# MPDS: Exhaust Optimization Technology

With patent pending Multiple Passage Discharge System (MPDS), exhaust intensive labs and facilities could see more than 50% energy savings of their exhaust system while gaining more operational flexibility.

MPDS Overview

MPDS is an exhaust optimization system built out of well established and trustworthy standard components. It eliminates over exhausting through a data driven dynamic adjustment system and eliminates Variable Bypass Air used in traditional designs to maintain stack velocity. It is mostly constructed off-site and installed with minimum interruption to operations.

Actual Installation Data

Additionally MPDS increases the maintainability and uptime of the exhaust by allowing in-service maintenance of fans and other components through its dynamic control system.

Typical qualified installations can expect more than 50% energy savings and 100% Return On Investment (ROI) in less than three years. Win-win for both the business and the environment.
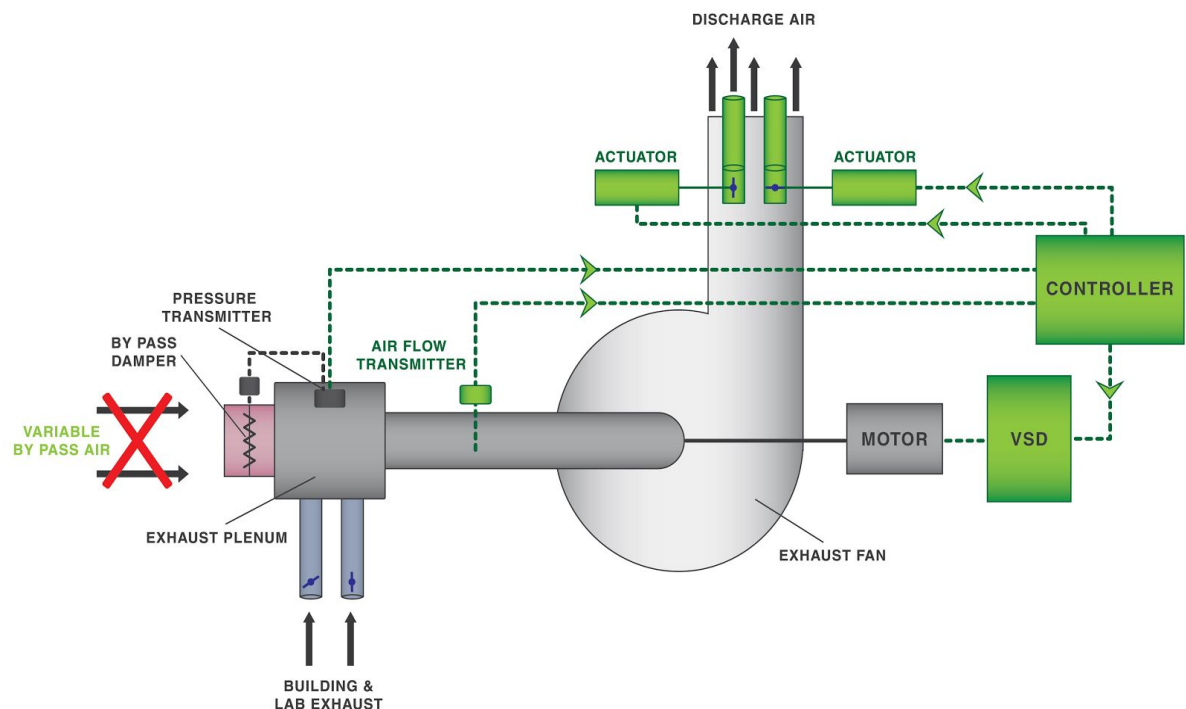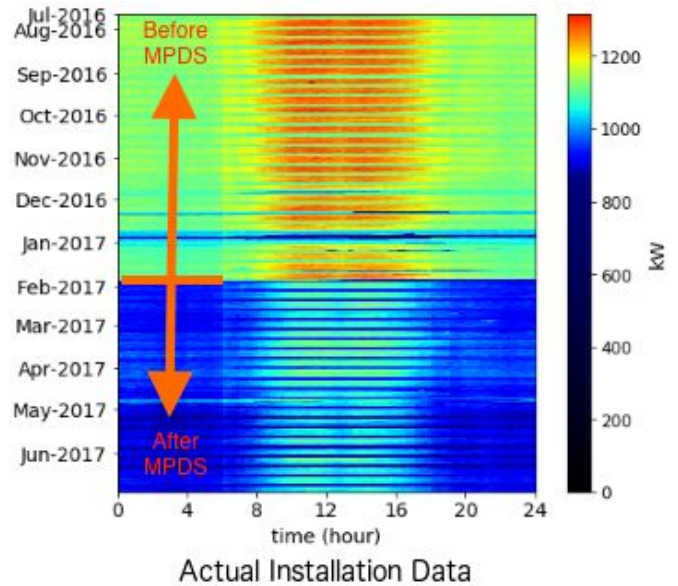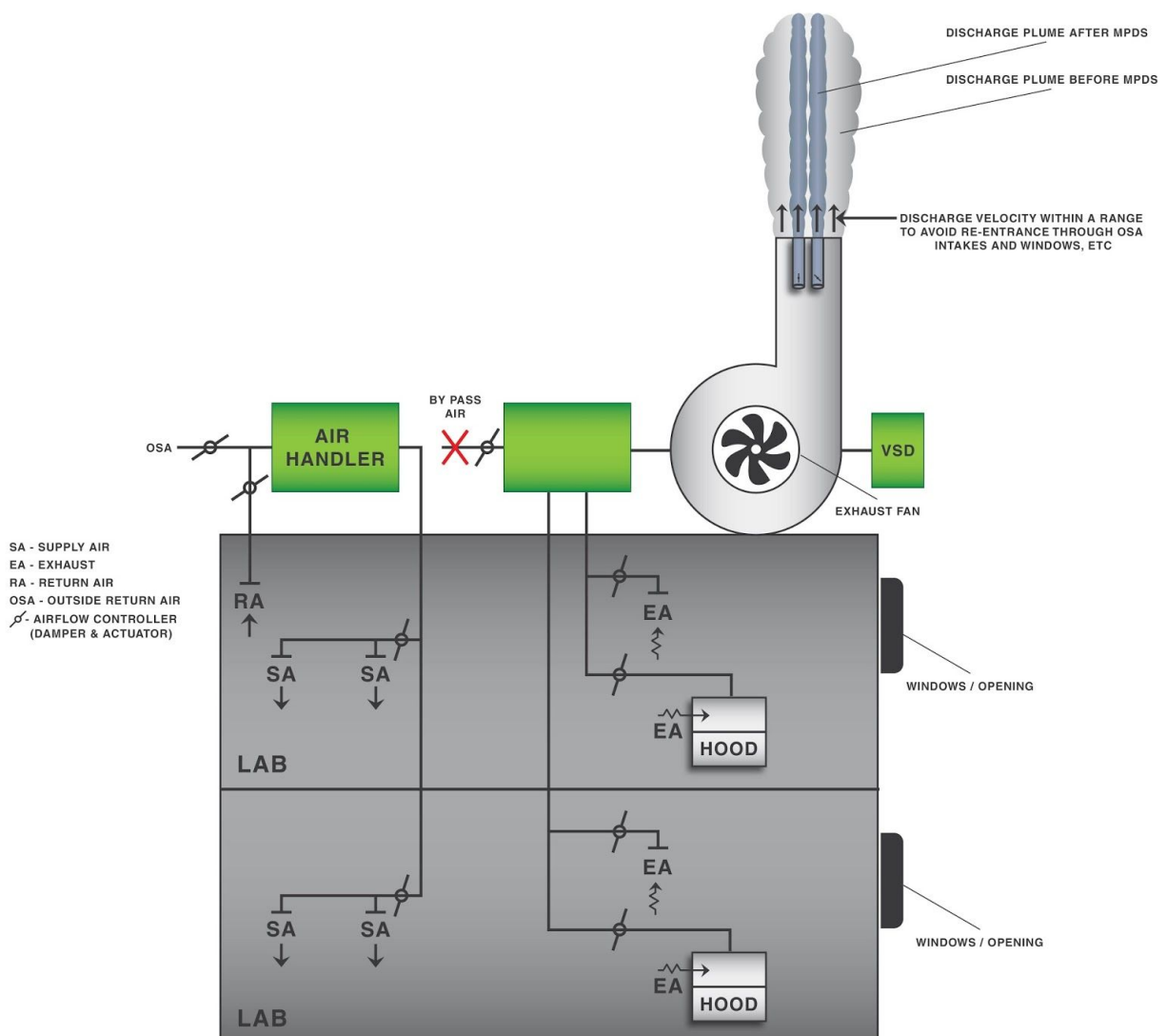
Problem - Variable Bypass Air

Traditional variable exhaust flow designs employ variable by-pass air bringing outside air into exhaust airstream in order to maintain stack velocity. Pushing this additional air through the exhaust results in additional energy usage.

Alternatives to the MPDS include:

- Eliminating variability resulting in constant flow of conditioned air through the exhaust which can be very wasteful when demand is variable.
- Ambient wind-based designs: MPDS can work in conjunction with these systems improving their performance and operational maintainability or as a replacement for green field installations reducing cost and complexity with added efficiency..

Solution

MPDS is a plug and play optimization system that significantly reduces or eliminates the need for Variable Bypass Air while still allowing variable exhaust flow intake and maintaining steady exhaust stack velocity.

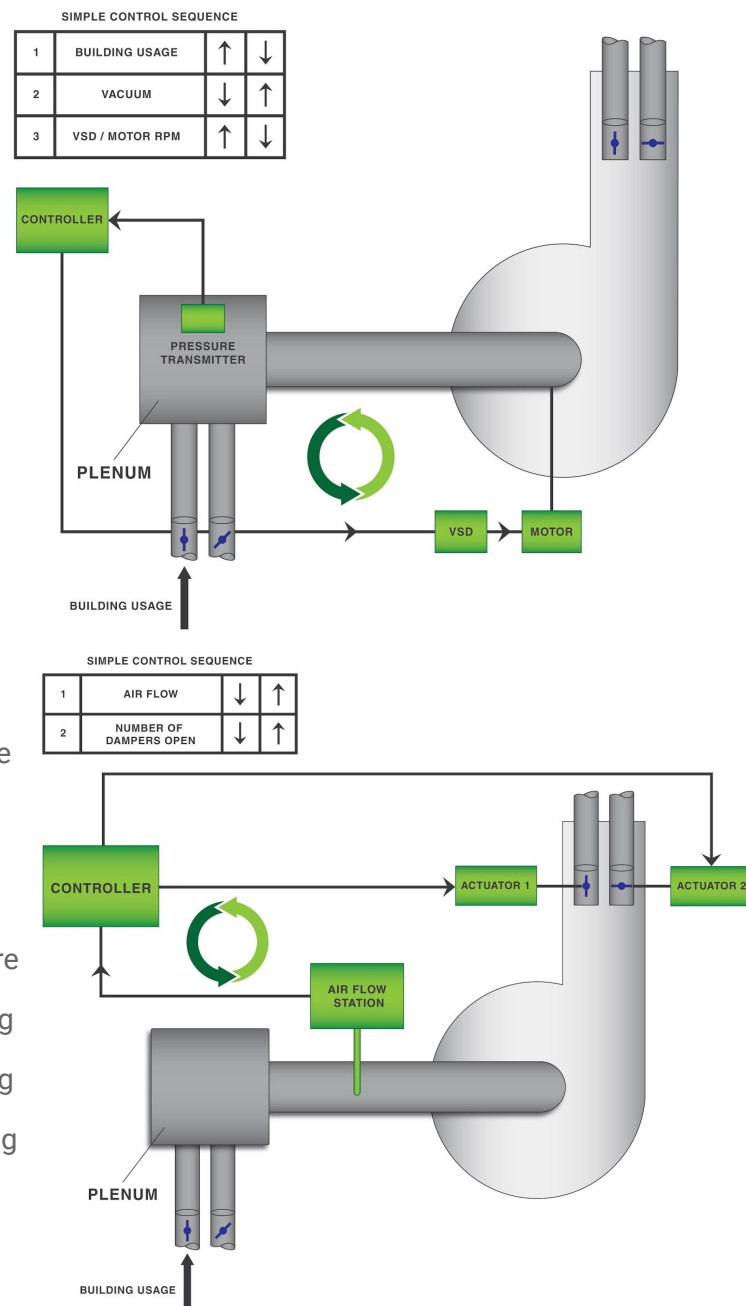It achieves this by incorporating two feedback loops:

1- First feedback loop's purpose is to maintain steady suction pressure under variable load. It achieves this by utilizing vacuum pressure signal and controlling fan's speed.

2- Second loop's purpose is to provide a variable exhaust cross section so that stack velocity stays steady under variable flow.

MPDS optimization software running on a controller uses these two control loops to allow for variable exhaust and steady discharge velocity range without incorporating bypass air resulting in optimal exhaust.

MPDS incorporates patent pending designs to ensure simple implementation and industrial durability using field tested proven components capable of operating as a stand alone solution while capable of interfacing with building management systems.

"We are thrilled to see the incredible savings our MPDS customers are seeing in their installations while enjoying an even more stable system operations. We are encouraged by the positive response to MPDS and we are excited to bring it to all exhaust intensive facilities in line with our mission of greener planet through HVAC optimization"

SIMPLE CONTROL SEQUENCE

1	BUILDING USAGE	↑	↓
2	VACUUM	↓	↑
3	VSD / MOTOR RPM	↑	↓

CONTROLLER

PRESSURE TRANSMITTER

PLENUM

VSD MOTOR

BUILDING USAGE

SIMPLE CONTROL SEQUENCE

1	AIR FLOW	↓	↑
2	NUMBER OF DAMPERS OPEN	↓	↑

CONTROLLER

ACTUATOR 1 ACTUATOR 2

AIR FLOW STATION

PLENUM

BUILDING USAGE

How to Get Started

It is easy to get started with a free initial evaluation of your facility and an estimate of ROI. Just send an email to info@teebinc.com or give us a call at (510) 862-4377 and our team will contact you within 24 hours to schedule a free evaluation of your facility.

About Teeb

Teeb is an engineering firm with proven track record for one stop cost-effective sustainable solutions for mechanical, structural, electrical and plumbing. Building on our strong industry experience coupled with unparalleled theoretical knowledge, we do not shy away from problems that require innovative solutions, including central plant and facility optimization. This is where magic happens, resulting in nonlinear savings for our customers and a greener planet.

Our clients include pharmaceutical facilities, data centers, clean rooms, high tech facilities, commercial buildings and other industrial applications.

info@teebinc.com
+1 (510) 862-4377