THE QUEEN'S AWARDS
FOR ENTERPRISE
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PPI
ENGINEERING

PP1214 - PURGE AND PRESSURISATION SYSTEM

ENHANCED CONTROL
EFFICIENT PRESSURE MONITORING
INTELLIGENT LEAKAGE COMPENSATION

REV 1.7

PPI ENGINEERING LTD

PPI Engineering is an international engineering company specialising in the design, supply and support of rotating machines and associated equipment. We operate an ISO9001:2015 quality system and have an established reputation for technical excellence, quality and reliability. Our team of highly qualified engineers are drawn from the major UK electrical machine manufacturers, with extensive onshore and offshore, mechanical and electrical expertise.

PPI Engineering's market leading Purge and Pressurisation safety device ensures the safe operation of electrical machines and enclosures within Zone 1/21 and 2/22 hazardous areas. The unique attributes of this system provides numerous advantages over its competitors.

STANDARD SYSTEM ADVANTAGES

- **Fully automatic, electronically controlled system, reducing commissioning time (does not require outlet valve orifice plate changing to achieve correct flow rate).**
- **No pneumatic connections between inlet and outlet unit, reducing installation time.**
- **Option to automatically compensate varying air leakages in machine.**
- **Automatic models use machine leakage compensation display – essential information for machine maintenance.**
- **LCD information display.**
- **Mechanically interchangeable with expo systems**
- **Up to 4250ls/min [standard litres per minute] automatic leakage compensation already built in, i.e. no additional "BOOST"equipment needed to increase leakage compensation.**
- **Local & remote control and monitoring.**
- **No pneumatic logics used, therefore reducing the possibility of faults created by leakages or blockages, increasing reliability.**
- **Risk of failure minimised due to simplified layout – fewer components needed.**

CONCEPT

PP1214 is designed in accordance with IEC 60079-2/ EN 60079-2, ensuring a pressurised and leakage compensated enclosure. This creates a non-hazardous atmosphere inside the enclosure by keeping a positive differential pressure between the pressurised enclosure and atmospheric pressure to ensure that no potentially explosive gases enter the electrical equipment.

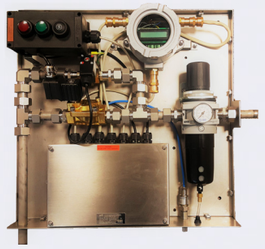
This type of protection consists of two main stages:

Purge Cycle: Activated when the electrical machine is OFF prior to being switched ON. Clean air/inert gas is blown through the machine and monitored to ensure compliance with IEC 60079-2/ EN 60079-2.

Leakage Compensation and Pressurisation Cycle: Once the purge cycle is satisfactory, the machine is considered non-hazardous and ready to be switched ON. A positive differential pressure to atmospheric has to be maintained.

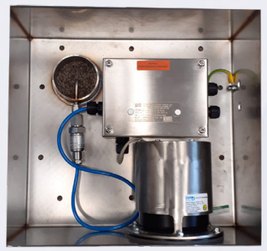
This is achieved by compensating for any air/inert gas leakages that the machine might experience.

› PP12 (INLET UNIT)



› PP12 (INLET UNIT) SHOWING INTERNAL COMPONENTS AND P121 (CONTROL UNIT) SITUATED IN A ROUND EX D ENCLOSURE

› PP14 (OUTLET UNIT)



› PP14 (OUTLET UNIT) INTERNAL COMPONENTS

SYSTEM SPECIFICATIONS

- **Certification and Marking –**
  CML 21UKEX11076X
  CML 15ATEX1185X
  IECEx CML 15.0089X
  Purge and Pressurisation Models
  Ⓔx II 2(2)G D, Ex db eb mb [ib] [pxb] IIC T4 Gb Ex tb [pxb] [ib] IIIC T135°C Db Ta= -40°C to +55°C
  Pre-start Purge Systems
  Ⓔx II 2(2)G D, Ex db eb mb [ib] IIC T4 Gb Ex tb [ib] IIIC T135°C Db Ta= -40°C to +55°C
- **Manufacturing –** Quality assurance QAN and QAR against the requirements of EU Directive 2014/34/EU and IECEX product certification scheme.
  Ⓔx Quality Assurance Notification CML ATEXQ393
  IECEx Quality Assessment Report GB CML/QAR15.0012
- **Dimensions –** PP12 Inlet Unit – 587mm (W) x 572mm (H) x 182mm (D)
  PP14.1 Outlet Unit – 387mm (W) x 358mm (H) x 155mm (D)
- **Weight –**
  PP12 Inlet Unit – approx. 26 kg
  PP14 Outlet Unit – approx. 10 kg
- **Inlet supply –** 5.5barg max regulated pressure. Minimum req'd flowrate = purge flowrate + leakage flowrate. System fitted with air/inert gas filter regulator 40µm filtration size.
- **Alarms –** Low internal pressure, programed by user (typical values, 3mbarg).
- **Sensors –** Low internal pressure, programed by user (typical values, 3mbarg).
- **Purge Flow Rate –** Up to 7000 ls/min.
- **Working Pressure –** ser programmed (typical values 5 - 12mbarg).
- **Operating Temperature –**
  -40°C to +55°C
- **Leakage Capacity –** Up to 4250 ls/min.
- **Simplified Installation Connections**
  1: Inlet air supply via 22mm OD compression fitting.*
  2: Air supply (to machine) via 22mm OD compression fitting (other fitting sizes available on request).*
  3: ¼" OD enclosure pressure sensing pipe.
  4: 2.5mm² 3-core power supply cable, terminated in inlet unit main terminal box.
  5: 0.5mm² 8-core remote control and signalling cable, terminated in inlet unit main terminal box.
  6: 2 x 0.25mm² 3-core cables to connect inlet to outlet unit. Both cables to be housed in a protective conduit. Cables terminated in inlet unit main terminal box and outlet unit junction box.
  All cables to comply with IEC60079-14 clause 9.
- **General Control –** Local ON/OFF supply key switch via control station and remote START/STOP control via increased safety volt-free contacts terminated inside inlet unit main terminal box.
- **Signaling and Machine Interlocks –** Power On, Pressure OK, Pressure Fail, and Purge OK signals/machine interlocks provided via increased safety volt-free contacts housed inside inlet unit main terminal box. Contacts rating: 2A, 250VAC, 220VDC.
- **Mounting –** 4 x M8 bolts for inlet unit and 10 x M8 bolts for outlet unit.

› P121 (CONTROL UNIT)

**Air supply dimensions would increase if Max Flow PP0919 model chosen - TBD.*

MODELS

MODEL	TYPE	LEAKAGE COMPENSATION
PP0919.1.1	Max flow	Manual ball valve
PP0919.3.1	Max flow	Automatic electrical solenoid valve
PP1214.1.1	Normal flow	Manual ball valve
PP1214.3.1	Normal flow	Automatic electrical solenoid valve
PP1214.PV.3.1	Pre-start ventilation	None

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