

PAL MIDDLE EAST PIR LLC

Pre-Insulated Ducting Technology

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TECHNICAL COMPARATIVE STATEMENT

SN	Description / Characteristics	Galvanized Insulated Ductwork	PAL Pre-insulated Sandwich Panels Duct Work
1.	Hygiene / Health hazard		
	- Fabrication	Fiberglass dispersion whilst cutting, cause for asthma-like ailments.	No such dispersion as the material does not disintegrate whilst cutting.
	- Service	In a warm and humid environment, lagging adhesives used in insulation work lead to eventual growth of fungus, bacteria, mildew (typical 'black' spots) and kind of messy site job.	Meets the requirement of IAQ (Indoor Air Quality), specially important in clean room applications such as hospitals, laboratories, food processing, etc.
2.	Quality control		
	- Manufacturing Stage	Numerous vendors (at least 5 different manufacturers involved)	Single-point quality assessment, ISO 9002
	- On-site / Storage	Continuous supervision required in ensuring conformity to material specifications, work method, workmanship. Adhesives used have much smaller shelf life.	Minimum supervision only. As system is factory supplied in semi-finished condition; deviations from set procedures and material specifications cannot occur.
3.	Dead-Weight & Handling	Heavy on structure & not easy to handle.	Lightweight 8 to 10% of conventional G.I. insulated ducts.
4.	Heat transfer	'U' = 0.033. (with 25mm thk. Insulation).	'U' = 0.021 (21mm panels). Due to reduced losses, energy savings over GI. Ductwork, supports energy conservation programme / environmental protection.
5.	Aesthetic	Awful, if installed without false ceiling.	Neat & tidy, if exposed to view i.e. without false ceiling.



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7.	Permeability, Solubility	Slightest damage to aluminum foil vapor barrier is cause for condensation on duct surface and consequential damages to ceilings / finishes. Fiberglass absorbs water, loses thermal properties. Damp areas are susceptible to mildew / fungal growth.	Closed cell content is very high; water immersion test was conducted. Whereas aluminum facing laminate, if damaged, can be repaired; the chances of vapor condensation and water drip-off are practically nonexistent; thereby the risk factor for consequential damages to ceilings / finishes is eliminated.
8.	Longevity / Ageing	Galvanization begins to oxidize / deteriorate over period of time, especially when the installation is external, exposed to weather.	Prolonged life due to use of aluminum laminate, coated with 2 gm / m ² of special anti-rust lacquer on both sides (all panels). In addition, dedicated panel for highly corrosive environment is available. This panel has additional polyester film on aluminum laminate.
9.	Productivity	Low; very high fatigue, especially in summer. Bigger work force / deployment. Extended time-frame / completion.	High; very low fatigue. Smaller work force / deployment. Faster completion; can easily compensate for initial delays.
10.	Logistics	Added transportation to site, site storage facilities / space consuming. Extensive handling / requirement of service lifts, hoists; heavy scaffoldings, etc.	Site fabricated and installed. Minimum storage area. Lightweight handling equipment. Panels and accessories are moved and fabricated into ducts at the actual work place itself (such as various floors of a multi-storey building).
11.	Administrative	Large workforce requiring added accommodation, sanitation, transport, mess / dining space, government departmental costs, naturalization, gratuity, travel costs, added supervisory staff. Extensive procurement, documentation.	Much smaller workforce, less supervision and efficient / competitive management. Single point procurement, efficient material control.



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12.	Human Error during Fabrication & Assembly.	All chances of human error due to many activities or sequence of activities involved.	Minimum chances of human error due to its physical configuration.
13.	Aluminum Cladding	Expensive, both in material & labor.	Standard feature.
14.	Fabrication Time	Requires longer fabrication and installation time and more labourers	Lesser labourers are required. Modifications of existing ducting system are exceptionally easy to perform.
15.	UV Protection	Lesser protection features.	Guaranteed due to Aluminum foil facing and resistance to thermal shock.
16.	Harsh Weather, Temperature and Humidity	Deteriorates over period of time, especially when the used for outdoor.	Suited for Indoor (20mm thick with 80/80 microns aluminum foil) and Outdoor (30mm thick with 80/200 microns) use



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