YOUR PROTECTION. OUR PRIORITY.

Breathe Easy:

A Comprehensive Guide to Respirator Fit Testing

Stephanie Lynch, PhD, CIH, CSP

Luke Allen

Hunter Strickler

October 2024

What is a Respirator Fit Test?

The use of a protocol to evaluate the fit of a respirator on an individual

Verifies training and identifies the specific make, model, style, and size of respirator best suited for each employee

YOUR PROTECTION. OUR PRIORITY.

Why Fit Test?

- Protect the health of employees
- Ensure employees are trained on their mask and their risk
- Provide employees peace of mind
- Required by:
  - OSHA 29 CFR 1910.134
  - ANSI Z88.10 – 2010
  - ISO 16975 – 2017
  - HSE INDG479
  - INRS ED 6273
  - AS/NZS 1715

OHD
YOUR PROTECTION. OUR PRIORITY.

Who Can Fit Test?

- Competent Individual?
- Qualified Individual?
- Program Administrator?
- Anyone?

YOUR PROTECTION. OUR PRIORITY.

Accreditation Schemes

RESP-FIT
RESPIRATOR FIT TESTING
TRAINING & ACCREDITATION

fit2fit ACCREDITED
RPE Fit Test
Provider

OHD
YOUR PROTECTION. OUR PRIORITY.

How About a Repeat Test?

When the wearer:

- Loses or gains significant weight (+/- 20lbs or 9kg)
- Undergoes any substantial dental work
- Develops any facial changes (scars, moles, etc.) around the faceseal area
- At the regulated time interval (typically annually)

YOUR PROTECTION. OUR PRIORITY.

Qualitative Fit Testing (QLFT)

- Relies on the wearer to detect leakage
- Pass/Fail Test
- Typically limited to half mask respirators

Quantitative Fit Testing (QNFT)

- Uses a machine to measure leakage
- Provides a fit factor
- Can be used on any respirator

OHD
YOUR PROTECTION. OUR PRIORITY.

Two Most Common Methods of QNFT:

CNP	Ambient Aerosol CNC
• OHD Quantifit & QuantiFit2 • Air is the challenge agent • Carried out by replacing filters with fit test adapters • Uses a Controlled Negative Pressure to directly measure respirator leakage	• OHD AeroFit • Aerosol is the challenge agent • Carried out by probing the respirator • Calculates the ratio of external particles to the particles in the mask

YOUR PROTECTION. OUR PRIORITY.

Controlled Negative Pressure

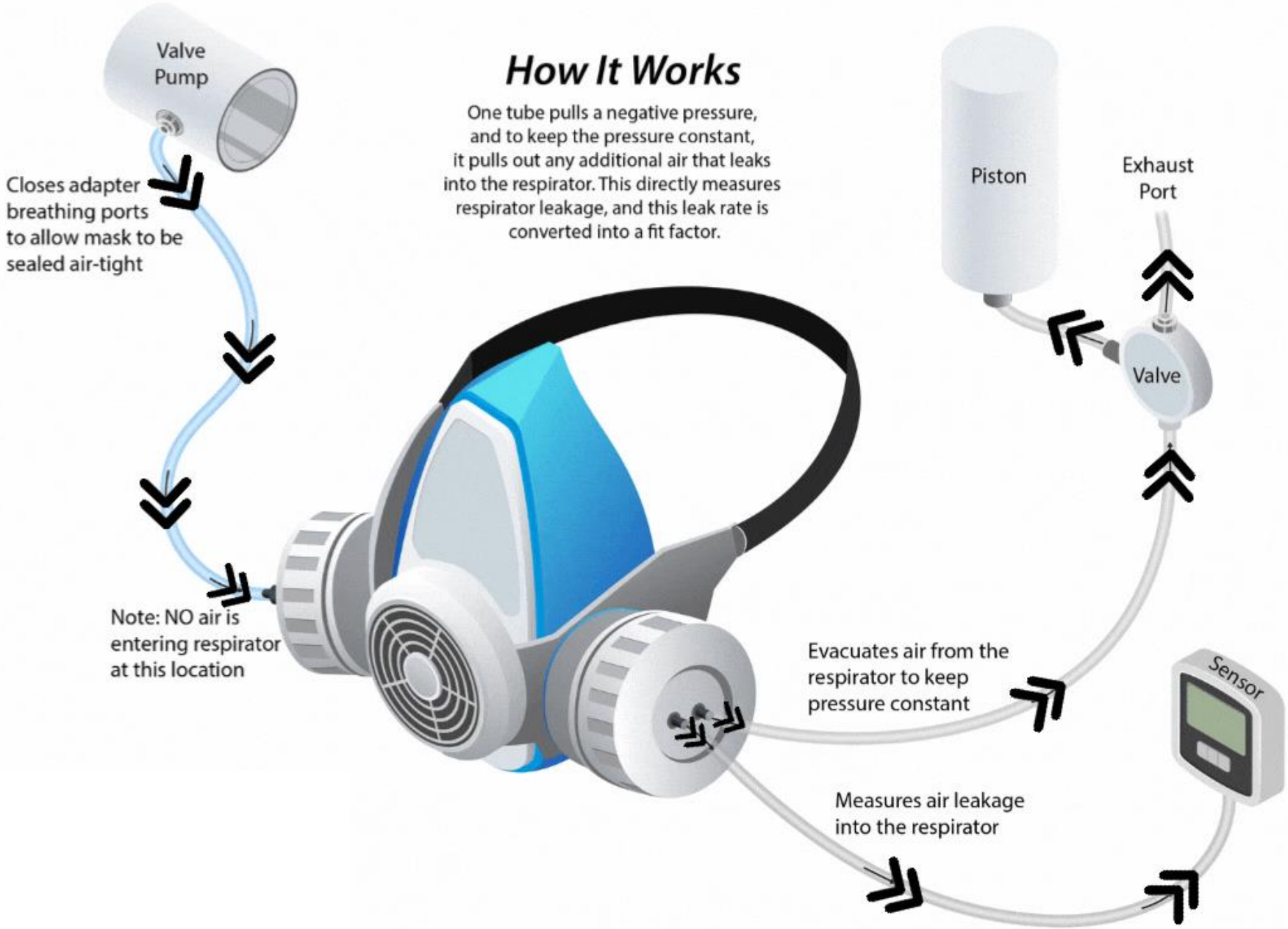
- Uses Controlled Negative Pressure technology directly related to a scientifically validated modelled breathing rate to measure respirator leakage.
- Respirator must be equipped with fit test adapters.
- The idea is that once a controlled pressure is achieved within the respirator facepiece, any air that is removed is the result of leakage.
- CNP precisely measures leak rate in cc/min after a series of exercises.
- The ratio of this leak rate to the modelled breathing rate is the Fit Factor.

OHD
YOUR PROTECTION. OUR PRIORITY.

OHD
YOUR PROTECTION. OUR PRIORITY.

How It Works

One tube pulls a negative pressure, and to keep the pressure constant, it pulls out any additional air that leaks into the respirator. This directly measures respirator leakage, and this leak rate is converted into a fit factor.



CNP

Benefits

- No Environmental Requirements
- Highly Portable
- Battery power

Limitations

- Cannot fit test Filtering Facepiece Respirators

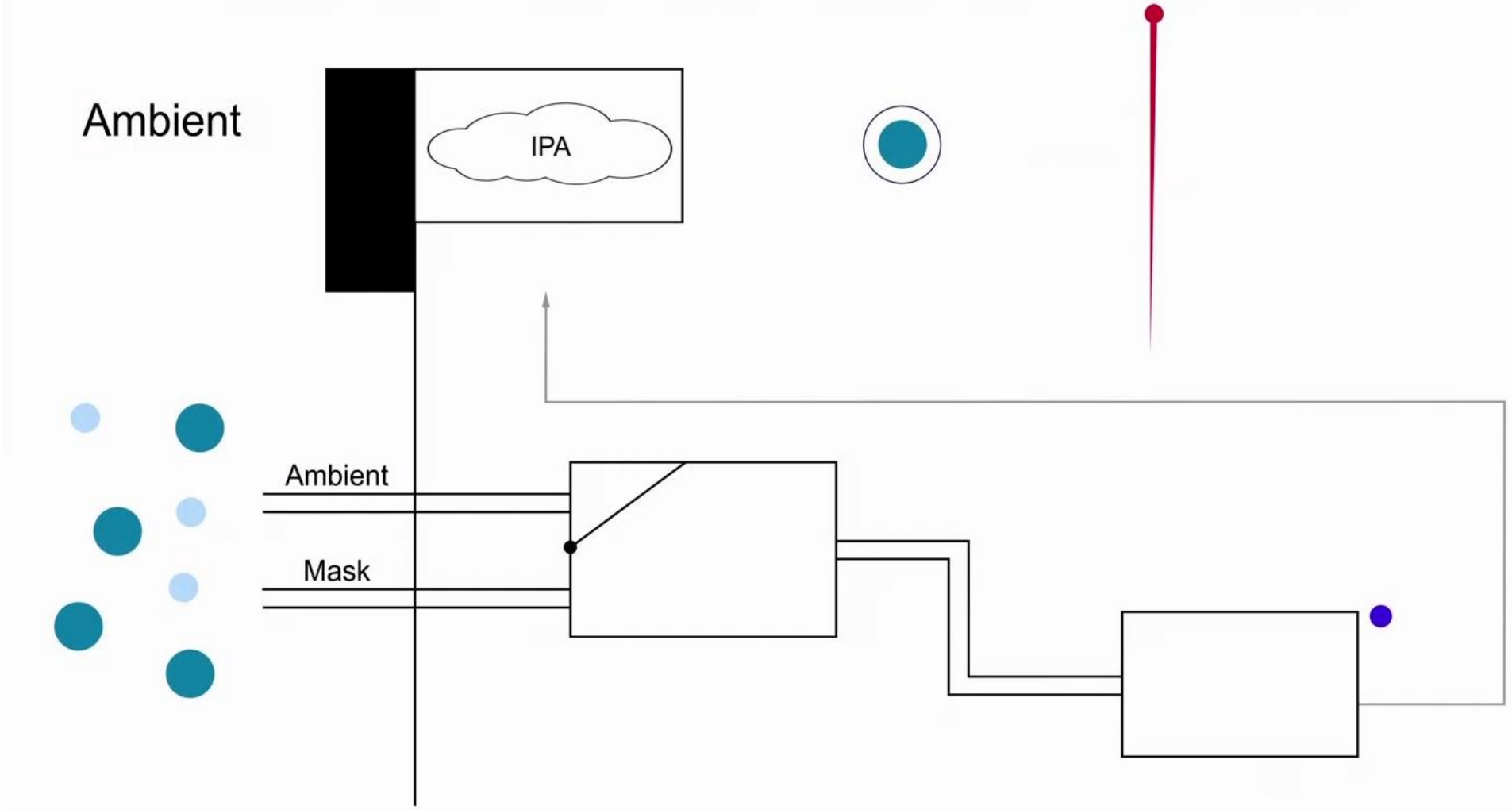
OHD
YOUR PROTECTION. OUR PRIORITY.

Condensation Nuclei Counting

- Uses laser technology to measure aerosol concentrations inside and outside the respirator.
- Respirator must be equipped with high efficiency filters.
- The idea is that because few particles penetrate a high efficiency filter, any found inside the respirator can be attributed to face seal leakage.
- Measures the concentration of particular particulates in the respirator while the test subject is performing a series of exercises.
- The ratio of this concentration in the breathing zone to the ambient particulate concentration is the Fit Factor.

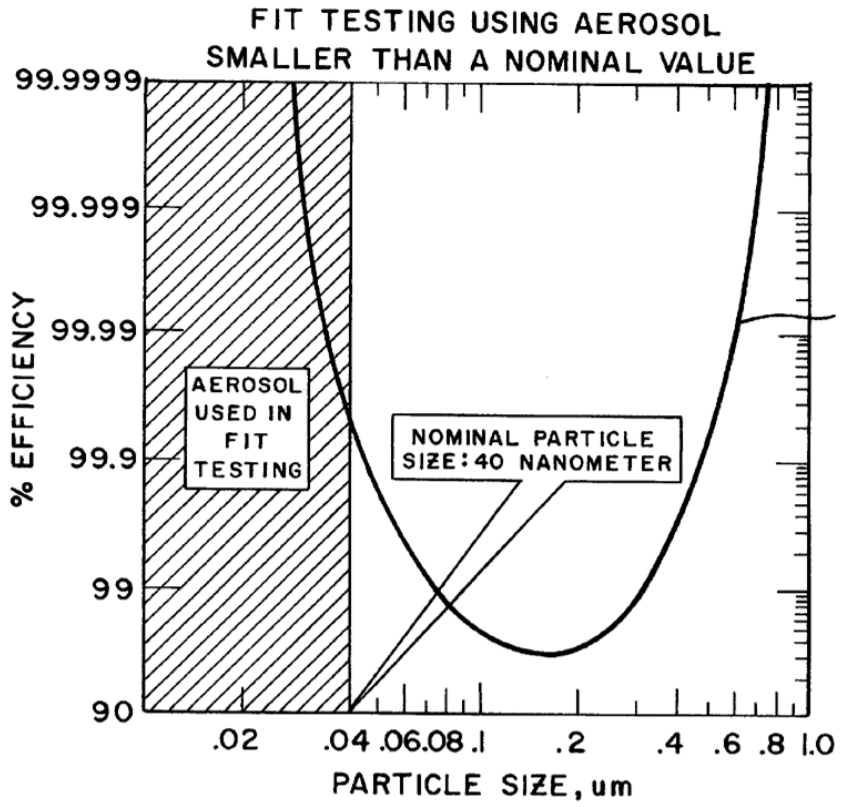
OHD
YOUR PROTECTION. OUR PRIORITY.

YOUR PROTECTION. OUR PRIORITY.



N95/DMA Explanation

Minimum filter efficiency	N series	R series	P series
	Not resistant to oil	Somewhat resistant to oil	Strongly resistant to oil
95%	N95	R95	P95
99%	N99	R99	P99
100% (99.97%)	N100	R100	P100



OHD
YOUR PROTECTION. OUR PRIORITY.

CNC/APC

Benefits

Can fit test any tight-fitting respirator

Limitations

Environmental requirements

Consumables

Test Subject should not eat or smoke for 30 minutes before testing

YOUR PROTECTION. OUR PRIORITY.

Overall Fit Factor =

N / [1/FF1 + 1/FF2+… 1/FFN]

Where:

N = The number of exercises;

FF1 = The fit factor for the first exercise;

FF2 = The fit factor of the second exercise;

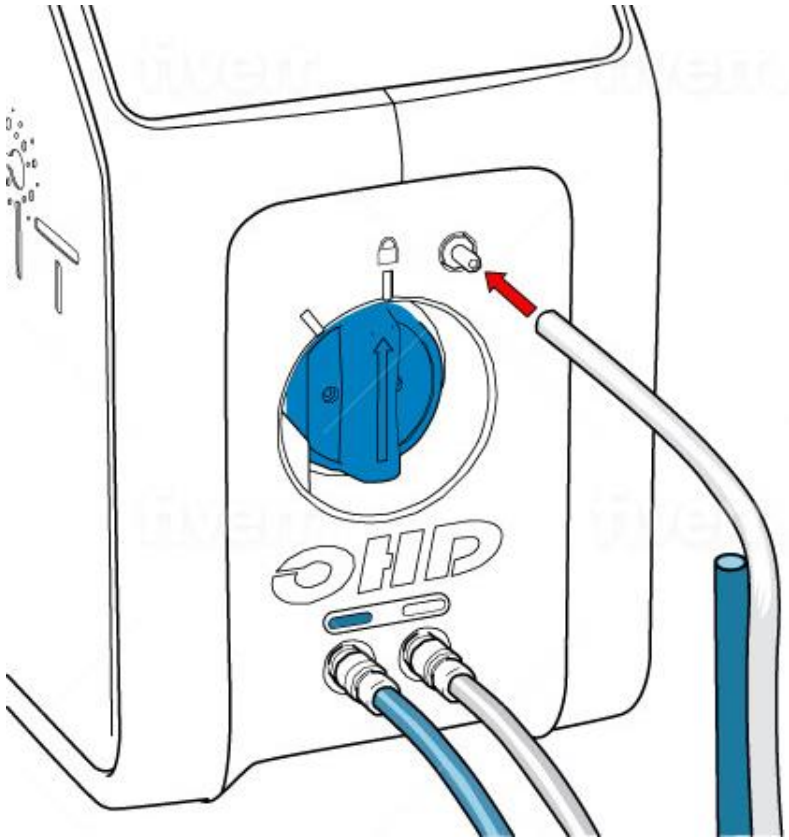
FFN = The fit factor of the Nth Exercise.

OHD

YOUR PROTECTION. OUR PRIORITY.

Latest Advancements in Respirator Fit Testing

AeroFit Built in Zero Port



AEROFIT

OHD
YOUR PROTECTION. OUR PRIORITY.

QuantiFit2 - Integrated Valve Prop Adapters

- **Convenience:** Eliminates the need to use and keep track of separate, small valve props
- **Speed & Efficiency:** Reduces setup time for fit testing
- **Consistency:** Ensures consistent, repeatable results in fit testing by standardizing the valve propping process

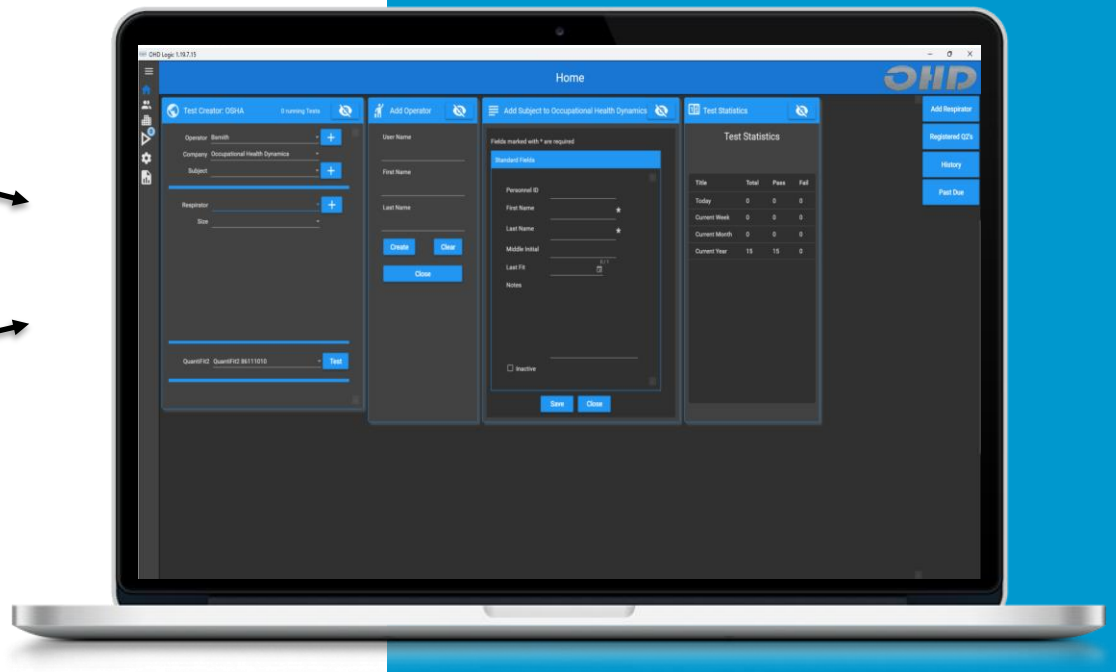
QuantiFit2 and AeroFit

- Can operate in stand-alone mode with virtually unlimited data storage or can operate through OHD Logic software.
- OHD Logic software can operate both the QuantiFit2 (CNP) and AeroFit (CNC) simultaneously out of one fit testing database.

One Software, Two Instruments

OHD

YOUR PROTECTION. OUR PRIORITY.



Software Innovations

Logic Cloud Data Flow

OHD
YOUR PROTECTION. OUR PRIORITY.

OHD - Logic Cloud

https://staging.ohdlogic.com/dashboard

- Dashboard
- Personnel
- Notifications
- Conflicts
- Instruments
- Data Imports
- Reports
- Settings

Version 1.10.0

OHD | All Locations | Type your search here... | Hunter Strickler | HS

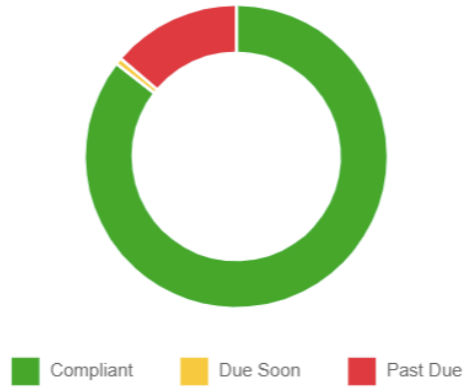
Manager Dashboard

New Import

Overview

Past Due	305
Due Soon	16
Compliant	1888
Calibration Due	1

Compliance Status

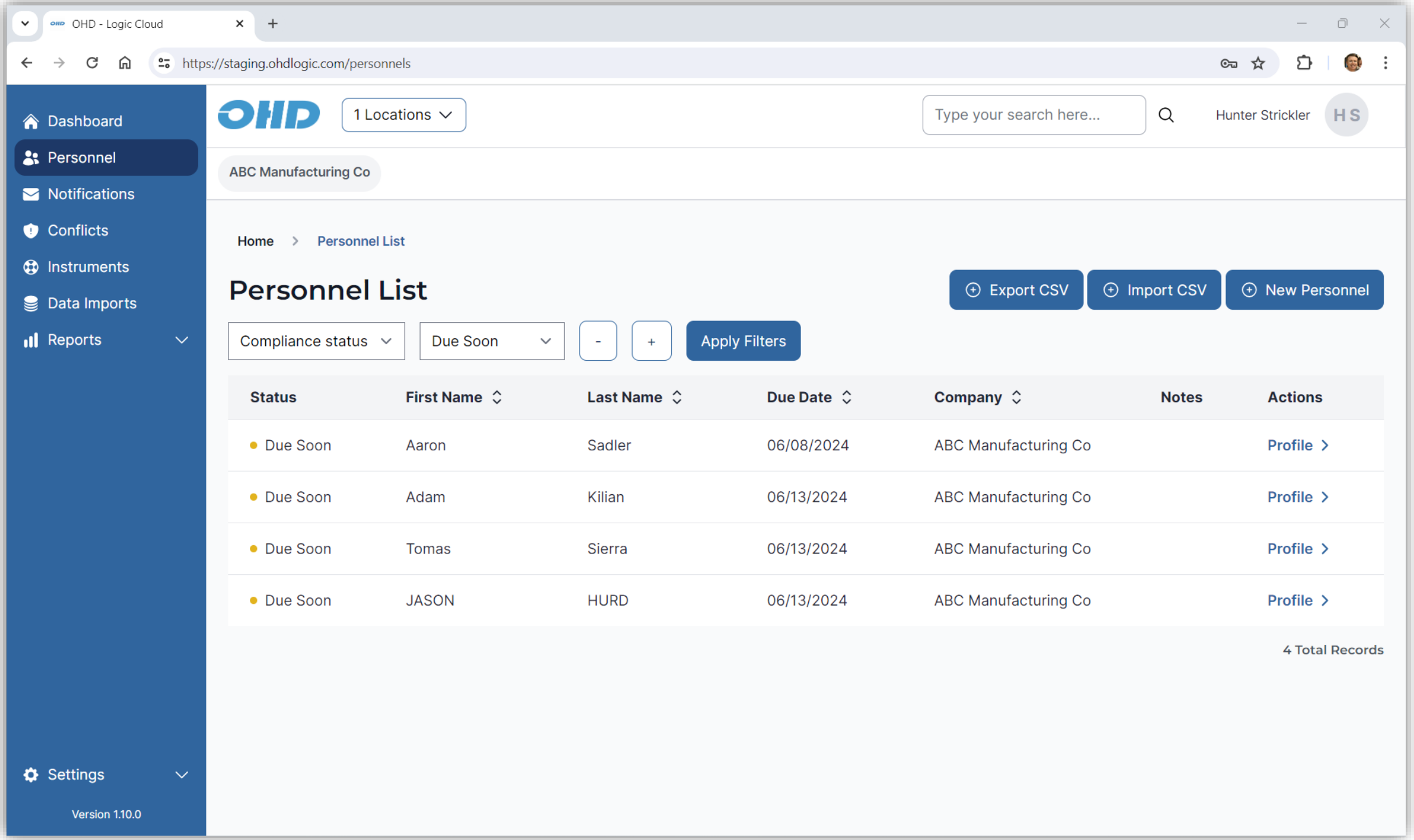


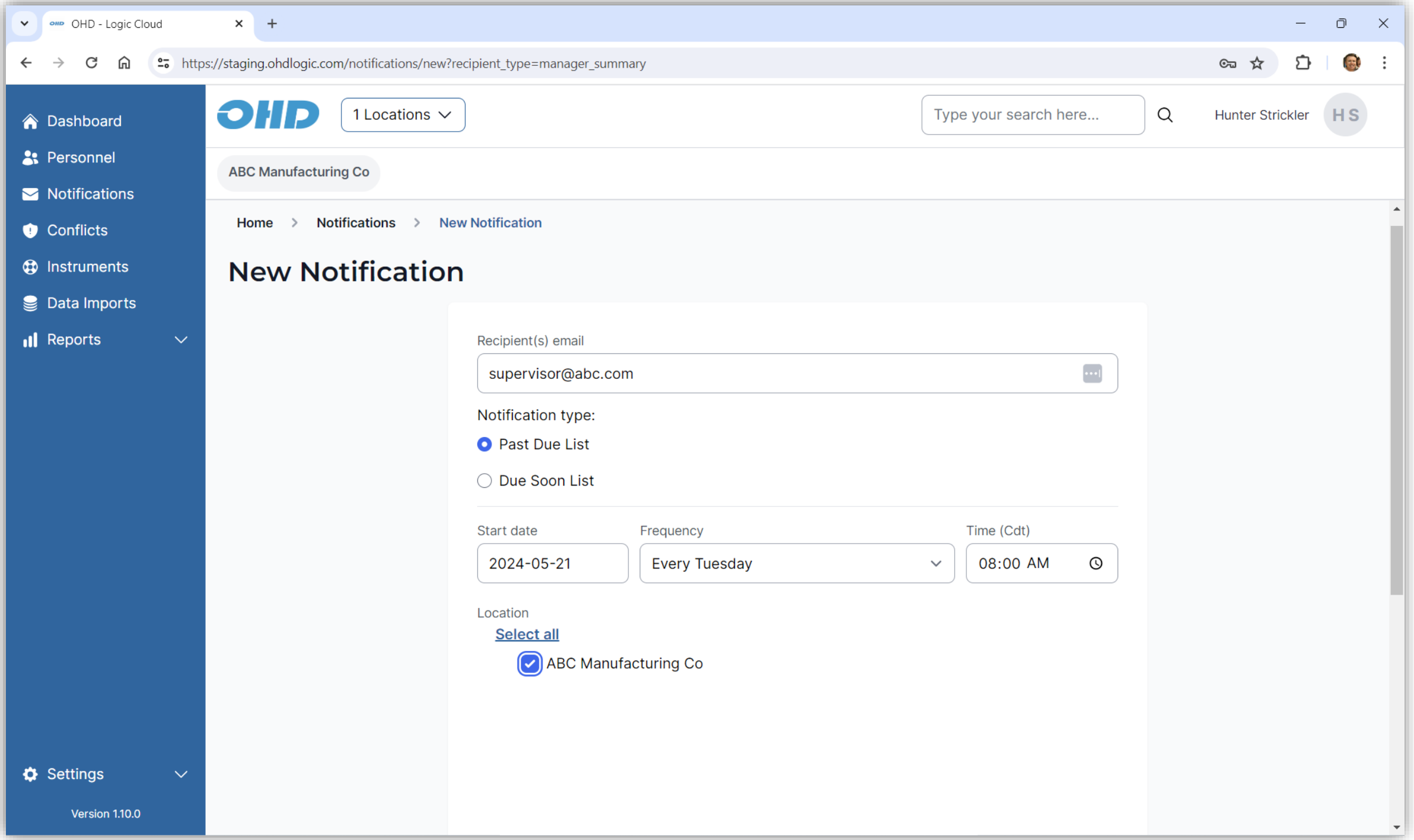
Due Soon Personnel

Name	Due Date	Actions
Ashton Dunbar	05/26/2024	Profile >
Yunki Noh	05/26/2024	Profile >

Past Due Personnel

Name	Due Date	Actions
Amy Easha	02/23/2023	Profile >
Brian Clancy	03/24/2023	Profile >


OHD - Logic Cloud
https://staging.ohdlogic.com/personnels
Dashboard
Personnel
Notifications
Conflicts
Instruments
Data Imports
Reports
Settings
Version 1.10.0
1 Locations
Type your search here...
Hunter Strickler
HS
ABC Manufacturing Co
Home
Personnel List
Personnel List
Export CSV
Import CSV
New Personnel
Compliance status
Due Soon
-
+
Apply Filters
Status
First Name
Last Name
Due Date
Company
Notes
Actions
Due Soon
Aaron
Sadler
06/08/2024
ABC Manufacturing Co
Profile
Due Soon
Adam
Kilian
06/13/2024
ABC Manufacturing Co
Profile
Due Soon
Tomas
Sierra
06/13/2024
ABC Manufacturing Co
Profile
Due Soon
JASON
HURD
06/13/2024
ABC Manufacturing Co
Profile
4 Total Records


OHD - Logic Cloud
https://staging.ohdlogic.com/notifications/new?recipient_type=manager_summary
Dashboard
Personnel
Notifications
Conflicts
Instruments
Data Imports
Reports
Settings
Version 1.10.0
OHD
1 Locations
Type your search here...
Hunter Strickler
HS
ABC Manufacturing Co
Home
Notifications
New Notification
New Notification
Recipient(s) email
supervisor@abc.com
Notification type:
Past Due List
Due Soon List
Start date
2024-05-21
Frequency
Every Tuesday
Time (Cdt)
08:00 AM
Location
Select all
ABC Manufacturing Co

Training Innovations

How to Use the QuantiFit2 (03:12 / 15:03)

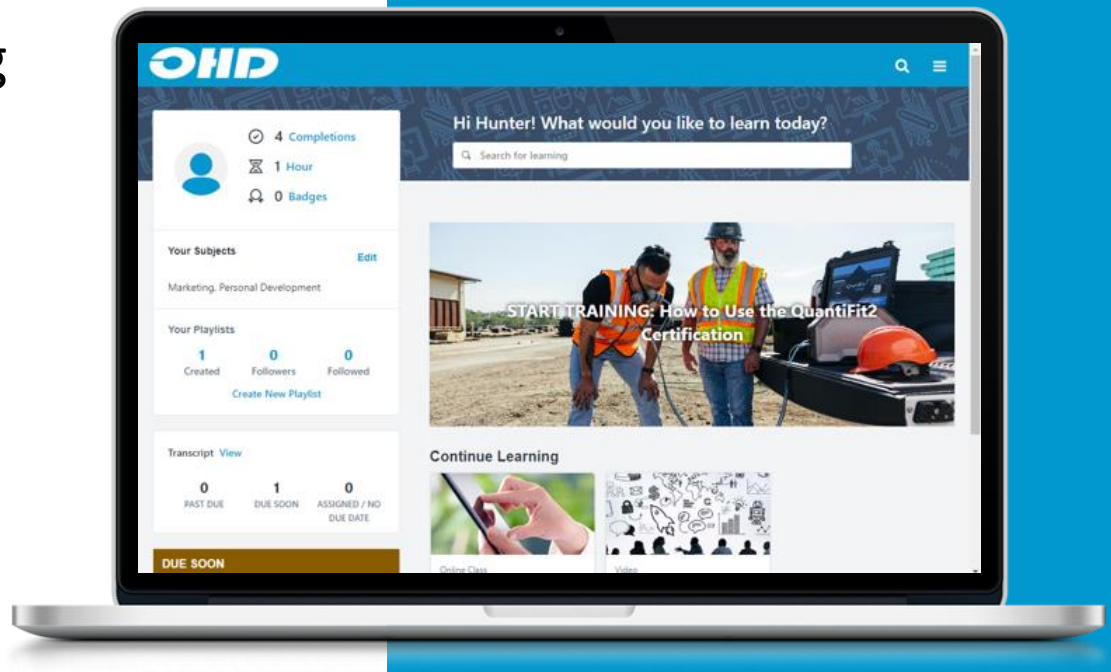
Menu

1. Introduction
2. Powering On Your Unit
3. Daily Verification
4. Adapters & Inhalation Valve Props
5. Knowledge Check 1
6. Adding a Test Subject
7. Performing a Fit Test
8. Knowledge Check 2
9. Record Keeping & Reports
10. Troubleshooting
11. Annual Calibration
12. Controlled Negative Pressure
13. Conclusion

Introducing: OHD Academy

YOUR PROTECTION. OUR PRIORITY.

- **How to Use the QuantiFit2** course has received early 5-star reviews
- Designed for *individual* (not group) training for new Q2 operators
- OHD registers each participant in the platform
- Certificate is issued upon completion



Which instrument is right for you?

Breathe Easy

With the launch of AeroFit, OHD will be the only respirator fit testing manufacturer with *both* CNC and CNP technologies.

OHD

YOUR PROTECTION. OUR PRIORITY.

Q&A

YOUR PROTECTION. OUR PRIORITY.

Thank You for Attending!

AUSTRALIAN INSTITUTE OF OCCUPATIONAL HYGIENISTS

Visit us with Air-Met at the AIOH Conference in December!

OHD

YOUR PROTECTION. OUR PRIORITY.