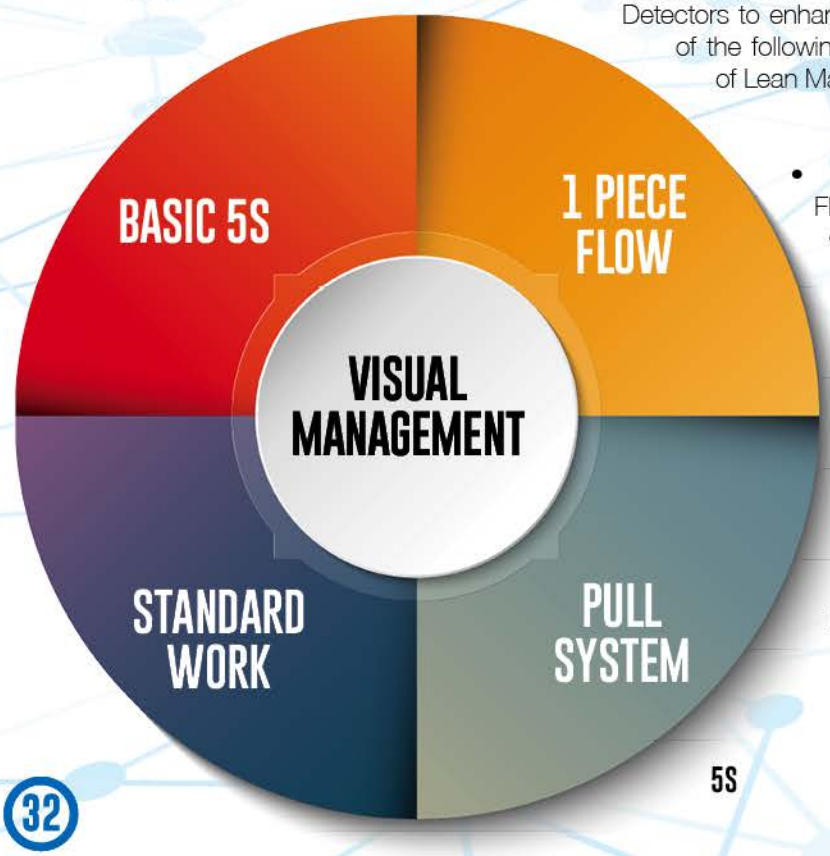
The simplification of procedures and of the necessary basic indicators of management is one of the most positive aspects characterizing the Lean Application in M.D.. Now for us many things are simpler, easier to apply and intelligible. Through simplified action and access to all key business indicators we have achieved greater efficacy.

All key business indicators are regularly updated and date back to no longer than the day before. Employees constantly have these indicators before their eyes and that facilitates the action and decision-making process.

Visual Management allowed M.D. Micro Detectors to enhance the application of the following typical practices of Lean Manufacturing:

- 5S
- One Piece Flow
- Standard Work
- Pull System.

In this article, after listing the four Lean practices above mentioned, we will illustrate our application of Visual Management.



5S

5S is a simple and effective system for the order management and for the workplaces cleanliness. 5S refers to five Japanese terms representing the phases of the methodology:

- Seiri - Choosing and Separating. Eliminate anything not needed in the workplace;
- Seiton - Arranging and organizing. Place efficiently the tools, equipment, materials, etc.;
- Seison - Systematically checking the created order and cleanliness;
- Seiketsu - Standardizing and improving. Keeping the order and cleanliness created, trying to improve continuously repeating the steps: Seiri, Seiton, Seison;
- Shitsuke - Supporting over the time. Imposing always, keeping discipline and rigor.

Working in a clean location, neat and organized, is something easy to apply, which provides a great benefit both to the employee and to the Company.

ONE PIECE FLOW

The advantages of the system based on the complete production of a single piece per time, are:

- Security Improvement. Studies have been carried out which show that the overcrowding of the production lines is one of the most common causes of accidents at work;
- Quality Improvement. Producing and handling one piece per time allows to immediately highlight defects (usually at the following work station), causing a consequent corrective action, In this way, if there is a whole defected lot, you will discover it immediately and not at an an advanced stage of production;
- Flexibility improvement. Working a piece per time increases our speed and flexibility of response, allowing us to have more time available to manage even last minute requests of the customer;
- We can re-think the whole scaled production line. The equipment and the machines can be smaller and consequently need less space;
- Reduction of warehouses, releasing financial resources to be used differently;
- Productivity improvement. Many of

wastes identified in production are due to batch production and to the waiting queues of material which need to be processed, handled and transported;

- The supply of new material is simplified. The flow of material and the consequent replacement is well predictable and manageable;
- free space increase. As already said before, due to the reduction of volumes processed in production, we have less material waiting to be processed and therefore more space is available. Furthermore work stations must be necessarily closer to each other and this also contributes to saving space;
- An environment according to Kaizen (continuous improvement): not having "buffers" in the form of warehouses, all flaws and problems arising must be promptly solved. We work with a continuous strive for improvement;
- Points mentioned here above contribute to improve the situation of workers and consequently of their performance. People want to see the progress and want to be involved. This type of production greatly facilitates their professional growth.

Standard Work

Standardizing their work means to define and share what is the most effective (and therefore more productive) working method and apply it continuously.

It lets people know exactly what they must do to complete the assigned phase of their work, ensuring the expectations' fulfilment in termsof productivity and output quality.

In this way the production process is continuously monitored and its output is repeatable. The addition of new staff is facilitated and can be integrated more quickly in each working team time.

The Standard Work should not be considered as a not modifiable subject but, like everything else in the company, subject to the continuous improvement. The new proposals should be shared and evaluated thoroughly before being deemed worthy of becoming part of the new standard.

Pull System

A key aspect for the rationalization of material stocks, the Just in Time, which is a logistic flow system of management based on the concept of producing only when needed, i.e. when there is a customer demand.

This way of organizing the production launch, together with the adoption of increasingly small lots allowed by the introduction of techniques for rapid set-up (SMED), eliminates or at least drastically reduces the stationing of the waiting fastener material to be worked, reducing the total time of "crossing".

This way of producing is defined pull type, opposed to the traditional systems (Push), based on production programs established before and therefore unable to to reflect the actual demand.

The tool used is the Kanban, a system based on the standardization of manufactured and transported units and the use of a card that "accompanies" the full boxes. When you begin to consume the material from the box, the card is released, and thus acts as a signal for the top station to indicate the immediate need to provide new delivery of a full box.

Peculiarities of Just-in-Time is the extension of the logistic mechanism to the suppliers, which are fully integrated in the pull system. It is evident that the system works if the supplied material complies with quality requirements, otherwise it will be blocked. Just-in-time and Quality are in fact two sides of the same coin.

Visual Management

The Visual Management integrates and allows to develop the four practices described above (5S, One Piece Flow, Standard Work, Pull System).

To see things, to be inside them, improves knowledge and allows first of all to act and simultaneously to act correctly and faster. The most intuitive and practical example is the one of Kanban management: as soon as I "see" that the box is empty, I willorder a new box.

Another very important element of

CLAUDIO GUERZONI
CISTELAIER S.P.A.
DIRECTOR

Visual Management is represented by Gemba Walk: the factory tour performed several times a day to see what is the state of things.
Based on our experience, another further example of effective application of Visual Management was eliminating all offices from the Production Area. Part of the complete overhaul of the production layout, consisted in the physical elimination of all barriers represented from the office walls: now the whole area is open space, in order to allow complete and constant vision and "hearing" of what happens in the production area. In this way each cell manager and the Operations Manager can easily see and hear what happens in the environment.

The Visual Board is the key element of the Visual Management, as it summarizes a lot of immediately and simply available information for all actors involved in the production cycle. It allows you to take decisions quickly; it shows all weaknesses, thus allowing to define where we mustimprove.

The Visual Board (Figure 1) is the instrument of dialogue between the production cell and all external entities to the cell: Sales Logistics, Shipments, Purchasing, Pre-Production cells and Warehouse.

following documents in particular are displayed on it:

1. Output hours of the cell, i.e. the number of pieces produced in a certain time unit, coming from the comparison of "ideal" and "real" targets;
2. Daily production, that is to say the number of parts produced;
3. Cell Productivity of the last 12 weeks, realizing it both on "real" target and the "ideal" one;
4. On Time Delivery Shipments to, i.e. on-time delivery of the cell to its client, which is the Shipping Department;
5. On Time Delivery to the customer, i.e. on-time delivery of the cell to the end customer;
6. Situation of the daily scraps of the production cell;
7. Qualification of Cell Matrix, that is to say the training matrix of the cell operators;
8. Holidays Plan of Cell staff;
9. Planning Board, the Planning tool available to the Cell Manager, with which he/she perfects the current day planning and he/she prepares the schedule of the days of a fixed time period.

In M.D. Micro Detectors S.p.A. the Planning Board, based on Excel files, has replaced complex and expensive programs of Planning Production Software and of Production Advancement test. Using an Excel file developed internally, it allows to:

- Manage production planning with great simplicity and flexibility, with the assurance of the necessary components;
- to daily feed the basic production data, allowing to have a constant monitoring of the key indicators of production.

This system has so far guaranteed the total security and a large increase in the planning and execution speed. Each production line uses the same system, thus allowing a full standardization of the management system and of the criteria of calculation and reading of the basic indicators.

In conclusion, we underline once again the concept mentioned at the beginning of this article: in M.D. Micro Detectors Lean application has enabled an increase in performance and efficiency, thanks to the great simplification of processes and management tools. This enabled us to speed up the action of the cell managers and therefore of the production lines, having total control of the fundamental parameters of production in real time.

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PCB Division has obtained ISO TS, NADCAP, ISO9100, ISO 13485 and IRIS certifications, which allow supply of products for Automotive, Civil Avionic, Military, Medical, Railway and Telecommunication Industry.

Cistelaier and Techcì can offer a co-design and DFM service, thus following the project from the Customer's idea up to realization of finished product suitable for the final application it was designed for.

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- Multilayer structure rigid and rigid-flex , up to 40layers with High-Tg material , with Polyimide material and Low DK&DF material for high speed application,
- Multilayer structure with special material like Thermount, Ceramic filled, Teflon based and
- Invar,
- HDI Technology with blind and burred vias, and SBU technology up to 4+N+a structure,
- Mechanical Drill 0.15 mm minimal,
- Laser drill 100 µm.
- Via Plug – Via Filling,
- Press Fit,
- Back panel (4 mm),
- Z axis routing capability: Cavity creation for assembling placement,
- Thermal dissipator in Copper or Aluminium applied internally or externally,
- Thick Copper Technology, up to 500 µm both for inner and outer layer,
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- PCB on thermal dissipation base (IMS): single, double side and multilayer,
- Different colour solder mask: green, red, blu, yellow, black and white,
- Different surface finishing: Hals with and without Lead, Enig, Enepig, Chemical Tin and Silver, Electrolytic hard gold and soft gold for bonding,
- Digital inkjet printing for Barcode, 2D code and serialization on pcb.

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FINMASI GROUP: EXECUTIVE HOTEL AND EXÉ 1985 RESTAURANT

Hotel Executive is a company belonging to Finmasi Group, which deals with hospitality and reception. It was opened thirty years ago, on May 18th, 1985, at that time the first and only four-star hotel in the area; it has always been an important receptive reality for the ceramic district of Sassuolo and Fiorano as well as for all related industries and business companies from Scandiano to Vignola, with Ferrari factory of Maranello exactly in the centre. The Executive Hotel is able to offer all of its services at major events held in the neighboring areas, such as Modena, Bologna, Reggio Emilia and Parma.

The hotel management is back in the hands of the property, after a brief period during which it had been entrusted with little success to a hotel chain.

As evidence of the importance Finmasi Group attaches to this reality, its **President** from 2013 **Marcello Masi** directly oversees the operational management entrusted to Director Lorena Merli, who has made hospitality the success factor of this structure, using a team of loyal and efficient employees.

Lorena Merli testifies: "We like to think that Guests who stay at Hotel Executive can feel at home, enjoying the attention and affection that all my colleagues and I are together able and want to dedicate. We work mainly with business customers and our commitment is also to ensure that our Guests' return in the evening is relaxing, with a family atmosphere, where they can find care and dedication. In the same spirit we conceived and adapted the space fit for breakfast, not to mention the decision to directly produce most of what we offer, from our cakes, which in fact are especially welcome to our guests."

"Then a source of great satisfaction is the possibility to count on a very loyal customer base which for years has honored us with his fidelity, allowing to create a relationship with all the members of our staff, giving priority to the personal relationship, while always maintaining a full formal respect."

The understatement as a philosophy of customer approach, desired and protected by Lorena Merli also goes hand in hand with a series of excellent services offered by the hotel. The four stars of which the hotel can boast are confirmed in substance and are therefore a source of pride, especially for those who work there.
The sixty rooms are all equipped with air conditioning, sky television and free wi-fi access in all rooms as well as public areas; more than half of the rooms have a private terrace. The cleaning is performed by a highly qualified staff and it is guaranteed by very strict procedures and daily checks supervised in person by the Director, in collaboration with the reception manager Ramona Fulgeri: "On this subject we are absolutely intransigent, believing cleaning the first element of a reception that tends to excellence".
The Art Deco lobby is decorated with furniture and objects that enhance the harmony and pleasure to those who want or need to stay to enjoy the many services available.
The hotel's conference room is in constant use by local companies due to its consistent modular capacity (over 100 seats), and all the technology at

its disposal (wi-fi, two video projectors, microphones, laptops, wireless presenter, etc.).
The Executive is also equipped with a wide and equipped parking area, both outdoor and indoor.
Since the property has taken over direct management of the structure, it has carried out a substantial recovery and redevelopment plan that has met the expected consent of its customers.

On May 18th 1985 together with the Hotel Executive opened also **EXÉ Restaurant**, outsourced for almost 30 years to different companies **since May 19th 2015 the EXÉ Restaurant was leased to EXÉ 1985 s.r.l. company taking the name of it.**

The fully refurbished and modernized EXÉ 1985 Restaurant opened on 29th October 2015 showing itself as a contemporary restaurant; the cooking mostly inspired by the tradition is open to international cooking fusions based on local and Mediterranean ingredients.

In this regard Stefano Gualdi, Manager of EXÉ 1985 says: "We are sons of our culinary culture and we have great respect of it making use of recipes our families passed us down, we do ourselves our homemade fresh pasta and we are in contact with local suppliers of fresh ingredients, enjoying sometime the pleasure to experience reinterpretation of international cooking"

To its menu, the EXÉ 1985 has decided to include the most famous food in the world: Pizza.

A top quality pizza because of freshness of its ingredients and very long leavening process we identify with the name of **Pizza Gourmet** as clear proof of inner quality, which name is generally used by International Restaurants.

Restaurant EXÉ 1985's kitchen is managed by a group of passionate young chefs, moved by energy and talent necessary to grant both tradition and just mentioned innovation as well capable to marry the best of traditional Pizza with the innovation of Pizza Gourmet.

This spring EXÉ 1985 has completed renovation of its **courtyard, a wide garden with trees to offer their customers a quiet relaxing place far away from the traffic where tasting dishes from the menu as well as salads and light summer recipes.**

Wide Restaurant's halls join the green fresh area outside to offer its customers an **ideal location for breakfast meeting, ceremonies, coffee break and private events with the use of a high-tech kitchen. Restaurant EXÉ 1985 is ready also to offer catering service with its own personnel on different locations.**

The information above is a brief overview of what we offer our district and neighboring areas, a complete service of both reception and catering, keeping the right synergy between the two activities nonetheless the self-standing one each other when necessary **to dispel the legend for which there could not be a good restaurant close to an Hotel, worthless the need to state famous cases that reject this theory.**

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STEFANO GUALDI
EXÉ 1985
RESTAURANT
DIRECTOR

MARCELLO MASI
PRESIDENT

LORENA MERLI
EXECUTIVE HOTEL
DIRECTOR

During 2015 M.D. Micro Detectors has participated in 4 fairs: SPS DRIVES IPC in Nuremberg and Parma, the SIAF in Guangzhou and the most important Spanish fair for packaging, Hispack in Barcelona.

In 2016 M.D. will take part to the following fairs:

- SIAF in Guangzhou: from 8th to 10th of March
- SPS IPC DRIVES in Parma: from 24th to 26th of May
- SPS IPC DRIVES in Nuremberg: from 22nd to 24th of November

We wait for you in our booth!

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Italian Sensors Technology

M.D. Micro Detectors is an industrial group which has designed and produced a wide range of industrial sensors since 1971. M.D. has a great tradition but also a very visionary approach, thanks to their great entrepreneurship and innovating spirit.

The Group is composed of the head office, M.D. Micro Detectors S.p.A. (Modena), along with subsidiaries Micro Detectors Iberica SA (Barcelona) and M.D. Micro Detectors (Tianjin) Co. Ltd.

Our catalogue is composed of ollowing product ranges:

- Photoelectric Sensors
- Proximity Sensors
- Ultrasonic Sensors
- Area Sensors
- Safety Devices
- Accessories
- Coils for inductive sensors

Technology, Quality, Service, Efficiency and Speed are the key words distinguishing our products and our companies.

In addition to the catalogue products, an important share of our activity is dedicated to special versions and custom products, with the aim to satisfy our customer's specific application needs.

Made in M.D. is another key point: from development of new products (or special version of catalogue products) up to final shipment, all activities are carried out internally by our staff. The integrating strategy enables us to be present on the market with great Flexibility, Speed and Efficiency. This way we have a total control on our processes andtechnology, too.

The companies of our Group are organized and operate following the Lean Thinking principles, allowing us to offer our customers, our suppliers and all our partners an excellent service level.

More than 1.3 million pieces per year are completely realized in our plant in Modena. The Made in Italy featuring our production means Quality, Accuracy and Reliability.

All products manufactured by our factory are subject to precise control standards during the production process, before the final test.

Working culture, focus on customer and on constant improvement, passion and excellence aptitude, continuous research: all of that is part of our staff professional background. All of that belongs to M.D. Style.

M.D. Micro Detectors Quality is also guaranteed by all the certificates our Company has achieved over time: our quality management system is ISO 9001:2008 certified and many products are CE, ATEX, UL, cULus,Diversey, TÜV and ECOLAB certified.

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