

	<p style="text-align: center;">Scope of Work</p>	<p style="text-align: center;">Camden Power Station</p>
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Title: **Manufacturing PF Scroll and Core air II tube – deliver to Camden Power Station.** Document Identifier:

HBS / Functional Location): **HJA, HJF, EGD, EGB**

Area of Applicability: **Boiler – Fuel Oil Plant and Fuel Oil Burners**





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<p>Date: 23/05/2022</p>	<p>Date: 23/05/2022</p>	<p>Date: 23/05/2022</p>	<p>Date: 23/05/2022</p>

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1. Introduction

Camden Power Station has experienced excessive wear failures of the newly installed Low NOX burners. These failures compromise unit availability.

The plant operational experience with the new burners has identified three areas that require attention, being the pulverized fuel (PF) inlet scroll, the core air sleeve and the PF tube. All three areas require attention with respect to wear and erosion.

Unit 6 and 4 are susceptible to failures on the PF inlet scroll because they have the old scrolls that were not modified. This Scope is to ensure that some of the identified deficiencies are addressed by the Procurement of the new PF Scrolls and Core Air II Tubes. The units must be fitted with the modified PF inlet scrolls and core air II tube.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

This Scope is to ensure that some of the identified deficiencies are addressed by the Procurement of the new PF Scrolls and Core Air II Tubes. The units must be fitted with the modified PF inlet scrolls and core air II tube.

2.1.2 Applicability

- Boiler Engineering.
- Boiler Maintenance.
- Procurement.
- Prospective contractor.

2.1.3 Effective date

Authorisation date

2.2 Normative/Informative References

2.2.1 Normative

- 240-83797789 Specification for Fuel Oils Coal Fired Boilers Standard
- ISO 9001 – Quality Management Systems.

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- OHS Act - Occupational Health and Safety Act and Regulations (Act No.85 of 1993)
- 240-105453648 – Fossil Fuel Firing Regulations Standard
- NFPA 85 – Boiler and combustion systems hazard code
- Pressure Equipment Regulations (PER 2009).
- The Eskom burner manufacturing specification (240-106027729).
- 0.36/20539 - PF Pipe wear protection
- 0.36/20540 - Secondary air flange
- 0.36/20542 - PF assembly

2.2.2 Informative

N/A

2.3 Definitions

N/A

2.4 Abbreviations

Abbreviation	Explanation
BMS	Burner Management System
C&I	Control and Instrumentation
CPS	Camden Power Station
FFFR	Fossil Fuel Firing Regulations
FO	Fuel Oil
FOP	Fuel Oil Plant
GO	General Overhaul
HFO	Heavy Fuel Oil
HP	High Pressure
IR	Interim Repair
LP	Low Pressure
LPG	Liquefied Petroleum Gas
MBSA	Maintenance Basis Standardisation Application
MGO	Mini General Overhaul
NOx	Nitrogen Oxides
PF	Pulverised Fuel
PLL	Partial Load Loss
PSR	Plant Safety Regulations
SANAS	South African National Accreditation System
SOW	Scope of Work
SSR	Successful Start-up Rate

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Abbreviation	Explanation
UCLF	Unplanned Capability Loss Factor

2.5 Roles and Responsibilities

- Boiler Engineering - Is responsible to draw up the scope and technical evaluation criteria for the manufacturing of PF Inlet scroll and Core air II tube.
- Boiler Maintenance - Is responsible for Procuring PF Inlet scroll and Core air II tube as per the terms set-out in the SOW
- Procurement - Is responsible to ensure that the procurement process is properly followed in setting-up and awarding the tender.

2.6 Process for Monitoring

The Procurement process ensures that the tender is set-up according to the terms given in the SOW.

2.7 Related/Supporting Documents

N/A

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3. Scope of Work

3.1 Objectives and Purpose of the Works

The objective of this contract is to manufacture and supply PF inlet scroll and Core air II tube.

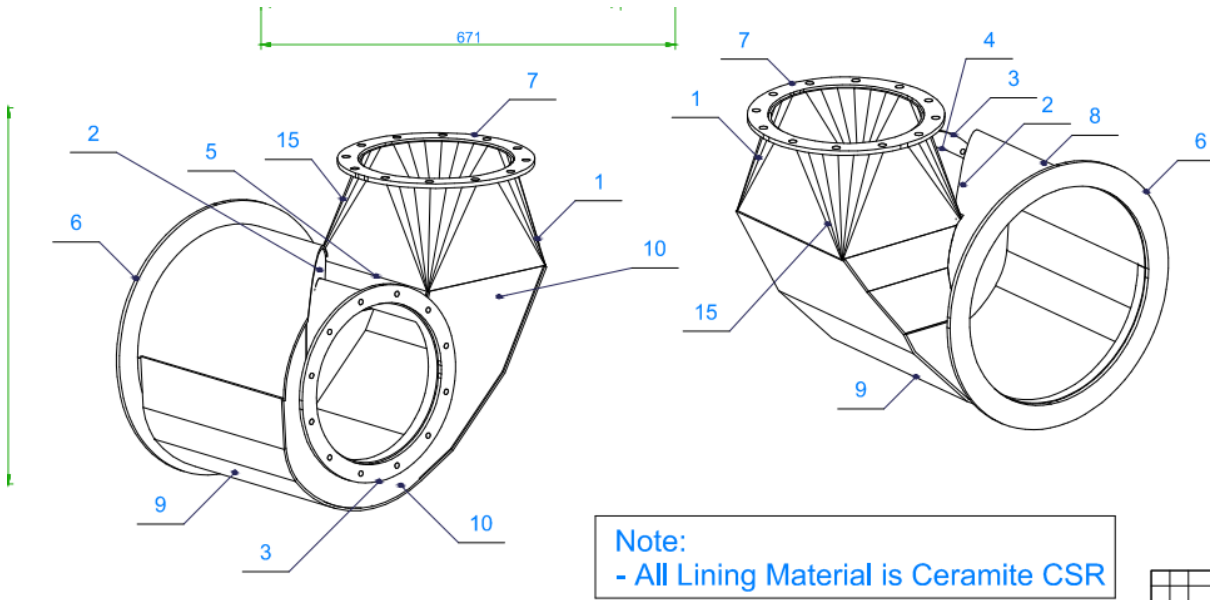


Figure 1: PF Inlet scroll

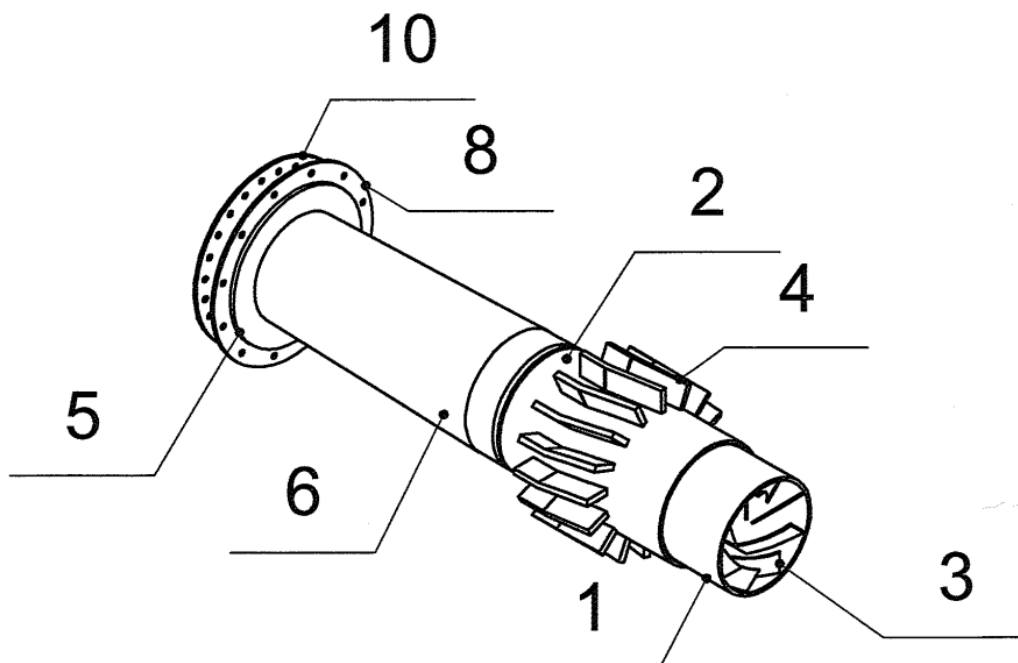


Figure 2: Core air II tube

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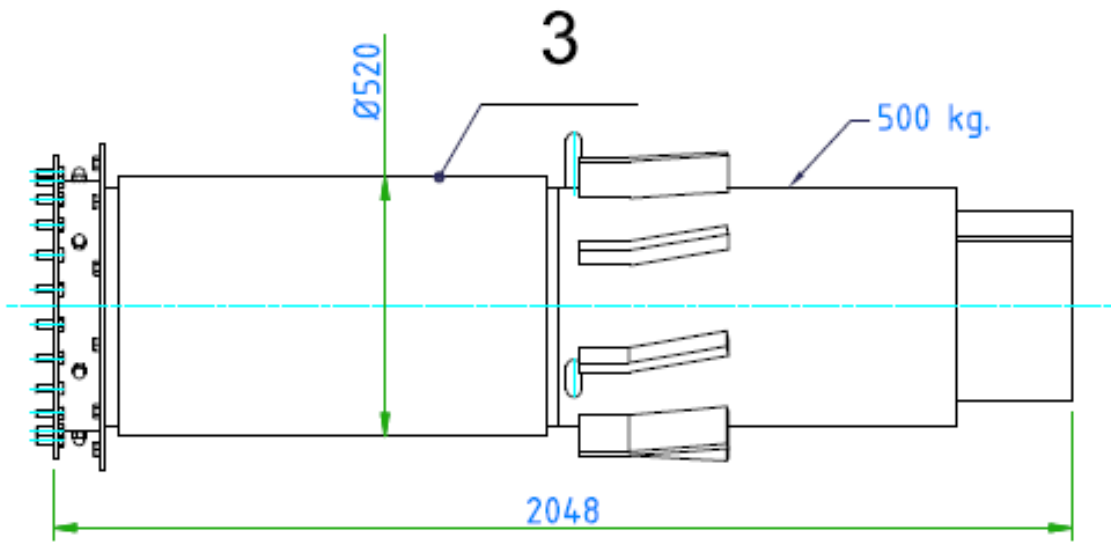


Figure 3: Core air II tube.

NB: Manufacturing Drawings will be shared with the winning contractor.

The *Contractor* will be required to sign a non-disclosure agreement with Eskom before having access to the design drawing.

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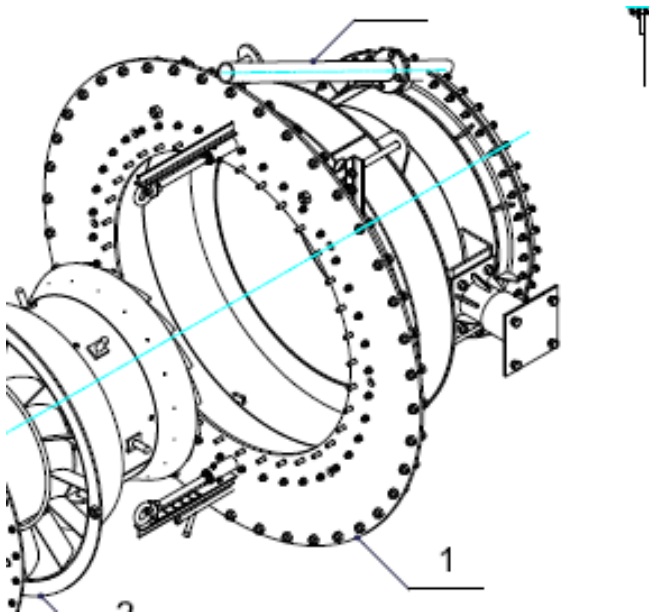


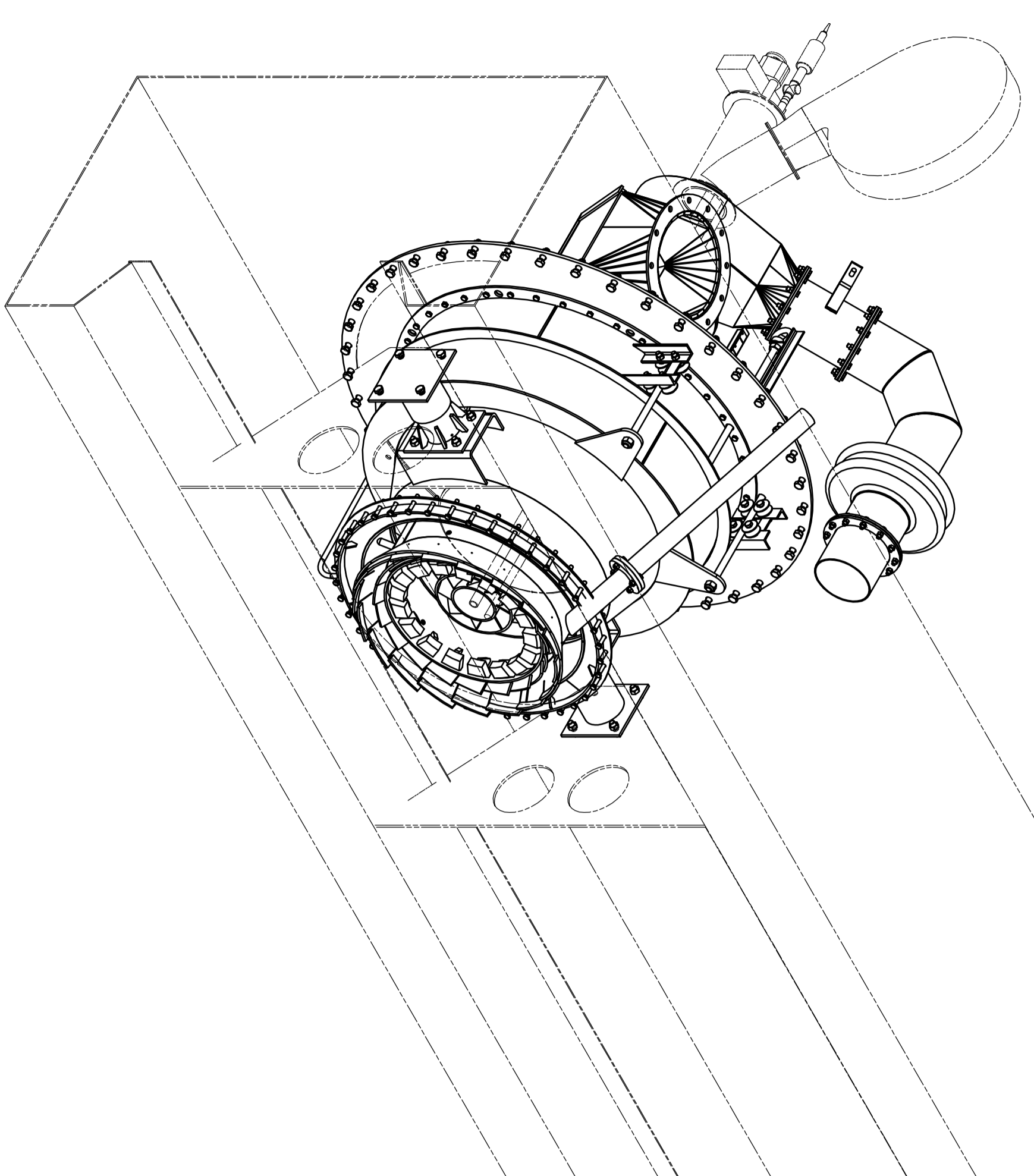
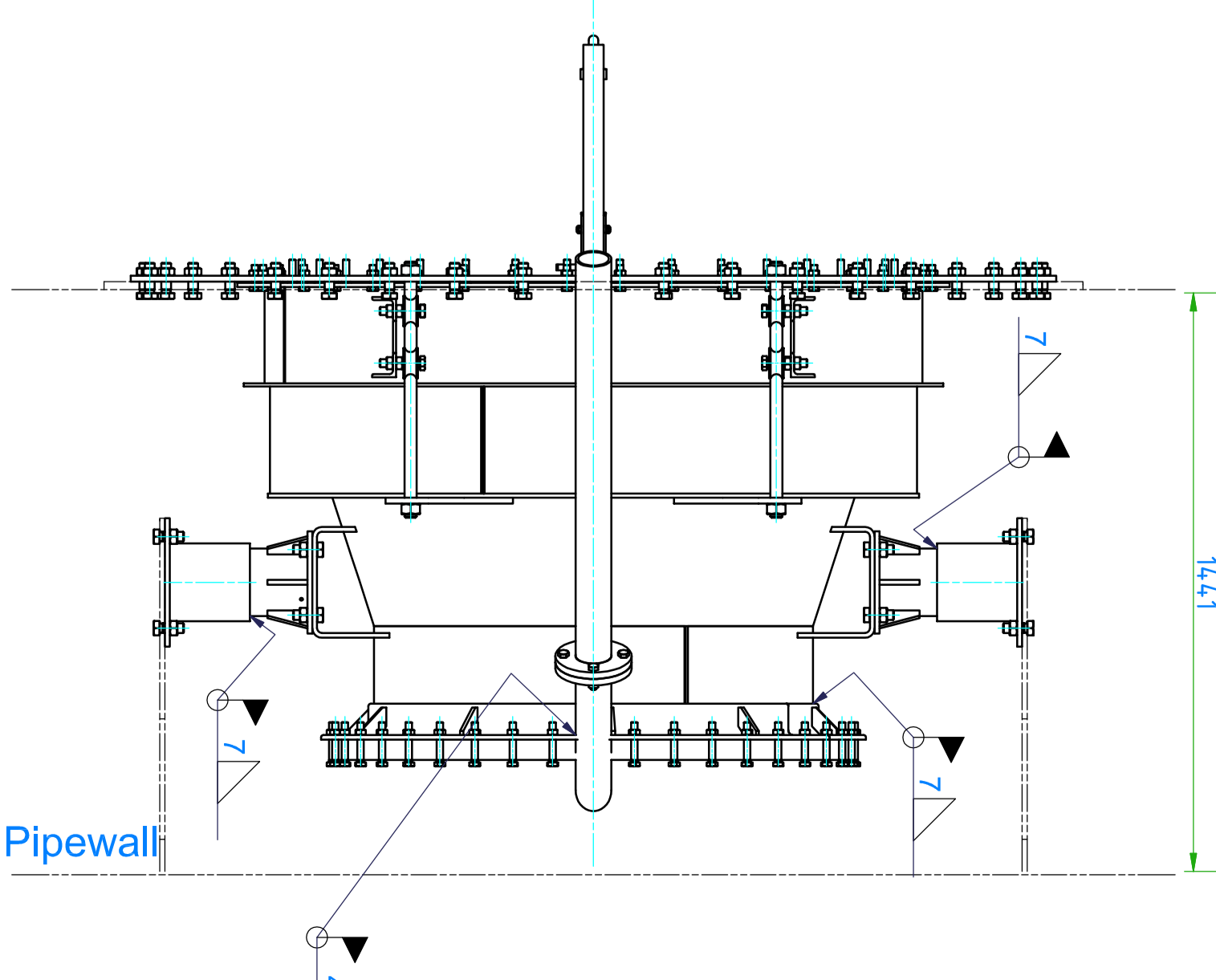
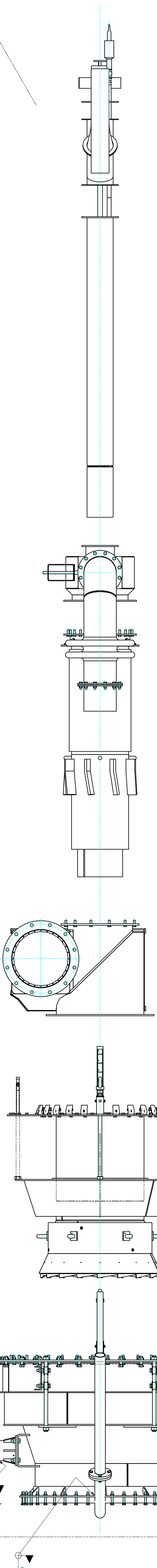
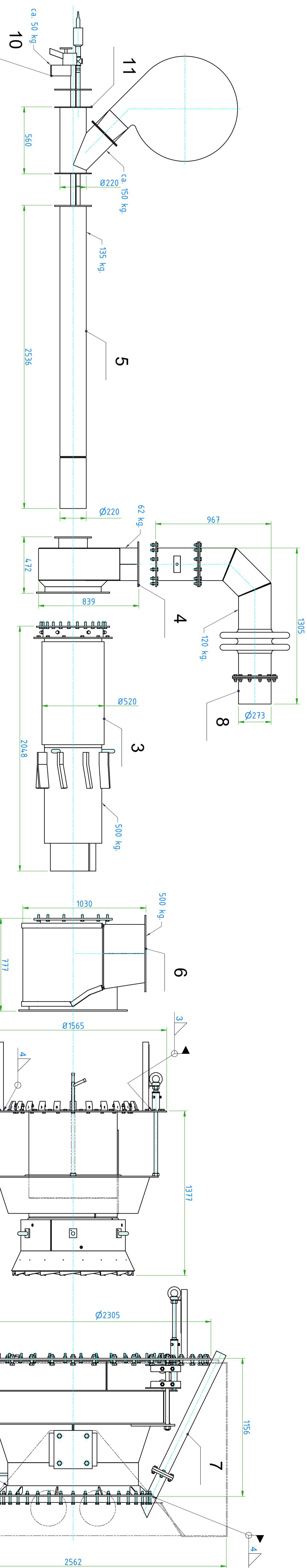
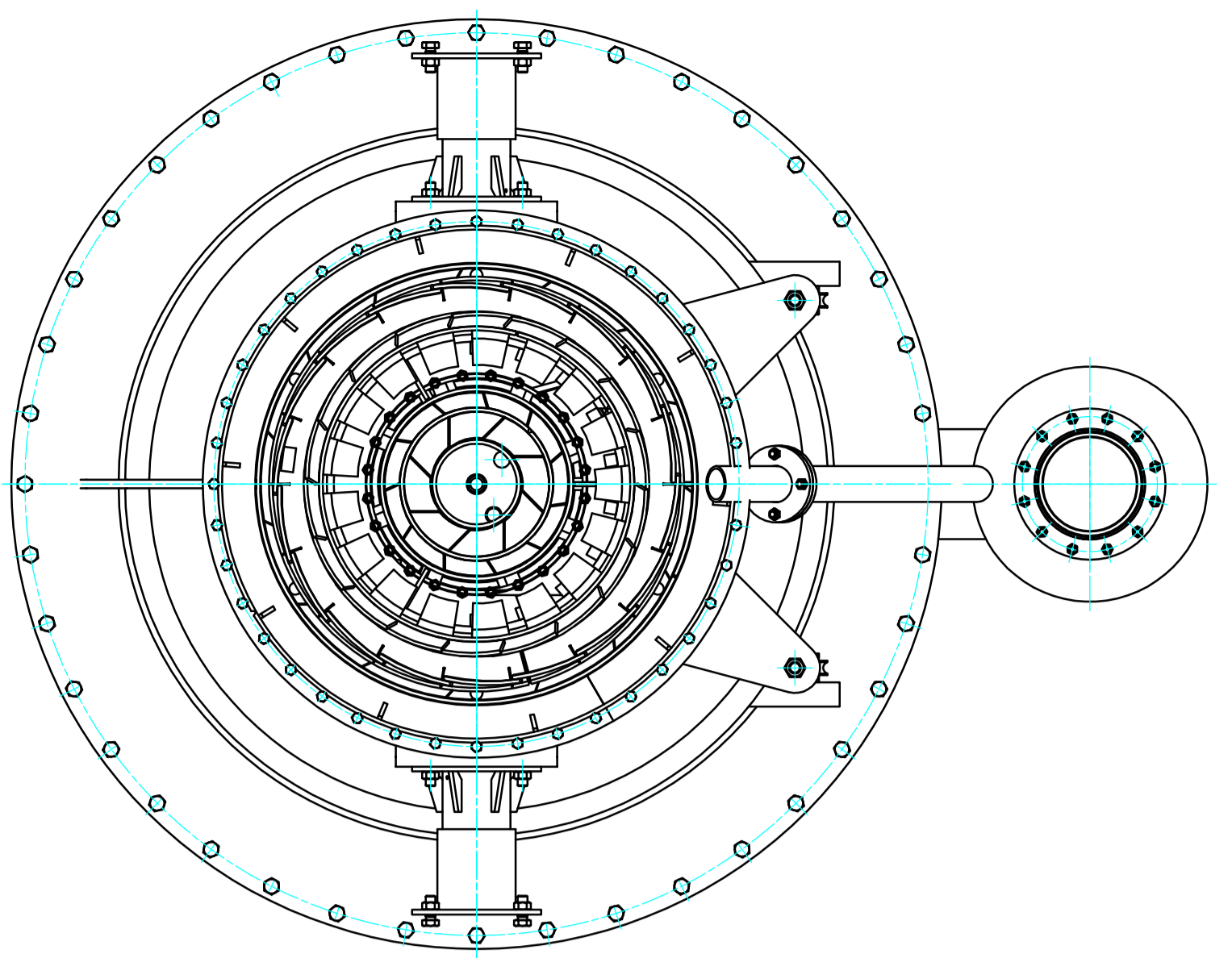
Figure 4: Secondary Air Tube

Item 1 on the drawing below.

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Swirl level/Burner row	1	2	3	4
E	PF-air switch	Right	Right	Right
D	PF-air switch	Left	Left	Left
C	PF-air switch	Right	Right	Right
B	PF-air switch	Left	Left	Left
A	PF-detector	Right	Right	Right

Item	Quantity	Weight
11	1	857 kg
10	1	101 kg
9	1	3 kg
8	1	119 kg
7	1	25 kg
6	1	447 kg
5	1	134 kg
4	1	62 kg
3	1	496 kg
2	1	841 kg
1	1	1082 kg

List of parts

Attention installation!!!

Burner position (swirl right or left)
see drawing 60117-Z5330-100

GENERAL INFORMATION		DRAWING INFORMATION	
NO. 130	DATE: 01/13/2011	REVISION: 01	SCALE: 1:1
PROJECT: 036/20XXX		DRAWING NO.: 60117-Z5330-100	
DESIGNER: [Name]		CHECKER: [Name]	
APPROVED: [Signature]		DATE: 01/13/2011	
Camden Installation drawing			

3.2 Contractor's design

From the PF tube drawing the *Contractor* performs the following design work.

- (1) Detail design of the scroll. This section is to be manufactured from 10mm 16Mo3 plate that is rolled and butt welded to produce the replacement section. The newly inserted plate shall have matching outer diameters.
- (2) Detail design of the welding arrangement and processes to be used to refit the newly manufactured section to the original tip section and flange. This need to ensure that the dimensional tolerances for the overall length and ovality of the PF tube are maintained.
- (3) Detailed manufacturing drawings. This includes the following details:
 - a. Bending schedule
 - b. Welding details and requirements
 - c. Manufacturing sequence
 - d. Manufacturing tolerances and surface finishes. The Eskom burner manufacturing specification (240-106027729) shall be complied with at all times.
 - e. Bill of quantities.
 - f. Material layout and quantities
 - g. Detailed weld matrix inclusive of but not limited to welding procedures, welding consumables to be used, post weld heat treatment if required, NDE requirements.
- (4) Detailed tiling design and layout, taking special note and care of the interfacing section between the tile and weld overlay material and the bonding agent to be used. This design shall be discussed with Eskom engineering staff at Camden prior to the commencement of work.
- (5) Manufacturing method statement and quality requirements.

All designs conform to the Eskom specific stated standard Eskom "Burner Manufacturing Standard", document number 240-106027729 or where not stated to an accepted international EN standard. The Contractor accepts full liability for all his design work executed under this contract.

3.2.1 Special activities – program

- (1) The *Contractor* supplies a detailed project plan / program within 14 days of contract award.

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- (2) The program details the manufacturing activities with key dates for the following
 - a. completion of design work
 - b. material order and delivery
 - c. completion of manufacturing of each set (4x) of burners
 - d. delivery to site

3.2.2 Special activities – Tiling

- (1) The new tube section is tiled with 12mm thick interlocking ceramic tiles manufactured from 96% alumina oxide.
- (2) The tiles are bonded to the tube with a suitable bonding material that can safely withstand the operating conditions (temperature of 330°C).
- (3) The tile interfacing with the weld overlay tapers off such that there is no step change in inside diameter.
- (4) The open area between the last tile and the weld overlay is kept as small as reasonably possible and is properly filled with a suitable wear resistant epoxy or grout material which can safely withstand the operating conditions (temperature of 330 °C).

3.2.3 Excluded activities:

Not applicable

3.3 Boundaries

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4. Acceptance

This document has been seen and accepted by:

Name	Designation	Signatures
Malusi Ngcobo	Maintenance advisor	

5. Revisions

Date	Rev.	Compiler	Remarks
23 May 2022	1	V Vilakazi	Original Issue

6. Development Team

The following people were involved in the development of this document:

- o Velaphi Vilakazi

7. Acknowledgements

N/A

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