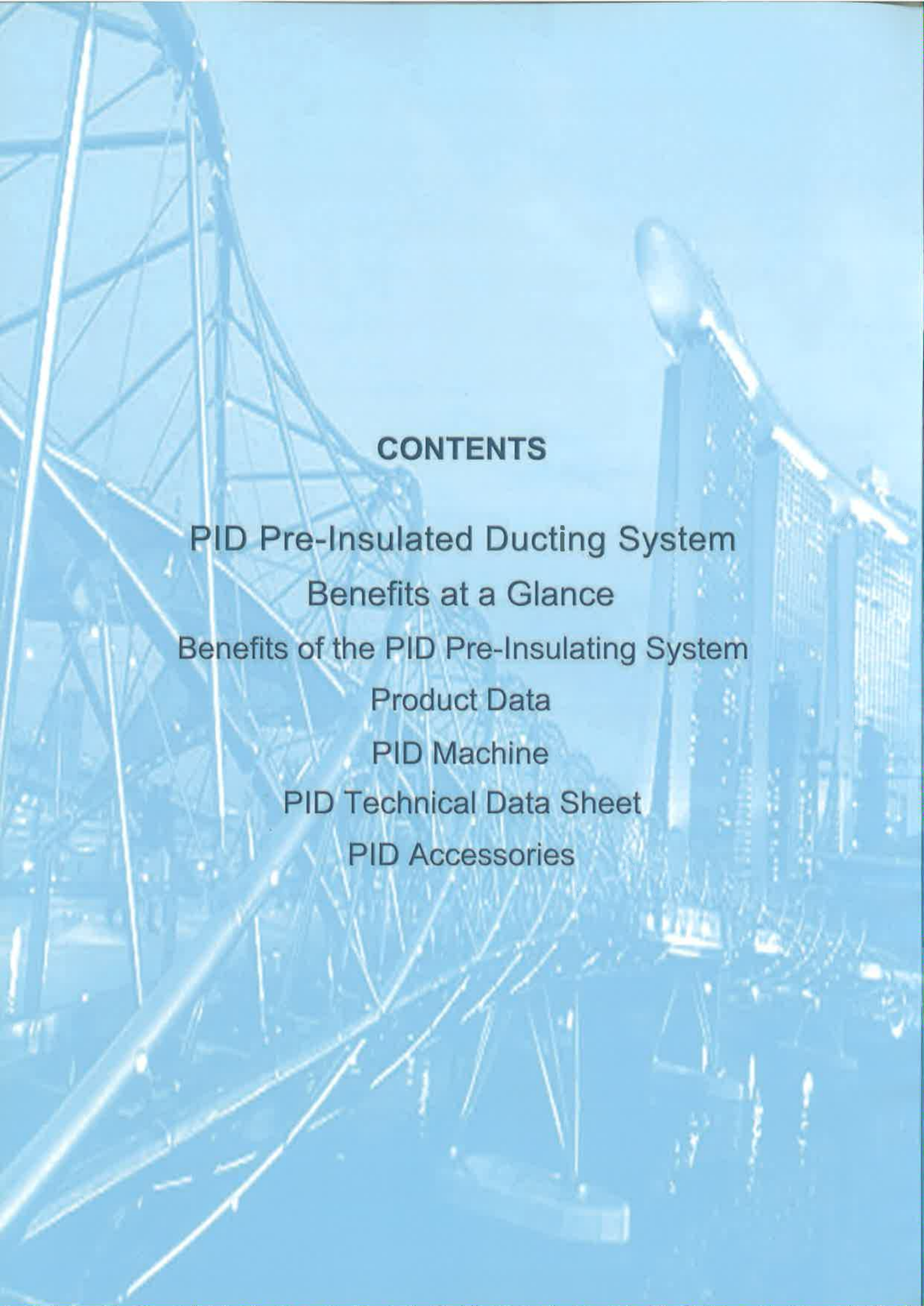
PiD®

Pre-Insulated Ducting System





CONTENTS

PID Pre-Insulated Ducting System

Benefits at a Glance

Benefits of the PID Pre-Insulating System

Product Data

PID Machine

PID Technical Data Sheet

PID Accessories

PID Pre-insulated Ducting System

The Heating, Ventilation and Air Conditioning (HVAC) industry is in the midst of a dynamic era. However, air ducting, a critical component of HVAC systems, has remained virtually unchanged since the early 1900's. Several factors and recent innovations have introduced the need to revolutionise air ducting. Building materials and insulating products have dramatically improved. Requirements for clean air are becoming increasing stringent. Energy costs have continued to escalate. Changing fire and smoke regulations have raised the standards for compliance.

PID is pleased to present a revolutionary approach to insulated ductwork. The PID Pre-insulating System is like no other insulated ducting. It is the most advanced and innovative System of pre-insulated ducting air distribution ductwork available in the world. The PID Pre-insulating System of pre-insulated ducting is a proven, easy, innovative product providing a new perspective in the field of air distribution.

The third generation System virtually eliminates all the problems of traditional metal ductwork while at the same time offering extra advantages to both the consulting engineer and the fabricator/installer. The System is the clear leader in the new generation of insulated prefabricated ducting and has already proved itself in the highly competitive global marketplace.

What's different about the PID-insulating System? Traditionally, ducting is made of sheet metal which is installed first and then lagged with insulation as a second operation. The PID Pre-Insulating System comprises pre-insulated ducting with aluminium surfaces in a single fix.

The PID Pre-insulating System comprises duct sections fabricated from polyisocyanurate insulation panels and joined together with proprietary jointing systems.





Benefits at a Glance

- ❖ Installed cost can be up to 10% cheaper than sheet metal ducting

- 15% of the weight of sheet metal ducting
- can be installed quickly by two people
- single fix fast track installation
- no lagging required
- 4m long segments rather than 1.2/1.5m
- fewer sections and less handling
- can be installed twice as fast as un-lagged sheet metal ducting

- ❖ Can yield electrical consumption savings of up to 20%:
- air leakage is a fraction of sheet metals
- best available thermal insulation
- provides the optimum energy saving and environmental solution.

- ❖ Space saving – can be installed flush to the ceiling

- ❖ 100% clean air. Fibre-free-suitable for food processing, pharmaceutical, medical and other clean air environments

- ❖ Aesthetically pleasing appearance – suitable for open-to-view applications

- ❖ Excellent strength-to-weight ratio and impressive moisture resistance-suitable for rooftop installation.

- ❖ Installed only by specially trained fabricators

- ❖ Class O fire rating and negligible smoke emission

Benefits of the PID Pre-insulating System

Speed

The PID Pre-insulating System has a single fix installation, by virtue of the elimination of the lagging operation, reducing site time and contractor management. The ability to manufacture 4m long segment rather than 1.2/1.5m long segments in the case of sheet metal ducting means fewer sections and less handling. This coupled with increased support centres and ease of handling results in a fast tract installation. The PID Pre-insulating System can be installed twice as fast as sheet metal ducting – not even taking lagging into account. Faster installation obviously means lower costs and no work disruption for other trades.



Energy Efficiency & System, Running Costs

The superior insulation properties of the PID polyisocyanurate insulation panels combined with minimal air leakage of the PID Pre-insulating System yield significant electrical consumption savings of up to 20% because of reduced heating and cooling loads. The PID Pre-insulating System provides the optimum energy saving and environmental solution in comparison with other ductwork systems.



Installed Cost

The installed cost of the PID Pre-insulating System can be up to 10% cheaper than sheet metal ducting.

Light Weight

The exceptional strength to weight ratio of ductwork fabricated from the system results in ductwork that is easier to handle and quicker to install. Weighing up to 85% less than sheet metal ductwork as a second fix. This can save up to 150-200mm / 6"-8" of valuable space.

Most of older buildings involved in refurbishment projects are not designed to support the additional weight of insulated sheet metal ductwork. The PID Pre-insulating System generally alleviates the requirement for additional structural support.



Versatility

The PID Pre-insulated Ducting System can be installed internally, externally, concealed above a false ceiling or visibly mounted. It can be installed in a very high temperature and relative humility ambient operating conditions. The PID Pre-insulating System can be installed in residential, commercial and industrial applications and also for special applications such as food industries, pharmaceutical, special clean air applications and hospitals.



Fire & Smoke Performance

The PID Pre-insulating polyisocyanurate insulation panel's resistance to burning and spread of flame is far superior to that of any other cellular plastic insulation, regardless of facing type. In addition, there is an almost complete absence of smoke when subjected to a flame source. The PID Pre-insulating polyisocyanurate insulation Panel has been extensively tested by independent laboratories. The following tests have been successfully passed.

The PID Pre-insulating polyisocyanurate insulation panel achieves a Class O rating to the Building Regulation based on the results of the following tests:

- BS476: Part 6: 1989 (Method of test for fire propagation for products; and
- BS476: Part 7: 1997 (Method of test to determine the classification of the surface spread of flame of product)

The PID Pre-insulating polyisocyanurate insulation panel achieves a mean maximum obscuration not exceeding 5% when tested to BS5111: Part 1: 1974 (Laboratory methods of test for determination of smoke generation characteristics of cellular plastics and cellular rubber materials).

The PID Pre-insulating polyisocyanurate insulation panel achieves the following results when tested to BS6401:1983 (Method of measurement, in the laboratory, of the specific optical density of smoke generated by materials): the avg. specific optical density (non-flaming mode) = 8; and the avg. specific optical density (flaming mode) = 5.

The PID Pre-insulating polyisocyanurate insulation panel achieves a toxicity index not exceeding 6.9 when tested to NES713 (Smoke Toxicity).

Frictional Resistance

The basic principles of duct design and friction loss for smooth sheet metal ducting applies equally to the PID Pre-insulating System. The pressure losses due to elbow, divergence, take-offs, contractions, expansions, etc. should be computed as for sheet metal ducting. Specifically, the designer should apply the same pressure drop factors for sheet metal duct fittings as defined in the current issue of the CIBSE Guide to Current Practice.

Quality Assurance

PID Pre-insulating polyisocyanurate insulation panels are manufactured to ISO 9002: 1994 (Quality Systems: Mode for quality assurance in production, installation and servicing).

Cleaning

The PID Pre-insulating System can be cleaned with compressed air and vacuum, as in the High Jetting System.

Ease of Modification

The PID Pre-insulating ducting is easily modified or repaired. Doors and hatches for cleaning and access can be readily added even post installation.



Handling and Storage

Care should be exercised in handling PID Pre-insulating System components and duct sections. Storage should be under cover and all materials should be protected from the environment. In all cases where the materials are stored for prolonged periods, all open ends of ducts should be sealed with polythene sheet or other suitable materials to prevent the ingress of foreign matter.

Ease of Used

The PID Pre-insulating System is easy to manufacture and assemble in the workshop or on site requiring only hand tools.







PID Machine







CNC High Speed Automation Machine is capable to provide high precision cutting which allows for increased efficiency through higher levels of automation.

Being alternative option from handheld cutting tools, the CNC High Speed Automation machine is able to cut various types of profile with high accuracy, reducing workload and preventing errors.

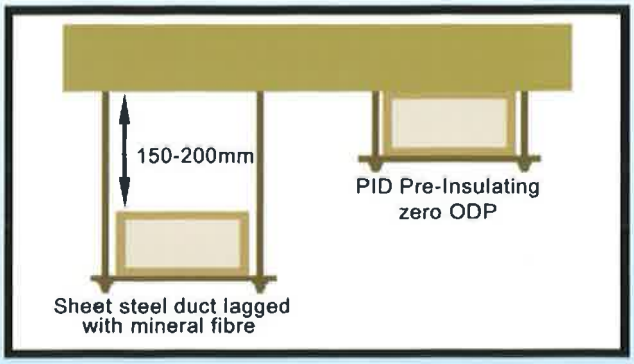
Advantages of CNC High Speed Automation Machine

- Provide accuracy during profile cutting
- Able to reduce labour cost as compared to conventional handheld cutting tools
- Increase productivity for installation
- CNC Machine can be completely reprogrammed in a matter of short time to produce a completely different product.

Space

The PID Pre-insulating system is space saving by virtue of the elimination of space for the lagging or the lagging operation above the duct.

PID Pre-insulating ducting can be installed flush to the ceiling. This can typically save 150-200mm of valuable space above a false ceiling. Thinner insulation, because of the incomparable insulating efficiency of the PID polyisocyanurate insulation panel, further contributes to increase space savings.



Installed by Trained Fabricators

The PID Pre-Insulating System is installed only by specially trained fabricators. Comprehensive training guarantees uniform excellence. All registered contractors attend a specialised training course to ensure that uniform quality standards are maintained. An official certificate of competency is awarded to all trainees who successfully complete this training program.
The course combines both theoretical and practical concepts:

- Air flow dynamics, pressure and velocity
- Basic techniques in cutting and duct design
- Construction of a wide range of sizes and shapes
- Utilisation of aluminium profiles for duct reinforcement, duct jointing and connection to sheet metal ductwork components and plant
- An introduction to project cost estimation





Strength

PID Pre-insulating ducting is very strong, does not require bracing for any size and is self-supporting. PID polyisocyanurate insulation panels are capable of being permanently formed to require shape and duct integrity under operating conditions and limits covered by "The PID Pre-insulating System Design Guide". Ducts of larger sizes and ducts subjected to high pressures may require additional stiffening as specified within "The PID Pre-insulating System Design Guide" to avoid deflection.

Air Quality

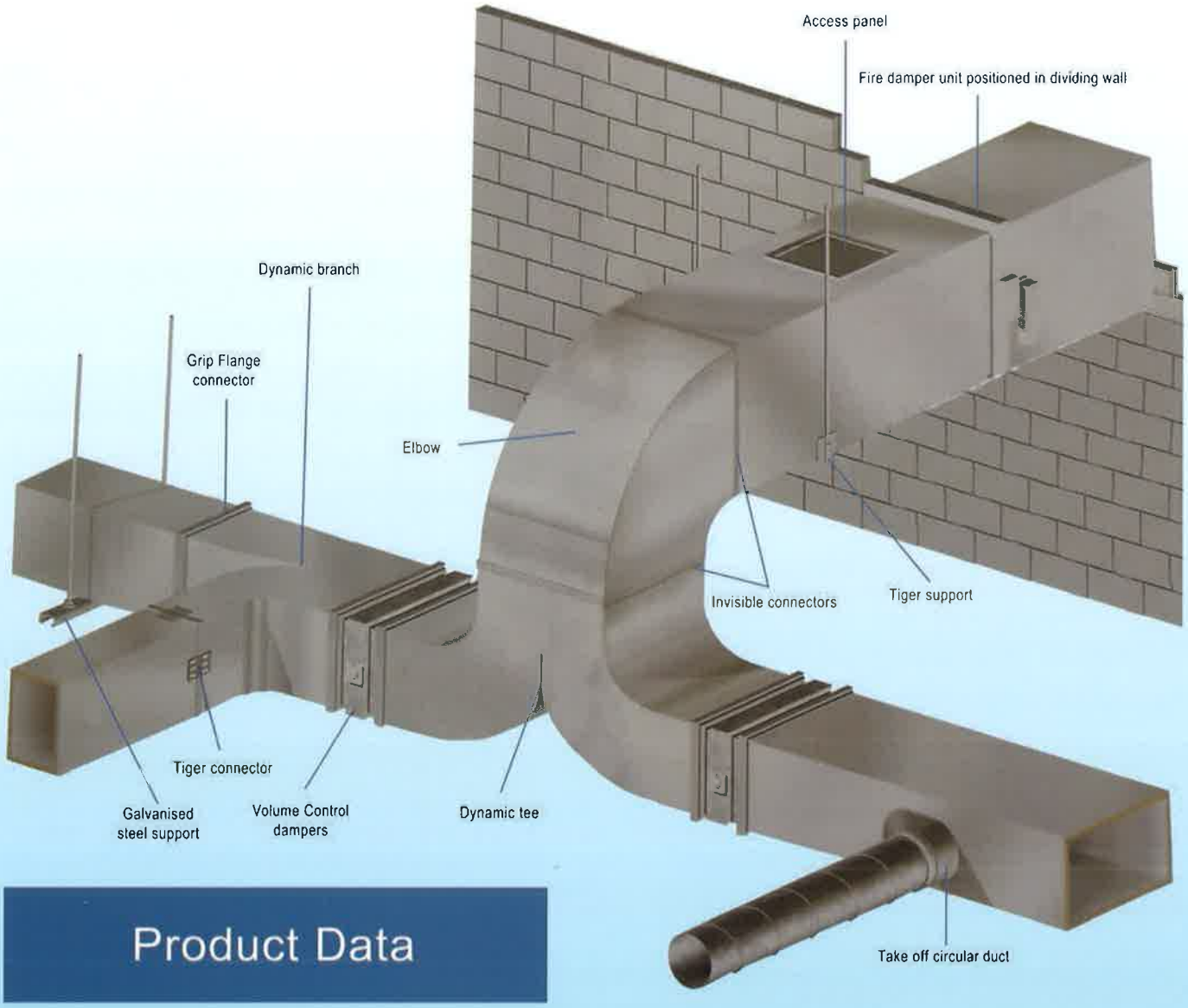
The airstream through the hermetically sealed PID Pre-insulating System flows on only aluminium and does not have any contact with a material that produces loose fibres which could be harmful making it ideally suited for high specifications projects, providing good and facilitating the sheet metal ducting are in the general environment then into recirculation systems and back into air handling system.

Air Leakage

The PID Pre-insulating System technology, the fabrication methodology combined with the patented jointing system and the complete line of bespoke accessories produce a System where the air leakage is reduced to a fraction of that found with sheet metal ducting. The PID Pre-insulating System easily meets the air leakage requirements of HVAC DW 144 – Class C (high pressure).Sheet metal ducts to achieve the air leakage requirements of Class C.

Aesthetics

The PID Pre-insulating System is aesthetically acceptable in open to view applications.



Product Data

PID Polyisocyanurate Insulation Panel Specification

PID Pre-insulating polyisocyanurate insulation panels are rigid flat boards manufactured from polyisocyanurate insulation laminated on both sides to 80 micron embossed aluminium foil.

Environmental Properties

In addition to its contributions to energy efficiency, PID Pre-insulating polyisocyanurate insulation panels are entirely CFC-free. They provide designers and specifiers with an optimum solution towards compliance with international environmental agreements.

In terms of overall environmental efficiency on a cradle to grave analysis, PID Pre-insulating can provide a very significant environmental advantage compared to all other insulation materials when specified to BS 5422:1990 (Method for specifying thermal insulating material on pipes, ductwork and equipment in the temperature range -40°C + 700 °C).

Moisture Resistance

PID Pre-insulating polyisocyanurate insulation panels have >95% closed cell structure which makes them highly resistant to moisture penetration and also non-wicking.

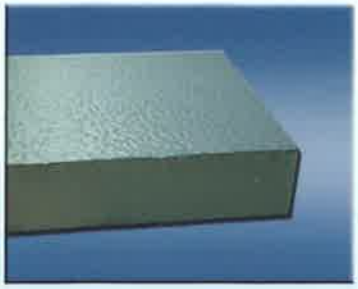
Heat Resistance

The PID Pre-insulating System is suitable for use in peak temperatures as high as 80°C and continuous operating temperatures up to 70 °C

Thermal Performance

The thermal conductivity of PID Pre- insulating polyisocyanurate insulation panel is 0.022W/mK at 10°C, the lowest of any commonly available insulation material, which allows the thinnest possible insulation to achieve the required thermal performance.

PID Accessories



PID Pre-Insulated Duct Board



Tiger Connector



G.I Angle Plate



PVC Bayonet



Aluminium "U" Profile



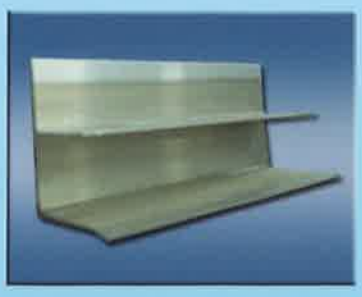
PVC Cover Angle



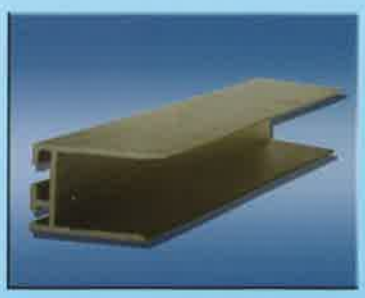
Aluminium "h" Profile



Branch Flange



Aluminium "F" Profile



PVC Flange



PID Glue



PID Tools

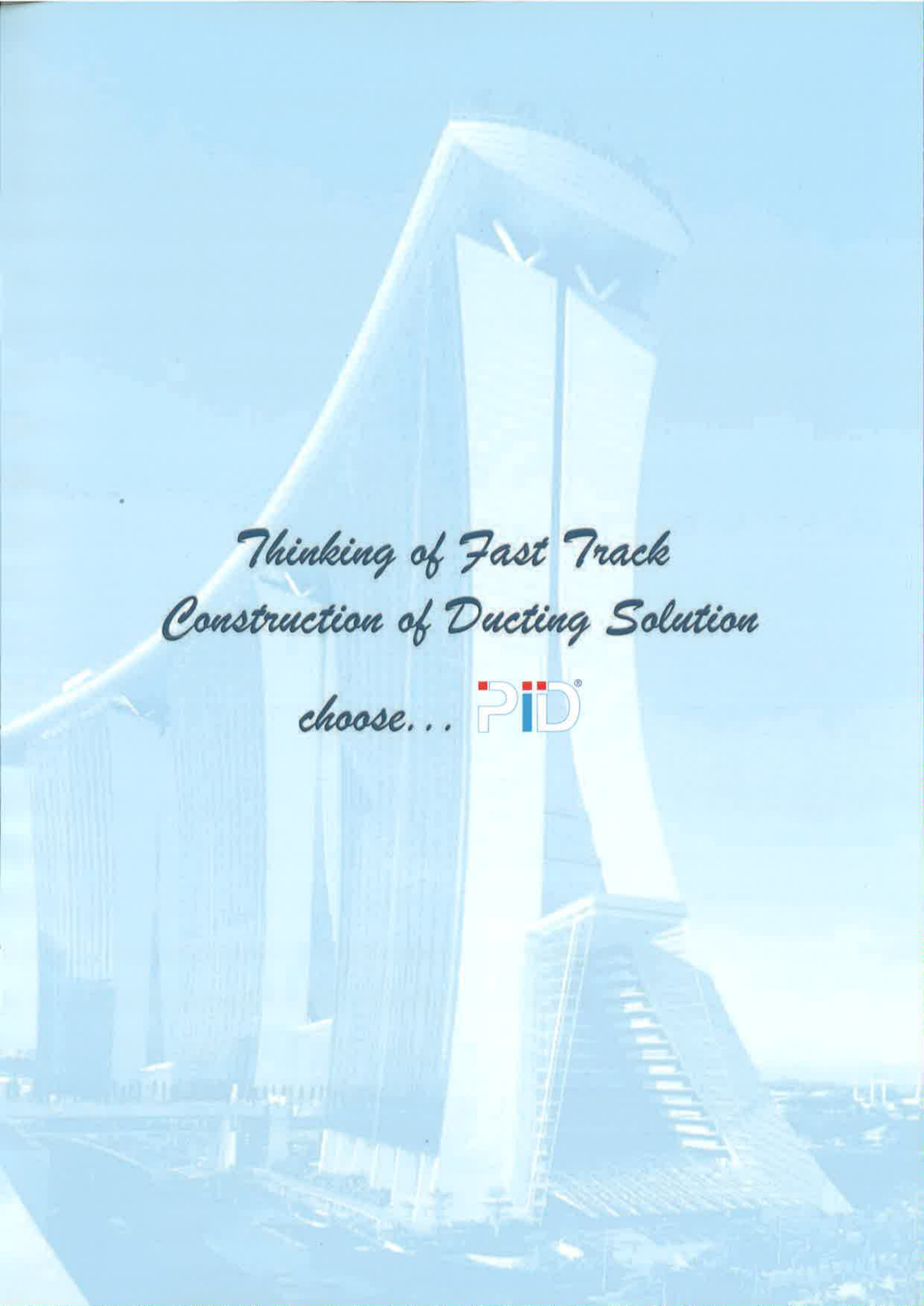
PID Technical Data Sheet

PID® Pre-Insulated Ducting System

Technical Data Sheet

Material Property	Test Method	Unit	Typical Value
Nominal Density	EN ISO 845	kg/m³	45 ± 5%
Thermal Conductivity	EN 12667 at 10 °C	W/m K	0.022
Colour			Green
Closed Cell Content	EN ISO 4590 Meth. 1	%	≥ 95
Operating Temperature Limits	Upper Limit Lower Limit	°C °C	+ 120 - 180
Compressive Strength	EN 826 at +23 °C Parallel Perpendicular	kPa kPa	> 300 > 190
Tensile Strength	ASTM D 1623 - Spec. A at +23°C Parallel Perpendicular	kPa kPa	> 490 > 380
Linear Dimensional Stability	EN 1604 +93 °C for 24 hours - 30 °C for 24 hours +70 °C and 95% RH for 48 hours	 % % %	 ≤ 1 ≤ 1 ≤ 3
Friability	ASTM C 421 (10min.)	%	≤ 30
Linear Expansion Coefficient	ASTM D 696	K^{-1}	40 - 70 x 10^{-6}
Water Absorption	ISO 2896	Vol %	≤ 5.0
Water Vapour Permeability	ASTM E 96	ng/Pa s m	≤ 5.5

Fire Properties	Test Method	Typical Result
Fire Propagation	BS 476 Part 6	Index of performance (I) not exceeding 12 and sub-index (i_1) not exceeding 6*
Surface Spread of Flame	BS 476 Part 7	Class 1*
Horizontal Burning	EN ISO 3582	≤ 10 mm
Oxygen Index Temperature Index	EN ISO 4589 - 2 EN ISO 4589 - 3	≥ 30 % > 390 °C
Surface Burning Characteristics	ASTM E 84	Flame Spread Index: ≤ 25


Thinking of Fast Track
Construction of Ducting Solution
choose... PID®

PiD®

Pre - Insulated Ducting System

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