Conventional Ducting
vs
Fabric Ducting
for
Logistics Project

1. Introduction

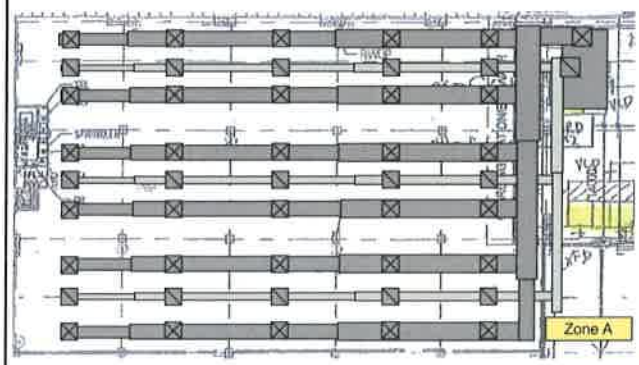
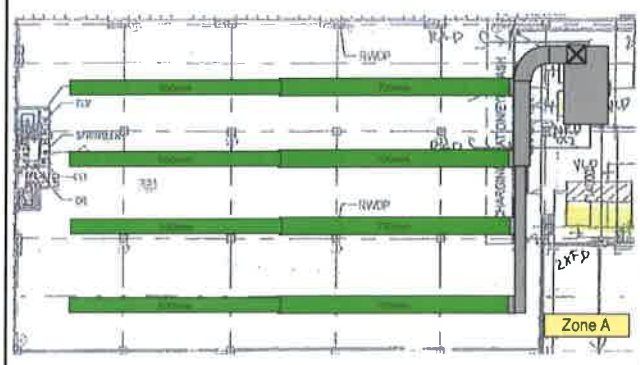
Fabric ducting is a common ACMV (Air-Conditioning & Mechanical Ventilation) component used all over the world. It offers great improvements in productivity as well as in energy efficiency and thermal comfort. Fabric ducting system is a textile air dispersion system that offers the ideal solution that delivers conditioned air in the building. This unique solution not only works better than conventional steel ducting system but offers more benefits:

1. Excellent Thermal Comfort
2. Lower Running Cost & Energy-saving
3. Easy Installation
4. Maintenance
5. Flexibility
6. Lifespan

This proposal outlines our recommendation to use Fabric Air ducting system including semi-permeable option which remove the risk of condensation.

Summary: Excellent Comfort, Energy saving, Productivity and Innovative design

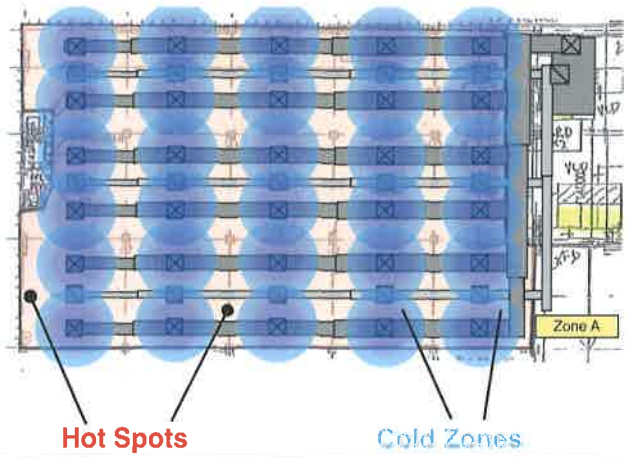
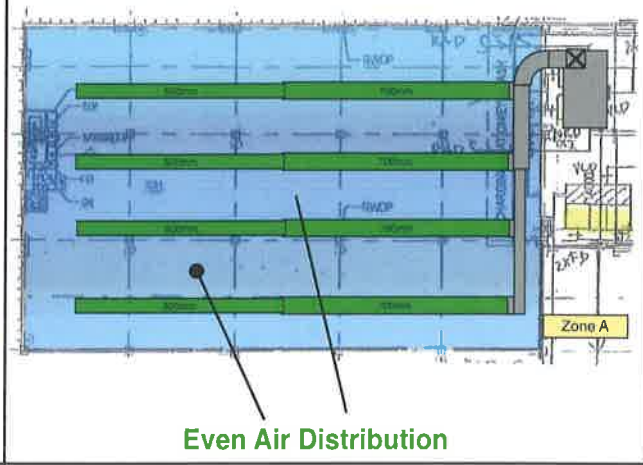
Typical Layout of Logistics hub:

Steel Duct	Fabric Duct
	
- 6 lengths of supply air steel ducting with multiple diffusers - 3 lengths of return air steel ducting with multiple return air grilles	- 4 lengths of fabric ducting with laser cut holes

The Fabric Ducting Advantage

Excellent comfort:

Steel ducting system usually have problems with air balancing which results in cold zones and hot spots, draught and even condensation issues. With fabric duct system, it discharge air from the entire duct surfaces, you are guarantee even air distribution and no risk of condensation.

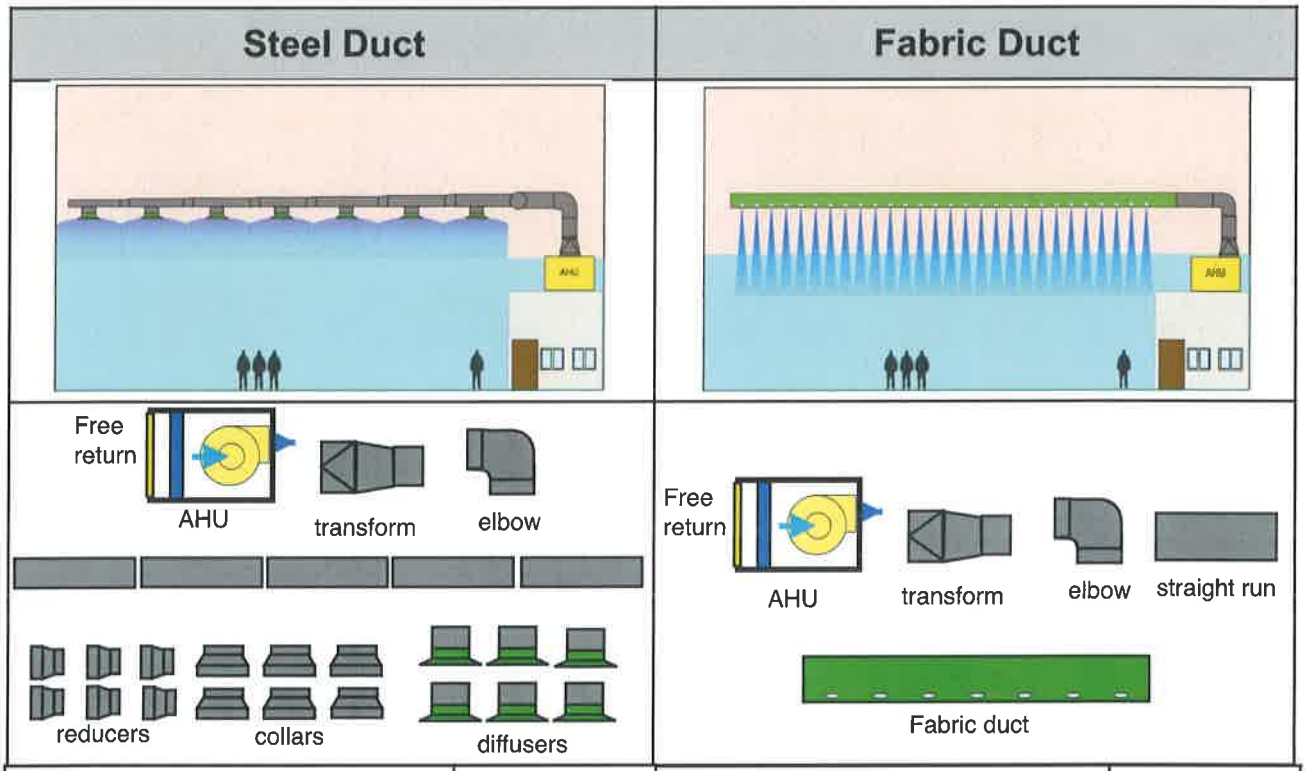
Steel Duct	Fabric Duct
	
- In a mixing ventilation system we need high discharge air velocity to cover the occupant space - A wide range of conditions (temperature and velocity) - Hotspots, cold zones and draughts are common	- Outstanding temperature control - Precise air velocity control - Even air distribution

Benefit: Outstanding Air Distribution

The Fabric Ducting Advantage

Lower Running Cost & Energy-saving:

Due to the patented fabric, it allows us to design air-conditioning systems which achieve better air distribution and save energy. Fabric duct operates at a lower static pressure, reduces the fan motor power requirements and can save up to 20% of the air-conditioning energy consumption.



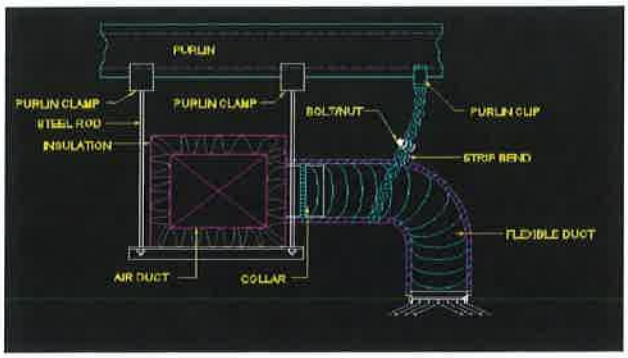
Airflow (cmh)	24,480	Airflow (cmh)	24,480
Static Pressure (Pa)	500	Static Pressure (Pa)	250
Fan Motor Power (kW)	11	Fan Motor Power (kW)	9.5
Annual Op Hours (12hrs/day)	4380	Annual Op Hours (12hrs/day)	4380
Annual Consumption (kWH)	48180	Annual Consumption (kWH)	41610
Cost (S$)	$12,526.80	Cost (S$)	$10,818.60

Benefit: Lower Static Pressure leading to Lower Running Costs

The Fabric Ducting Advantage

Easy Installation:

Fabric ducting systems are mounted on steel wires which hold the fabric ducts in place.This simple and reliable mounting system allows contractors to reduce installation times by up to 80% and the lightweight characteristics of the system allow it to be installed on any ceiling (including false ceilings).

Steel Duct		Fabric Duct	
			
			
Man-days to install	4320	Man-days to install	1560
	Total Savings		2760 (64%)

Benefit: Faster Installation

The Fabric Ducting Advantage

Maintenance:

Based on a 10 year maintenance program, the below shows the type of maintenance that have to done for both rigid ducting or fabric duct.

Steel Duct

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
2		✓		✓		✓		✓		✓	5
3										✓	1

1) Checking & Adjustments Includes
- Checking of mounting
- Checking of performance
- Checking for damage

2) Preventive
- External cleaning and wiping of steel duct
- External replacement and repair if necessary (Repainting and re-insulation)

3) Corrective (If necessary)
- Cleaning of internal steel ducting

	Cost each time	10 years' total
Checking & Adjustments	$1500	$15,000
Preventive	$20,000	$100,000
Corrective	$50,000	$50,000
Total	-	**$165,000**

Fabric Duct

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
2			✓			✓			✓		3
3										✓	1

1) Checking & Adjustments Includes
- Checking of mounting
- Checking of performance
- Checking for damage

2) Preventive (If necessary)
- External Cleaning (Wiping & Vacuum)

3) Corrective (If necessary)
- Cleaning of fabric duct (Washing)

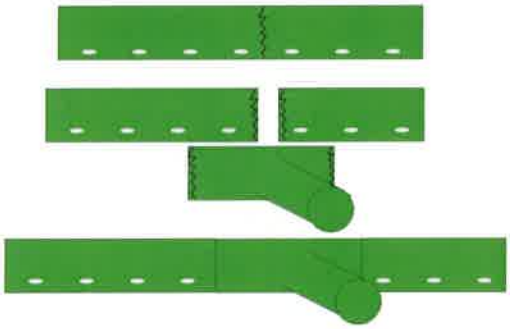
	Cost each time	10 years' total
Checking & Adjustments	$1500	$15,000
Preventive	$10,000	$30,000
Corrective	$20,000	$20,000
Total	-	**$65,000**

Benefit: Lower Maintenance Cost

The Fabric Ducting Advantage

Flexibility:

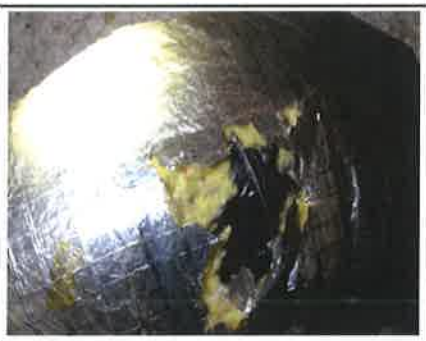
With fabric duct, you now have the flexibility to change the layout of your air con ducting system at ease. Fabric ducts are joined together using zippers like a modular system, giving you the ability to add or remove any sections of the duct if necessary.

Steel Duct	Fabric Duct
	
1) Cut the ducts	1) Unzip the ducts
	
2) Fastening the ducts is complicated Ducting cannot be re-used once installed	2) Joining the ducts using zippers Parts are inter-changeable
	
3) Messy and disorganized ducting	3) Modular system like 'Lego' set

Benefit: Ability to add or extend duct to cover more areas

The Fabric Ducting Advantage

Life Span:

	Steel Duct	Fabric Duct
1st Year	Under DLP	No Change Under warranty
3rd Year	No Change	No Change Under warranty
5th Year		No Change Under warranty
10th Year	 Bacteria, mould and dusts starts to build up	 Dust free and no mould
20th Year	 Corrosion and rust starts	 In great condition after 20 years, no rust or corrosion

Benefit: No requirement to replace duct

Summary

	Steel Duct	Fabric Duct
Thermal Comfort	- Hot Spots - Cold Zones	- Even Air Distribution
Running Cost & Energy Saving	- Higher Energy Consumption	- Lower Energy Consumption
Easy Installation	- Longer time needed to fabricate and install - More man-power required	- Shorter time required for installation - 'Plug and Play'
Easy Maintenance	- Higher cost and more times required to clean and maintain	- Easier to clean and maintain, saving cost
Flexibility	- Requirement to shut down the working area to do amendments for long period of time	- Easy to dismantle and install the duct thus saving a lot of time
Life Span	- Able to last a long time, however will subject to dust, dirt, corrosion and rust	- Due to easy maintenance, fabric duct can last longer than its 10 years' warranty