**Engineering change process of BESA registered HIU**

**Scope**

Engineering change is a necessary process for manufacturers and can be bought about because of a supply issues, quality issues, as well as ratio or product improvement. For heat interface units tested under the BESA HIU test regime, it is imperative to maintain consumer confidence in the test results by ensuring that any change will not adversely affect the performance of the HIU.

Each manufacturer has a legal responsibility to ensure any claims they make about their product are maintained or updated as necessary.

Any reference to BESA within this process document is referring to the Technical Committee and Steering Group of the BESA HIU test regime. Any manufacturer’s representatives, who have been elected to either committee, are not permitted to represent BESA in this matter.

Reference to the manufacturer in the process document is referring to the company or persons responsible for placing an HIU product onto the UK market.

**Existing bill of materials for publish test results**

Before an EC change process is implemented, it will be necessary to ensure the bill of materials for all existing tested HIU is brought up to the current standard. This means that individual components must not only list the component manufacturer, but also the exact component identification designation and number. This should include any undeclared components (such as electrical heating elements) and software/firmware versions.

**Short-term temporary changes**

Temporary changes and concessions should be dealt with by the manufacturer rather than forming part of the BESA engineering process. This is seen as a matter for the contract of sale between the manufacturer and customers who may be sold equipment that does not exactly match that tested to the BESA HIU test regime. It is for the manufacturer to decide how this will be agreed with their customer. In this regard, temporary changes are seen as different from permanent changes that will last longer than individual sales contracts, where there is transparency to both parties.

**Change process under the BESA HIU test regime**

The engineering change process consists of three routes that manufacturers must follow when making a product change in order to maintain the BESA registered status of their HIU. Failure to follow this process and declare a change may result in the product being deregistered and removed from the BESA website.

The manufacturer should refer to the change process flow chart to determine which action should be taken.
If an engineering change falls within the categories set out in list C, the manufacturer should complete the manufacturer’s self-declaration form and submit it, along with any evidence required, to BESA. There will be an administration charge made by BESA to process the change. If the change is accepted by BESA, an addendum will be added to the HIU listing on the BESA website and confirmation will be sent to the manufacturer. If the change is not accepted, BESA will direct the manufacturer to an alternative route for full or partial testing.

For engineering changes that fall within the criteria of list B, the manufacturer should contact a Test House, or the BESA Technical committee, to assess if the proposed engineering change will have an effect on the test results. If it is assessed as not likely to have an effect, then the self-declaration route can be taken. The details and correspondence of the Test House or Technical committee should be presented to BESA as evidence, as well as shared with the other Test Houses to form a database of precedents. A key criterion to be considered by the Test House or Technical committee is whether the proposed change would likely alter the test results beyond the tolerances of the BESA test regime and the test rig. The Test House or Technical committee are expected to make a charge for this service.

If the proposed engineering change falls within the criteria covered in list A, the manufacturer should contact the Test House to arrange for either full testing or partial testing as set out in list A. Once completed, the new test results will be published on the BESA website as the current version. The older version will remain available on the website but clearly identified as out of date. The normal test regime charges of both the Test House and BESA will apply.

**Engineering change self-declaration form**

The declaration must contain the following information as a minimum.

Company Name:

HIU model identification:

BESA test results reference or HIU serial number or certificate number:

BESA test regime version of original test:

Details of engineering change (attach photos):

Part number/s of changed component:

Manufacturer of component:

Manufacturer’s part number:

Date/FD code/serial number from which change will commence:

Details of the Test house or TC member responsible, who carried out the verification (attach report):

This declaration on behalf of the manufacturer confirms that the engineering change being made to the HIU variant falls within list C or list B (with independent verification) of the BESA engineering change process and therefore will not affect the original test results.

Signed:

Position in company:
BESA Technical committee acceptance of the self-declaration is confirmed on behalf of the committee:

Names of committee members:

Signed:

**BESA record of engineering change (list C or B) for inclusion as an addendum**

Date:

HIU model identifier:

HIU serial number/FD code change came into effect:

Component part number:

Revision identification (if more than one):

Description of engineering change made (include photo):

The BESA Technical committee accepted the above change would not affect the test results on (date):

**BESA Service level**

Many engineering changes have commercial value in some form, which means it is envisioned that there may be urgency to get a decision from the Technical committee. MEHNA members believe that a three-week turnaround time for normal decisions would be reasonable. At the same time on going testing work might be seriously held up if an unusual situation is encountered needing guidance from the TC. In these situations, the suggestion from MEHNA members is to have both a formal hierarchy of escalations (which takes precedent for the TC available time) and the ability to contract time from a key TC member, paid via the manufacturer.

**Complaints**

Any complaints relating to the engineering change process should be dealt with within the standard BESA complaints process, published by BESA.

**Process revision**

The engineering change process should be reviewed in line with any new iterations of the BESA HIU test regime, to ensure it remains up to date and relevant. In the first year of its introduction, it is proposed that a review process is conducted once the process has had time to bed in, in case there are any unintended consequences or situations that need addressing further.
**Required tests**

- **A1.1** Insulation or thermal seal - pipe, component and HIU casing
- **A2.1** Space heating heat exchanger - treated as a variant
- **B1.1** Temperature sensors DHW if within tolerance +/-5%
- **C1.1** Space heating strainer - if dP confirmed to be within the same tolerances
- **A1.2** Control board type
- **A2.2** Domestic hot water heat exchanger - treated as a variant
  - 0, 1a-f
- **B1.2** Temperature sensors HTG if within tolerance +/-5%
- **C1.2** Domestic hot water isolating valve/check valve
- **A1.3** Electrical heater
- **A2.3** Mechanical or electrical sensors (dry pockets) and devices that generate control signals to HIU space heating control valves/actuators. Control valve and actuator for space heating
  - 1a-f
- **B1.3** Differential pressure control valve
- **C1.3** Primary side strainer - if dP confirmed to be within the same tolerances
- **A1.4** Common control valve/diverter (HW & HTG)
- **A2.4** Mechanical or electrical sensors and devices that generate control signals to HIU DHW control actuators for domestic hot water (dry pockets)
  - 2a-b,3a-d,4a-b,5a-b
- **B1.4** Pipe material/Pipe geometry (if no change to sensor position)
- **C1.4** Drain valves
- **A2.5** Control valve and actuator for domestic hot water
  - 0, 2a-b,3a-d,4a-b,5a-b
- **B1.5** Control software/firmware
- **C1.5** Vent valves and test points
- **A2.6** Flow meter / sensor / switch, for activation of domestic hot water
  - 0, 2a-b,3a-d,4a-b,5a-b
- **B1.6** Primary isolating valves - insulated
- **C1.6** Circulation pump providing same or better energy efficiency rating applies and no change to pipework
- **A2.7** Thermostatic mixing valve for DHW output
  - 0, 2a-b,3a-d,4a-b,5a-b
- **B1.7** Any component not specifically listed in this document
- **C1.7** Heat meter
- **A2.8** DHW anti-scald valve
  - 0, 2a-b,3a-d,4a-b,5a-b
- **B1.8** Any component from list C that is not accepted by BESA - discussion with Test house/ BESA about test required
- **C1.8** Joints and connections with same internal bore (as long as covered by WRAS or equivalent)
- **A2.9** Keep warm bypass valve - electronic or mechanical
  - 0, 4a-b,5a-b
- **B1.9** Change of location of components within the HIU / redesign of internal arrangement
- **C1.9** Gaskets with same internal bore (as long as covered by WRAS or equivalent)
- **A2.10** Mechanical or electrical sensors and devices that generate control signals to HIU keep warm control valves / actuators
  - 4a-b,5a-b
- **C1.10** Expansion vessel like for like position
- **A2.11** Sensors in wet pockets
  - 0
- **C1.11** Uninsulated chassis or casing
- **A2.12** Control software HW
  - 2a-b,3a-d,4a-b,5a-b
- **C1.12** Safety valves
- **A2.13** Control software HTG
  - 1a-f (4a-b, 5a-b depending on operation of control)
- **C1.13** Indicator lamp or LED
- **C1.14** Integrated flushing bypass
- **C1.15** Shock absorber (incoming cold water)
- **C1.16** Secondary pressure gauge
- **C1.17** Primary isolating valves - uninsulated dP within the same tolerances
- **C1.18** Area vents

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**Engineering Change BESA Test Regime - Engineering Change process**

- **Engineering change list A** - Key change that will affect the test results
- **Engineering change list B** - change that may have an affect on the
  - Engineering change list C - change that will not affect results

**Test type required**

- Full Test with new test results published to BESA website
- Partial Test with addendum published to BESA website

**Test House and BESA decision**

- Full Test/Partial Test/Manufacturer declaration with results published to BESA website as an addendum
- Manufacturer self declaration published to BESA website as an addendum