The Vaccine and Infectious Disease Organization – International Vaccine Centre

University of Saskatchewan

InterVac

Level 3 biocontainment facility built on U of S Campus

Provides research capacity for development and testing of vaccines and vaccine delivery systems

Constructed adjacent to Vaccine Infectious Disease Organization

145,000 sq. feet

$145,000,000 cost

University of Saskatchewan

InterVac

24/7 operation, regardless of conditions

full N+1 system redundancies

annual validation & re-certification of all components

regulated by Public Health Agency of Canada and Canadian Food Inspection Agency

University of Saskatchewan

InterVac

Six – CL-3 independent lab modules, with each one being 1,500 sq.ft.

10 – 15 ACH in containment areas

All exhaust air to pass through single HEPA filter

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InterVac

Eighteen – CL-3Ag animal housing rooms, with each one being 675 sq.ft.

10 – 20 ACH in animal containment areas

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All exhaust air to pass through double HEPA filter

Pressure decay tested

InterVac

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InterVac

Mechanical - HEPA Filtration
– High Efficiency Particulate Air Filter

-All containment exhaust air passes through 1 or 2 HEPA filters before leaving building

- Units located as close to line of containment as possible, wherever possible

- Housings stainless steel construction

- All ductwork made of welded stainless steel from line of containment to housing, tested to -10 w.c

- Filter mediums subject to annual validation (scanning)

- Use of Camfil technology

Mechanical - HEPA Deck – Interstitial Floor above

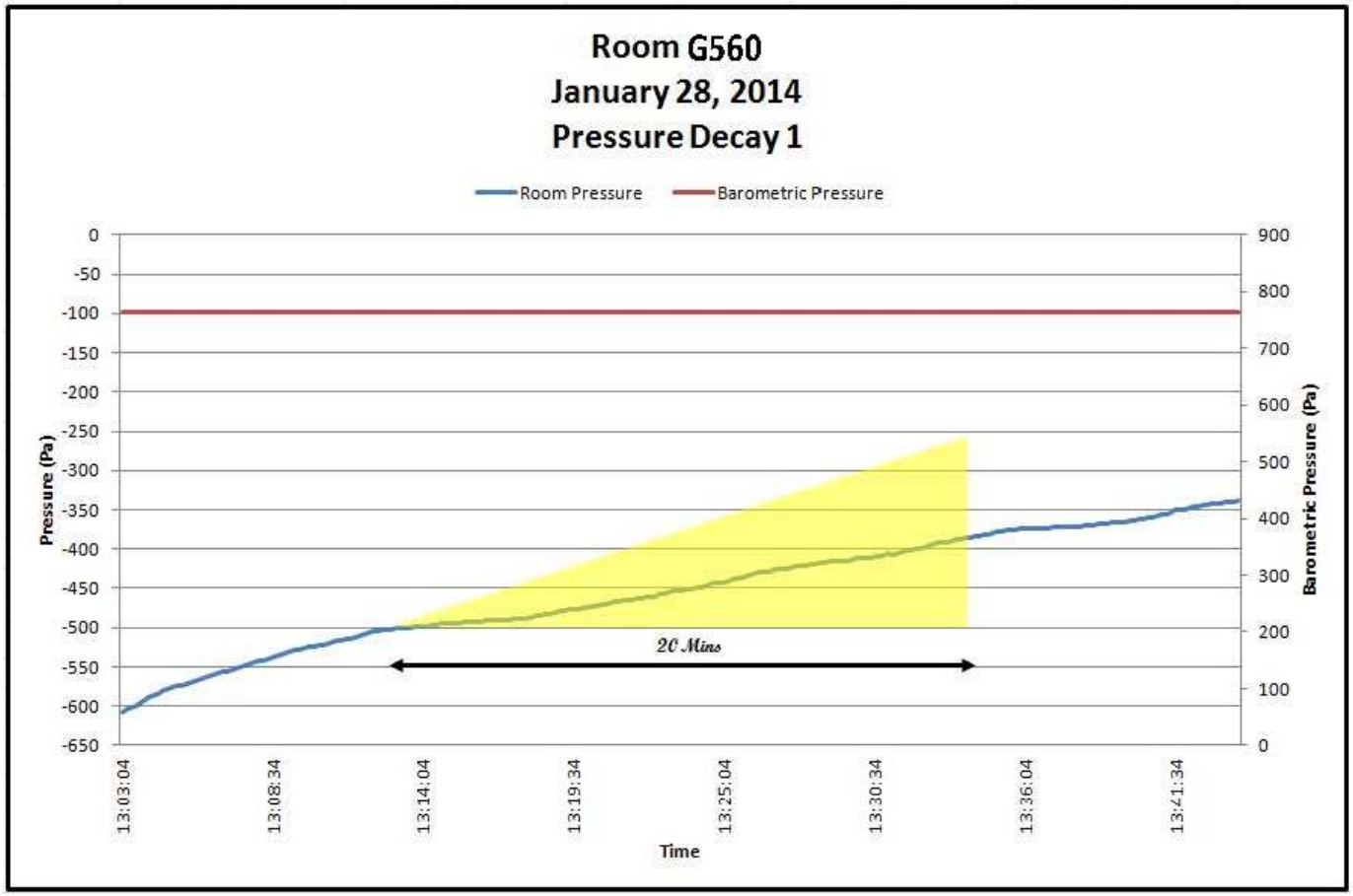
Mechanical – Camfil HEPA filtration
– 138 Camfil housings with a total of 255 filters

Mechanical - HEPA Filtration – High Efficiency Particulate Air Filter

Mechanical – HEPA filter system requirements for initial certification

- housings pressure tested with documentation
- Stainless steel ductwork pressure tested to 10” w.c.
- supply of calibration certificates for all equipment used, valid within the year
- validation of all filters (by contractor)
- pressure decay test of all CL-3Ag rooms, including associated ductwork and housings

Mechanical – typical room pressure decay test



Mechanical – HEPA filter system requirements for annual re-certification

-statement that no modification to housing occurred; if modified, housings pressure tested with documentation

- statement that no modification to stainless steel ductwork occurred; smoke test all joints; if modified pressure tested to 10” w.c.

- pressure decay test of all CL-3Ag rooms, including associated ductwork and housings

- supply of calibration certificates for all equipment used, valid within the year

- re-validation of all filters

Mechanical – HEPA filter system growing pains

Initial filter scanning part of capital contract
- some typographical errors noted

Initial registration of filter medium before scans
- if scan unsuccessful and filter swapped out, there was no way to edit the software
- same filter serial number noted in two housings

Positional sensor issues
- incorrect initial input of scan travel distance

Scanning equipment condition upon turnover
- remediation by Camfil

Mechanical – HEPA filter system - issues

Probe glide gears stripped
- incorrect travel input or proximity switch failure

Internal binding/crimping of probe hoses
- getting caught under bottom probe guide
- getting caught between probe and prox sensor
- getting caught on damper support plate
- kinked hoses establish “memory”
- insufficient space for hose to gather

Mechanical – HEPA filter system - issues

Hoses squeezed and kinked at end of scan run

Mechanical – HEPA filter system - issues

Hoses snagged on internal components and kinked

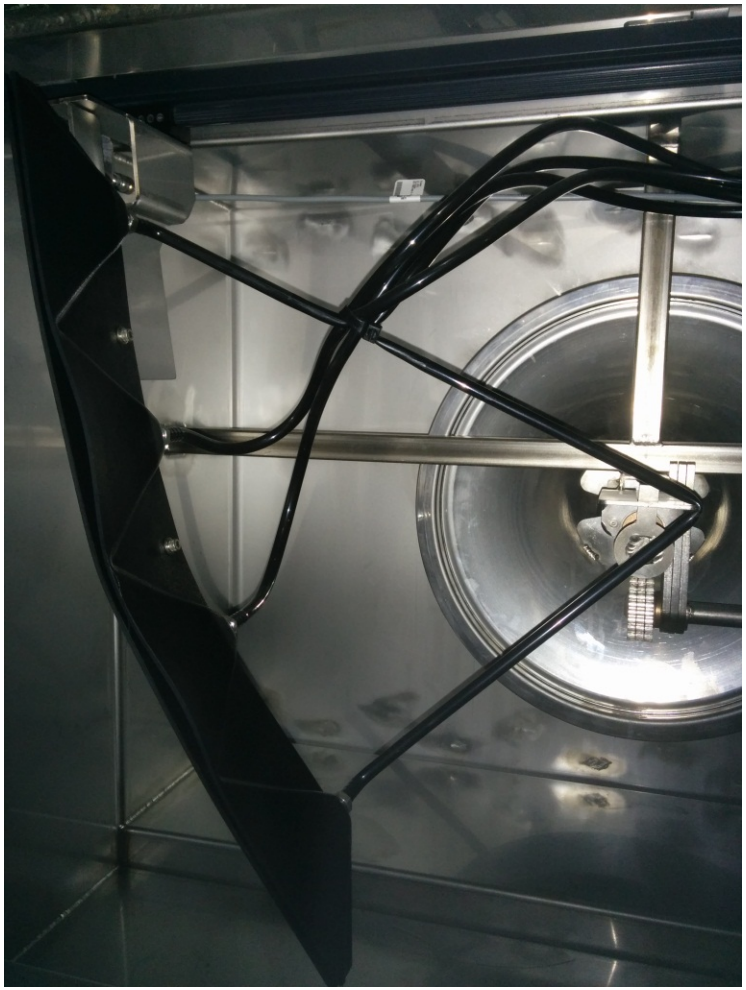
Mechanical – HEPA filter system - issues

Hoses getting caught under track in triple wide filter housings

Mechanical – HEPA filter system - issues

Installation of Heli-wrap to better gather hoses and stabilize

Mechanical – HEPA filter system - issues



Extreme example of hoses catching on damper support place

Mechanical – HEPA filter system - solutions

Probe glide gears stripped
- reprogrammed travel lengths
- replacement by our staff with guidance from Camfil

Internal binding/crimping of probe hoses
-redesign of internal components and installation of hose loom
-site visit and remediation by Camfil
-longer hoses, better placement of gathers
-All accessible units refurbished; materials left for remainder

HEPA filter system – overall thoughts

strong advocate of the system

Well suited if you have your own O&M staff
- start scan and do other things

Camfil very supported of their product

Most problems we encountered were already solved in latest version of product or software


QUESTIONS?