



# Dryer Exhaust Systems

# Types of Clothes Dryers

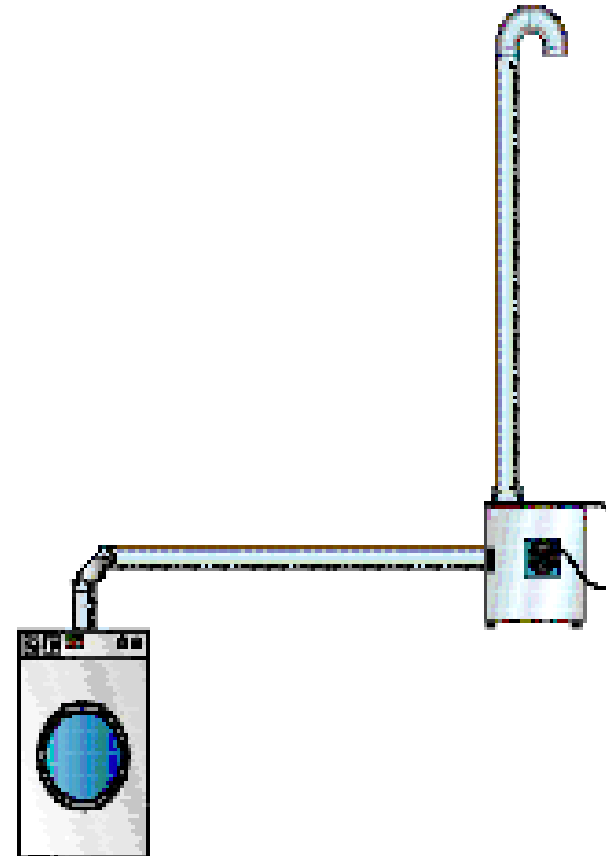
- **Type 1 dryers: “Domestic” dryers to be used primarily in a family living environment.**
  - Residences
  - Individual apartments or condominiums
- **Type 2 dryers: “Public” dryers designed to be used in business with direct intercourse of the function with the public.**
  - Laundromats
  - Laundry rooms (apartment complexes, dormitories, etc.)
  - Business laundries (hotels, hospitals, health clubs, etc.)

# Typical Dryer Manufacturer's Requirements

- **Where possible use a single exhaust duct per dryer**
- **Dryers are to run with a positive outlet pressure.**
  - Type 1 dryers between +0.10 and +0.90 inch W.C.
  - Type 2 dryers between +0.10 and +0.30 inch W.C.
- **Maximum exhaust duct length:**
  - Type 1 dryers = 35 equiv. feet (each elbow = 5 feet)
  - Type 2 dryers = 15 equiv. feet (each elbow = 5 feet)

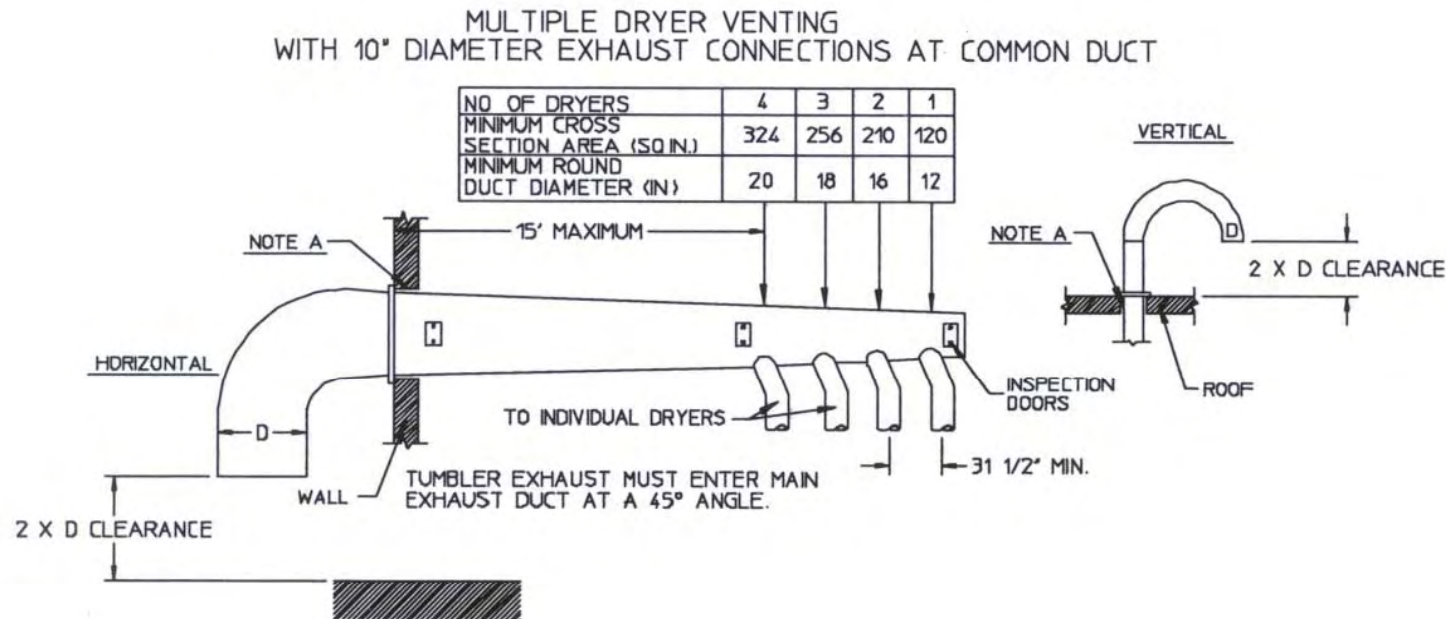
# Use a Mechanical Dryer Exhaust to Extend Exhaust Duct

- Exhaust duct can be extended to almost any length
- No need to locate dryer near a secluded outdoor wall
- Reduce drying times by holding the correct outlet pressure



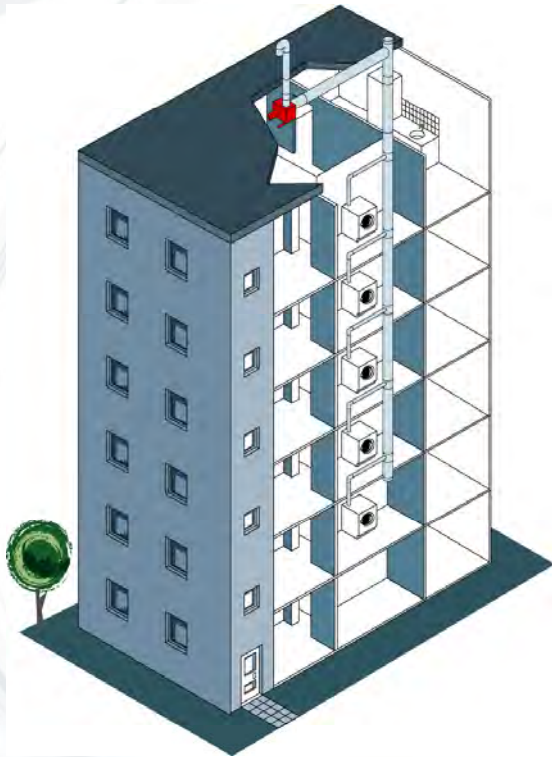
# Typical Dryer Manufacturer's Requirements for Multiple Dryers

- Vertical exhaust must not exceed 8 feet and can include up to 3 elbows
- Horizontal exhaust cannot exceed 15 feet and 1 elbow.

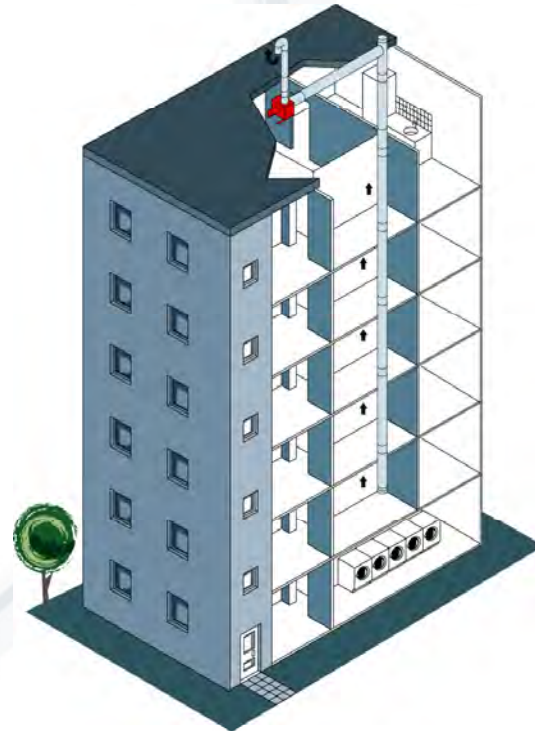


# Use a Mechanical Dryer Exhaust for Multiple Dryers

**Multistory exhausting of dryers**

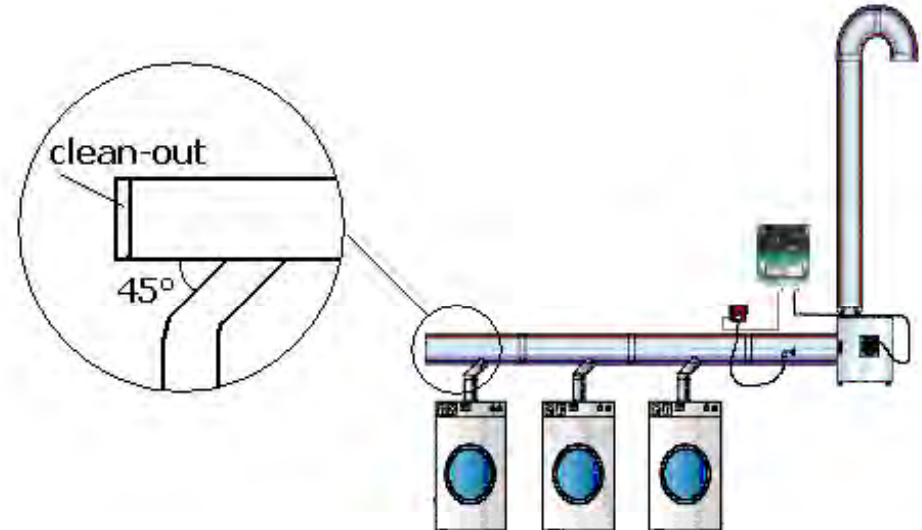


**Common exhausting of multiple dryers (Laundry Room)**



# Common Exhausting of Multiple Dryers (Laundry Room)

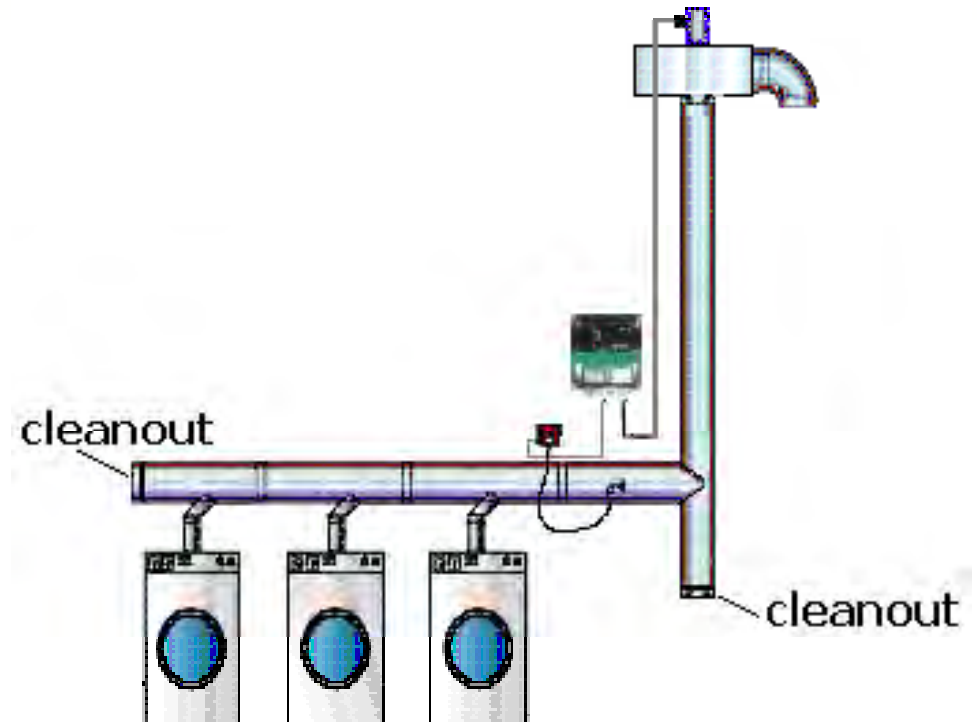
- By definition only Type 2 dryers should be used for this application
- Connector from dryer outlet to common horizontal is metal duct with smooth interior finish
- Connector diameter = dryer outlet diameter
- Max connector length = 15 equivalent feet
- Connector to be attached to common horizontal at no greater than 45°





# Common Exhausting of Multiple Dryers (Laundry Room)

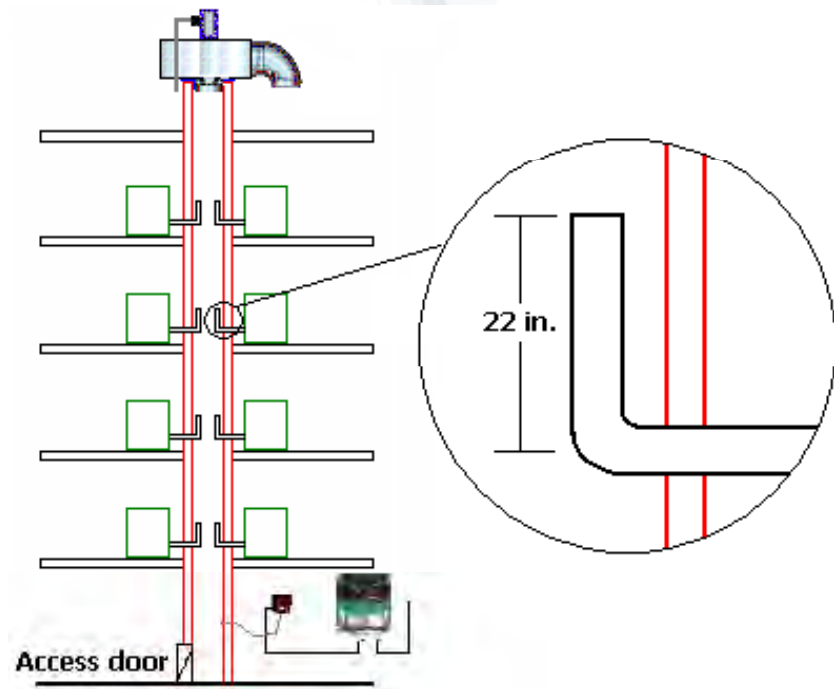
- **Common horizontal duct diameter is sized with maximum 0.10 inch W.C. pressure drop**
- **Pressure drop in main exhaust shaft is only limited by fan's total pressure capability**
- **Cleanouts must be provided in the common horizontal as well as the main exhaust shaft for removal of lint**
- **The fan can be located anywhere down-stream of the last dryer**





# Multistory Exhausting of Dryers

- Type 1 or Type 2 dryers
- If main exhaust shaft does not need to be fire rated – attach connector to main shaft at 45° as previously shown
- If main exhaust shaft does need to be fire rated – attach connector via a 22 inch subduct riser as shown
  - Main exhaust shaft and subduct riser must be made of appropriate materials to meet local codes
  - In order to offset the subducts, a square or rectangular main exhaust shaft should be considered

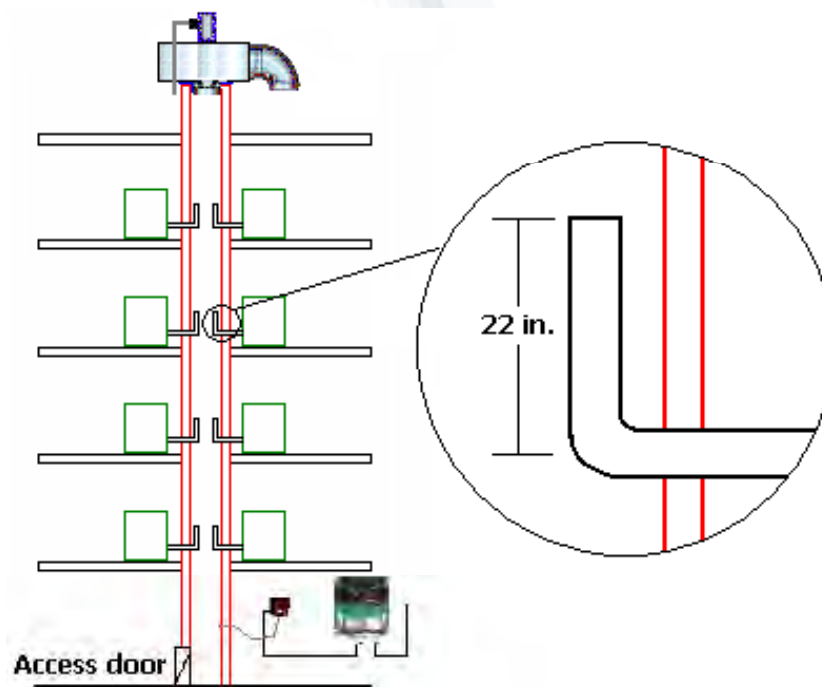


# Main Issues when Common Exhausting Dryers

- **For multistory dryer systems where the 22 inch subduct is used to maintain fire rating, a fan **MUST BE USED** and it must be in operation at all times to comply with code requirements**
  - IBC 2000 **715.5.3.1 Penetrations of shaft enclosures.** Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with approved fire and smoke dampers installed in accordance with their listing.  
**Exceptions:** Fire dampers are not required at penetrations of shafts where:
    1. Steel exhaust subducts extend at least 22 inches (559 mm) vertically in exhaust shafts provided there is a continuous airflow upward to the outside.

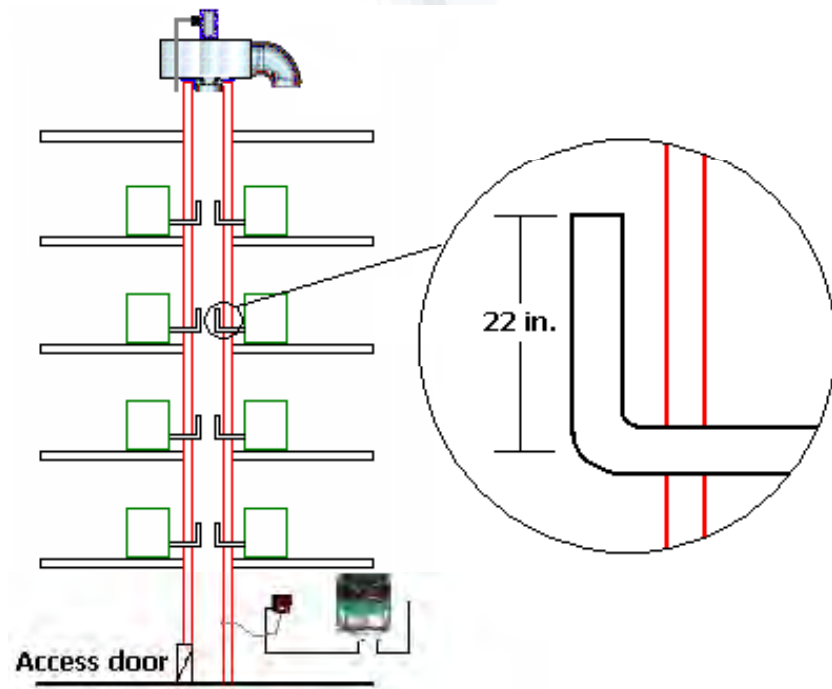
# Multistory Exhausting of Dryers

- **Dryer is connected to subduct riser using a transition duct**
  - Type 1 dryers - total equivalent feet of subduct riser plus transition duct = 25 feet
    - Type 1 dryers can use an approved flexible metal duct of max 8 feet
  - Type 2 dryers – total equivalent feet of subduct riser plus transition duct = 15 feet



# Multistory Exhausting of Dryers

- Main exhaust shaft is made of smooth (fire-rated) material
- Main exhaust shaft sized to max 0.10 inch W.C. pressure drop
- Access door or cleanout to be located at bottom of main exhaust shaft for lint removal
- Fan can be located anywhere above top most dryer



# Main Issues when Common Exhausting Dryers

- **No dampers (back-draft dampers, fire dampers) or baffles can be used **IN** the duct system unless approved by the dryer manufacturer. An approved back-draft damper can be used at the termination of the exhaust duct.**
- **Exhaust system must be able to unload so that off dryers will not be drawn into a deep negative**
- **The pressure drop between dryers must be maintained less than 0.10 in W.C.**
- **Fan must be of Spark Resistant Construction, able to handle lint, and allow easy access to the impeller in order to remove lint if needed**
- **Clean-outs must be provided in all sections of exhaust ducts that are larger than the outlet connection of the dryer**

# Recommended Diversity Factors

<b>Application</b>	<b>Number of Dryers per Exhaust Shaft</b>	<b>Diversity Factor</b>
<b>Common Exhausting</b>	1 - 7	100 %
	8 - 14	90 %
	15 - up	80 %
<b>Multistory Exhausting (One dryer per apartment)</b>	1 - 5	100 %
	6 - 10	80 %
	11 - 14	70 %
	15 - 19	60 %
	20 - up	50 %

# Variable Speed vs. Single Speed

## Variable Speed

- Usually runs at low rpm = low power
- Uses little to no conditioned air = low additional building heat or A/C

## Single Speed

- Runs at full rpm 24 hr/day X 365 days/yr = high power
- Uses a large quantity of conditioned air = large additional building heat and A/C



# Variable Speed vs. Single Speed

20 Dryer Multistory Apartment 200 cfm X 20 X 50% = 2000 cfm					
	MDVS		Single Speed		Savings
Fan Power	41 KW/yr	\$4 /yr	4368 KW/yr	\$437 /yr	\$433 /yr
Loss of heated air	1,454,200 (BTU/yr)	\$15 /yr	155,520,000 (BTU/yr)	\$1,555 /yr	\$1540 /yr
Loss of A/C air (sensible only)	824,100 (BTU/yr)	\$5 /yr	88,128,000 (BTU/yr)	\$557 /yr	\$552 /yr

Location = Atlanta, GA (3000 DD<sub>H</sub>, 1700 DD<sub>C</sub>)

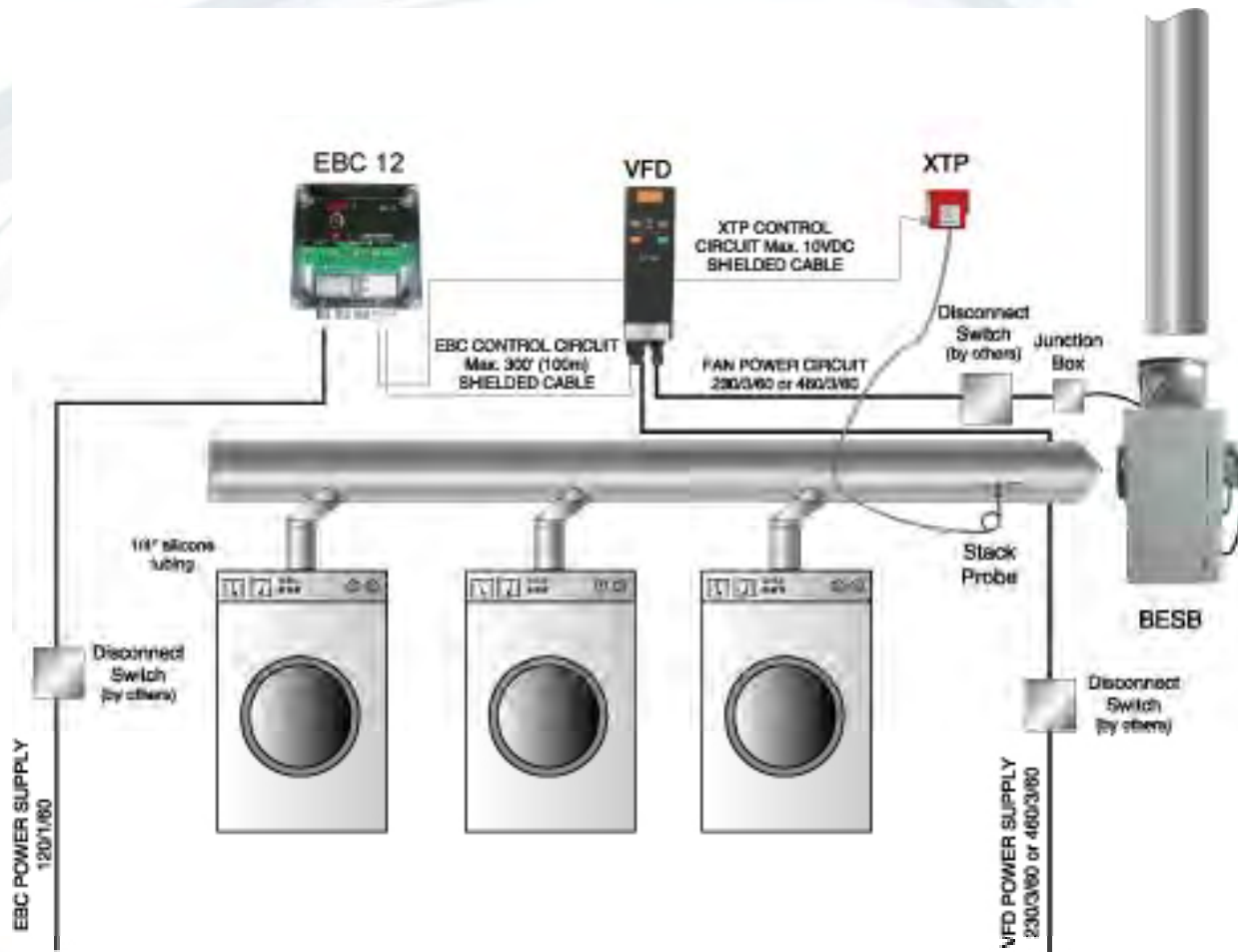
Power = \$0.10 per KW/h

Heating = \$1.00 per therm

A/C = .75 KW/ton X \$0.10 per KW/h

**Total Annual Savings = \$2525**

# MDVS – Mechanical Dryer Venting System



# Mechanical Dryer Venting Systems



# ABC's of the MDVS

## *A* **Aesthetics**

- Exhaust your dryers out a less visible wall
- Locate dryers where you want

## *B* **Back Pressure**

- Maintain the back pressure required by the manufacture to keep drying time down and reduce the risk of fires

## *C* **Cost reduction**

- Reduce the size of the exhaust vent
- Reduce operating costs by keeping drying times down



# Make-Up Air Supply for Dryers

# Make-Up Air for Dryers

## Make-Up Air.



- **Z223.1-2002**

### 9.4 Clothes Dryers.

**9.4.3.2 Provisions for Make-Up Air.** Provisions for make-up air shall be provided for Type 2 clothes dryers, with a minimum free area of 1 sq.in. for each 1000 Btu per hr total input rating of the dryer(s) installed.

# Manufacturer's Requirement

- **National Fuel Gas Code requires a minimum free area opening of 1 sq.in./1000 Btuh**
- **Most manufacturers require even larger – approximately 1 sq.in / 700 Btuh. Ex. A twin 30# tumbler dryer with a total input of 204,000 Btuh (1100 cfm) requires a minimum 2 sq.ft. free area opening.**
- **Most laundry facilities have problems with make-up air. The industry believes it is one of their biggest problems.**



The image features the text "Thank You!" in a bold, 3D, sans-serif font. The letters are a vibrant yellow with a gradient that transitions to a bright orange at the base, giving them a glowing, three-dimensional appearance. The text is slanted upwards from left to right. The background is a solid, medium-blue color. A large, white, brush-stroke-like swirl or swoosh is positioned behind the text, starting from the left and curving around the words. The overall composition is clean and celebratory.

**Thank You!**