

Contents

	Page		Page
Foreword	iii	9 Documents essential to the application of the Annexes of this PAS	16
Introduction	v	9.1 Use of the identified documents	16
1 Scope	1	9.2 British Standards	16
2 Normative references	2	9.3 Institution of Gas Engineer and Managers – Standards	18
3 Terms and definitions	2	9.4 Energy Networks Association Engineering Recommendations	18
4 The EEM design	4	9.5 UKLPG	18
4.1 Installer responsibility to be in possession of a location specific EEM design	4	9.6 Department of Communities and Local Government	18
4.2 EEM design validation	4	9.7 Common, Minimum Technical Competence (MTC) Annexes	18
5 Installation process	7	9.8 National occupational Standards (NOS)	20
5.1 Installation method statement	7	9.9 Other insulation installation guidance references	22
5.2 Installation equipment and tools	7	Annexes	
5.3 Checking, handling and storage of materials and supplies	8	Annex A Measure specific Annex selection and co-installation requirements	24
5.4 Provision of installation instructions to operatives	8	Annex B (normative) BFM energy efficiency measures	33
5.5 People	8	Annex C (normative) BSM energy efficiency measures (normative)	102
5.6 Engagement of subcontract installers	8	Annex D (normative) BSE energy efficiency measures	168
5.7 Commissioning	9	Annex E (informative)	
5.8 Handover	9	PAS 2030:2014/PAS 2030:2017 – Substantive change	179
5.9 Installation control	9	Annex F (informative) Installer guidance on the use and application of PAS 2030:2017	181
5.10 Installation documents and record keeping	9	Annex G (informative) Example installation project information collation form	184
6 Installation process management	10		
6.1 Operation and process oversight	10		
6.2 Pre-installation building inspection	10		
6.3 Action in respect of Intermediate inspection	11		
6.4 Installation process change	11		
6.5 Process continuity plan	11		
6.6 Process control	12		
6.7 Internal audit and corrective action	12		
6.8 Installation process records	12		
6.9 Business and financial probity	12		
7 Service provision	13		
7.1 Complaints procedure	13		
7.2 Complaints records	13		
7.3 Interaction with customers	13		
8 Claims of compliance	14		
8.1 Requirement to claim	14		
8.2 Claims in respect of installer designed installations	14		
8.3 Claims in respect of independent third party designed installations	14		

	Page	Page
List of figures		
Figure 1 – EEM Installation and Monitoring System, Overview.....	vi	
Figure A.1 – Key to EEM interaction matrix	27	
Figure A.2 – EEM interaction matrix	28	
List of tables		
Table A.1 – Category BFM (Building Fabric Measures).....	24	
Table A.2 – Category BSM (Building Services Mechanical)	25	
Table A.3 – Category BSE (Building Services Electrical)	26	
Table A.4 – Guidance for the provision of ventilation when installing EEM in existing buildings with air permeability levels >5m ³ /hr/m ²	30	
Table A.5 – Minimum levels of background and extract ventilation in conditions described in Table A.4	31	
Table A.6 – Minimum levels of extract and supply ventilation when continuous extraction is used	32	
Table B.1 – Measure specific requirements for cavity wall insulation (BFM.1)	33	
Table B.2 – Measure-specific requirements for draught proofing (BFM.2)	38	
Table B.3 – Measure-specific requirements for energy efficient glazing and doors (BFM.3).....	43	
Table B.4 – Measure-specific requirements for external wall insulation (BFM.4)	48	
Table B.5 – Measure-specific requirements for flat roof insulation (BFM.5)	55	
Table B.6 – Measure-specific requirements for floor insulation (BFM.6)	61	
Table B.7 – Measure-specific requirements for hybrid wall insulation (BFM.7)	67	
Table B.8 – Measure-specific requirements for internal wall insulation (BFM.8)	75	
Table B.9 – Measure specific requirements for loft insulation (BFM.9)	82	
Table B.10 – Measure-specific requirements for pitched roof insulation (BFM.10)	87	
Table B.11 – Solar Blinds, Shutters and Shading Devices (BFM.11).....	92	
Table B.12 – Measure-specific requirements for room-in-roof insulation (BFM12)	97	
Table C.1 – Measure-specific requirements for chiller units (BSM.1).....	103	
Table C.2 – Measure-specific requirements for gas-fired condensing boilers (BSM.2)	108	
Table C.3 – Measure-specific requirements for oil-fired condensing boilers (BSM.3)	114	
Table C.4 – Measure-specific requirements for flue-gas recovery devices (BSM.4).....	119	
Table C.5 – Measure-specific requirements for heating system insulation (including ducting, pipes and cylinders) (BSM.5)	123	
Table C.6 – Measure-specific requirements for Heating, hot water system, air conditioning or ventilation controls and components (BSM.6)	128	
Table C.7 – Measure-specific requirements for hot water systems (BSM.7)	134	
Table C.8 – Measure-specific requirements for Mechanical Ventilation and Heat Recovery (BSM.8)	140	
Table C.9 – Measure-specific requirements for Radiant heating (BSM.9).....	146	
Table C.10 – Measure-specific requirements for under-floor heating (BSM.10)	151	
Table C.11 – Measure-specific requirements for gas and /or oil-fired warm-air heating systems (domestic and non-domestic) (BSM.11).....	156	
Table C.12 – Water efficient taps and showers (BSM.12)	162	
Table D.1 – Measure-specific requirements for Electric storage heaters (BSE.1)	168	
Table D.2 – Measure-specific requirements for Lighting fittings, lighting systems and lighting system controls (BSE.2)	173	
Table D.3 – Measure-specific requirements for variable speed drives for fans and pumps (BSE.3).....	176	
Table E.1 – Substantive change introduced in PAS 2030:2017.....	179	

Foreword

This revision of PAS 2030:2014 was sponsored by the Department for Business, Energy and Industrial Strategy (BEIS).

The revised PAS continues to provide a specification for the installation of energy efficiency measures in existing buildings, but has been expanded to include additional installer requirements relating to the validation of design content and includes other changes introduced in response to recommendations from users.

Recognition is given to the following organizations that, through nomination of experts have assisted with this revision through direct technical input and through the provision of liaison with other bodies not directly represented on the group:

- Baxi
- British Board of Agrément
- British Electrotechnical and Allied Manufacturers Association
- BSI Retrofit Task Group
- Building Engineering Services Association
- BlueFlame Services
- CertSure LLP
- Chartered Institute of Building Services Engineers
- Cavity Insulation Guarantee Agency
- Construction Industry Training Board
- Construction Products Association
- Department for Business, Energy and Industrial Strategy
- Department for Communities and Local Government
- Electrical Contractors Association
- Energy Savings Trust
- FENSA Limited
- Federation of Master Builders
- Gas Safe Register
- Glass and Glazing Federation
- Insulated Render and Cladding Association
- Kingspan Group PLC
- Knauf Insulation Limited
- Mineral Wool Insulation Manufacturers Association
- National Federation of Roofing Contractors
- National Insulation Association
- National Inspection Council for Electrical Installation Contracting

- Ofgem
- Red Rose Consulting
- Rockwool Group
- St Gobain UK and Ireland
- SummitSkills
- Solid Wall Insulation Guarantee Association
- TrustMark
- United Kingdom Accreditation Service

Comments from other parties were also sought by BSI, particularly through the Expert Review and Public Comment process, which took place during October 2016. The expert contributions from all the organizations and individuals consulted in the development of this Publicly Available Specification (PAS) are gratefully acknowledged.

Publishing information

The revision of this PAS has been facilitated by BSI Standards Limited and is published under licence from The British Standards Institution which retains its ownership and copyright.

This edition of PAS 2030 is published on 1st February 2017 with the expectation that installers claiming compliance with PAS 2030 will be meeting its requirements by 31st May 2017.

BSI reserves the right to withdraw or amend this document on receipt of authoritative advice that it is appropriate to do so. Once published, this PAS will be reviewed at intervals not exceeding two years, and any amendments arising from the review will be published as an amended Publicly Available Specification and publicized in *Update Standards*.

Use of this document

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to a competent person or persons for whose use it has been produced.

This PAS is not to be regarded as a British Standard, European Standard or International Standard. In the event that this PAS is put forward to form the basis of a full British Standard, European Standard or International Standard, it will be withdrawn.

Presentational conventions

The provisions of this PAS are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material, e.g. Notes, are presented in italic type, and do not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Attention is drawn to the principle, applicable in British Standards generally, that they do not require actions that are the subject of legal requirement. Therefore, this PAS does not include, for example, requirement to observe Health and Safety, Building Regulations, Gas Safety Regulations, Water Regulations, etc. with which it is assumed users of this PAS will be in compliance.

Where judged to be of assistance, this PAS includes notes drawing attention to the existence of such legislation or regulation.

Compliance with this PAS does not in itself confer immunity from legal obligations.

Introduction

This revision of PAS 2030 continues to provide a specification for the installation of energy efficiency measures (EEM) in existing buildings but has been modified in response to market changes that have altered the context in which it is applied.

Although this PAS was originally developed with support for the United Kingdom Green Deal Financing Mechanism as a primary objective, it has always been appropriate for application in respect of any EEM installation, irrespective of how that installation is to be funded.

In this latest edition, the independence of the PAS has been further clarified with the removal of all references to specific funding schemes of any type and reliance on the generally accepted use of accredited certification bodies to provide compliance assessment where this is required. **Figure 1** provides a graphic overview of the principle elements of the system and their various relationships.

The most significant area of change within the PAS is the inclusion of enhanced installer requirements for checking that no matter where the design has been sourced (inhouse design facility or independent EEM design source), the EEM design provided for any specific EEM installation they are to undertake is appropriate for the buildings in which they are to be installed and functionally compatible with other EEM installed or to be installed in the same building.

Attention is drawn to the fact that this PAS does not set out a specification for the design of EEM or for the assessment of buildings undertaken to inform such designs. It does however set out critical aspects of EEM design that EEM installers should expect to find addressed in the designs they work to and without which they should not commence installation. As such it may be found of assistance to those undertaking the preparation of EEM designs.

In addition, minor changes have been made to the PAS in response to comments received from users during the first 4 years of application. These are generally matters of clarification, simplification or updating and the basic principles and methodology of the PAS remain unchanged.

The primary objective for the PAS remains the provision of a robust, uniformly applicable specification that will assist installers that comply with its requirements in full, to demonstrate that their installation processes are capable of providing installation of energy efficiency improvement measures to specification and in accordance with the customer's expectations.

Each of the energy efficiency measures covered by this PAS is provided for in a measure-specific Annex. Compliance with this PAS requires that for each installation, the installer has to meet all the requirements of Clauses 1 to 9 of PAS 2030 together with those set out in the Annex relevant to each measure to be installed.

It is anticipated that the list of included measures will change over time and therefore future editions of this PAS should be anticipated.