PANORAMA News

EDITOR
James Wallace

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CONTRIBUTORS
Massimo Ferrari
Xavier Parayre
Efisio Spanu
David Spillane
Leopoldo Zauner

Panorama editor meets Dr. Betty Theriault, the new President of the International Association of Gnotobiotics

Betty Theriault - *President of the International Association of Gnotobiotics*

Betty Theriault, DVM, DACLAM, illustrates the Association role, facing the Gnotobiotics challenges and market perspectives.

1. You have recently been elected the President of the International Association of Gnotobiotics. What are your 3 most important objectives and related actions?

a. The IAG has not held its triennial symposium (ISG) in the USA since 2002. Although it is three years away, holding a successful meeting in Chicago in 2020 is of top priority. The meeting will be a joint Congress of the 20th International Symposium on Gnotobiology, the 42nd Congress of the Society for Microbial Ecology and Disease (SOMED), and may partner with an additional group for a successful meeting.

b. I have also recently transitioned from President Elect to President of the Association for Gnotobiotics in the United States. The Association had been inactive for several years. There is currently a core group comprising an Active Council that has been working tirelessly over the past year to bring the association back to an active status. We are intent on having the Association in operational condition by the timing of the 2017 National meeting of the American Association for Laboratory Animal Science (AALAS) meeting in Austin, Texas. It is our goal to be able to begin offering membership to the organization at that time.

c. With the inactivity of the AG, awareness of the IAG has also fallen off in the USA. It is my hope that with renewed activity of the AG a grassroots interest and awareness of the IAG will occur. If successful, this will help to provide an avenue of networking, information sharing and organizational opportunity for those who are actively engaged or interested in the field of gnotobiotics.

2. International means: from all over the world? Are there areas playing better support?

a. Yes, this is truly an international organization however, there are areas of the world that are more active and represented than others. The Japanese Association of Germfree Life and Gnotobiology is very active and has a strong membership. The JAGG held its 50th congress in conjunction with the ISG this year. They have been a strong driving force in keeping the IAG viable as other countries have seen attrition. SOMED is an active society and has been a strong participant in the ISG. SOMED is an international society with members in the USA and Europe, but most heavily represented, I believe by many European countries. There has and currently is overlap of the ISG with JAGG and SOMED. Additionally, the AG has been historically recognized by the IAG as an affiliate organization. Korea has had participation in the ISG symposium through the years as well.

b. The field of gnotobiotics supports changing research interests over time. During its early years, Gnotobiology supported research in infectious disease and understanding the biology of many microbial pathogens of interest, such as *Clostridium difficile* and *Helicobacter pylori*. Current interests are utilizing gnotobiotic technologies to study areas of research interest in host microbiome in health and in disease. Specifically, looking at states of dysbiosis and identifying new therapeutic interventions such as applications in personalized medicine, pre-biotics, pro-biotics, fecal microbial transplant, autologous microbial transplant, personalized nutrition and more. What is fascinating and educational is learning of the different technologies used in different countries as well as novel approaches being taken to interrogate pathogenesis of disease and interventions.

> “ **3. What are the most challenging topics for Gontobiotics In short term?**
> a. Human microbiome screening of patient or community derived fecal libraries.
> b. Space and financial constraints.
> c. Limitations on trained individuals to support the technology and research.
> d. Keeping pace with big data technologies which are also driving this area of research. ”

4. Is the industry meeting those challenges?

I believe industry is keeping pace but challenges remain in the successful application of technologies at the user level. The toughest challenge will continue to be maintenance of germ free/axenic mouse colonies. Interfacing research needs while maintaining desired microbial status will continue to create technical challenges.

5. Tecniplast offers the most complete product line for Gnotobiotics. Have you had the opportunity to test Tecniplast products?

The Tecniplast BioExclusion Isocage P system is ideally suited for human microbiome screening and other gnotobiotic applications. Reports on the successful use and application of this system are developing and there was even favorable preliminary reports shared at the ISG meeting by Joanne Bom who is using this system successfully in Portugal. I have not yet had the opportunity to test the Tecniplast products directly, but anticipate that changing within the coming year.

> “ The Tecniplast BioExclusion Isocage P system is ideally suited for human microbiome screening and other gnotobiotic applications. Reports on the successful use and application of this system are developing. ”

Leopoldo Zauner - *Marketing Director*

The new Service Training Centre

At Tecniplast we take Service very seriously:

- √ A team always ready and fully equipped for professional problem-fixing in the field,
- √ a spare parts stock worth over one million euro,
- √ two Engineers dedicated full time to help desk support,
- √ detailed procedures and check lists, comprehensive and tailor-made preventive maintenance programs,
- √ regular Service auditing process for our partners,
- √ a solid system for information sharing across our Service network …

are just some of the ingredients to make a good Service, but **the key element is Engineers' training!**
We know well that Engineers' knowledge and professionalism are the cornerstones for a "Class A" Service support: this is why we train directly and regularly every single Field Service Engineer of our network.
Training courses are designed with a balanced mix of theory and practice, and their results are checked with challenging written tests and observation during hands-on and troubleshooting activities. If the tests are passed the Engineers are rewarded with a Competence Certificate that vouches for their formal qualification, plotted along a detailed matrix machines-tasks that specifies exactly what they are trained (and qualified) to do. Regular training updates will allow the Engineers to extend their certification and keep it valid.
Our Service Training sessions are always face-to- face, because we want to know personally each one of the Engineers we trust globally for the Customer Service - and there are more than 300 of them!
We train our Engineers on the "real stuff": installation procedures, calibration, preventive maintenance, trouble-shooting, repair and validation tasks are practised on the very same equipment they will tackle in the field.

To facilitate the learning process we have equipped a new large training room, just below our recent Headquarters Service Office, with different generations of machines, with all the control interfaces and with the most critical components which have to be maintained in the field.
We have also designed and built a flexible simulator for training sessions on our Centralized Aquatic Systems: since those machines feature a high level of Customization we needed a special tool to have the Engineers gaining specific practice. This is a smart solution indeed: we just have to upload the customized software into the processor to have all the hardware components physically working with the logic of the desired machine.
Training courses are always delivered by skilled senior Service Engineers: this is such a paramount process to us that we have also appointed a Training Specialist within our Service team. We know that Service is a critical function for the long-term satisfaction of our Customers: this is why we spare no efforts to guarantee the proper level of knowledge and professionalism throughout our Service network, from the junior airflow technician to the senior automation specialist.
If you want to learn more about our global Service organization, feel free to contact us at *admin-service@tecniplast.it*

Efisio Spanu - *Global Service Manager*

Integration – you know it makes sense!

Definition: Integration is the act of bringing together smaller components into a single system that functions as one.

You get few chances in work life to specify new equipment – so it makes great sense to be sure it works together i.e. integrates seamlessly into your work place. **Whether it's a complete new build to equip or just a small refresh, sparing time to consider the impact of your purchase can save you lots of heartache!**

Or of course you can talk to the integration experts – Tecniplast. Our complete product range is designed to work together in a complimentary way – so you get systems and not stand alone items. This becomes particularly evident if you think of the process flow throughout your unit.

Why would you buy cages with dirt traps making them difficult to clean, bottles with narrow necks that can't be washed, racks that are too heavy to move, that don't fit the autoclave, change stations that don't give protection and so on? Obviously if you stand back and think then you wouldn't start down this road.

So hopefully its good news that **we consider all the aspects of product performance and making sure they integrate with one another to give you the most efficient, effective and ergonomic solutions.** It's a fact that Tecniplast invest heavily to ensure all our products are designed to work together.
So, think systems and not items when your chance arises!

Why integrate with Tecniplast?

For new builds or major refurbs there are even greater benefits to thinking integration and greater risks not to – you only get one chance to get it right! Repent at leisure comes to mind.

Selecting Tecniplast to provide the integration throughout the building so, between animal room (IVC caging), the Cage Wash Area (wash, cleanse, automate, decontaminate), and the various logistic flows in between considering safety from allergen exposure, manual handling, ergonomics; its where experience really makes a difference.

When we build a partnership with you, we can develop a clear understanding of how you want your animal unit to function and offer a Turn-Key Solution.

As the definition above states - we provide equipment packages designed to interact together into a single system.

Our complete product range is designed to work together in a complimentary way - so you get systems and not stand alone items.

Here's a few ways you can benefit from an integrated equipment package

• **Ensuring compatibility of material and process** e.g. plastics and washing cycles/autoclaving and automation handling. Awareness of interdependencies reduces risk and results in improved performance.

• The cost and complexity of dealing with multiple suppliers can be high and communication can be complex. **By establishing a single supplier process, risks and conflict can be avoided.**

• **The shorter the information chain, the more effective and efficient it becomes.** Consequently, planning, communication and service will improve, becoming more efficient, with "grey areas" disappearing and any issues which do arise can be handled more effectively.

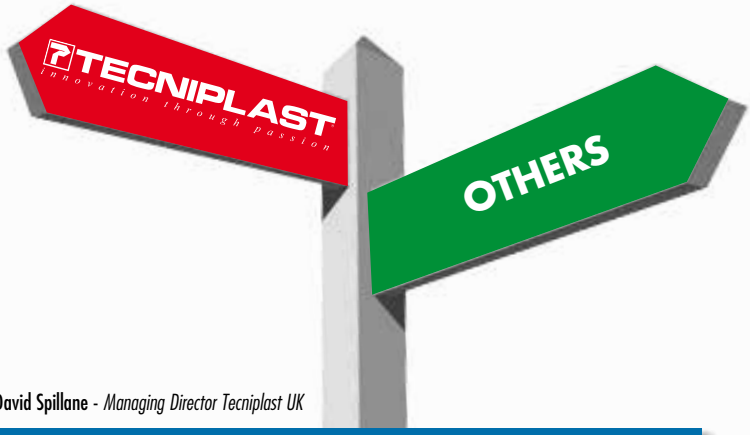
• Tecniplast can provide solutions that link equipment and activities across all areas which results in improved workflows, logistics and environment.

• Reduced risk of conflicting specifications and ensuring staff are motivated.

• Integration suppliers maintain a clear line of responsibility and liability.

• Better co-ordination of install teams, equipment and services protects programmes and reduces cost.

• Offers long term preventative maintenance and service benefits (single source).



David Spillane - *Managing Director Tecniplast UK*

Tecniplast believes that Integration is the key part of providing effective solutions to laboratory animal facilities. This and working together with you as a partner, not just a supplier, makes us stand out from rest.

Charles River Short Courses 2017 - Europe & Asia

Charles River hosted the 8th European Short Course on Laboratory Animal Science in Berlin, Germany in March 2017, and the Asia Short Course in May in two locations: Jinan, Shandong Province; and in Suzhou, Jiangsu Province. **Charles River Short Courses are designed to inform the biomedical research community of current trends and technological advances in our ever-changing industry.**

Charles River SHORTCOURSE

They offer a variety of stimulating presentations from academic and industry experts as well as members of the Charles River professional staff. Participants find that the Short Courses are the ideal setting to invest in their careers via thought-provoking lectures and excellent peer networking opportunities.

Tecniplast successfully participated at all 3 of the events listed above with scientific presentations in the programs highlighting the new Interceptor system, which captured the audience's attention.

Interceptor European Patent Application

Patents are a set of exclusive rights granted by a sovereign state to an inventor or assignee for a limited period of time in exchange for detailed public disclosure of an invention. An invention is a solution to a specific technological problem and is a product or a process. Patents are a form of intellectual property and show the grade of innovation of a company. **Tecniplast is more than proud to state that the Interceptor European Patent Application was published under n. 3 162 198 together with the corresponding Search Report on 3 may 2017,** along with the written opinion of the EPO examiner who explicitly recognises that the subject matter of this application meets the patentability requirements of novelty and inventive step.

Interceptor is the brand new Tecniplast solution for an accurate environmental microbiological monitoring in IVCs, which represent a new frontier to monitor the hygienic state of laboratory animals with a highly sensitive solution for the collection of exhaust dust particles. In addition, the removal of biological samples from the IVC occurs in a contamination-free manner enabling the sample to be safely transferred from the microbiological unit under investigation to the laboratory. The product is simple, inexpensive, efficient and validated on Mouse Norovirus (MNV), a difficult microbiological agent to detect in the environment. Made up of two parts, a stainless steel frame purposely designed to allocate a second piece of equipment, an irradiated cardboard folder containing a sliding filter, Interceptor (patent pending) is the Tecniplast answer to the need for animal free microbiological monitoring. The Interceptor is also retrofitable and meets European Union and Asian regulatory requirements.

Consumers will benefit from this new technology, which offers the following benefits:

1. Quick and effective detection of microorganisms
2. Closed system to avoid contamination of samples (patent pending)
3. Easier and more inexpensive than bedding sentinels
4. Closed system to avoid contamination of samples (patent pending)

Scientific results from a multicentric study will presented at the next Aalas in Austin (October 2017).
Contact your Tecniplast local representative for further information on Interceptor System.

The 56th Calas Annual Symposium in Calgary

CALAS, the Canadian Association for Laboratory Animal Science, strives to continually elevate the standards of laboratory animal practices to enhance animal welfare and excellence in science through training, certification, and continuing education. Members are trained to strictly adhere to all applicable Canadian laws, guidelines, and policies. Calas organize a National meeting every year. The last one, The **56th Calas Conference** was organized **from June the 8th to June the 11th in Calgary**. It was a nice event with about 500 registered people who had a great chance to:

- Participate in scientific sessions with the latest news for Lab Animal Science
- network with LAS professionals from across the country
- participate in small class size workshops
- discuss during poster sessions
- be present at vendor technical presentations

An interesting poster where interceptor system was tested, was presented at the conference. The poster was entitled **"Validation of Exhaust Air Dust Testing Using a Prototype Plenum Attachment and Interceptor in an IVC System with Centralized Ventilation"**, by Lise Phaneuf DVM, DVSc, DACLAM & Brianna Attanasio, BSc(Hons), RLAT The Centre for Phenogenomics, Toronto, ON.

The poster focused on the Exhaust air dust (EAD) testing.

The authors demonstrated that, through the Interceptor, the EAD testing:

- can be performed on an IVC system that has centralized ventilation using a prototype plenum attachment and the rack sampling device Interceptor.
- reliably identified MNV, Helicobacter, Pasteurella pneumotropica (Heyl and Jawetz), and Tritrichomonas as early as 7 days after exposure to colony cages.
- after 90 days of exposure to colony cages was consistent with our regular health monitoring program which uses a combination of sentinel mouse serology and direct animal sampling PCR analysis.
- after 90 days of exposure to colony cages appeared to be slightly more sensitive than our regular program in detecting Pasteurella pneumotropica (Jawetz) and Entamoeba

A great result for our Interceptor system.

Massimo Ferrari - *International Sales Area Manager*

Validation of Exhaust Air Dust Testing Using a Prototype Plenum Attachment and Interceptor in an IVC System with Centralized Ventilation

Lise Phaneuf DVM, DVSc, DACLAM & Brianna Attanasio, BSc(Hons), RLAT
The Centre for Phenogenomics, Toronto, ON

Abstract

Exhaust air dust (EAD) testing is a relatively new technique that can be used to perform rodent health monitoring by sampling the exhaust air from ventilated rack systems. Exhaust air is sampled through swabbing plenums or using a rack sampling device (filter), and samples are tested via PCR for microbial analysis. To perform EAD testing with our IVC rack system that has centralized ventilation, a prototype plenum attachment was developed for use with the rack sampling device Interceptor (Tecniplast). Results from EAD testing were compared to our regular health monitoring program which uses both sentinel mice (serology) and direct animal sampling (PCR). Two IVC racks (80 cage maximum capacity) were fitted with the prototype plenum attachment and Interceptor to perform the EAD testing. Racks and plenum attachments were washed and autoclaved prior to use and confirmed sterile by PCR swab analysis. Racks were initially populated with cages that were changed as they were placed onto the racks. To confirm the health status of the mice on the racks, pooled samples of feces and oral and body swabs (10 random cages per rack; 1 mouse sampled per cage) were submitted for PCR analysis at the beginning of the study. Interceptor was placed into the plenum attachment on Day 0. A sentinel cage containing 2 mice was placed on each rack and exposed to 1 tablespoon of soiled bedding from each cage at the time of cage change (every 14 days). EAD testing was performed at various intervals through a 90 day period and the results were compared to our regular health monitoring program. EAD testing using Interceptor reliably identified MNV, *Helicobacter*, *Pasteurella pneumotropica* (Heyl and Jawetz), and *Tritrichomonas* as early as 7 days after exposure to colony cages. EAD testing after 90 days of exposure to colony cages was consistent with our regular health monitoring program which uses a combination of sentinel mouse serology and direct animal sampling PCR analysis. EAD testing after 90 days of exposure to colony cages appeared to be slightly more sensitive than our regular program in detecting *Pasteurella pneumotropica* (Jawetz) and *Entamoeba*.

Materials and Methods

Mice. All mice used were obtained from breeding and research colonies at TCP with a known history for MNV, *Helicobacter*, and *Pasteurella pneumotropica* (Heyl & Jawetz). Sentinel mice (female, 5 week old ELITE health status) were obtained from Charles River Laboratories. For the duration of the study, cage numbers on each of the 2 racks varied from 46 to 73 per month (Figure 2).

Animal Housing. All mice were housed in individually ventilated cages (Tecniplast GM500) on racks connected to a central HEPA filtered air supply via a delivery plenum. Ventilation was maintained at 65 to 75 air changes per hour in positive pressure mode. All cages, bedding, enrichment, wire-bar lids, and filter tops were sanitized and autoclaved prior to use. Mice were housed with a maximum density of 5 adult mice per cage under standard environmental conditions (12:12 hour light:dark cycle, 20-24˚C, 40% to 60% humidity). Bedding material consisted of ¼ inch corncob and shredded paper nesting material was provided for enrichment. Mice were fed a commercial irradiated diet ad libitum and given UV irradiated, reverse-osmosis-filtered and acidified water via an automatic system. Cages were changed every 14 days. All personnel entering the animal holding room wore dedicated scrubs and clogs, an isolation gown, gloves, head cap and surgical mask. All cage manipulations were performed in a Biological Safety Cabinet or Animal Transfer Station.

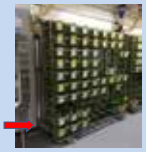


Figure 1. Two racks were fitted with a prototype plenum attachment to perform EAD testing (red arrow).

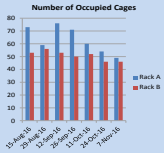


Figure 2. Number of occupied cages for each of the two racks (Rack A and Rack B) over 90 day study period.

Study Design

To compare EAD analysis with traditional health monitoring techniques, two IVC racks with 80 cage maximum capacity (Figure 1) were fitted with a prototype plenum attachment (Figure 3) to perform exhaust air dust testing using Interceptor (Figure 4). Racks and plenum attachments were sanitized and autoclaved prior to use and confirmed sterile by PCR swab analysis (Figure 5).

Figure 3. Prototype plenum attachment connected to the exhaust plenum.

Figure 4. Interceptor being placed into the plenum attachment.

Figure 5. Swabbing of rack plenum for PCR analysis to confirm sterility at beginning of study.

Racks were populated with cages that were changed as they were placed onto the racks. To determine the health status of the mice on the racks, direct animal sampling was performed using pooled samples of feces and oral and body swabs (10 random cages per rack; 1 mouse sampled per cage) submitted for PCR analysis (Table 1). The prevalence of agents on each rack was not known. Interceptor was placed into the plenum attachment of each rack on Day 0. A sentinel cage containing 2 mice was placed on each rack and exposed to 1 tablespoon of soiled bedding from each cage on the rack at the time of cage change (every 14 days).

Sentinel mice were tested using serology after 60 days and 90 days of exposure to colony cages. Pooled samples (10:1) using direct animal sampling of feces and oral and body swabs (8 random cages from colony mice and 2 samples from sentinel cage per rack; 1 mouse sampled per cage) were submitted for PCR analysis after 60 days and 90 days of exposure to colony cages (Figures 6-8). Interceptor from each rack was submitted for EAD PCR analysis after 7 days and 90 days of exposure to colony cages. A control Interceptor (not exposed to a rack) tested negative after 7 days . All testing profiles were performed by Charles River Laboratories (Table 1).

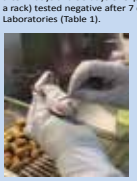


Figure 6. Body swab from colony mice for PCR analysis. Body swabs were performed on the ventral abdomen and perianal region. Oral swabs were also obtained.

Figure 7. Fecal collection from colony mice for PCR analysis.

Figure 8. Pooled samples (10:1) of feces and oral and body swabs using direct animal sampling (10 random cages per rack; 1 mouse sampled per cage) PCR analysis.

Table 1. List of agents in testing profiles for direct animal sampling PCR analysis, EAD PCR analysis, and sentinel serology. Testing was performed by Charles River Laboratories.

Direct animal sampling PCR & EAD PCR profiles:	MVM/MPV, MNV, MHV, MRV/EDIM, TMEV/GDVII, MAV-1/2, Reovirus 1-4, PVM, Sendai virus, Ectromelia, LCMV *Helicobacter, Citrobacter rodentium, Mycoplasma pulmonis, Streptobacillus moniliformis, Pasteurella pneumotropica* (Heyl & Jawetz)*, Clostridium piliforme, CAR Bacillus, Pseudomonas aeruginosa, Salmonella, Campylobacter, Bordetella bronchiseptica, Bordetella hinzii, Corynebacterium kutscheri, Corynebacterium bovis, Staphylococcus aureus, Streptococcus pneumoniae, Klebsiella pneumoniae, Klebsiella oxytoca,* Beta hemolytic *Streptococcus* group *B, C, G, Proteus mirabilis* Fur mites, Pinworms, *Giardia, Spironucleus muris, Cryptosporidium, Entamoeba, Pneumocystis, Demodex, Tritrichomonas*
Sentinel serology profile:	MVM/MPV, Generic parvovirus NS-1, MNV, MHV, MRV/EDIM, TMEV/GDVII, MAV-1/2, Reovirus, PVM, Sendai virus, Ectromelia, LCMV, *Mycoplasma pulmonis*, Mouse Pneumonitis virus, Polyoma virus

Results

Table 2. Number of racks testing positive / number of racks tested by direct animal sampling PCR analysis, EAD PCR analysis, and sentinel serology from Day 0 to Day 90.

	Day 0	Day 7	Day 60		Day 90		
	Direct Animal Sampling PCR*	EAD PCR Rack Collection Device†	Serology‡	Direct Animal Sampling PCR	EAD PCR Rack Collection Device	Serology	Direct Animal Sampling PCR
MNV	2/2	1/2	2/2	2/2	2/2	2/2	2/2
Helicobacter	2/2	2/2	-	2/2	2/2	-	2/2
P. pneumotropica Heyl	2/2	2/2	-	2/2	2/2	-	2/2
P. pneumotropica Jawetz	2/2	1/2	-	1/2	2/2	-	1/2
Entamoeba	0/2	0/2	-	0/2	2/2	-	1/2
Tritrichomonas	2/2	2/2	-	2/2	2/2	-	2/2

* Pooled samples (10:1) of feces and oral and body swabs using direct animal sampling PCR analysis (10 random cages per rack; 1 mouse sampled per cage)
† EAD prototype plenum attachment and a rack sampling device (Interceptor) PCR analysis
‡ Serology performed on soiled-bedding sentinel mouse (1 cage per rack) using EZ Spot®

Conclusion

- We demonstrated that EAD testing can be performed on an IVC system that has centralized ventilation using a prototype plenum attachment and the rack sampling device Interceptor.
- EAD testing reliably identified MNV, *Helicobacter*, *Pasteurella pneumotropica* (Heyl and Jawetz), and *Tritrichomonas* as early as 7 days after exposure to colony cages.
- EAD testing after 90 days of exposure to colony cages was consistent with our regular health monitoring program which uses a combination of sentinel mouse serology and direct animal sampling PCR analysis.
- EAD testing after 90 days of exposure to colony cages appeared to be slightly more sensitive than our regular program in detecting *Pasteurella pneumotropica* (Jawetz) and *Entamoeba*.

Acknowledgements

The authors would like to thank Dr. Gianpaolo Milite and Massimo Aspesi (Tecniplast) for their guidance and assistance with this project. We would also like to thank Tanya Cini-Kirk, RLAT for technical assistance and Francesca Fabry for administrative assistance.

Tecniplast France: The Courage to Invest

In this year 2017, a major evolution is taking place at Tecniplast France, we have managed to move into new larger premises and more especially we have a showroom and a stock for the spare parts in order to manage them faster.

At the time we changed our location, we had our national congress (AFSTAL) in Lyon, so we organized an event for our customers to show them our new offices and especially our training room and showroom in which they had the chance to see some pieces of hardware installed. We were able to demonstrate washing machines live and laminar flow equipment and also IVC's. During this evening 250 peoples visited us and left some message on a blackboard installed at their disposal.

The evening was a great moment for sharing information, expectations and speaking about training, projects and products.

Next year AFSTAL is going to be in Reims, and we will have a new Tecniplast event for our customers…surprise !

Xavier Parayre - *Marketing Manager Tecniplast France*

TTC we match your needs sharing our knowledge with you!

TECNIPLAST TRAINING CENTRE

The Tecniplast Training Center (TTC) started 2017 in the best way! **The Housing and laminar Flow Introductory Course** was held in Tecniplast Training Center in May. Registrations were sold out already in February, before the closure of the timing slot (we have a closed number of 20 people, with the objective of developing direct relation with all participants).

The Attendees evaluated the Training very positively with an average score of 3,6, on a ranking scale of 1 = POOR; 2 = SUFFICIENT; 3 = GOOD; 4 = EXCELLENT, filling in a questionnaire which considered all the aspects such as: level of interest; topics, program, speakers' competence, level of communication, organization and structure. More important is the fact that 100% of the participants (20 people, closed number) answered that:

- They learnt something that they will put into practice
- They will suggest the TTC courses to their colleagues
- They found perfect the degree of retention of the subjects explained.

Training in TP is teaching, developing skills competence and knowledge of our products. Training is part of our product features. For TP, Training has specific goals of improving our customers' capability, capacity, productivity and performance. It is part of our products' offer and we want to support our customers to continue training beyond initial qualifications: to maintain, upgrade and update skills throughout their working life.

Leopoldo Zauner - *Marketing Director*