



THE COMPANY

IACOMELLI RICERCHE AVANZATE (Advanced Researches) Nautical Department, stems from the 10- year experience and from the in-depth study of all aspects, the characteristics and the real demands of this sector aimed at meeting the requirements of the clientele and being among the leaders of this sector.

The new scientific discoveries within the biological domain and the awareness of the need for a non-superficial cleanness, which is appropriate to re-establish the exact level of hygiene, have brought our company, together with the co-operation of highly qualified professionals, to elaborate a new working protocol for the sanitary measures of locations, particularly in the nautical domain.

Such research has the target of defining the suitable methodologies and intervention criteria, which are necessary for the complete sanitation of the places.

The technical sanitary intervention developed by Iacomelli Ricerche Avanzate, with the help of special materials and equipment, is going to be carried out only by specialized technicians, following the usual cleaning tasks performed thoroughly by the crew or the cleaning company.

This procedure is advised to be carried out on all boats, especially on those where the passenger-turnover is frequent.

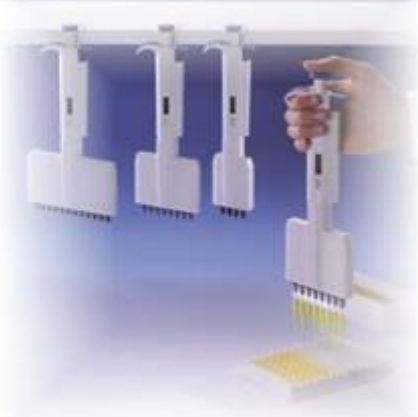
The certificate issued by our company once the sanitation is complete is going to represent a further step towards health and safety.



Why taking sanitary measures



The recurring moving of great numbers of people from one country to another, the contacts between people, continents which are experiencing industrializations or life-conditions which are not up to standards with the sanitary regulations, all of this represents the phenomenon which, for the last few years, has been pursued and carefully studied by the appointed Health Organizations for the safeguard and the protection against the diffusion of infectious and viral diseases.



During the last few years the occurrence of the transmission of micro-bacteriological and viral diseases has increased (source: EWGLI- European Work Group Legionella Infections). On the other hand, the conscience awareness and the protection of the tourist or the travellers rights, has increased the legal actions taken by or on behalf of the consumers organizations, claiming high compensation costs against the means of transport or against the lodgings the tourist or traveller had stayed or travelled with.



In this context, monitoring and preventive controls carried out by both Government organizations and non-Government, become particularly important together with the safeguarding interventions in order to keep the means of transport, leisure and lodgings efficient from the health and safety point of view and to hold responsible the people working within the transport industry and the industry for the reception of tourists.

Taking into account all the important social-economic and practical aspects together with the loss of reputation coming from the above, the strategy to be followed is, without a doubt, that of carrying out measures and technologies aimed at preventing the rising of significant health and safety problems.



The nautical sector:

Maritime work retains complex risk-factors bound to the “ship environment” which is a working environment, leisure and life. In this area, the evaluation of the infective risk must consider different parameters in connection with the technical construction, the communal areas and as a moving means of transport carrying tourists and crews to geographical areas with different climatic conditions, to areas which are endemic for infectious diseases and are potentially at risk.

Within the domain of the research-study carried out by our Advanced research division, based on the sanitary conditions in force on boats and ships, yachts, either chartered or owned, we found underestimates or almost total lack of knowledge, even basic, of the environmental disinfection and sanitation notions on a micro-biological level.

After a number of careful and in-depth investigations, performed on board of yachts, by examining the usual cleaning and sanitary tasks and by asking specific questions to the crew, our evaluation is that of a dangerous underestimate of the micro-bacteriological risks, both under the point of view of strictly personal protection and that of the prophylaxis for the diffusion of infectious diseases, imported from European and non-European countries, exotic countries or around the Equator or from the African or Asian countries.

Causes :

The lack of seal of the water-ducts, the overflowing of the pipes collecting the condensation from the fan coils, the lack of care when replacing the carbon-active filters, water infiltration from the sliding doors, with the stagnation and sedimentation on the insulating materials as a consequence; the collection of dust and dirt in the air-conducts, the vents of the black waters, of the bilges, the numerous cases above the living quarters (living rooms, bedrooms, dining rooms etc.) corners and cavities where it is difficult for the crew to take action. These mentioned above are all recurring examples which cause the proliferation of bacteria and moulds.



We usually notice how the crew performs sanitary actions without suitable protection, using chemical agents which are too invasive and above all it lacks an adequate preparation which is aimed at operating in places where the cleaning procedures are only effective on the visual and olfact level (which is not the same as sanitation).

Prevailing infectious pathologies:

We must underline that in places such as these, the sanitary risk in incurring lung infections which can be either epidermic or parasitic or more or less serious pathologies (Legionella, Pontiac's fever, Salmonella, fungi, allergies from mites or other kinds) is highly amplified unless operations which are effective and technically suitable take place.

Underestimating or not taking into account such sanitary problems without promptly intervening, will definitely result into a ineluctable sanitary decay which is going to be very hard to wipe out unless the yacht is dismantled.

Our targets :

1. To focus our attentions on all aspects of the sanitation. The ever worrying reports and accounts on the spreading of serious diseases as the above mentioned Legionella, has put us in the position of creating a data bank in co-operation with the most important Italian shipyards, with the aim of monitoring and intervening quickly with the support of teams of professional technicians who are trained to face bacteriological emergencies to prevent and make safe an exclusive environment which maybe apparently perfect but in reality is lacking important sanitation measures.

2. To take care of the precautionary and formative aspect and the aspect of intervention by creating a number of courses aimed at supplying the most exhaustive and complete course to guarantee security and health. Specific training for crews will be aimed at replacing the managing director.
3. To carry out an information and sensitization campaign on a very high level, involving Government Institutions such as the health Ministry, the local health authorities, harbour offices and U.C.I.N.A..

Conclusions :

The prevention and the control of the infective risks must revolve around analysis, preventive check-ups, and prompt interventions aimed at keeping up the sanitary standards on board and also it must concern the training and the information of the crew together with the ship-builders and the ship-owners.



Standard Operative Procedures



Following the indispensable acquirement of the ship construction designs together with all the technical specifications of the materials used and of the plants and installations, our company will develop a report with a list of all the procedures and the application methodologies in order to bring back all the areas to a perfect sanitary level. Each single place will be analysed into all its aspects and the applicative compatibility will be verified in relation to the sanitary agents that are going to be used.

Once the report has been accepted, a team of specialized technicians will carry out, under the control and the supervision of a supervisor, the intervention of sanitation in compliance with the directions and the treatments as per the report.

Once the operation has been accomplished a Certificate of intervention will be issued. This certificate will be signed by our supervisor and by the executive officer or the person in charge on board. A certificate of Conformity reporting the tests results, will be issued by the test

laboratories (credited according to the national regulations) and will be attached to this certificate.

A crew training course will be carried out in order to implement the ordinary maintenance tasks and a manual of instructions for the maintenance tasks will be issued and left to the crew.



Places of intervention

We will be carrying out the different sample inspections in order to do the necessary investigations as provided in the protocol, on those places which we deem critical for the development and the proliferation of bacteria, particularly:

- **Jacuzzis**
- **Drains**
- **Lavatories**
- **Floors and coverings (ceramic, steel, carpets and parquets)**
- **Junction-fissures**
- **Sinks**
- **Cookers**
- **Ovens, micro-wave ovens**
- **Extractor fans**
- **Supporting boards**
- **Fridges, cold stores**
- **Sofas**
- **Curtains**
- **Furniture**



- **Glasses**
- **Scuppers**
- **Chain locker**
- **Air-conditioning plant (split, fan-coil, in and out-plugs)**

For each of the above places we will be selecting a specific sample which will be tested in order to determine its hygienic standard





ATTACHMENTS

- **Copy of the Italian Gazzette** (which encloses the guidelines for the prevention of Legionella in the provinces of Bolzano and Trento which are in compliance with these regulations)

- **Table of the report U.F.C. per Cm²**

- **Table of the causes and pathologies of the micro-biological agents**



torri di raffreddamento/condensatori evaporativi;
fontane ornamentali, specialmente se collocate in
ambiente interno;
impianti di irrigazione di giardini;
acque di scarico di impianti igienici.

A tutt'oggi non è dimostrato che la malattia si possa
contrarre bevendo acqua contaminata e sembra esclusa
la trasmissione diretta tra uomo e uomo.

2.3 Definizione di cluster.

Possiamo identificare casi singoli di legionellosi o
cluster di casi. Particolarmente rilevante ai fini delle
misure di controllo della malattia è il «cluster» di legio-
nellosi associata ai viaggi, definito come il verificarsi
di due o più casi associati con la stessa struttura turi-
stico-recettiva nell'arco di due anni.

3. Prevenzione e controllo del rischio da esposizione a legionella.

Negli ultimi anni si è verificato un notevole increm-
ento dei casi diagnosticati di legionellosi associata ai
viaggi

natore
proba
mente
per ot
cui av
Co
gine c
più pr
in ato
malat
Per
trollo
ad ur
prime

3.1. rischi

Per
losi, l
contr
misu
tenei
strut
segue
essen
strat
che g
indiv

temp
in us
tatto
ai ru
lizza

⁽¹⁾ Un modo pratico di verifica del «molto caldo al tatto» è il
seguente: non deve essere possibile tenere le mani sotto l'acqua cor-
rente per più di qualche secondo.

b) mantenere costantemente l'acqua fredda ad
una temperatura inferiore a 20°C. Se non si riesce a rag-
giungere questa temperatura, e se una qualsiasi parte
dell'impianto dell'acqua fredda o delle uscite si trova al
di sopra di questa temperatura, si deve prendere in con-
siderazione un trattamento che disinfiltri l'acqua
fredda;

c) fare scorrere l'acqua (sia calda che fredda) dai
rubinetti e dalle docce delle camere non occupate, per
alcuni minuti almeno una volta a settimana e comun-
que sempre prima che vengano occupate;

d) mantenere le docce, i diffusori delle docce ed i
rompigetto dei rubinetti puliti e privi di incrostazioni,
sostituendoli all'occorrenza;

e) pulire e disinfettare regolarmente (almeno 2
volte l'anno) le torri di raffreddamento ed i condensatori
evaporativi delle unità di condizionamento dell'aria;

f) svuotare, disincrostare e disinfettare i serbatoi
di accumulo dell'acqua calda (compresi gli scaldia
acqua elettrici) almeno due volte all'anno e ripristi-
narne il funzionamento dopo accurato lavaggio;

From the official gazette of the Italian Republic

Art.3 Prevention and control of the risk from exposure to Legionella

During the last few years, there has been a remarkable increase in the
diagnosis of Legionella which is associated to travelling and, in 2002, 675
cases were notified to the co-ordinating centre EWGLINET. These cases had
probably been contracted in receiving structures. At the same time, the legal
actions taken by the tourists in order to claim for compensation costs against
the hotels where there had stayed and where the disease had been
contracted, have increased.

Taking into account the economic implications and the reputation which can
result from these events, the most pragmatic approach is to do all that is
possible to implement the necessary measures for the prevention of this
disease.

In order for the prevention to work, the control measures must be enforced
not only to answer to a single case or a cluster of cases of Legionella, but
before these happen.

ogni giorno;

trattare continuamente l'acqua con 2 - 3mg/l di
cloro;

Table of the ratio UFC per Cm2 / Litre
Microbial charge.



Parameters of reference set the level of sanitation of the
surfaces/cavities/waters:


<i>SAFETY PARAMETERS</i>	<i>UNIT</i>	<i>RISK EVALUATION</i>
<i>Above 10.000</i>	UFC Per cm ² /or Litre	Critical Level
<i>Above 1000</i>	UFC Per cm ² /or Litre	Risk of infection
<i>Above 100</i>	UFC Per cm ² /or Litre	Non Hygienic
<i>From 100 to 10</i>	UFC Per cm ² /or Litre	Clean but not Hygienic
<i>Under 10</i>	UFC Per cm ² / or Litre	Hygienic and sanitized

The unit of measure is expressed in **U.F.C.**
Unit Forming Cologne per cm² or Litre.

Classification, causes and symptoms

The table below has been designed by taking into account the most commonly found bacteria indoors, following the directions of the National Institute for Occupational Safety and Health NIHOS USA, and through the classification parameters of the biological agents of D.L. Art 75 N° 626 dated 19/09/1994

Bacteria and moulds	Causes	Health risks
<p>Legionella</p> 	<p>Lack of maintenance in the air-ducts, loss of water ducts and recycled water, stagnation and incrustations bio-film and sediments</p>	<p>Respiratory diseases, allergies, pneumonia, inflammations, nose and eye irritation, cough, headache, itching, asthma</p>
<p>Mico bacteria</p>	<p>High humidity levels, breakage of water-ducts and air-ducts</p>	<p>Respiratory diseases, allergies, pneumonia, inflammations, nose and eye irritation, cough, headache, itching, asthma</p>
<p>Mites</p> 	<p>Organic human residue (skin, dandruff) non-adequate aeration, wrong maintenance of the places</p>	<p>Respiratory allergies, asthma, rhinitis</p>

Bacteria and moulds	Causes	Health risks
Norovirus	Contact with infected surfaces, person to person contact (with a person infected by Norovirus), using not correctly sanitized tools	Gastroenteritis, stomach and large intestine inflammation
Salmonella 	Wrong sanitation of the garbage cells and the kitchen working boards, contamination of food and food containers	Diarrhoea, fever, abdominal cramps
Pseudomonas aeruginosa	Water stagnation	Urinary infections, wound infections, corneal ulcers, septicaemia, gastroenteritis, broncho-pneumonia and meningitis
Listeria	Water stagnation and water collection	Diarrhoea and in the most serious cases encephalitis and meningitis



Note:

Participating to this study and project :

Marcello Iacomelli	(General Manager – Ricerche Avanzate).
Marco Natalini	(Research and Development Manager - Ricerche Avanzate).
Serena Giannini	(Commercial Manager - Ricerche Avanzate
Rossano Molinaroli	(P.E.Electrotechnical).
Ing. Lara Gargini	(Hospital sector Manager Culligan Italiana spa).
Dott. Eugenio Rietti	(Sanitary environmental Engineering).

Analysis Certification after sanitation treatment.

Valued Laboratories :

We visited and inspected many chemical-bacteriological laboratories in order to value technical instruments and competences. Only three of them result suitable for our project development.

NEW SANITATION SYSTEM



OZONE AS SOLUTION FOR PROBLEMS ON BOARD.

Ozone is an unstable gas which consists of three oxygen atoms (O_3) and is produced by exposing Oxygen to UV rays, to electric discharges, glow discharges and other chemical processes. It is not possible to keep it and, for this reason, it is produced on the spot by means of suitable ozone generators.

Ozone has a highly oxidizing power which is used to attack bacteria, viruses and moulds.

Once its main function is over, ozone goes back to its original state: Oxygen.

Why disinfecting with ozone?

In confined areas, ozone carries out an effective action of bactericidal and antimycotic disinfection. The direct immission of this gas in the atmosphere is particularly indicated where there is a real need to disinfect even the most difficult to reach areas. Also in case of allergies, bad odours, bacteria and viruses (which usually occur in areas which are difficult to clean) and in order to neutralize mildews, germs and mites.

APPLICATION IN THE NAUTICAL FIELD

Ozone finds different applications on board, both on newly built or on those which have already been launched some years ago.

Please find below a list of all applications.

Disinfection of air conditioning ducts:

against fungi, bacteria, germs and viruses that can develop inside the ducts. It also gets rid of bad odours.

Disinfection of fan-coils:

inlet ducts and condensed air collection tanks.



Neutralizing of bad odours:

cigarette smoke, bad odours from the kitchen and galley, carpets, and other areas.

Disinfection of toilets/bathrooms, Jacuzzis:

Different mildews and bacterial charges proliferate in toilets/bathrooms and above all Jacuzzis. This treatment stops mould and bacteria formation, also inside the shower ducts.

Disinfection of fridge galleys:

Complete neutralization of bad odours, by slowing down the rotting and deterioration of perishable foods.

Prevention of bad odours:

To prevent bad odours coming from the air vents of grey and black water collection tanks and bilges

Treatment of drinkable water:

Ozone plants sterilize water and because ozone is odourless it is even better than chlorine. Besides it helps to eliminate chlorine residue in water. In countries where water is of dubious quality, this treatment makes sure that there are no health risks.

During sanitation treatments on board, Iacomelli Ricerche Avanzate takes into account different types of ozone treatment, the most important of which is “SHOCK”, a treatment that our technicians use on yachts that need a careful disinfection, for example after trans-atlantic crossing or journeys to particular countries (Asia, Africa, South America), or where they find bacterial charges to be very high.

A good sanitary condition on board is guaranteed by installing of ozone micro-plants which keep a steady level of this gas in the air and the water.



Via Mazzini,11 51010 Massa e Cozzile (PT) Cod.Fiscale e P.iva
01601920471

www.iacomelli-ricercheavanzate.it e-mail: info@iacomelli-ricercheavanzate.it

Tel: +39 0572. 913755 FAX +39 0572.901204