



EFECTIS ERA AVRASYA TEST VE BELGELENDİRME A.Ş.

Dilovası Organize San. Böl. 5.Kısım Fırat Cad. No:18 41455

Dilovası, Kocaeli / TÜRKİYE

DENEY RAPORU

TEST REPORT



AB-0556-T

RFTR23104

11-23

Müşterinin adı/adresi
Customer name/address

: ÖZTÜRK HAVALANDIRMA İKLİMLENDİRME SAN. TİC. LTD. ŞTİ.
Ferhatpaşa Mh. Aytaşı Sk. No: 63/2 Ataşehir, İstanbul / TÜRKİYE

İstek numarası
Order No.

: EEA-22-000273-REV3

Numunenin adı ve tarifi
Name and identity of test item

: Powered Smoke and Heat Exhaust Axial Fan – FAF-65

Numunenin kabul tarihi
The date of receipt of test item

: 27.07.2023

Açıklamalar
Remarks

:

Deneyin yapıldığı tarih
Date of test

: 28.07.2023

Raporun sayfa sayısı
Number of pages of the Report

: 11 (Totally 20 pages with annexes)

Deney laboratuvarı olarak faaliyet gösteren Efectis Era Avrasya Test ve Belgelendirme A.Ş., TÜRKAK'tan AB-0556-T ile TS EN ISO/IEC 17025:2017 standardına göre akredite edilmiştir.

Efectis Era Avrasya Test ve Belgelendirme A.Ş. accredited by TÜRKAK under registration number AB-0556-T for EN ISO/IEC 17025:2017 as test laboratory"

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Deney ve /veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir .

The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Mühür
Seal

Yayımlandığı Tarih
Date

Deney Sorumlusu
Person in charge of test

Onaylayan
Approval



24.11.2023

e-signed
Osman AYYILDIZ

e-signed
Ali BAYRAKTAR

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.

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1. SCOPE

Fire resistance test, in conformity with the general requirements of standards EN 1363-1:2020, with substitute or additional methods of standard EN 1363-2:1999 and with the particular requirements of standard EN 12101-3:2015 "**Smoke and heat control systems - Part 3: Specification for powered smoke and heat exhaust ventilators - Annex C: Test method for the determination of fire resistance of powered smoke and heat control ventilators**"

2. TEST LABORATORY

Name : EFECTIS ERA AVRASYA TEST VE BELGELENDİRME A.Ş.

Adress : Dilovası OSB 5. Kısım Fırat Cad. No:18 41455 Dilovası, Kocaeli / TÜRKİYE

3. TEST NUMUNESİNİN TANIMI

3.1. Genel

Product Identification : Powered Smoke and Heat Exhaust Axial Fan – **FAF-65**

Direction of flow : Motor downstream direction

Application : Inside the furnace

Temperature class : F300

Manufacturer : ÖZTÜRK HAVALANDIRMA İKLİMLENDİRME SAN. TİC. LTD. ŞTİ.
Ferhatpaşa Mh. Aytaşı Sk. No: 63/2 Ataşehir, İstanbul / TÜRKİYE

Sponsor of test : ÖZTÜRK HAVALANDIRMA İKLİMLENDİRME SAN. TİC. LTD. ŞTİ.
Ferhatpaşa Mh. Aytaşı Sk. No: 63/2 Ataşehir, İstanbul / TÜRKİYE

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3.2. Description of test sample

3.2.1. Fan

3.2.1.1. Carcase

Material : St 44 steel

Dimensions :

- Overall diameter : 730 mm
- Inner diameter : 630 mm
- Outside length : 750 mm
- Wall thickness : 5 mm
- Carcase support : 2 steel plate legs were used to fix the fan frame.
 - Steel plate dimensions : 636 x 40 x 192 x 5 mm (w x d x h x t)
 - Fixing : M20 steel screws. (6 pcs.)

3.2.1.2. Impeller:

Material : Special aluminium alloy (AlSi12Cu1(Fe))

Number of blades : 3

Nominal tip gap : 8 mm

Nominal dimensions :

- Overall diameter : 600 mm
- Blade length : 205 mm
- Blade thickness : 5 mm
- Fastening : Each impeller placed inside to the hub casing and fixed with 5 pcs. nut.

3.2.1.3. Hub:

Material : Special aluminium alloy (AlSi12Cu1(Fe))

Nominal dimensions : 60 x 30 mm (\varnothing x d) – bearing clearance
195 x 55 mm (\varnothing x d) – for hub

Fastening : Hub fixed with 5 pcs. of nut.

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3.2.1.4. Motor

Model number : GAMAK-GM2ED 132 S 2a
Rating : Motor Insulation H, Protection class IP55, Temperature rise class B (ΔT 80K)
Carcase : 132S
Speed : 2900 rpm
Electrical information : 400 V, 50 Hz, 5,5 kW, 10,3 A, $\cos\Phi$: 0,89
Application : Uninsulated, smoke and heat exhaust.
Bearing type : Ball bearing-ZZ
Class of fit : C4
Arrangement : Not locked
Lubricant : KRYTOX CORRUGATOR 226 FG-DUPONT

- Power cable: Halogen free silicon fire resistance cable
 - Cable cross section: 4 x 2,5 mm²

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4. PRE-TEST PROCESSES

Efectis Era Avrasya Test ve Belgelendirme A.Ş. verified the used materials and parts against the supplied data and drawings during installation of the test specimen and not involved in the selection of test specimen.

Brand, type, quantity and dimension information of the components, when it is not possible to be verified by the laboratory, are given according to the sponsor's declaration. Drawings included in this report are provided by the test sponsor.

The test specimen was assembled by the manufacturer.

4.1. Tip clearances measurements

- Declared nominal value : 8 mm
- Measured mean value : 8 mm

5. TEST PROCESS

5.1. Method

The fire test was conducted according to the TS EN 12101-3:2015, Annex C.
The heating of the furnace followed as specified in the EN 12101-3:2015, Annex C.

5.2. Measurements

Following test data were measured during the test:

- Air temperatures at the intake plane of the fan (Furnace TC1 to Furnace TC4) (see figure A1).
- Ambient temperature in the laboratory (see figure A3).
- Static pressure at the intake plane of the fan (see figure A2).
- Surface temperatures on the motor carcass (See Figure B2)
- Current of the motor (see figure B3)
- Supply voltage of the motor (see figure B4)
- Electrical power of the motor (see figure B5)
- The positions of the thermocouples on motor carcass are given in figure B1.

Following equipment were used during the measurement related to test specimen:

- Static pressure of the fan: Piezometric ring connected to differential pressure transmitter
- Electrical measurement: Power analyser
- Temperature measurement on motor carcass: Fibre-glass insulated Type K Thermocouple

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6. OBSERVATIONS

Table 1: Observations during test.

| | |
|-----|-----------------------------------------------------------|
| -60 | The fan was switched on and the motor started warming up. |
| 0 | Heating started. |
| 6 | Target temperature (300 °C) reached. Test started. |
| 21 | The fan was switched off. |
| 23 | The fan was switched on. |
| 60 | No changes were observed. |
| 90 | No changes were observed. |
| 128 | Test was terminated with approval of the sponsor. |

7. TEST RESULTS

7.1 Results

The results are given in Table 2 and appendices B.

7.2 Uncertainty of measurements

Due to the nature of fire resistance testing, in which several non-linear effects are present in both the test configuration and the test specimen, which influence each other, it is at this moment not yet possible to give a stated degree of uncertainty of measurement.

8. SUMMARY

Table 2: Summary of test results of the test specimen

| | |
|-------------------------------------------------------------------------------|------------------------------------|
| Functionality, (F) – Static pressure – Motor | No failure (- %5,88) No failure |
| Test was terminated at 122 nd minute with approval of the sponsor. | |

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9. DRAWINGS

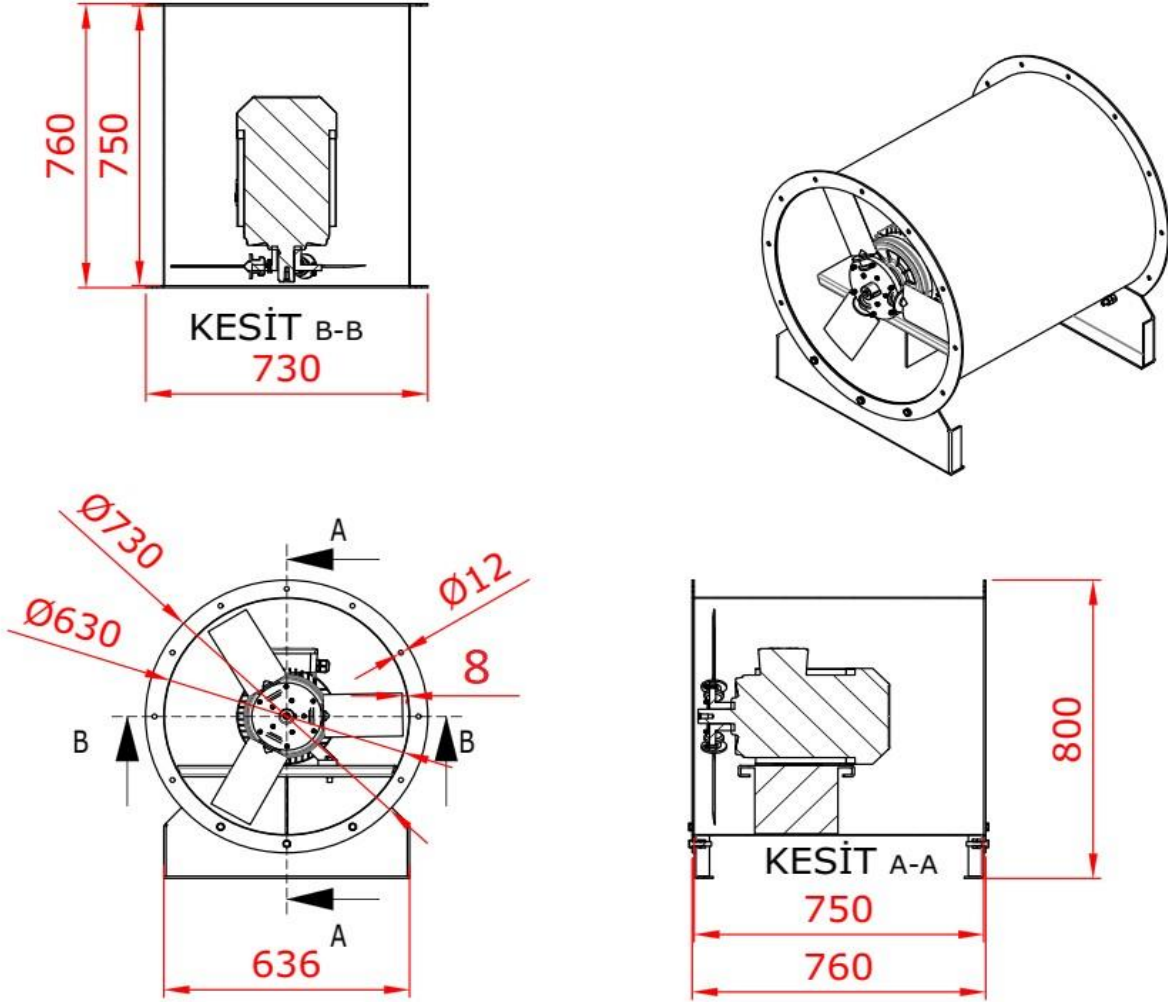


Figure 1: fan carcass details

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.

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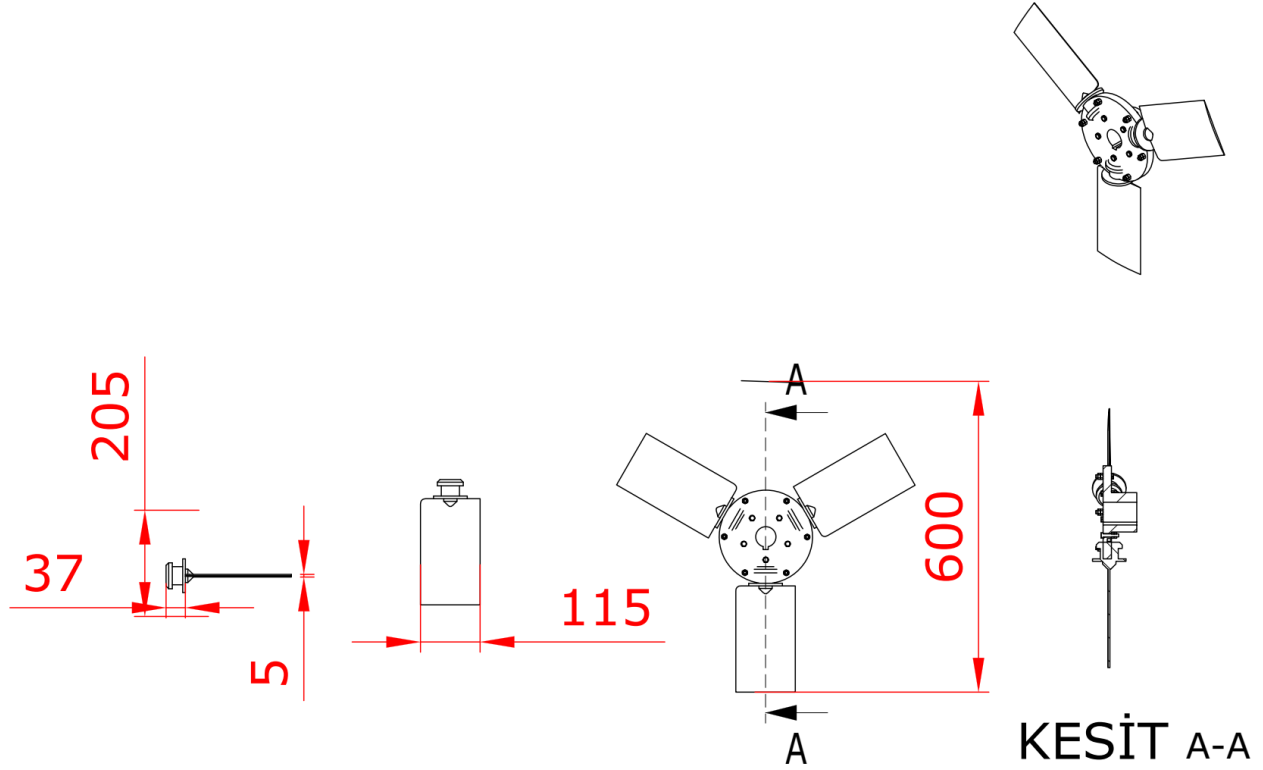


Figure 2: Impeller details

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.

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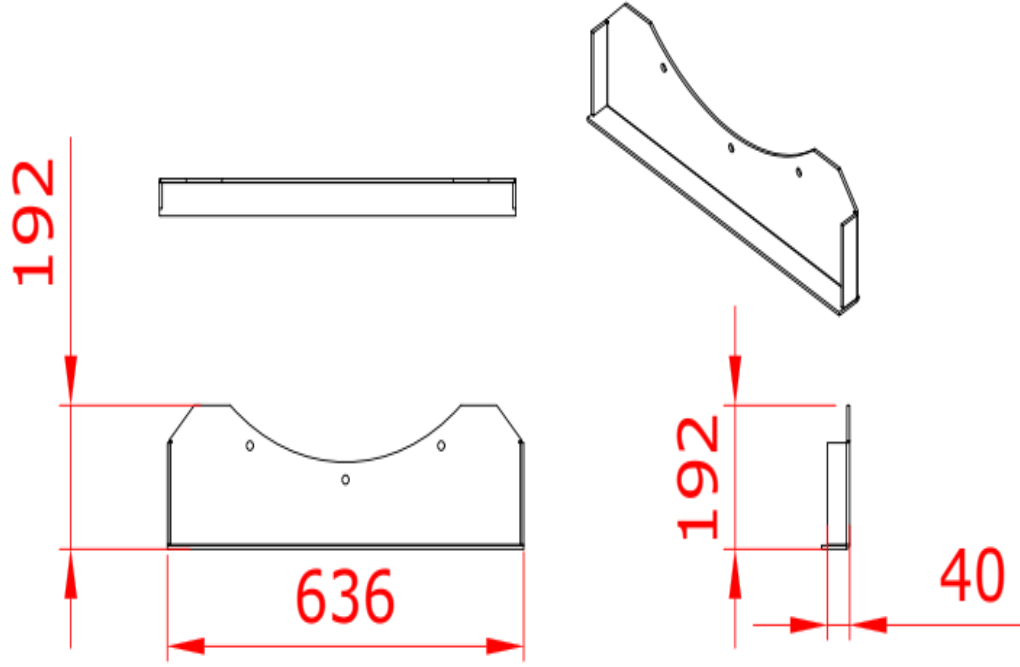
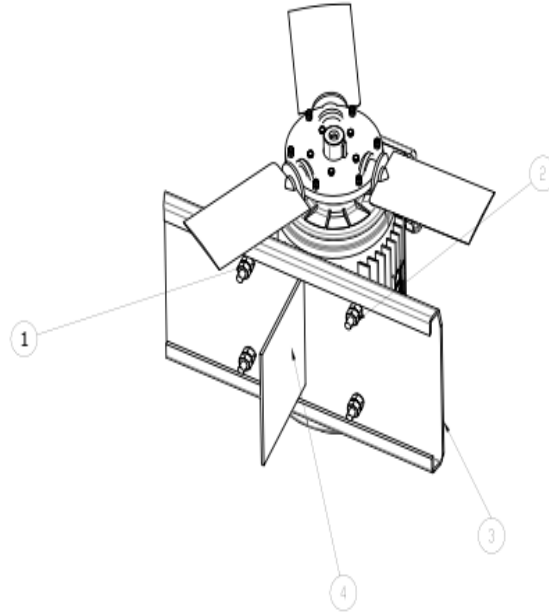


Figure 3: fan carcass details

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.

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| ÖĞE NO | PARÇA NUMARASI | ADET |
|--------|------------------------|------|
| 1 | M12 SOMUN | 8 |
| 2 | M12x60 CİVATA | 4 |
| 3 | 6MM MOTOR SEHPASI | 1 |
| 4 | 5MM MOTOR SEHPA DESTEK | 1 |

Figure 4: Motor connecting details

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.

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APPENDICES:

Appendix A: Furnace and laboratory conditions

Appendix B: Test results

Appendix C: Photos

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.

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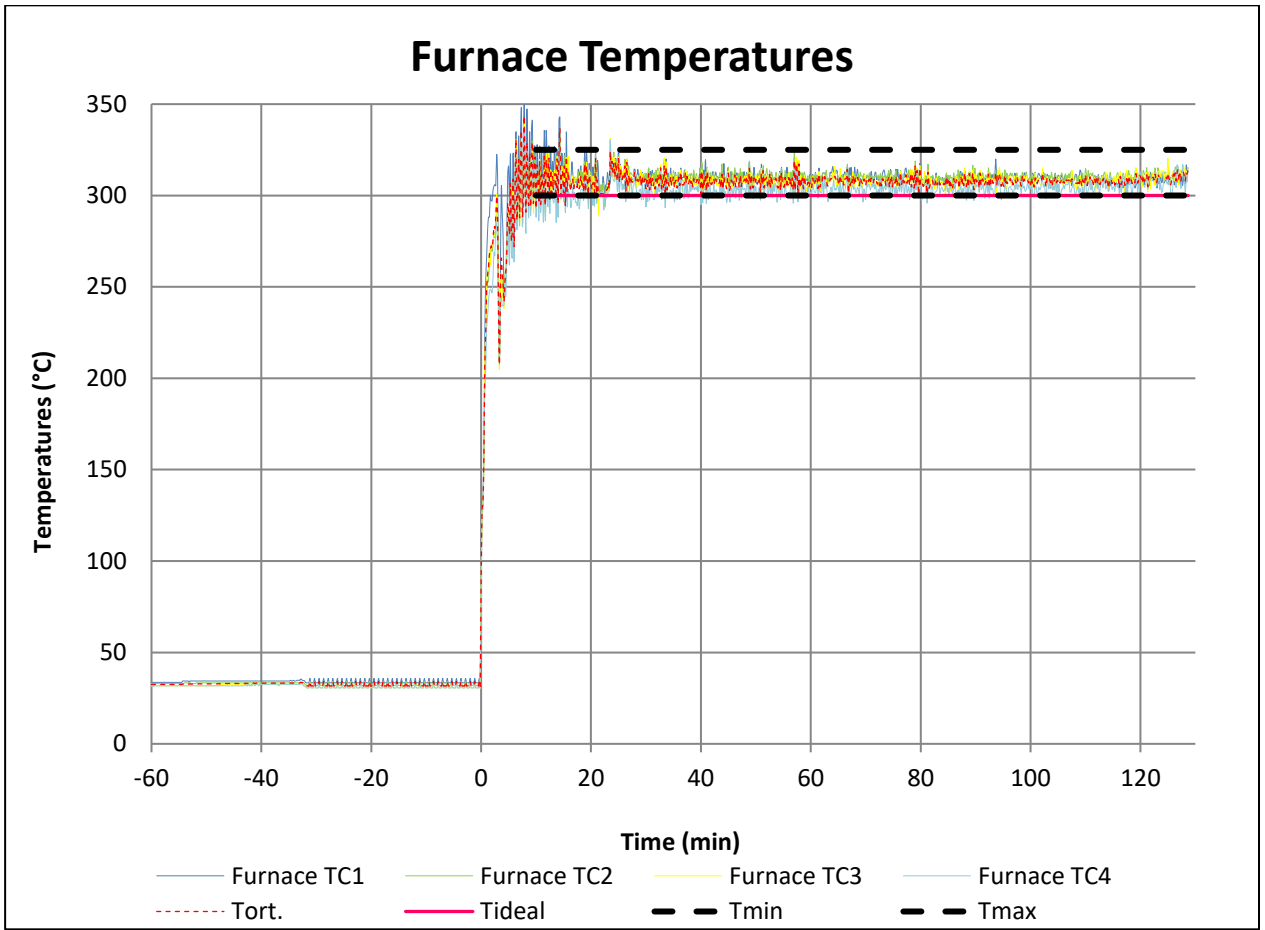


Figure A1: Furnace temperatures

Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.

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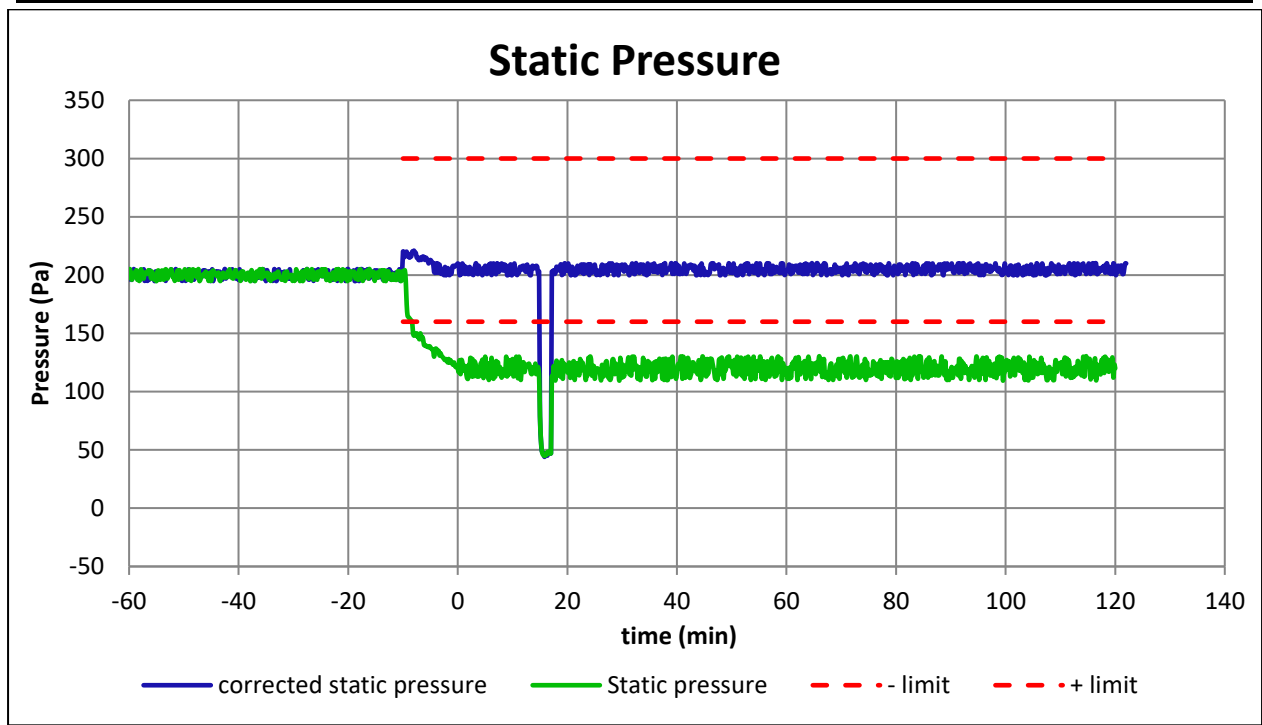
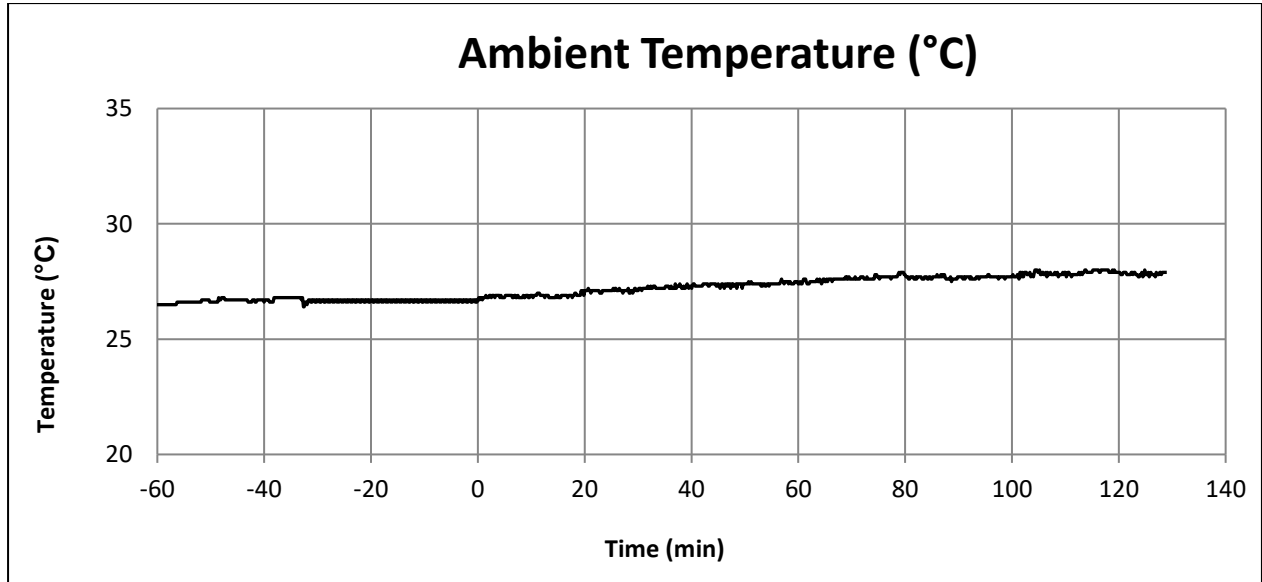


Figure A2: Static pressure of fan

Figure A3: Ambient temperature at laboratory



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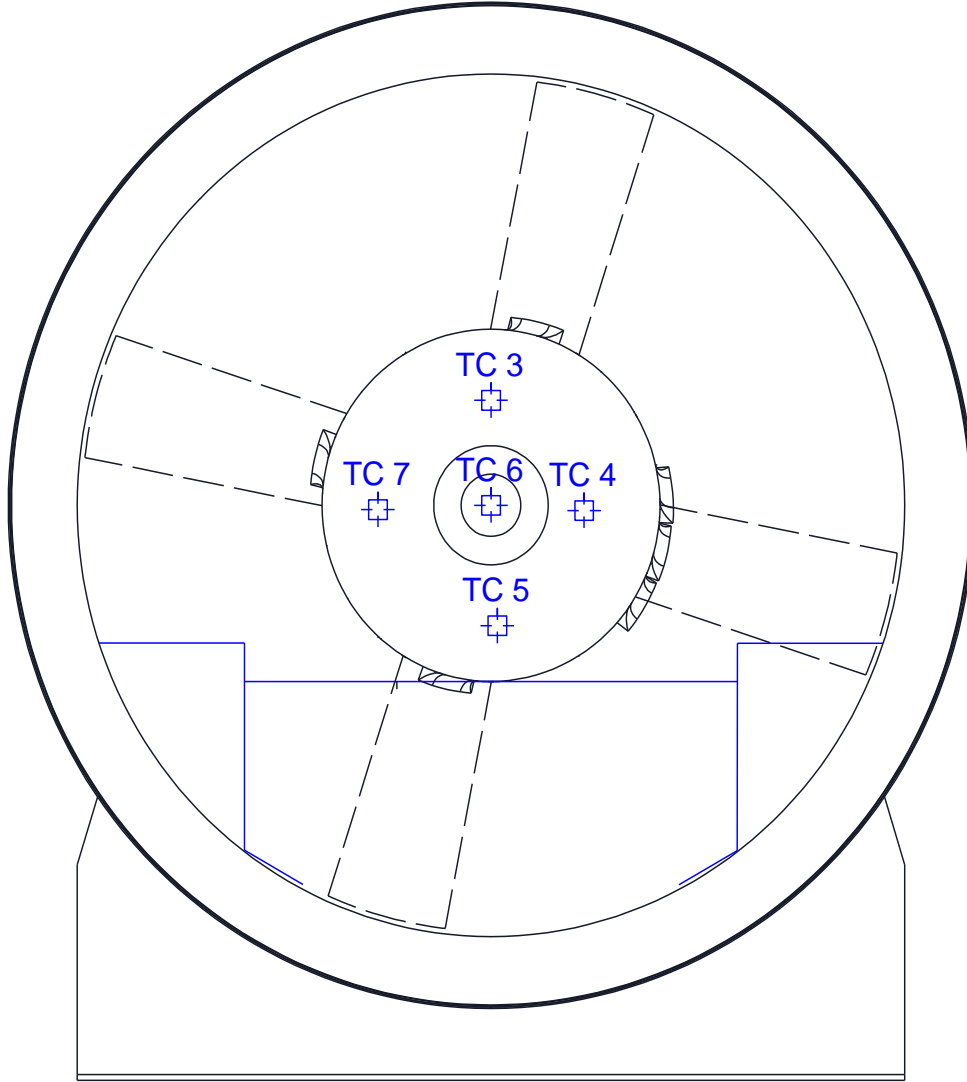


Figure B1: Locations of thermocouples on the motor carcass

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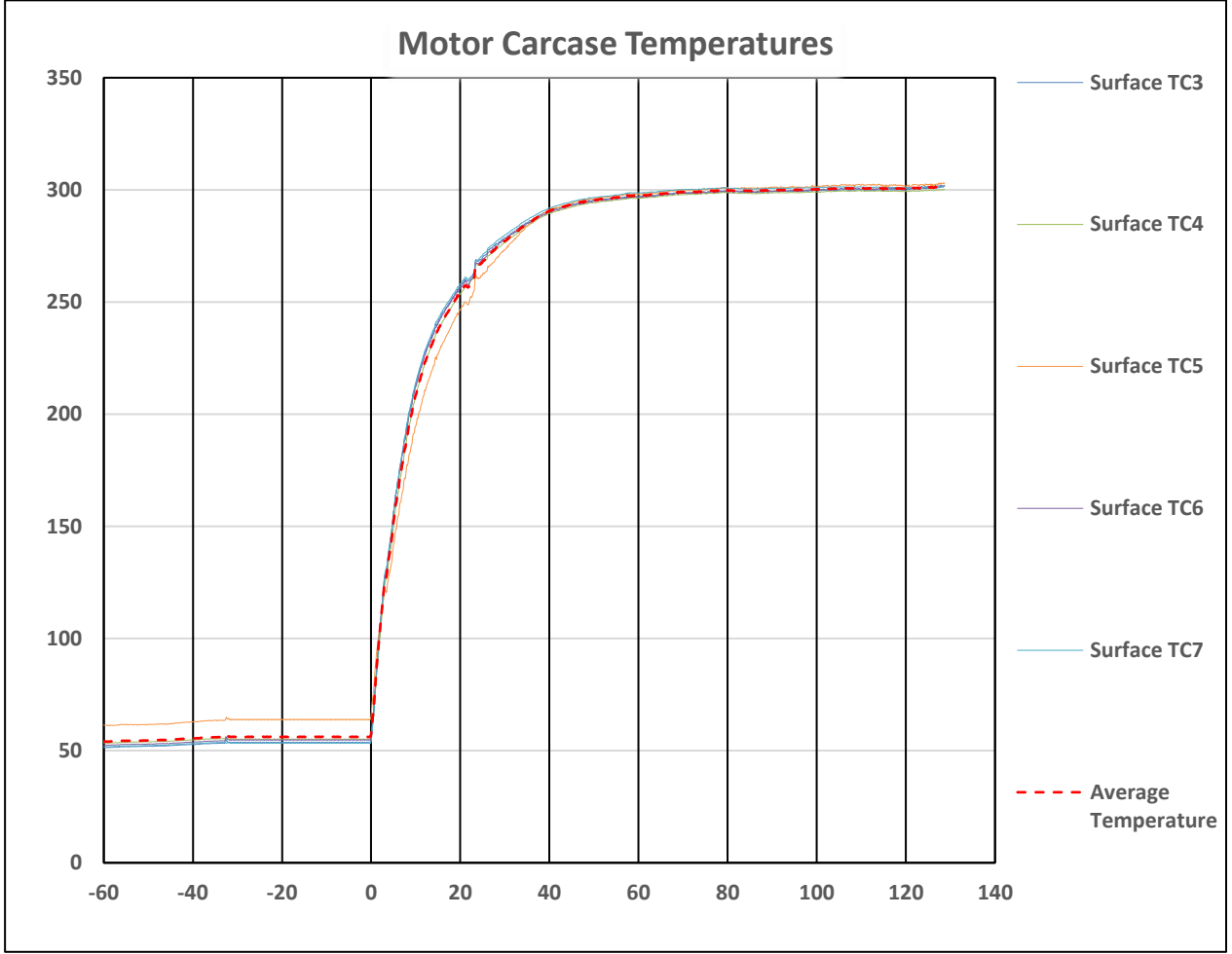


Figure B2: Surface temperatures on motor carcase

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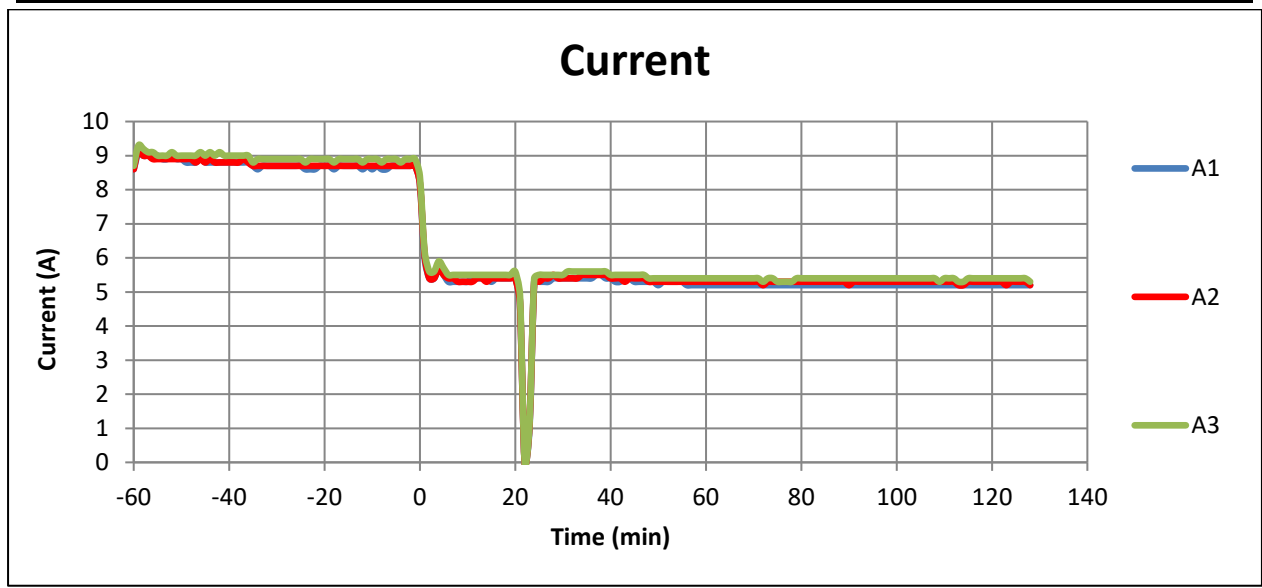


Figure B3: Motor current reading during test

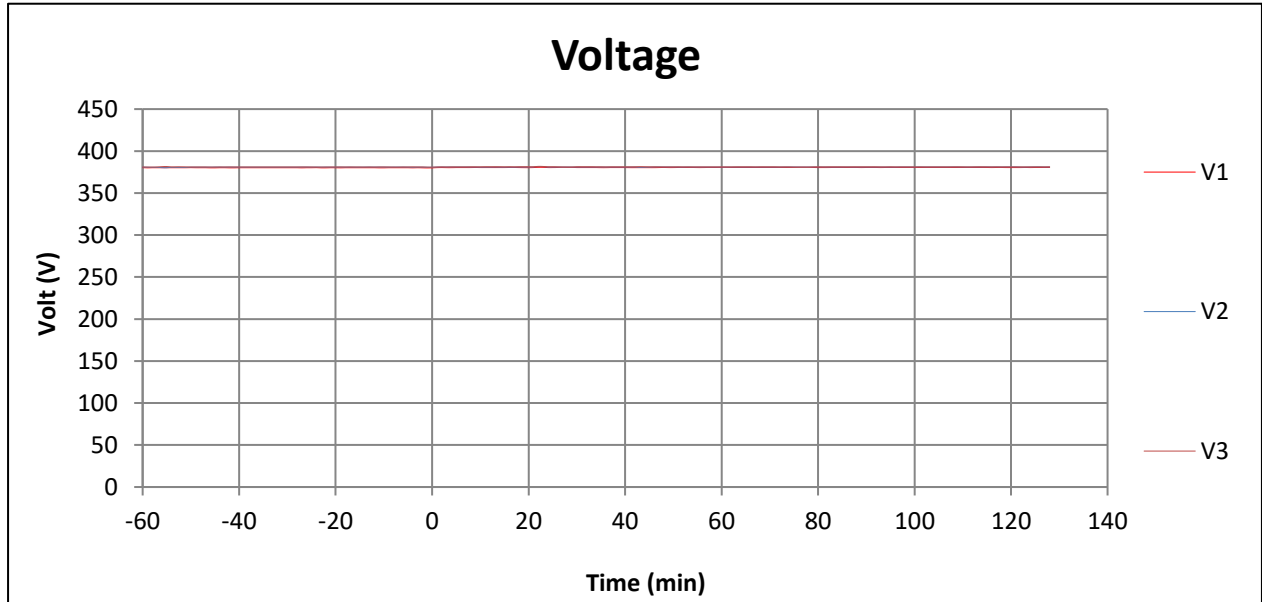


Figure B4: Motor voltage reading during test

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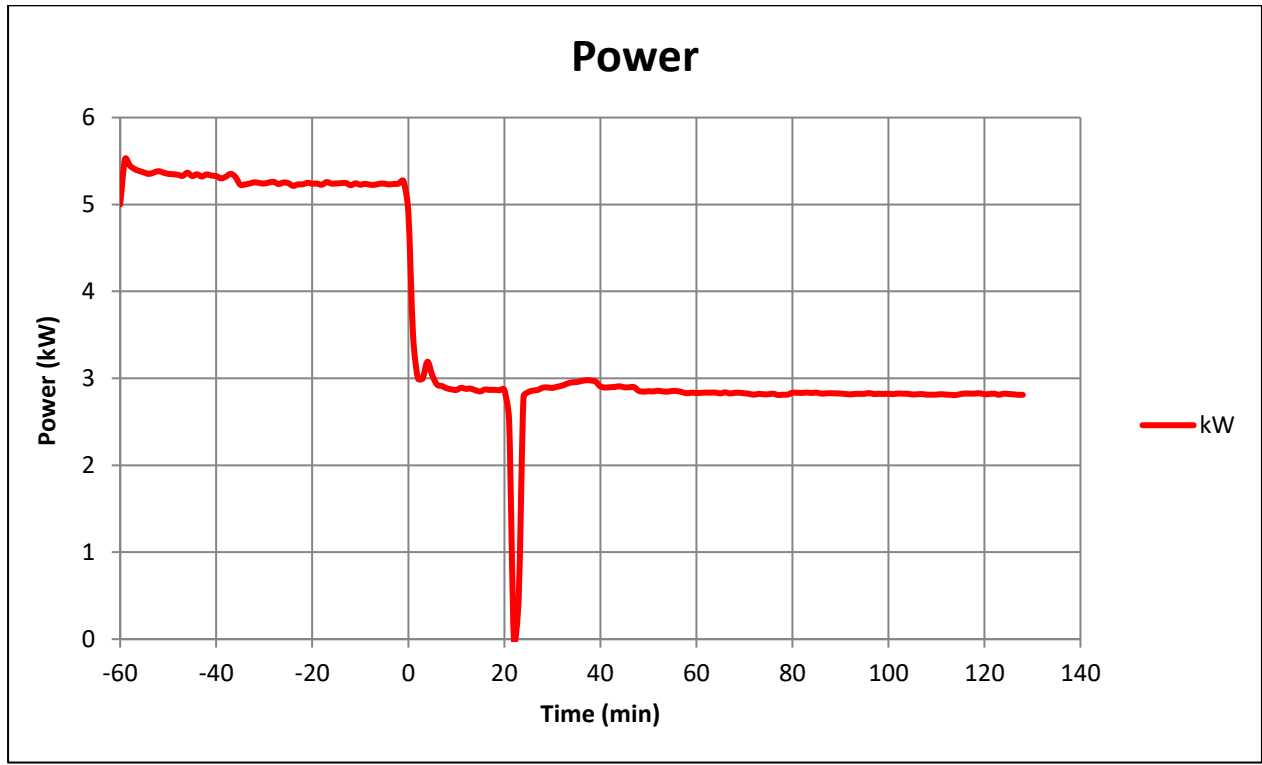


Figure B5: Motor power reading during test

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Photo C1: Front view of the specimen before the test

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Photo C2: Rear view of the specimen before the test

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Photo C3: Front view of the specimen after the test

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