RIGA 27.9.2018 EXPERT DAYS

Lifa Air Oy Ltd. (Helsinki, Finland) - Since 1988

Lifa Air has been at the forefront of functional and efficient solutions in indoor air quality since 1988. In Finland, a country well known for clean air and constant innovation, we design state-of-the-art solutions that set the standard for ensuring healthy indoor living.

Our professional HVAC duct and industrial pipeline cleaning equipment and air filtration solutions are backed by committed R&D, expert services and support dedicated to delivering results. We are passionate about providing solutions for the well-being of people working and living in indoor environments all around the globe. Clean indoor air results both into healthy spaces and also in improved productivity at work.

IAQ MARKET SITUATION

Market Entry:
Europe, 1988
Asia, 2000
North-America, 2002.
South-America, 2006
Africa, 2010

Order of Importance, 2010:
1. Europe
2. Asia
3. North-America
4. South-America
5. Africa

Order of Importance, 2015:
1. Asia
2. Europe
3. North-America
4. South-America
5. Africa

Order of Importance, 2020:
1. Asia
2. South-America
3. Europe
4. North-America
5. Africa

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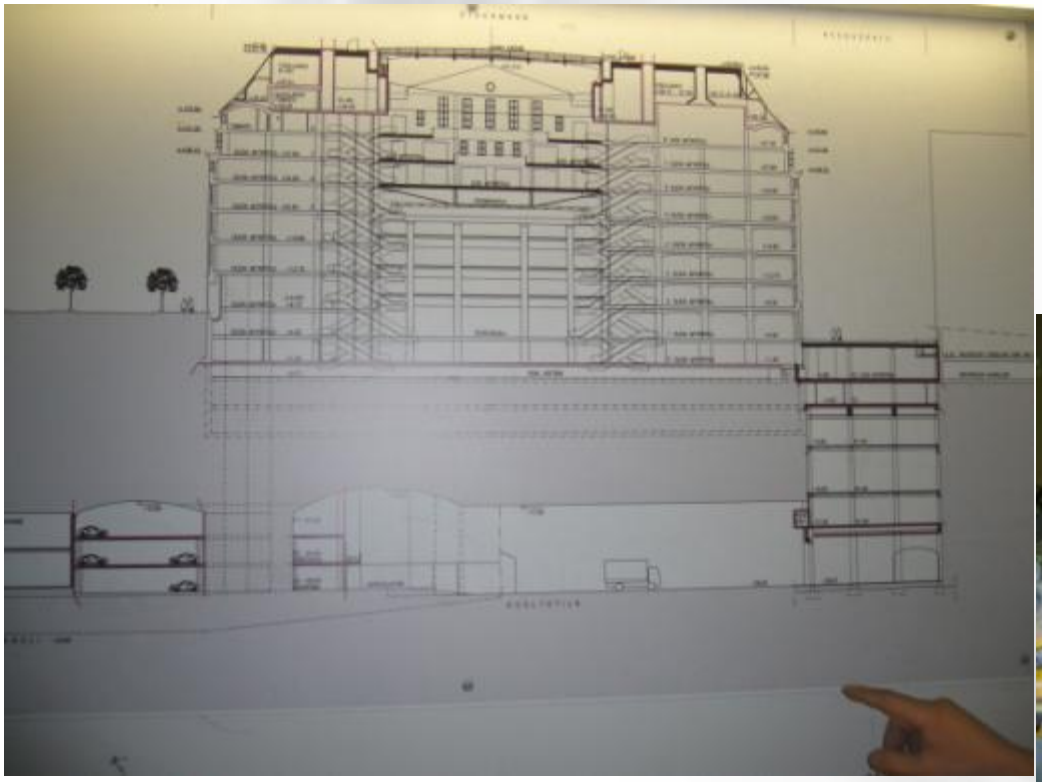
SCIENTIFIC PAPERS PUBLISHED >20 – KEY CONCEPTS PRESENTED IN HEALTHY BUILDINGS 2003 CONFERENCE

- Lifa HVAC Cleaning Concept: The verifying concept for the cleanliness of HVAC ductwork, Asikainen et al., 2003
- Lifa HVAC Cleaning Concept: Accumulation of grease deposits in kitchen exhaust ducts, development and testing of new cleaning techniques, Pasanen et al., 2003
- Effectiveness of duct cleaning methods on newly installed duct surfaces, Holopainen et al., Indoor Air 2003 13:3 p. 212
- Dust control methods and several other related building renovation best practice publications since 2000 (e.g. Finland RATU 82-0240)

ACTIVE PARTICIPATION in professional associations e.g. European Ventilation Hygiene Association EVHA (see www.evha.eu) and International Kitchen Exhaust Cleaning Association (see www.ikeca.org) and National air duct cleaning assotion USA (see www.nadca.com)

RENOVATION HYGIENE (DUST CONTROL)

CASE STOCKMANN: 60,000 m2 shopping mall was renovated for 2 years
➔ Shopping area was in normal operation and **sales increased!**



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- **Methods for inspecting the HVAC ducts and IAQ**
- **Products and service concepts for cleaning the air ducts and industrial pipelines and other special services**
- **Superior filtration solutions to remove airborne particulate and gaseous impurities (dust control)**

  1) HEPA filter units for asbestos (1988)

  2) Dry&Clean: removal of toxic gases from microbes, moisture and particulates (1996)

  3G filter units: low pressure filtration of both particulates and gases (2002)

Lifa HVAC Cleaning Concept

- **criteria for the cleaning and cleaning results**
- **methods for the visual evaluation of cleanliness**
- **plans for the cleaning**
- **optimal choice of the cleaning method**
- **advanced cleaning equipment and procedures**
- **quality assurance systems and education material**

Lifa Grease Cleaning Concept

- **s**uitable for all types of grease, soft or hard-burned and both round and rectangular ducts up to 1,2m in size
- unique capability of one machine capable of doing brushing, spraying chemicals and adsorbent granules all at the same time.
- Lifa machines are the only ones powerful and durable enough to be able to rotate big brushes in a grease duct
- Designed for MAINTENANCE done regularly – although also heavy accumulation can be dislodged
- **SEE VIDEO (Swedish fire safety tests for ducts):** http://www.imkanal.se/brand.html

Cleaning intervals for grease exhaust ducts (EVHA 2006b; TR19 UK)

USE of kitchen	TIME / DAY	CLEANING INTERVAL
heavy	12-16 h/day	min every 3 months
medium	6-12 h/day	min every 6 months
light	2-6 h/day	min every 12 months

EVHA target values, descriptions of grease layer thickness in micrometers with “grease comb” (wet film thickness test gauge/instrument i.e. W.F.T.T.)

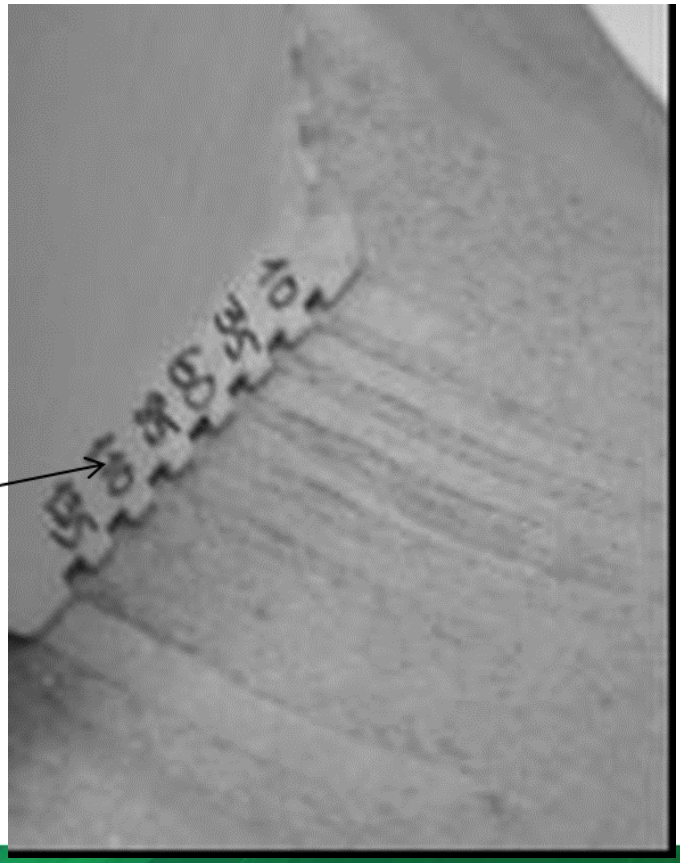
Readings	Description	Action
a) Micron readings 0 - 50	Clean	Report
b) Micron readings 50 - 200	Acceptable	Monitoring scheduled
c) Micron readings 200 - 300	Dirty	Program cleaning
d) Micron readings 300 - 600	Heavy	Urgent cleaning
e) Micron readings 600 +	Extremely Heavy	ASAP system closure

It has been verifed in several countries / service operators that over 600µm limit is reached within 3 months in kitchens operating >16 hours/day.
Also 200µm is reached in 6 months when kitchen is operating >6 hours/day.

Grease comb method

The WFTT measuring device is set down in 90-degree angle (perpendicular) to the surface, press down and scratch for length of 10cm. The “tooth” which does not leave mark anymore is the depth of layer (here 110 microns)

(photo courtesy of Kuopio University, Natural and Environmental Sciences)



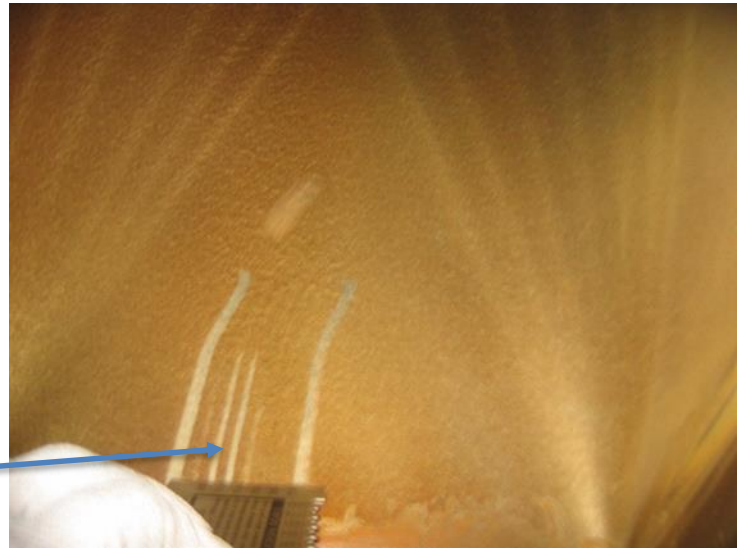
Grease comb method

here app. 100 microns

(photo Lifa Air)

New TR19 UK guideline and prEN15780:2017 update suggests:
- 200µm and above as a mean across the system: complete cleaning required
- **500µm and above in any single point: Urgent localized cleaning required**

The mean measurement is calculated by dividing the total of the test results by the number of testing locations



here app. 280 microns

(photo Lifa Air)

Cleaning intervals for grease exhaust ducts USA (measured depth of 2000 microns is trigger level)

NFPA Standard 96: Table 11.4 Schedule of Inspection for Grease Buildup

Type of Volume of Cooking	Inspection Frequency
Systems serving solid fuel cooking operations. Ex. Wood Burners	Monthly
Systems serving high-volume cooking operations, such as 24-hour cooking, charbroiling , or wok cooking.	Quarterly
Systems serving moderate-volume cooking operations.	Semiannually
Systems serving low-volume cooking operations, such as churches, day camps, seasonal businesses, or senior centers.	Annually

LIFAair quality assurance

CERTIFIED ISO 9001 QUALITY AND ISO 14001 ENVIRONMENTAL STANDARDS SINCE 2010

THANK YOU,

KIMMO HAAPALAINEN

LIFA AIR Ltd. (Vice President, Sales & Marketing) www.lifa.net

EUROPEAN VENTILATION HYGIENE ASSOCIATION (President elect since 2015) www.evha.eu