

NEW ULTRASONICS CUBIC SHAPE UQ SERIES

14

NEW LASER SHORT BODY SENSORS

NEW CRI AREA SENSORS



sps ipc drives
ITALIA

PARMA 28-30/05/2019
HALL 6 - STAND H006



Micro Detectors

Italian Sensors Technology

IT'S US, WE ARE M.D.

NEW COMPANY MOVIE



TO MAKE PEOPLE TOUCH WITH HAND WHAT M.D. MICRO DETECTORS IS, WE RECORDED A NEW CORPORATE VIDEO. TO SEE IT, VISIT OUR WEB PAGE, OUR YOUTUBE CHANNEL OR USE THE QR CODE ABOVE. THIS VIDEO WAS SHOT FOR THE FIRST TIME IN ALL OUR LOCATIONS.

PCB DIVISION OF FINMASI GROUP IS EXPANDING IN GERMANY WITH ACQUISITION OF GERMAN MANUFACTURER EPN ELECTROPRINT GMBH.



On 21st January 2019 Finmasi Group bought 100% of the capital stock of company EPN Electroprint GmbH, located in Neustadt in Thuringia. EPN Electroprint GmbH, founded in 1988, has about 70 employees and in 2018 realized a turnover of approximately 6 Million Euro. Therefore this German company EPN Electroprint GmbH has entered PCB Division of Finmasi Group, already consisting of two manufacturing companies, that is Cistelaier S.p.A., with two plants in Italy and Techci S.A. in France. PCB Division of Finmasi Group now consists of three companies, with a total turnover of more than 50 Million Euro, more than 300 employees and four manufacturing plants. The synergy between these companies of PCB Division (Cistelaier S.p.A., Techci S.A. and EPN Electroprint GmbH) allows to offer the market a complete package of PCBs of any technologies, from double sided PCBs to rigid and rigid-flex PCBs of high and very high technology level, both for series production and fast turnaround prototyping.



THE NEW M.D. WEBSITE IS ON-LINE!

M.D. Micro Detectors has launched its website in May.

Designed to be a compass of M.D. world, this portal allows a quick and comprehensive consultation of all our products.

To learn more, visit the website:

WWW.MICRODETECTORS.COM

Or go to page 21 of this M.D. News.



LET'S MEET AT THE EXHIBITION!

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ITALIA

AIC

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SIAF GUANGZHOU
SIFS - Industrial Automation Fair Guangzhou
广州国际工业自动化技术及装备展览会

28-30 MAY 2019
PARMA
HALL 6 STAND H006

18-22 JULY 2019
QINGDAO

17-21 SEPTEMBER 2019
SHANGHAI

26-28 NOVEMBER 2019
NUREMBERG

26-28 FEBRUARY 2020
GUANGZHOU

UQ SERIES

NEW CUBIC SHAPE ULTRASONIC SENSOR

By **Jessica Galantucci** - Sales Manager Brand Label and Subsidiaries

The latest innovation by M.D Micro Detectors in terms of ultrasonic sensors is represented by the launch of UQ1 family with compact plastic body. The reduced dimensions (53mmx20mmx37,7mm) and the plug connection allow a limited obstruction and a versatile usage.

Working distances expected in this new design are as follows:

- 40 mm – 300 mm for the UQ1A models
- 60 mm – 800 mm for the UQ1C models
- 80 mm – 1.200 mm for the UQ1D models.

In addition, thanks to the strength of plastic housing, we guarantee an IP67 mechanical protection grade. Models with following outputs are available:

- Mixed current analog output + digital NPN
- Mixed current analog output + digital PNP
- Mixed voltage analog output + digital NPN
- Mixed voltage analog output + digital PNP
- IO-Link



In particular, mixed output allows to solve some applications, where not only the detection of target presence is important, but also its own distancing and approach. The IO-Link output allows to transfer sensor collected data in remote, in order to memorize, elaborate and configure them through specific parameters, which have been standardized and made universal thanks to this new communication module. The usage of ultrasonic sensors and the most recommended applications are several for the UQ1 models: from levels detection, to detection of targets regardless their color, transparency or brightness (features that would compromise correct functioning of a photocell), from the blister detection on pharmaceuticals systems to detection of packages in the food packaging. This “without limits” technology allows to always obtain optimal and precise results. As a summary, the strengths of this new sensors range are:

- Compact Housing, with possibility of installation with reduced obstruction
- Plastic Housing, with contained cost and weight
- Plug connection, which allows further reduction of encumbrance
- Models with IO-Link output
- CULus Certification, allowing sales in the North American Market.

With this new product launch, M.D. Micro Detectors aims to achieve one of its maximum ambitions ever: to develop and realize excellent products with a high quality and which answer exactly to the customer's requests and reducing any application problem.

	UQ1A	UQ1C	UQ1D
type	Cubic Ultrasonic Sensor		
nominal sensing distance (Sn) flat metal target	40 mm - 300 mm (100 mm x 100 mm)	60 - 800 mm (100 mm x 100 mm)	80 - 1.200 mm (200 mm x 200 mm)
adjustable range (Sd) flat metal target	40 mm - 300 mm (100 mm x 100 mm)	60 - 800 mm (100 mm x 100 mm)	80 - 1.200 mm (200 mm x 200 mm)
unusable area	0..40 mm	0..60 mm	0..80 mm
sensitivity adjustment	Teach-in button		
full beam angle	10±2°	15±2°	14±2°
histeresys	1%		
repeat accuracy	1%		
resolution	3 mm		
linearity error	< 1%		
operating voltage	10.. 30 VDC		
ripple	5%		
no-load current	< 35 mA		
output current	100 mA		
leakage current	≤10 µA (VDC max)		
transducer frequency	300 kHz	230 kHz	200KHz
output voltage drop	2.2 V max. (II=100mA)		
switching frequency digital output	8 Hz	5 Hz	3Hz
response time analog output (10..90% Vout)	≤ 400 ms		
time delay before availability digital output	100 ms		
supply electrical protections	Polarity reversal, transient		
digital output electrical protections	Short circuit (auto reset) , over voltage pulses		
analogical output electrical protections	Short circuit (auto reset) , over voltage pulses		
operating temperature range	-20°...+70° C		
storage temperature	-30...+80°C		
digital temperature compensation	●		
active head material	Epoxy- glass resin		
protection degree	IP67		

SOLUTIONS FOR YOUR APPLICATIONS



SHINY AND COLOURED OBJECTS

Since ultrasonic detection is not an optical detection, differences in the color or shine of the material do not constitute a problem for our ultrasonic sensors.



BOTTLES DETECTION

Our ultrasonic sensors make it possible to detect the presence of bottles, regardless of their degree of transparency, colour and shape (cylindrical or rectangular).



DETECTION OF PAVING HEIGHT ON ASPHALT MACHINES

Since operating in harsh conditions (temperature, atmospheric conditions, etc.), the M.D.'s sensors used in these applications are required to have a high strength, so as to guarantee a stable reading and facilitate the correct performance of the operating machines

NEW UT

M30 ULTRASONIC SENSORS WITH IO-LINK

By Roberto Bosani - R&D Manager

So far the continuing process of innovation and growth of new ultrasonic products has interested our UK1 and UK6 series, which are the most complete families of sensors for functionality, performance and sensing distances. It is not a coincidence that the ultrasonic sensors in M18 format had been the firsts ever of the M.D. portfolio to be equipped with the IO-Link system. This improvement was made in order to make them functional and in compliance with the specifications of Industry 4.0.

Also in the M30 series it is now possible to select three different functions in only one sensor, simply by pushing the Teach-button. The combination of signaling led (green led for the received echo and two yellow leds for the two activated outputs), assures that the realized choice was made correctly, but, above all, it states the selected function in a simple and intuitive way, thanks to a new simplified programming menu. The standard versions offered in our new ultrasonic sensors UT1, UT2 and UT5 series are the following:

1. Digital single output (NPN or PNP – NO/NC) with synchronization function, in order to avoid



- interferences in applications where more ultrasonic sensors are involved;
2. Analogical single output (current or voltage – positive/negative ramp) with synchronization function;
3. Mixed output (1 digital + 1 analogical) with synchronization function;
4. Double digital output (NPN or PNP – standard window/ codified window/ hysteresis) with synchronization function;
5. Double digital output (NPN or PNP – standard window/ codified window/ hysteresis) + 1 analogical output (current or voltage) without synchronization function.

The new UT range assures a higher reliability on more complex applications and higher precision for the analogical versions, increasing the solvable applications at the same time, thanks to the extension of the power supply range to 10-30 Vdc and, including all the applications where batteries are involved.

In addition to the laser marking, which unifies the aesthetic improvement with a functional one, IO-Link versions are now available on the entire range of sensors (plastic and metal), in the “Smart Sensor Profile” configuration; an easier and more complete platform for the users, where it will be also possible to select two different modalities of ultrasonic beam opening:



“standard” or “narrow”. In this way, the result will be a higher usage precision.

In the following table the main technical data of new families are reported:

	UT1B	UT2F	UT5L
Technology	Ultrasonic		
Operating mode	Diffuse		
Nominal Sensing Distance	250...3500	350...6000	600...8000 mm
Unusable area	0...250 mm	0...350 mm	0...600 mm
Full Beam Angle	12° ± 2°	15° ± 2°	10° ± 2°
Operating voltage	10...30 V		
Ripple	5%		
No-load Current	≤ 30 mA		
Transducer frequency	112 kHz	75 kHz	40 kHz
Outputs	Push-Pull (IO-Link) PNP/NPN 4...20 mA 0...10 V		
Switching output	Push-Pull / PNP / NPN - NO / NC selectable		
Output current	100 mA		
Switching frequency	1 Hz		
Linearity error	1%		
Accuracy	0,1%		
Resolution	0,1%		
Temperature compensation	●		
Thermal drift	±5%		
Overload protection	●		
Short-circuit protection	●		
Polarity reversal protection	●		
Start-up time analogue output	≤ 600 ms		≤ 600 ms
Start-up time digital output	≤ 600 ms		≤ 800 ms
Adjustment	Teach-in button / IO-Link		
Indicators	Switching status: 2 LEDs orange, Echo: 1 LED green		
Operating temperature	-20°C...+70°C		
Storage temperature	-30°C...+80°C		
EMC	EN 60947-5-2		
Housing design	cylindrical		
Housing material	AISI316L/PBT		AISI316L + PBT
Dimensions	Connector version: M30 x 1,5; L = 98,9 mm		Connector version: M30 x 1,5; L = 115 mm
Connector type	M12 5-pol.		
Protection degree	IP 67		
Torque	100 Nm		



**SOLUTIONS FOR
YOUR APPLICATIONS**



LEVEL DETECTION

Our ultrasonic sensors make it possible to detect the level of liquids or solids inside tanks. Both analog output and digital output (single or dual) sensors can be used.

NEW QE SERIES

CUBIC PLASTIC PHOTOELECTRIC SENSORS

By **Fabrizio Marchi** - Product Marketing & application Engineering



M.D. Micro Detectors continue to increase their offer of photoelectric sensors, their most characterizing type of sensors since the beginning. This increase has the purpose of providing more alternatives to the customer and to satisfy the different demands on the Industrial Automation market. The introduction of the QE series enriches the range of miniaturized photoelectric sensors, guaranteeing a greater choice, especially in economic terms. The QE family is a complete range, composed of following versions:

The characteristics of the QE family are:

- Switching frequency 1Khz
- Complete protection against electronic damages
- Operating voltage: 10-30 Vdc
- Fixing holes 2 x M3.

- Direct diffusion
- Background suppression
- Polarized
- Through-beam (Emitter and Receiver).

available models

Function	Sensing distance	Emission	Output	Adjustment	PNP (NO+ NC)	NPN (NO+ NC)	
Direct diffusion	1 m	Red (625 nm)	cable	•	QER8/BP-0A	QER8/BN-0A	
			M8 4 pin plug		QER8/BP-0F	QER8/BN-0F	
Background suppression	200 mm		cable		QERS/BP-0A	QERS/BN-0A	
			M8 4 pin plug		QERS/BP-0F	QERS/BN-0F	
Polarized	5 m		cable		QERN/BP-0A	QERN/BN-0A	
			M8 4 pin plug		QERN/BP-0F	QERN/BN-0F	
Receiver	15 m		Infrared (880 nm)		cable	QEID/BP-0A	QEID/BN-0A
					M8 4 pin plug	QEID/BP-0F	QEID/BN-0F
Emitter		cable		QEIH/00-0A			
		M8 4 pin plug		QEIH/00-0F			

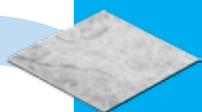


SOLUTIONS FOR YOUR APPLICATIONS



AUTOMATIC MACHINES

In the polarized models the sensor can detect the passage of cartons on conveyor, thanks to its sensitivity adjustment.



CERAMIC INDUSTRY

The barrier, emitter and receiver, positioned laterally on the belt, identifies the passage of tiles, detecting the edge.



DETECTION OF PCBs

The sensor is installed below the conveyors and it can accurately detect the presence of PCB despite its color.

NEW FL SERIES SPECIFIC FOR CAR WASH

WITH CODIFIED ANTI-INTERFERENCE EMISSION



FL series

"T-style" body photoelectric sensors with M18 optical head for car wash

characteristics

- Sensors for car washes
- IP protection degree: head IP69K (sensor IP67)
- Wide angular range for an easy alignment
- Totally filled with resin
- Two versions: high and standard distance
- Synchronization through cable
- Coded emission: anti mutual-interference



Micro Detectors

Italian Sensors Technology



NICOLA VAGHETTI

IT'S SIDERMED C.E.O. SPEAKING

Interview with **Nicola Vagheti** - Sidermed C.E.O. S.p.A.



NICOLA VAGHETTI, INTRODUCE YOURSELF.

I was born in Pisa on 20th May 1967. I achieved the accounting degree when I was 18 in Ravenna, the “city of mosaics”, where I have lived since 1985, fascinated by its beauty and its rich cultural heritage. I have grown up following my dad Giovanni’s business transfers, who was firstly a manager of the ILVA Group (Sidercomit, Italsider) and then CEO of Metalsider, until his untimely passing in 2004. These movements from a town to another one (Milan, Naples, Livorno, Bologna) have allowed me to know, see and grow in very different environments, feeding my curiosity of sensing every shape of every reality I lived and my capability of flexibility and adaptability to change. I am keen on tennis, which I have played in a competitively level for several years; this sport activity made of diligence, sacrifice, dedication and accuracy had positively influenced me in the building of solid moral principles, sense of responsibility, put side by side with a sane competitiveness. Such was my passion that, also in the summer period I dedicated myself to teaching tennis in resorts in Sardinia, at the end of the school year.

DESCRIBE US YOUR PROFESSIONAL CAREER

After finishing school in 1987 at the age of 20, I took the opportunity of entering Sidermed Services Centre of Marcello Masi and Angelo Spiga, as commercial employee “on paper”. Actually I started immediately to work in the plant, first in the warehouse in order to know the coils, then also in the production lines. In those years Sidermed was a company in full development and people had to take care of everything needed in that particular moment, from answering the phone when customers and suppliers called, to unload and load trucks, to prepare delivery notes. After a little more than a year, I started to accompany Spiga to the steel mills all over the world for buying coils. Then, luggage and passport in my hand, he sent me around the world (Canada, USA, China, Taiwan, Korea) searching for buying opportunities at competitive prices. That was love at first sight making me fall in love with this work.

From then on my career has been growing...

I started to follow sales activities and, particularly, to search for new customers in Emilia Romagna, Tuscany, Marche, then Veneto, Lombardy, ecc... in few years, thanks also to the inclusion

of sales representatives in the staff, we moved from selling 15.000 ton per year to 50.000.

From 2004 to 2008 I assumed the role of sales manager, always involved by our ownership in business and strategic choices.

In 2008 Masi took over the 50% of Angelo Spiga and he elected me as CEO, role which I still fulfill with full satisfaction.

INTRODUCE US SIDERMED AND STEEL DIVISION OF FINMASI GROUP

Sidermed was born in 1984 in Mordano di Imola, one of the nerve centre of the Italian industrial system. The over 30 years of activity allowed to grow and to be performing in all those aspects and today can count on a production capacity of over 150.000 ton per year. Sidermed sells sheets and strips made from cold rolled coils, electro-galvanized pickled, aluminized galvanized, Aluzinc® and pre-painted with thicknesses ranging from 0.25 to 6 mm. Sidermed together with Metalsider constitute the Steel division of Finmasi Group. Companies, which pay lot of attention to the technology innovations, can consider themselves as centre of cutting-edge services. Their sophisticated machineries allow to guarantee an excellent quality to the most demanding customers. Metalsider, founded in 1961, has its head office in Ravenna, close to docks of industrial port. This location proved to be a strategic choice for the development of raw material imports, with very low logistics costs. Metalsider is a leading service center for the processing and marketing of flat carbon steel products, black hot rolled, pickled and train sheets. It is able to supply sheets cut to size with thicknesses from 1 to 25 mm. Together Sidermed and Metalsider are able to offer customers all types of products made from carbon steel.

STRENGTHS OF THESE COMPANIES? WHY RELY ON THEM?

These two companies together have lined up more than 90 years of work, diligence, accuracy and ethics. They are located on a total area of over 65.000 square meters, equipped with the most innovative facilities for coil processing and with storehouses with over 80.000 tons of products, always available. A staff of over 100 people, who works motivated for satisfying all the customers’ demands. Both companies operate in compliance with ISO 9001:2015 certification procedures and they are particularly careful to all security measures, involving the entire staff

through courses and continuous updates, in order to maximize attention on this very important issue. Our customers know that they can rely on a very high quality standard with an appropriate price, with on time deliveries and guarantee of continuity, aspect which can not be negligible. All industrial policies, commercial strategies, as well as the innovation and investments plans are constantly shared with my brother Filippo, CEO of Metalsider, and with Marcello Masi, President of Finmasi group.

WHAT DO YOU LIKE MOST OF THE ACTUAL M.D.? WHAT ARE THE STRENGTHS OF THIS COMPANY, IN YOUR POINT OF VIEW?

M.D. is a dynamic company, which has grown a lot in the last years, aiming to grow much more in the years to come. Speed, flexibility, technology, efficiency, professionalism, desire and capability of continually improve characterize a team of enthusiastic and high motivated people. Those are M.D. Micro Detectors' strengths and those are the core values of our organization, Finmasi Group.

HOW DO YOU JUDGE THE SITUATION OF THE INDUSTRIAL AUTOMATION AND ITS FUTURE?

Industry is in the midst of the fourth industrial revolution; it is an epochal change, which sees the birth of new business models, industrial and commercial strategies, which are also summarized in the plans launched by the governments under the voice "Industry 4.0". The common factor is the innovation meant at 360° in every company processes. This very often coincides with the

application of automation and interconnection systems always more reliable and performing. Precisely because of the needs to detect situations, data, samples, the market of sensors (seen as a sensitive more and more sophisticated termination of networks) has a very strong developing future ahead of it. The sensors in practice must not only be detectors, but acquire ever greater "intelligence", relocating the data processing from the center to the periphery of the system, regardless of whether it is a machine or a network. In this context, the new frontier of "Internet of Things" has also developed, where every device is interconnected, exchanging information with others through more and more powerful networks. This also leads the great attention that M.D. Micro Detectors focuses on seeking a very close relationship with schools and universities and on training, which plays and will play an increasingly important role in preparing women and men, who will face challenges and opportunities given by the new 4.0 scenarios.

HOW DO YOU JUDGE THE SITUATION OF THE STEEL AND ITS FUTURE?

Decisively complex and ever-changing. Until 2015 the world steel industry was characterized by globalization without limits and borders. After this date, the production overcapacity in China has begun to threaten the profitability of European producers, who have strongly required and obtained protectionist measures from the European Commission. Since 2016, the scenario has completely changed through the introduction of steel duties from China, Russia,



Iran and other important countries. In 2018, the US government's decision to introduce duties on all steel imports triggered safeguards by various countries (including European ones) against the sudden increase in imports.

This is why what had been depicted for decades as a globalized market has turned into an almost regional market in which local steel mills live in a sort of protected commercial area. It has happened in the United States and in Europe, with medium-term effects that could cause negative impacts on steel consumption, since the level of prices in protected markets tends to move upwards and break free from international prices with possible losses of competitiveness of the transforming and producing companies of steel-intensive final goods.

These radical scenario mutations impose us to pay increasing attention and responsiveness, in order to understand and fast react to the market fluctuations that influence purchase and sale decisions, so as to assure to our companies and to our customers the best possible conditions.

WHAT DOES NICOLA VAGHETTI ADVISE TO YOUNG PEOPLE, WHO ARE APPROACHING TO THE JOB'S WORLD?

To put accuracy, passion, will and humility in every job they do. The world of job, now more than ever, requires competence; it is therefore necessary to combine the concepts learned during the studies and those of the experience of people already in this world, to create innovation through the exchange of know-how.

In an increasingly globalized context, intercultural competences are needed: having experiences abroad is highly educational, it helps to broaden one's points of view and the ability to interact effectively with different cultures. Finally, I advise young people to actively devote themselves to developing their soft skills, which cannot be ignored, especially leadership, creativity and skills of communication. More and more fast and complex dynamics require companies to pay a lot of attention to these transversal skills that go beyond the candidate's academic preparation.

FOR WHICH REASON SHOULD A YOUNG GRADUATED FROM HIGH SCHOOL OR FROM UNIVERSITY BECOME INTERESTED IN M.D. MICRO DETECTORS?

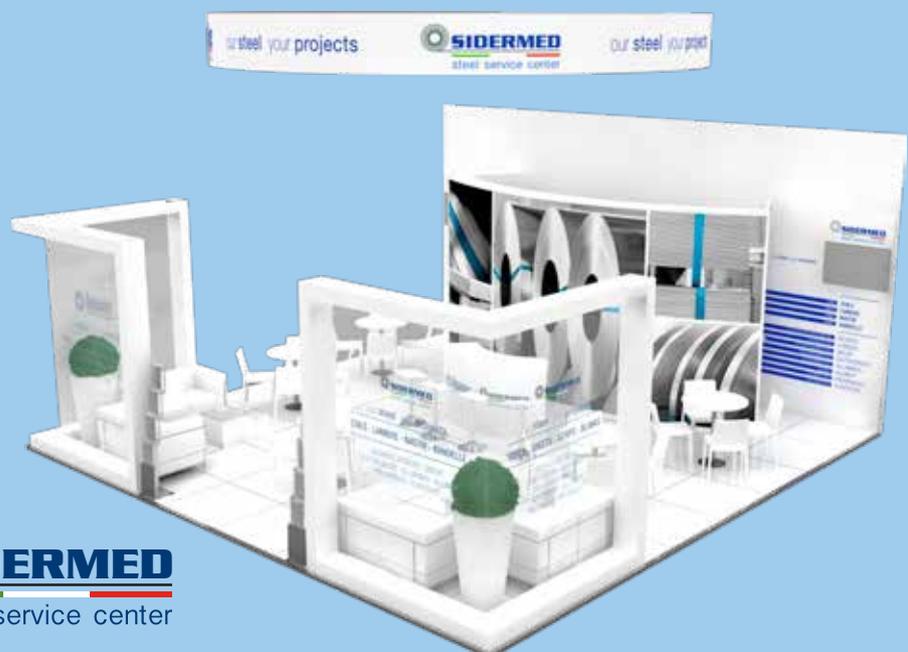
In a competitive labor market like that of technology companies, M.D. Micro Detectors stands out for its solidity, production efficiency and reliability, creating high quality products recognized by the market. All this would not be possible if at the base there were no people with strong shared values, for whom work is also an expression and realization of one's identity. M.D. believes in the principle that employees are the key to the company's success and actively engages its employees to help them fully express their potential. A young high school or university graduate should approach M.D. to be part of this vital, dynamic and booming reality where, with enthusiasm and together with a highly motivated team, the future is built.



**WE WAIT FOR YOU IN RHO FROM 14TH TO 16TH MAY 2019
HALL 24 - STAND G3+H2**

Also this year Metalsider and Sidermed will be present at "Made in Steel" exhibition, taking place in Milano Fiere in Rho from 14th to 16th May 2019.

We are waiting for you at our stand G3+H2 hall 24.



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HRPO	PICKLED AND OILED
CRC	COLD ROLLED
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ELZ	ELECTROGALVANIZED
ALU	ALUMINIZED
HRP	HOT ROLLED PLATES

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NEW FBL SERIES

LASER SHORT BODY PHOTOELECTRIC SENSORS

By **Marco Messori** - Responsible for Ultrasonic and Photoelectric Sensor Development

The automation industry trend in the direction of sensors with reduced dimensions has been long-established: reducing obstructions on machines and systems is a priority aspect for developers. For this reason, M.D. Micro Detectors, already on the market with inductive, photoelectric and miniaturized sensors, as well as with ultrasonic sensors with a cylindrical compact body, have chosen to launch a new range of short body photoelectric sensors with laser emission. The new FBL family with laser emission in Class I respects completely these requirements. First of all, the body length is reduced by 20%, in comparison with the traditional laser photocells – FAL series:

- In the axial models there is a reduction of 17.6 mm;
- In the radial models there is a reduction of 18 mm.

The innovations introduced at the mechanical level do not only concern the dimension of sensor. In those models with sensitivity adjustment the teach button has been replaced by a more ergonomic one, with the purpose of simplifying the adjustment itself. Also the labeling of products with plug has been improved with the introduction of laser marking, which is more resistant against external agents, in comparison to the traditional one.

With reference to the technical



specifications of the sensor, the new range presents higher stability in temperature and a higher immunity against external light disturbances. Moreover, the presence of a metallic body in nickel-plated brass, together with a complete resin filling of all the models, confers a higher mechanical strength and resistance to the product.

This product range includes:

- Models with direct diffusion and sensing distance up to 300 mm with axial optic and up to 200 mm with radial optic;
- Polarized models with sensing distance up to 30m;
- Through beam models up to 50m;
- Background suppression models with an adjustment range from 30 mm to 150 mm, available both with laser in Class I and in Class II.

As for all the photocells with laser emission, the new products are suitable for applications where a high precision in the detection of the target is required. The small spot allows indeed the detection of very small objects.

The most significant strengths can be summarized as follows:

- Reduced body dimension, with the possibility of installation in narrow spaces;
- Higher mechanical strength and resistance thanks to a metallic body in nickel-plated brass, to a total resin filling and to embedded optics in the axial models and compact ones in the radial ones;
- Higher immunity to external disturbances and higher stability in terms of temperature;
- Body with laser marking for an easy and long-lasting reading of product data;
- cULus certification, which makes products saleable in the North American market.

The new FBL family therefore represents a concentration of quality and high performances in narrow dimensions.

	FBL4	FBLN	FBLHD
operating principle	direct diffuse	polarized	emitter – receiver barrier
nominal working distance	300 mm (axial focalized optic at 100 mm) 200 mm (radial focalized optic at 100 mm)	20 m (with RL 110) 30 m (with RL 201) 5m (with RL 100D)	50 m
emission	red diode laser (650 nm) - laser class 1 (IEC 60825-1)		
hysteresis	≤ 10 %		
repeatability	5%		
operating voltage	10...30 Vcc		
load current	≤ 30 mA		≤ 25 mA
output current	100 mA		
output type	NPN or PNP NO + NC		
work frequency	800 Hz		1 kHz
delay in the availability	200 ms		
output electrical alimentation/ output protections	polarity inversions, impulsive excess voltage / short circuit (auto reset)		
sensibility regulation	Button		Trimmer (receiver)
ambient temperature range	- 15°C...+ 55°C (without condensation)		
temperature drift	10 % Sr		
electromagnetic compatibility	in conformity with the EMC Directive according to EN 60947-5-2		
protection degree	IP67		
interference by external light	3.000 lux (incandescent lamp) 10.000 lux (sunlight)		-
output	cable 2m PVC Ø 4,7 mm – connector M12 4 poles, male		
housing material	nickel-plated brass		
optics material	PEEK + glass (axial versions) PC + glass (radial versions)		

STAY CONNECTED WITH M.D. WORLD

THERE ARE DIFFERENT WAYS TO STAY IN TOUCH WITH M.D. MICRO DETECTORS WORLD.

IN ADDITION TO M.D. NEWS, YOU CAN MEET US AT FAIRS, VISIT OUR WEBSITE AND ALSO VISIT OUR SOCIAL CHANNELS: OUR LINKEDIN PAGE AND OUR YOUTUBE CHANNEL.

FINALLY IT IS POSSIBLE TO SUBSCRIBE TO OUR NEWSLETTER, AVAILABLE IN ITALIAN, ENGLISH, SPANISH, CHINESE, FRENCH, GERMAN AND PORTUGUESE.

WRITE TO INFO@MICRODETECTORS.COM TO ASK FOR REQUESTING ACCESS.



MINIATURIZED INDUCTIVE SENSORS



Micro Detectors

Italian Sensors Technology



AA, AB, AC, AD, AHS, AES,
IL5, IL8, IL9 series

Cubic and cylindrical miniaturized inductive sensors

characteristics

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



MORE ENERGY FOR OUR SENSORS



- RECHARGEABLE BATTERIES
- POSSIBILITY TO CHOOSE BETWEEN 5 V AND 24 V POWER SUPPLY
- CAN BE USED WITH 2-WIRE 3-WIRE DIGITAL SENSORS
- SILENCE MODE
- SLEEP MODE



ST 300D series

Sensor tester

characteristics

- 4 LED-lights
- can be used with photoelectric, inductive, capacitive, ultrasonic and applicative sensors
- both NPN and PNP sensors testable
- dimension: 125.5 x 62 x 22.5 mm
- weight: 145 g



Micro Detectors

Italian Sensors Technology

The PCB Division offers
a "one stop shop
package" of services
and PCBs ranging
from standard products to
leading edge
technology products
for any kind of volumes,
guaranteeing the highest
quality level

THINK GLOBAL, ACT LOCAL!

The target of the PCB Division of Finmasi Group is to give to its partners a "global service" where "global" means that it is able and it want to provide our partners with:

All services

- Design Rule Check
- Design For Manufacturing
- Co-design support
- Electro Magnetic Check Analysis
- Fast Prototyping Service (QTA)

All technologies

- Rigid, Rigid-Flex, HDI, Microwave and "special" products
- Length/width combination up to 855/464 mm
- Thickness up to 5 mm
- Copper thickness up to 0,5 mm
- Copper coins and bus bar implementation
- More than 100 different kind of base materials
- ENIG, ENEPIG, chemical tin, lead and lead free HAL, silver, OSP, hot oil reflow finishes
- Green, red, blue, black, white, grey and specific RAL solder mask on request

All markets/applications

What makes the PCB Division a "unique" interlocutor is to be homologated for

- Industrial sector: ISO 9001
- Aeronautic, Space and Defence sector: UNI EN 9100
- Civil avionic: NADCAP
- Automotive sector: IATF:2016
- Medical devices: ISO 13485
- Railway sector: ISO/TS 22163
- Space sector: trough ESA ECSS Group 6 rules

and to be able to produce according to the following standards

- IPC-A-600, class 2, 3 or class 3DS(A)
- IPC 6012 (Rigid), IPC 6013 (Rigid-Flex), IPC 6016 (HDI) and IPC 6018 (Microwave)
- MIL-P-55110 (Rigid) and MIL-P-50884 (Rigid-Flex)
- ESA-ECSS - Q – ST – 70 – 10C / 11C / 12C
- ESA-ECSS - Q – ST – 70 – 60C



Our people are IPC certified

- 4 of them are qualified IPC trainers
- 9 of them are qualified IPC specialists



BIAXIAL INCLINATION SENSOR

NEW !!!



INC4 series
Biaxial inclination sensor

CE



Micro Detectors

Italian Sensors Technology

characteristics

- Dimensions 50 x 75 x 19,5 mm
- BUS RS485 (addressable) + analogic 4...20 mA / 0...10 V (programmable)
- 1,2 axis of measures
- Technology MEMS
- Smart sensor
- M12 plug 4, 5 and 8 pins
- Housing material: zama

SMART
SENSOR



IT'S US, WE ARE M.D.

NEW WEBSITE

M.D. Micro Detectors are pleased to announce that they have launched the new website.

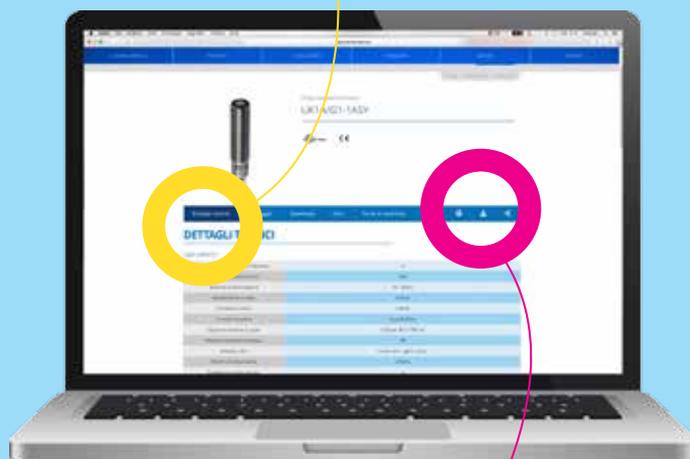
It is a "Responsive" portal, which is able to adapt its content to any device being used (tablets and smartphones included), guaranteeing perfect indexing even for search engines.

In the "products" area the data-sheets are available for each article with all detailed information (including 3D drawings). Each data-sheet can be easily downloaded, printed and shared with a simple click thanks to the appropriate buttons.

This site is in Italian, English, Spanish, Chinese and German.



DETAILED TECHNICAL DATA-SHEETS FOR EACH ARTICLE



PRINT, DOWNLOAD, IT IS POSSIBLE TO SHARE THE DATA-SHEETS BY A SIMPLE CLICK



RESPONSIVE WEBSITE, IT CAN ADAPT TO ANY SCREEN THEREFORE IT IS PERFECTLY INDEXED BY GOOGLE



World of Work and World of Education can and must work in close connection. Companies and schools can benefit greatly from these collaborations and, more than any other, future generations can benefit from them. Therefore we continue to work alongside the main technical institutes operating in the local area and with some of the most renowned Italian universities.

- M.D. cooperates with ITIS Da Vinci's in Carpi, the Institute Enrico Fermi in Modena and the Institute Fermo Corni in Modena;
- M.D. is part of the Technical Scientific Committee of the ITIS Fermi and the Guidance Committee for the Degree Course in Electronic Engineering of the University of Modena and Reggio Emilia;
- M.D. has an agreement with the University of Modena and Reggio Emilia and with the University of Bologna to host trainees/undergraduates;
- supports the school / work alternation project of the ITIS Da Vinci's III Classes;
- M.D. cooperates with with the Polytechnic Institute in Milan.

M.D. Micro Detectors, also offers university students the opportunity to realize their degree thesis in the company.



	2014	2015	2016	2017	2018
Number of trainees	15	21	25	39	36
Internship hours	2.000	2.520	3.756	4.765	4.448

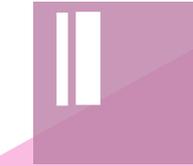
NEW CR1 SERIES

POLARIZED RETRO-REFLECTIVE AREA SENSORS

By **Mauro Del Monte** - Responsible for Area Sensors and
Roberto Bosani - Responsabile R&D

After the launch of CR0 family, M.D. Micro Detectors continue to widen their offer of Area Sensor range, by introducing a new photoelectric array with reflector: the CR1 family. It is an optoelectronic device, which can be used to detect the presence of any object, which obscures or reduces the luminous intensity of the light beam returning to the reflector. The aim of developing this new family is to provide their customers with devices, which can satisfy multiple applications, always maintaining M.D. Micro Detectors' tradition of developing more innovative and performing products for detection of objects in industrial environments.

Compared to CR0, the new CR1 sensor will have a greater controlled area height. The photoelectric array of CR1 series has an optic composed by a continuous series of 10mm pitch lenses, for an overall optic window height of 149mm. The functions of the single elements are alternatively emission and reception,



consequently they realize a succession of more couples of reflex elements, with the purpose of guaranteeing a higher coverage of the controlled area and the detection of objects with 6mm diameter.

As in the CR0 family, in all models of CR1 series there are two LEDs to indicate the different status of the sensor: alignment, optic state and malfunction indication.

The mechanical structure of the new products is similar to that of CR0. The user has a button available, located on the top part of the curtain, for the activation of menu functions: Teach-in and Blanking.

There are two Teach modalities, which differ for the resolutions:

- Teach G (standard teach);
- Teach F (fine teach).

This second adjusting mode can be used when the system and the environment allow operating in a situation of high cleanliness and mechanical stability.

The beam blanking enables to adapt the height of active optical window to the specific application, progressively eliminating pairs of beams. Active couples range from a maximum of six to a minimum of one.

The available outputs in the new CR1 family are:

- 1xPNP, 1xNPN
- 1xPush-Pull
- 1xPNP NO; 1xPNP NC
- 1xNPN NO, 1xNPN NC
- IO-Link

The electronic connection is a pigtail, with a M12 connector (4 or 5 poles) and 220 mm cable.

Moreover:

1. Power supply 12...30 V
2. Output IO-Link or SIO (C/Q), PNP/NPN/PUSH-PULL
3. Auxiliary output (Q): PNP/NPN/PUSH-PULL
4. Auxiliary entrance for the commutation/switching impulse selection LIGHT/DARK or others.

You can find main technical specifications of the new CR1 family as follows.





CR1 series

Polarized retro-reflective area sensors

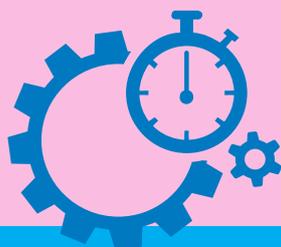


- controlled area height: 149 mm
- Maximum operating distance up to 4,5 m
- Minimum detectable object: 6mm diameter
- Two types of Teach-in: fine and standard
- Optics pitch: 10mm
- IP67 protection degree
- Funzione esclusione ottiche



	CR1
nominal sensing distance (Sn)	0,2...4,5 m (RL136G)
emission	red (617nm)
operating voltage	16...30 Vdc
ripple	≤ 10%
no load supply current	100mA
load current	100mA
leakage current	≤ 100 µA (Vdc max)
output voltage drop	3 V max (100mA)
adjustment	Teach-in: fine < 3 sec; standard > 6 sec
output type	PNP; NPN; Push-pull; (NO+NC) compl. output (NO+NC)
switching frequency	275 Hz
time delay before available	300 ms
minimum object detection	3...6 mm @ 2 m RL136G ⁽¹⁾ 3...10 mm @ 4,5 m RL136G ⁽¹⁾
power supply protections	polarity reversal, transient
output protection	short circuit (autoreset)
interference external light	5000 lux (fluorescent lamp); 50000 lux (sunlight)
operative temperature range	-10°C...+55°C (without freeze)
temperature drift	10% Sr
LED indicators	green: power supply red: dark/light status
protection degree	IP67 (EN60529)
housing material	aluminium
optical material	PMMA

⁽¹⁾ 136G reflector 42 x 200 mm (concealment)



SOLUTIONS FOR YOUR APPLICATIONS

PACKAGING

Flow-pack machines work in loop by wrapping and sealing the product with coil film: BX10 area sensor can detect any type of object inside the film.



WOOD

On conveyors it is possible to detect wooden panels of any finishing and color by means of CR0 retroreflective area sensors.





THE LIMITLESS SERIES



THE NEW ULTRASONIC WAVE





SOLUTIONS FOR YOUR APPLICATIONS



UK1 and UKR1 series

M18 cylindrical ultrasonic sensor with Teach-In button

- Models with digital programmable output
- Models with current or voltage analogue outputs
- Working area adjusting (window teach or single point teach) by Teach-in button suitable
- Multifunction LED indicator: output type, adjustment procedure, NO/NC selection and reverse analog output slope
- Plastic and AISI 316L stainless steel housing, plug M12 or cable exit



DETECTION OF THE HEIGHT OF ARMS IN AGRICULTURAL MACHINERY

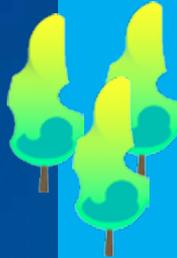
The ultrasonic sensors can be used to detect the distance from the ground and automatically adjust the correct height of the devices to distribute the fertilizing substances



UK6 and UKR6 series

M18 cylindrical short body ultrasonic sensor

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



DETECTION OF TREES / OBSTACLES TO ACTIVATE JETS OF FERTILIZING SUBSTANCES

Thanks to ultrasonic sensors you can reduce the waste of fertilizer / pesticide substances by starting the jet of different substances only when the sensor detects the element to be treated



UT and UTR series

M30 cylindrical ultrasonic sensor with Teach-In button

- 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
 - Multifunction LED indicator: output type, adjustment procedure, NO/NC selection and reverse analog output slope
 - Plastic and AISI 316L stainless steel housing, plug M12 or cable exit 4 pin



DETECTION OF PAVING HEIGHT ON ASPHALT MACHINES

Since operating in harsh conditions (temperature, atmospheric conditions, etc.), the M.D.'s sensors used in these applications are required to have a high strength, so as to guarantee a stable reading and facilitate the correct performance of the operating machines

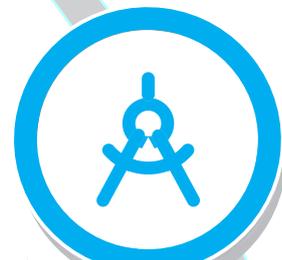
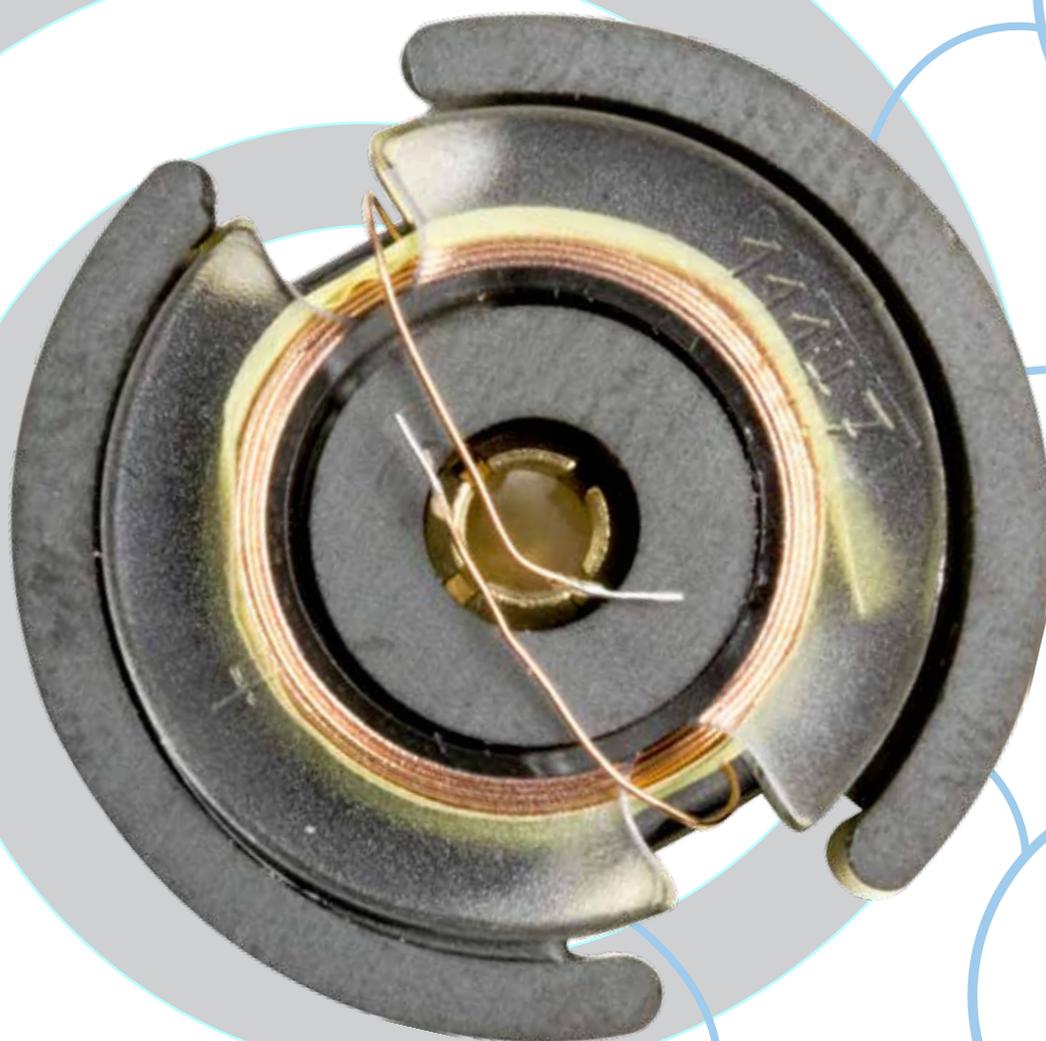


EXTENDED TEMPERATURE RANGE

The new ultrasonic sensors have extended working temperature range (from -20°C to $+70^{\circ}\text{C}$), they can guarantee greater reliability on more complex applications and a greater accuracy even for analog versions.



YOUR SENSOR, OUR COIL



PLANNING STAGE



CONSULTATION AND
TECHNICAL SUPPORT



RAW MATERIAL
SEARCH



PRODUCTION



Micro Detectors
Italian Sensors Technology

ITS SERIES

INFRARED THERMAL SENSOR

THE NEW APPLICATIVE "VISION"



ITS series
M18 thermal sensor

characteristics

- Supply voltage: 24 Vdc $\pm 20\%$
- Working Range: $-20^{\circ}\text{C} \dots +350^{\circ}\text{C}$
- Resolution: $0,0017^{\circ}\text{C} @ +350^{\circ}\text{C}$
- Number of measuring axes: 60° (X axis); 16° (Y axis) (ITS1)
- Technology 16 x 4 Thermopile array (ITS1)



Micro Detectors

Italian Sensors Technology

ENTERPRISE AND HUMANITAS

GIACOMO VILLANO SPEAKING, M.D.'S C.E.O.

Giacomo Villano's speech - M.D.'s C.E.O. - during convention "Enterprise and Humanitas" held on 9th November 2018 at the Faculty of Law of the University of Modena

Here we report an abstract of the speech made by the Chief Executive Officer (CEO) Giacomo Villano during the convention "Impresa ed Humanitas", which took place the 9th November 2018 at the law department of the University of Modena and Reggio Emilia. The forum was organized by the association "Il Capitale Intellettuale" and the cultural association "Progetto Emilia-Romagna", under the scientific direction of Dr. Anna Spadafora.

IMPRESA ED HUMANITAS

I believe that enterprises are a really important element of the contemporary society. They play a fundamental role both as producer of wealth and also as developers of ideas and values.

In my view the enterprise is "Doing and Thinking". It is the "Creating Values and Ideas".

I strongly believe that in corporate realities there is a lot of humanitas. I believe that company's humanitas is a huge reservoir of positive values, for which it is worth living and engaging. I also believe that the company's humanitas is something extremely concrete, which leads to the production of a huge amount of facts that enrich communities.

I believe that business activity is essential for the preservation and, above all, for the growth of our society. And again about humanitas, I also consider the business activity and work in general, on a personal level, as something really exciting and rewarding. For me, work is a constructive and virtuous activity, which dignifies man and enables him to fulfill his potential and to realize positive things for other people too, for present and future generations.

INVOLVING TALENTS AND ENHANCE RESOURCES

I have the honor and pride of running a company called M.D. Micro Detectors, which has developed and produced sensors for the industrial automation in Modena since 1971. Since the end of 2011 we have put into practice a radical change, a really deep one, of our Business Organization. It has been a real revolution, which has brought us to the achievement of important results. "We turned the company upside-down like a sock". It has been a strong experience with a really high coefficient of difficulty. The goal we set ourselves since the beginning was: to increase the turnover, efficiency, employment, company results, keeping production and development activities of new products in Italy.

It has been a hard challenge if we consider the fact that

our company was and is one of the smallest compared with our competitors. The latter, in fact, have factories in countries where there are evident advantages in terms of personnel costs, infrastructures and utilities, taxation, and, more generally, of the country systems itself, which facilitate entrepreneurial and manufacturing activities.

For us it was decisive to focus on speed, flexibility and process control, with the purpose of exalting the quality and the technology of our products. So far, we can talk about a successful experience but our approach is not to consider everything as "already done" but everything as something "to do". The positive results are a comfort for our self-esteem, but we are convinced that this is just the beginning of a long journey of growth.

Among the determining factors for achieving the positive results that we have reached so far, there are:

1. To have clear ideas in mind. To have a clear vision, strategy and goals. Maximum Commitment by the Property and Management. Maximum cohesion of the Management Team.
2. To communicate ideas and strategies to people. Talk to people. In our case, from the beginning, we have made clear and we have widely communicated to all people who have responsible roles and not, the strategy and the purposes that we were meant to be achieving. The target was to make everyone aware of the goal of creating values (material and immaterial) that we set ourselves. To make them understand that the new way was a path to be taken in order to survive and to grow again. Inside the company it was fundamental to make clear that the change was an irreversible process. It was also crucial to periodically communicate to people the changing progress and the obtained results.
3. To involve people in the change: motivating and empowering them. The change, in order to be efficient, requires participation, involvement and empowerment of the highest number of people, who must feel themselves as authors of the change itself and also involved in the achievement of the result. Involving people in the change, motivating them in this direction, making them participate and stimulate them to give their contribution, have allowed the conciliation of the growth of the single professionalisms with the improvement of the company performances.
4. Promotion of the human capital and exaltation of employee's skills. The M.D.'s experience says that the company's profitability has increased (in a context of extremely tough competition) through the increase in performance and business efficiency. At the same time and consequently, the work environment has greatly improved and enabled the staff to professionally grow up, to improve their performances and to exalt their professional capabilities.
5. To lead by example: who has a position of responsibility must be the first to go into the field in order "to do" and "to set an example". Our company, M.D. Micro Detectors, and our group, Finmasi Group, operate following the inverted pyramid model: those who are in charge to direct and have positions of responsibility must constantly support who have more operative roles and/or who are in contact with the outside



IMPRESA
&
HUMANITAS

FORUM INTERNAZIONALE
IMPRESA E HUMANITAS
MODENA VENERDÌ 9/11



(customers, suppliers, consultants, institutions, financial corporations, etc.). We believe it is essential that who have directive and responsibility positions must constantly be “on the field”, in contact with the internal and the external realities of our companies.

The professional growth of our collaborators has been realized in the following elements:

1. Professional growth through the acquisition of a new working methodology (in our case, the Lean Manufacturing)
2. Professional growth through the assignment of greater responsibilities.
3. Professional growth through performance of new tasks (and for this reason the development of technical skills) and of a multitasking approach (meant as functional versatility and implementation of more tasks at the same time).
4. Professional growth through the duty of more challenging goals.
5. More opportunities for economic growth thanks to the company's growth, to the individual professional growth and, mostly, to the results made by everyone.
6. Working environment based on motivation, enthusiasm, leaning to goal, continuous improvement and research of the excellence.
7. A more rational, tidy, clean and organized work environment.

WORKING STRESS?

I would like to return to one of the topics of this conference where we talk about “ideology of well-being that medicates school, work and society, confusing health with relaxation and satisfaction with amusement” and, I add, with “little effort”.

I share 100% the thought which is opposed to this current of thought. I believe that the company's achievements are the result of a vision and a strategy, combined with:

- A strong corporate organization, composed by people who are experienced, highly motivated, empowered and who are engaged in the achievement of the challenging results;

- Personal and professional skills of each person;
- The ability of working in a team and with a high degree of enthusiasm and motivation;
- The ability of making people growing by increasing their capabilities and by raising the level of their performances;
- The ability of each person to struggle, to spend themselves with lot of generosity, to involve their physical and intellectual resources for the growth and the continuing improvement of the person itself but also of the company.
- I am not a supporter of the “maximum result with minimum effort”: I believe that, in the constant research of improvement, efficiency and effectiveness it is fundamental to produce the efforts needed in order to create results, which are solid in a middle-long range of time.
- Struggle, in the study as in the work, as also in the sporting disciplines, is not pleasant, but it is the basis for obtaining those results, which give us personal satisfaction and which allow us to realize ourselves as men and as professionals.

There is a way of thinking which aims to the elimination of stress in the work environment. In my opinion, stress understood as “propensity to the company's result”, is a positive, virtuous and essential element. From this point of view, the work is comparable to the sport. The propensity to result, the constant and accurate daily preparation, the prosecution of a continuing personal improvement, which brings people to cross their personal boundaries, the management and the preparation to effort and hard work and the setting of challenging targets to achieve, are all essential for the development of the companies and of the employees. As well in the sport, as also in the companies, the results do not arrive accidentally but through the daily programming, preparation and production of professional quality and quantity. Nowadays is truer than ever because there is a strong global competition in almost all areas of activity, the offer of goods and services exceed the demand.

I would like to reassess the often criticized concept of Quantity, which is essential in order to achieve the goals and as much important as the Quality.

In conclusion, my point of view is that companies must create wealth, essential for the growth and the realization of investments, of the research, of the growth at the employment basis and, more generally, of the country development.

In the experience made in our group, Finmasi Group, the economic capital development can and must always go along with the development of the human capital. For us, the company is “Doing and Thinking”. For us, doing business means creating objects, services, values and ideas.

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M8, M12, M18, M30 inductive
with AC/DC supply voltage

characteristics

- Operating voltage: 20...250 Vac / Vdc
- NO/NC output selectable, if DC supplied
- Cable or M12 plug exit
- IP67 protection degree

**SHIELDED
AND
UNSHIELDED
MODELS!**



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Via Circondariale
S. Francesco 2,
41042 Fiorano Modenese (MO)
ITALY

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Micro Detectors
 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 following product ranges:

- Photoelectric Sensors
- Proximity Sensors
- Ultrasonic Sensors
- Area Sensors
- Safety Devices
- Applicative Sensors
- Encoders
- 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 and technology, 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 9001:2015 certified and many products are CE, ATEX, UL, cULus, Diversey, TÜV and ECOLAB certified.

+ **THAN 28 MILLION, OUR CONSOLIDATED TURNOVER** 

+ **THAN 1.6 MILLION ITEMS MANUFACTURED EVERY YEAR** 

+ **THAN 210 EMPLOYEES** 

+ **THAN 70% OF OUR TURNOVER OUTSIDE ITALY** 

+ **THAN 30% OF OUR TURNOVER MADE UP OF CUSTOM PRODUCTS** 

+ **THAN 70, THE COUNTRIES WHERE WE ARE PRESENT** 

M.D. Micro Detectors S.p.A.
 Strada S. Caterina 235
 41122 Modena - Italia

tel. + 39 059 420411
 fax + 39 059 253973
 info@microdetectors.com
 www.microdetectors.com

Micro Detectors Ibérica S.A.U.
 C./ Antic Camí Ral de València, 38
 08860 - Castelldefels (Barcelona)

Tel.: +34 93 448 66 30
 Fax: + 34 93 645 28 15
 info@microdetectors.es
 www.microdetectors.es

M.D. Micro Detectors (Tianjin) Co, LTD.
 XEDA International Industry area B2-3 Xiqing District
 300385 - Tianjin (China)
 Tel.: +86 022 23471915
 Fax: +86 022 23471913
 info@microdetectors.com
 www.microdetectors.com