

DIN EN 16905-2:2020-03 (E)

Gas-fired endothermic engine driven heat pumps - Part 2: Safety

| Contents | Page |
|--|-------------|
| European foreword..... | 4 |
| 1 Scope..... | 5 |
| 1.1 Scope of EN 16905..... | 5 |
| 1.2 Scope of EN 16905-2..... | 5 |
| 2 Normative references..... | 6 |
| 3 Terms and definitions..... | 7 |
| 4 Classification..... | 8 |
| 4.1 General..... | 8 |
| 4.2 Classification of GEHP appliances..... | 8 |
| 4.3 GEHP appliance classification according to the maximum water side operating pressure (PMS):..... | 8 |
| 5 Design requirements..... | 9 |
| 5.1 Structure..... | 9 |
| 5.2 Material..... | 12 |
| 5.3 EMC / electrical requirements..... | 19 |
| 6 Operational requirements..... | 20 |
| 6.1 General requirements..... | 20 |
| 6.2 Soundness..... | 20 |
| 6.3 Heat input at standard rating conditions..... | 21 |
| 6.4 Limit temperatures..... | 21 |
| 6.5 Limit operating conditions..... | 22 |
| 6.6 Insulation resistance..... | 22 |
| 6.7 Transient overvoltage..... | 22 |
| 6.8 Withstand voltage..... | 23 |
| 6.9 Waterproof performance..... | 23 |
| 6.10 Sound power level..... | 23 |
| 6.11 Engine perform..... | 23 |
| 6.12 Power failure..... | 25 |
| 6.13 Abnormalities..... | 25 |
| 6.14 Starting current..... | 25 |
| 7 Test methods..... | 25 |
| 7.1 General test conditions..... | 25 |
| 7.2 Soundness..... | 27 |
| 7.3 Heat input at standard rating conditions..... | 29 |
| 7.4 Limit temperatures..... | 29 |
| 7.5 Limit operating conditions..... | 30 |
| 7.6 Insulation resistance test..... | 31 |
| 7.7 Transient overvoltage test..... | 31 |
| 7.8 Withstand voltage test..... | 31 |
| 7.9 Waterproof performance test..... | 31 |
| 7.10 Sound power level test..... | 32 |
| 7.11 Engine performance..... | 32 |
| 7.12 Power failure test..... | 33 |
| 7.13 Abnormalities test..... | 33 |

| | | |
|--|---|----|
| 7.14 | Starting current test | 33 |
| 8 | Risk assessment | 33 |
| 9 | Marking and instructions | 34 |
| 9.1 | GEHP appliance marking | 34 |
| 9.2 | Installation instructions..... | 36 |
| 9.3 | User's instructions..... | 38 |
| 9.4 | Gas conversion instructions..... | 38 |
| 9.5 | Presentation | 39 |
| Annex A (informative) Calculation of conversion of NO _x | | 40 |
| Annex B (normative) Engine startup test method | | 41 |
| B.1 | General | 41 |
| B.2 | Test condition | 41 |
| B.3 | Test method | 41 |
| Annex C (normative) CO concentration test method | | 42 |
| C.1 | General | 42 |
| C.2 | Test condition | 42 |
| Annex D (normative) NO _x concentration test method..... | | 45 |
| D.1 | Definitions..... | 45 |
| D.2 | General | 45 |
| Annex E (normative) Power failure test method..... | | 48 |
| E.1 | General | 48 |
| E.2 | Test method..... | 48 |
| Annex F (informative) Examples for marking..... | | 49 |
| F.1 | Data-plate (see 9.1.1) | 49 |
| F.2 | Additional data-plate (see 9.1.2)..... | 49 |
| Annex G (informative) Examples for NO _x calculation | | 50 |
| G.1 | E _{rpm} equivalent calculation | 50 |
| G.2 | NO _x ppm to mg/kWh conversation..... | 50 |
| G.3 | Temperature and humidity correction formula calculation | 50 |
| Bibliography | | 51 |