中華民國 96 年 11 月 15 日電人字第 09611006121 號出國報告

行政院所屬各機關因公出國人員報告書

（出國類別：洽公）

興達卸煤改善計畫
輸煤皮帶機、電力設備及控制系統採購案
皮帶機滾輪測試見證

服務機關：台灣電力公司

姓名職稱：李安礎 機械工程師

派赴國家：韓國

出國期間：96 年 11 月 18 日至 96 年 11 月 24 日

報告日期：97 年 1 月 16 日

出國報告審核表

出國報告名稱：興達卸煤改善計畫輸煤皮帶機、電力設備及控制系統採購案皮帶機滾輪測試見證		
出國人姓名 （2 人以上，以 1 人爲代表）	職稱	服務單位
李安礎	機械工程員	台灣電力公司
出國期間：96 年 11 月 18 日至 96 年 11 月 24 日		報告繳交日期：97 年　1 月 16 日

出國計畫主辦機關審核意見	■1.依限繳交出國報告 ■2.格式完整（本文必須具備「目的」、「過程」、「心得」、「建議事項」） ☐3.內容充實完備 ☐4.建議具參考價值 ☐5.送本機關參考或研辦 ☐6.送上級機關參考 ☐7.退回補正，原因：☐不符原核定出國計畫　☐以外文撰寫或僅以所蒐集外文資料爲內容　☐內容空洞簡略　☐電子檔案未依格式辦理　☐未於資訊網登錄提要資料及傳送出國報告電子檔 ☐8.本報告除上傳至出國報告資訊網外，將採行之公開發表： ☐辦理本機關出國報告座談會（說明會），與同仁進行知識分享。 ☐於本機關業務會報提出報告 ☐9.其他處理意見及方式：
層轉機關審核意見	☐1.同意主辦機關審核意見　☐全部　☐部分_____（填寫審核意見編號） ☐2.退回補正，原因：_____ ☐3.其他處理意見：

說明：一、出國計畫主辦機關即層轉機關時，不需填寫「層轉機關審核意見」。

二、各機關可依需要自行增列審核項目內容，出國報告審核完畢本表請自行保存。

三、審核作業應儘速完成，以不影響出國人員上傳出國報告至「出國報告資訊網」爲原則。

單位主管處	總經理
報告人：　主管：　主管：　副總經理：	

行政院及所屬各機關出國報告提要

出國報告名稱：

興達卸煤改善計畫輸煤皮帶機、電力設備及控制系統採購案

皮帶機滾輪測試見證

頁數 18 ，含附件■是□否

出國計畫人員姓名/服務機關/職稱/電話

李安礎/ 台灣電力公司/ 核能火力發電工程處 /機械工程員

/(02)23229539

出國類別：□1 考察□2 進修□3 研究□4 實習■5 其他:洽公

出國期間：96 年 11 月 18 日~ 96 年 11 月 24 日

出國地點:韓國

報告日期：97 年 1 月 16 日

分類號/目：

關鍵詞：ROLLER、IDLER 等

內容摘要：

本案見證工作爲依採購規範第 12.6 節所規定皮帶機滾輪檢測工作需由買方或者 A/E 參予見證，因此本次出國爲「見證皮帶機滾輪測試工作」，以確保未來本公司所採購之滾輪能符合法規及本規範之需求，並依照本公司及顧問公司核可後之皮帶機滾輪測試程序書進行測試。

目　錄

一、前言

因目前興達電廠駁船碼頭上所設置之兩台連續式卸煤機及相關輸煤皮帶機設備已使用近 20 年，設備趨於老舊，故維修費一每年逐步增加。爲了改善現行運轉方式，故積極推動「興達卸煤系統改善計畫」來更新擴建目前輸煤方式，並配合即將完工之室內煤場，使得興達電廠之供煤系統，更具有經濟性及穩定性。

而本計畫中所主要採購內容有包含了兩大機電採購案

1.「連續式卸煤機採購案」

2.「輸煤皮帶機、電力設備及控制系統採購案」

而於輸煤皮帶機採購案中主要採購爲一組共約 540 公尺長碼頭輸煤皮帶機以及一組共約 4650 公尺棧橋式輸煤皮帶機與其相關附屬設備等（詳如附件一），而該皮帶機組中數量最多者爲皮帶機滾輪(Roller)共約 17000 組，因此皮帶機滾輪的設備品質好壞將直接影響整體輸煤皮帶機運轉時之安全可靠度，有鑑於此，故於本採購規範中已明列皮帶機滾輪檢測工作需由買方或者是 A/E 參予實質見證工作。

二、目的

本案見證工作爲依採購規範第 12.6 節所規定皮帶機滾輪檢測工作需由買方或者 A/E 參予見證，因此本次出國爲「見證皮帶機滾輪測試工作」，以確保未來本公司所採購之滾輪能符合法規及本規範之需求，並依照本公司及顧問公司核可後之皮帶機滾輪測試程序書進行測試。

而參與見證工作所包含之工作項目內容如下：

1.見證輸煤皮帶機滾輪防污染試驗

2. 見證輸煤皮帶機滾輪防水試驗

3. 見證輸煤皮帶機滾輪動平衡試驗

三、過程

參與見證前，廠家 POSMEC 公司需先將 ROLLER 測試程序書先送本公司及顧問公司審查，並經審查核可後，方能進行後續測試事宜。而本案之測試程序書於 96 年 11 月 15 日時已核准通過，且於 96 年 11 月 16 日本人正式接獲核准通知前往韓國進行廠試見證工作。

而本次見證工作包含了三大項目

1. 滾輪防污染試驗

防污染試驗之主要測試條件是不讓粉塵跑入軸承內

其測試條件如下：

(1)測試時間：旋轉 10 小時

(2)傾斜角度：30 度

(3)轉速：200m/min

(4)粉塵：300 mesh

(5)粉塵量：30g/100CC 體積量

而抽測數目：3 隻 carrier rollers 及 2 隻 return rollers

2. 滾輪防水試驗

防水試驗之主要測試條件爲不讓水進入滾輪軸承內

其測試條件如下

(1)測試時間：旋轉 2 小時

(2)傾斜角度：30 度

(3)轉速：200m/min

(4)水壓：1.5Kgf/㎝^2

(5)水量：1.5L/min

抽測數目：7 隻 carrier rollers 及 3 隻 return rollers

3. 滾輪動平衡試驗

動平衡試驗依規範規定需最少能符合 JIS B905 G60。

抽測數目：10 隻 carrier rollers 及 5 隻 return rollers

日程簡介：

因前往韓國廠家 posmec 公司共 5 日，故以時間來表示每日所辦理有關見證事宜中部份主要工作內容並附上照片以供參考。

中華民國 **96** 年 **11** 月 **19** 日

皮帶機滾輪測試前討論會議：

有關測試前會議中，與 posmec 公司人員先行交換名片，且該公司人員並針對未來 5 天內所安排之行程先口頭報備本人，經討論後發現，有部份疑問，故再向對方澄清

該問題詳列如下 ：

第一：請提供該測試機器之校正紀錄及檢測結果表供查核。

第二：調整/規劃部分見證工作時程。

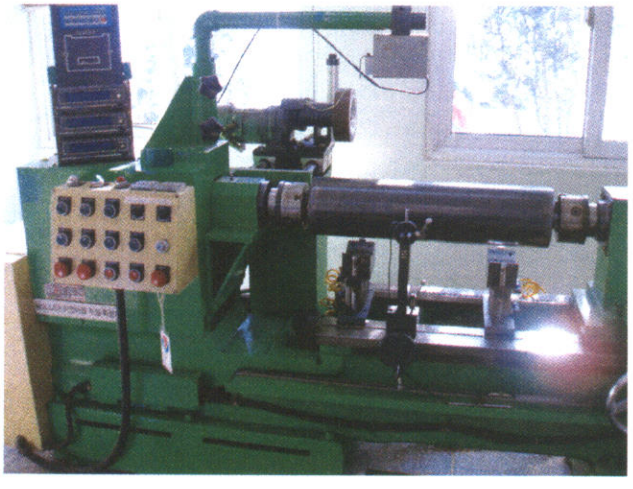
第三： POSMEC 於檢測期間，本人將盡最大可能性於測試實驗之前、中、後等階段照相。

第四:所有的 DATA 資料請於 23 日本人將離開 posmec 公司前拷貝乙份供本人作爲報告所使用，而有關正本方面另請函送台北吉興公司/台電審查。

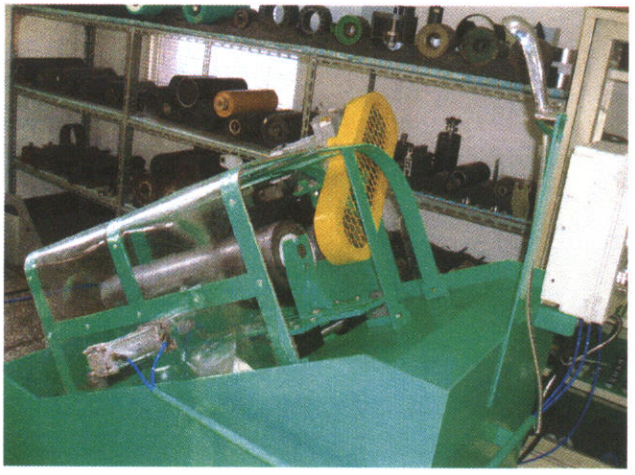
中華民國 **96** 年 **11** 月 **20** 日

開始實質參予見證工作

一早請位於工廠之接待人員 JACKY 先生以流利之英文解釋目前將進行之測試與機器，並於機器介紹完畢之後並提供校正記錄詳如附件二。

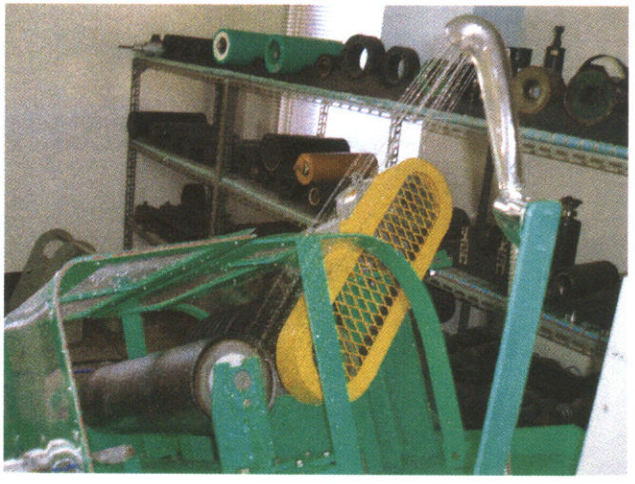


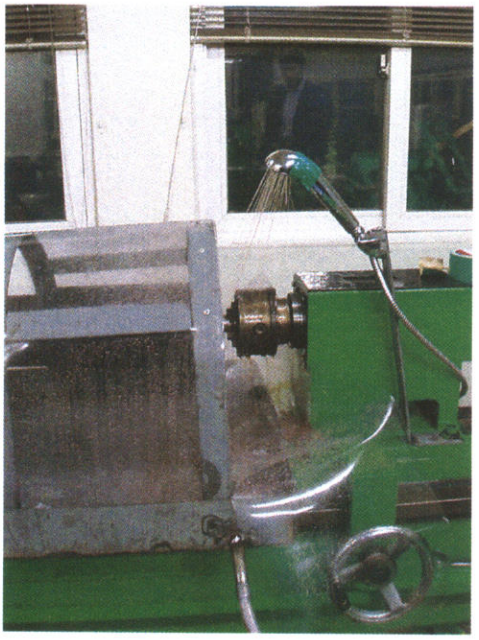
此張機器爲測試 return roller 所使用之機台



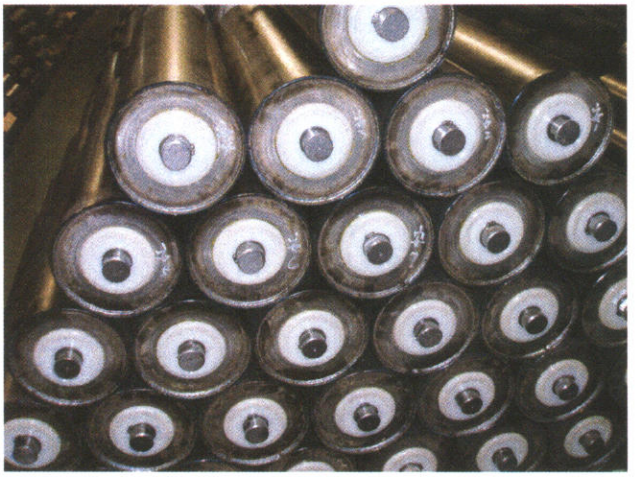
此機器爲測試 carrier roller 時所使用之機台

以上兩種機台階可測試防污染試驗以及防水試驗如下所示：





並開始抽測

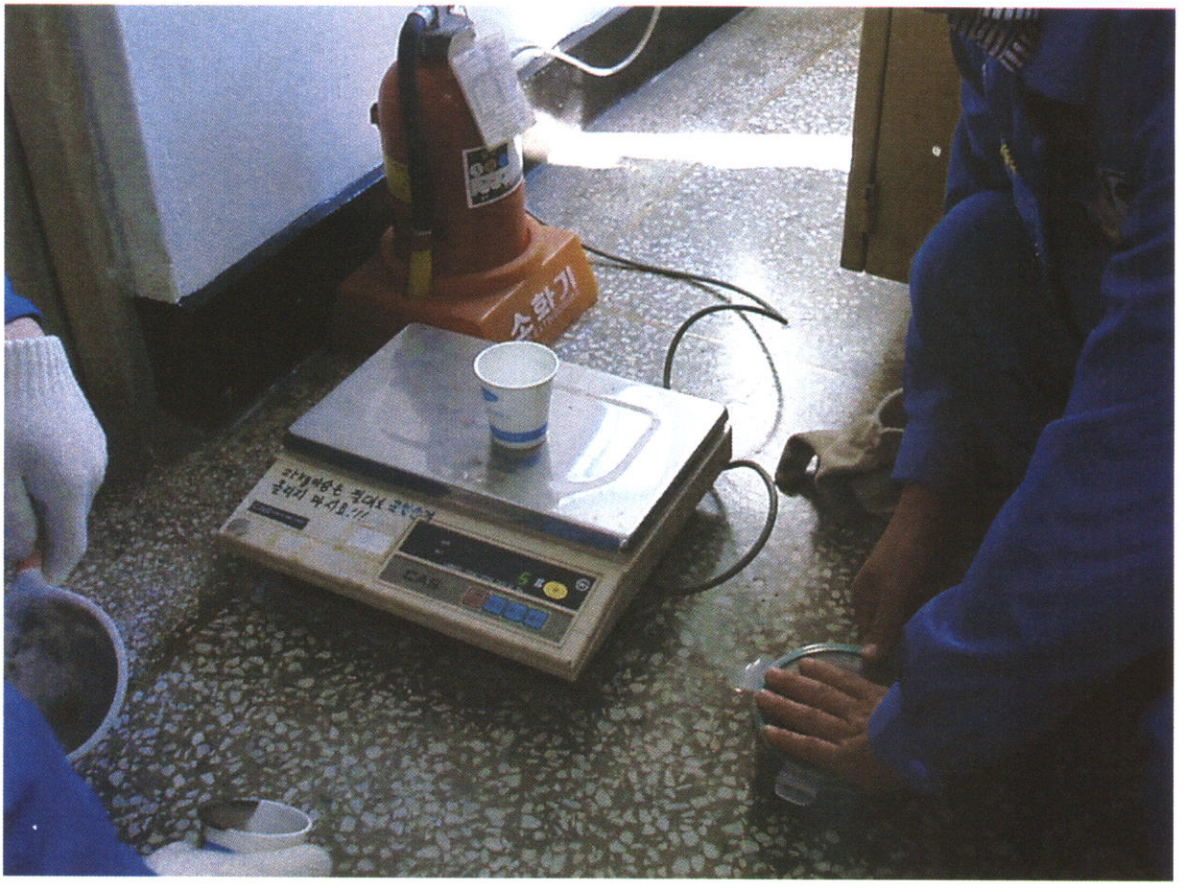


Carrier roller 之抽樣試品

Return roller 之抽樣式品

再將 ROLLER 旁之軸封處以塑膠殼及塑膠黏著劑封住，並於塑膠殼上挖個小洞，以供 DUST 置入。

已密封之 carrier rollers



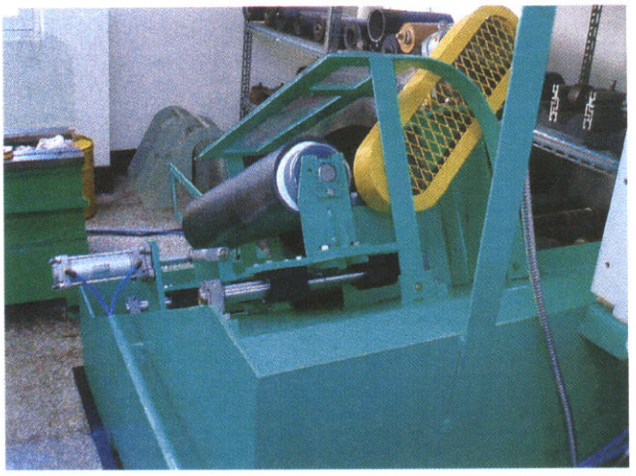
準備進行防污染試驗，先測量杯子重量(5g)

再測量要放入 DUST 之重量(40g)，此時粉塵量應含有 35g

再將 dust 導入小孔之內

把小孔密封，不讓 DUST 散出。

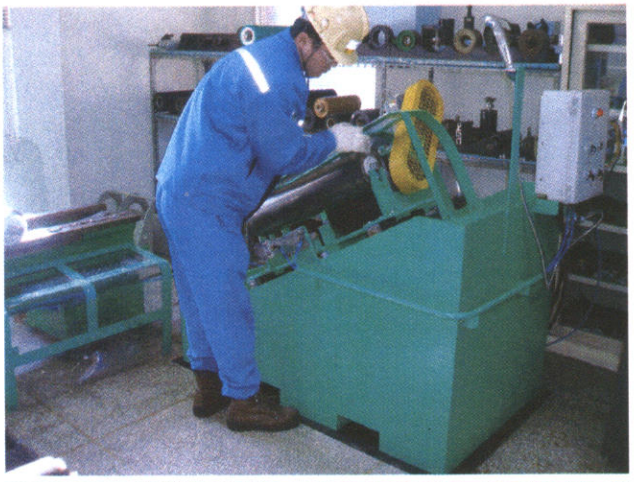
Return roller 放置於機台上並開始進行見證工作



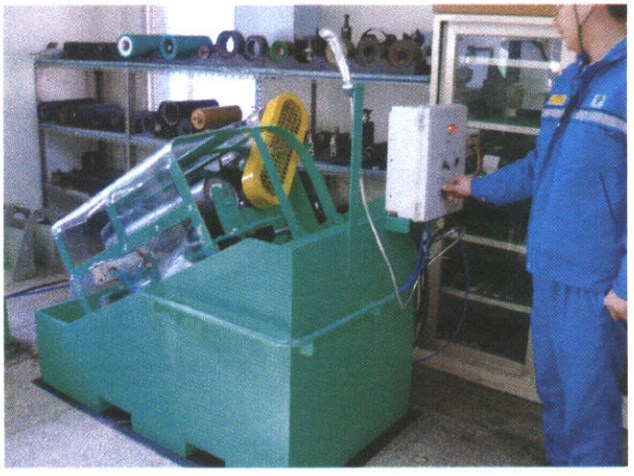
Carrier roller 放置於機台上並開始進行見證工作

中華民國 **96** 年 **11** 月 **21** 日

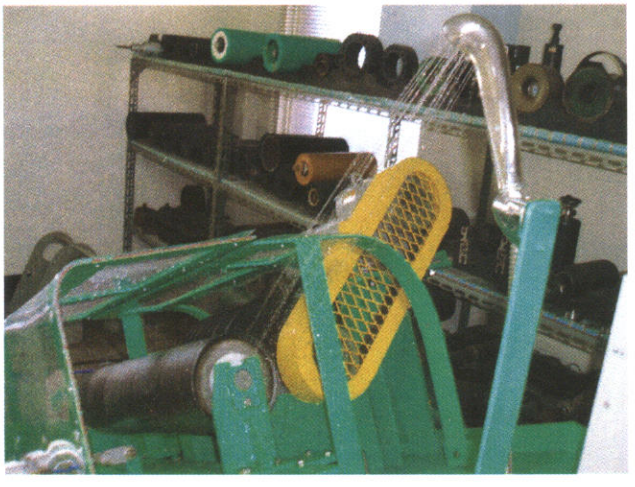
開始進行防水試驗



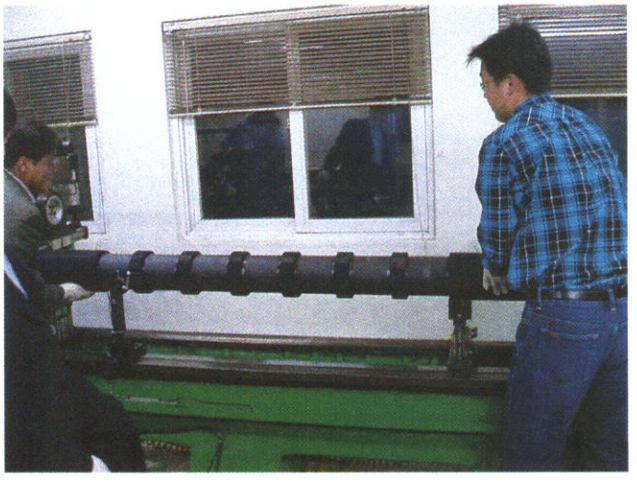
將 carrier roller 鎖在機台上面



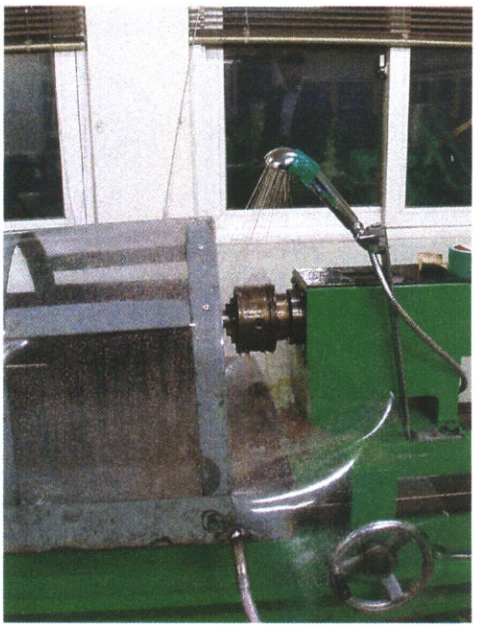
啓動



Carrier roller 進行防水試驗(開始見證防水試驗工作)



將 return roller 鎖在機台上準備進行防水試驗



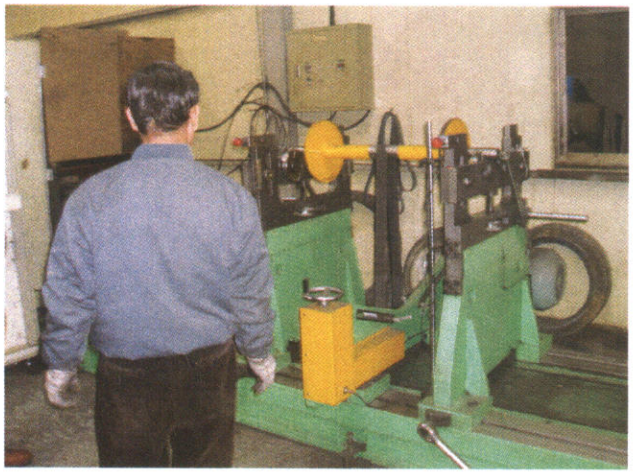
Return roller 進行防水試驗(開始見證防水試驗工作)

中華民國 **96** 年 **11** 月 **22** 日

因 POSMEC 公司並無動平衡試驗所使用之機台，故一早便與 POSMEC 公司人員前往大邱一家小型工廠進行廠試作業，而當初本人所挑選之 return roller 以及 carrier roller 均已於前晚送抵該廠，並等候開始見證工作

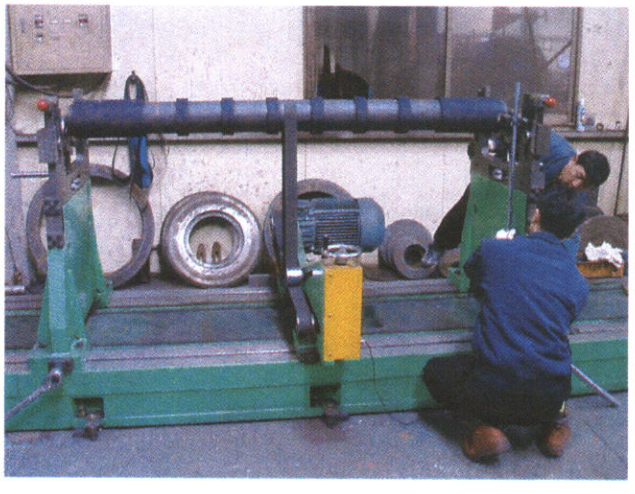
準備進行動平衡試驗

10 隻 carrier rollers 以及 5 隻 return rollers

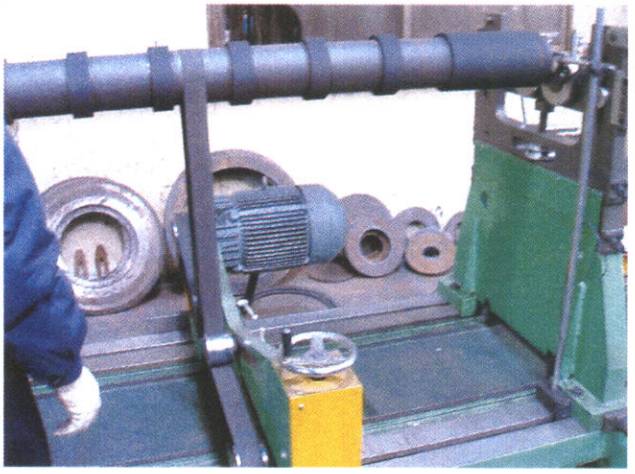


機台數據校正試驗

先測量 roller 長度後再進行機台調整作業



Return roller 即將進行動平衡試驗



開始見證 return roller 動平衡試驗

開始見證 carrier roller 動平衡試驗

中華民國 **96** 年 **11** 月 **23** 日

參加驗證後討論會議

於本次會議中，本人要求 POSMEC 公司人員將所有見證後之 Data 與照片複製一份供本人帶回台北(詳如附件三)，並詢問是否還有相關見證問題須本人答覆，而雙方並無意見之後，拍照留影。

四、心得

首先，非常感激上級長官的愛戴能將此次國外見證工作能交付於我，因此在韓國這段期間內職每日皆競競業業的從早上 8 點工作至晚上 11 點多方離該工廠回到飯店休息，深怕不小心遺漏何處而導致此次見證工作失敗，並另在此報告中也感謝 POSMEC 公司人員的大力配合，所以才有今天這份美好的見證回憶。

因職負責興達卸煤改善計畫輸煤皮帶機、電力設備及控制系統採購案有關機械部份之主辦組室，長期以來皆屬審圖最爲頻繁，對於設計領域方面一直要求著不斷的求新求變，而現場實際狀況有時並無法掌控與瞭解，只能藉著顧問公司或者尋問前輩們的經驗來獲得，這次的出國亦可讓我好好思考有關規範是否有不適當不合理之處，比如目前輸煤皮帶機採購案有關 ROLLER 動平衡試驗，世界潮流皆已採用更爲嚴謹之 JIS B905 G40 而非屬規範所規定之 G60，然本公司屬展望國際性之大公司，因此建議將未來有關輸煤皮帶機採購案之規範應採用此項規定，以符合未來世界潮流。

本次皮帶機滾輪見證工作，爲本人第一次參與，以往僅在規範內容規定相關條文或經由前輩們口述有關於皮帶機滾

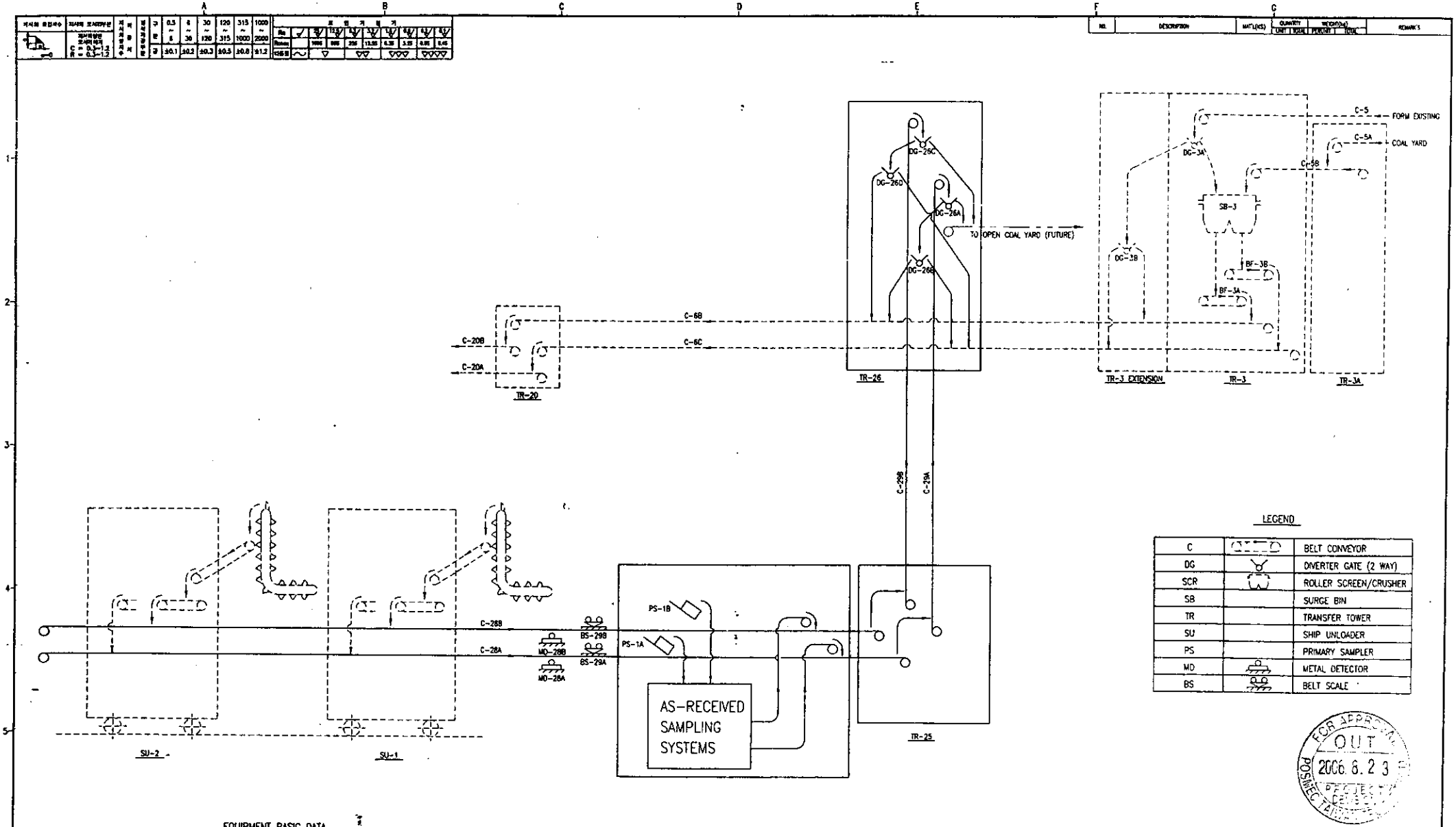
輪的測試方式爲何，而並無親眼見過，因此次出國讓我獲益匪淺，另外藉由拍照聊天及開會等過程亦可以獲知該公司對於輸煤皮帶機部份獨特的見解與技術上想法，且也針對長期以來對於輸煤皮帶機之基本金額概算彼此交換經驗，這些都是平常在國內是無法學到的，因此很榮幸能夠參予此次的見證工作。

另該公司人員有特別交代，本次測試機台屬於該公司智慧財產機密，對岸中國無不積極想竊取 POSMEC 之測試機台專利智慧，故要求本人不能將此機台予以公開，並雙方簽署同意書詳如附件四。

五、建議事項

1. 爲了維持廠家設備品質穩定，故建議未來應可多派遣成員至國外觀看並了解相關見證事宜有可能所發生之問題，如此更有效使得本處同仁能瞭解規範內容與法規之規定，並使得人力更加有所發揮。
2. 於此次皮帶機滾輪見證工作，因順道參觀有關滾輪整體製造過程，發現製造滾輪時已採自動化大量製造，人工作業極爲稀少，因此製造出完整品之品質已有一定良好程度，然此次部份測試之時程冗長，數目亦較多，有部分抽測樣品須於凌晨開始，因此爲掌控見證時效，建議將抽樣數目可再爲減少，另有關動平衡試驗亦建議取消，因測試防水試驗與防污染試驗時，滾輪皆均屬

於動態平衡下進行測試，故應無須多浪費本公司金錢進行該項試驗。



LEGEND

C		BELT CONVEYOR
DG		DIVERTER GATE (2 WAY)
SCR		ROLLER SCREEN/CRUSHER
SB		SURGE BIN
TR		TRANSFER TOWER
SU		SHIP UNLOADER
PS		PRIMARY SAMPLER
MD		METAL DETECTOR
BS		BELT SCALE

EQUIPMENT. BASIC DATA

EQUIPMENT NO.	CAPACITY t/h	BELT WIDTH mm	BELT SPEED m/s	CONV.LENGTH m (HORIZONTAL)	REMARKS
C-6B/C	4000	2000	3.5	APPROX. 320	EXISTING
C-20A/B	4000	2000	3.5	APPROX. 75	EXISTING
C-28A/B	4000	2000	3.5	APPROX. 270	
C-29A/B	4000	1800	4	APPROX. 2320	

NOTES:
- ——— DENOTES THIS PROJECT
- - - - - - DENOTES EXISTING
- — · — DENOTES FUTURE

FOR APPROVAL OUT 2006.6.23 POSMEC TAIWAN

PROJECT : TAIWAN POWER COMPANY
HSINTA POWER PLANT COAL UNLOADING SYSTEM IMPROVEMENT PROJECT

TPC CONTRACT NO. : 8449511M00200 | POSMEC PROJECT CODE : F052D001

TAIWAN POWER COMPANY

TITLE: COAL UNLOADING SYSTEM FLOW DIAGRAM

TPC-M-L-000B

POSMEC POSCO Machinery & Engineering Co., Ltd. POHANG KOREA

50g/m (2002. 01. 01)

Certificate of Calibration

Certificate No. : POS-PER-001
Date of Calibration : 09.10.2007
Page : 1 of 1

Calibrated Item : Dust / Water Proof Test M/C
Calibrated for : POSMEC Machine & Roller Dept.
Calibrated at : Measurement Laboratory

Specification of Items | Specification of Standards used

Manufacturer : POSMEC
Details :

1. Peripheral Speed : Min. 200m/min ~ Max. 320m/min
2. Water Pressure : Min 1.5Kgf/cm^2
3. Water Capacity : 36L/min

Ambiet Conditions :

Temperature : 20 ℃ Relative Humidity : - %

1) Calibration status : Sticker with date of next calibration
2) Next Calibration date : 09.10.2008

QC Group / Mesurement Laboratory

POSCO MACHINERY & ENGINEERING CO.,LTD. posmec WITNESSED BY REVIEWED BY

(Quality Manager)

CERTIFICATE OF CALIBRATION

[1] INSPECTED BY	L.J.W	[2] APPROVED BY	S.D.H		
[3] CAL.ITEM	DECSRIPTION	COMPUTER BALANCING MACHINE			
	MANUFACTURER	JINWON ENG.	TYPE OF ITEM	B.C ROLLER	
	SERIAL NO.	06-1101-133	MODEL SPEC	JCH-3000HB	
[4] DAY OF CAL.	2007.10.01	[5] RECAL. DATE	2008.10.01		
[6] ENVIRONMNET	TEMPERATURE	20±5℃			

[7] CALIBRATION RESULTS

SET UP

PART NAME : CALIBRATION			
CUTOMER :			
TEST TIME : 2007.10.01 10:20:15			
GRADE : G 6.3		RATING SPEED	117 rpm
WEIGHT : 30.000 KG		TESTING SPEED	597 rpm
RADIUS : 135.0 mm		CORRECTION	ADD
ACCEPTABLE UNBALANCE			
PLANE 1 : 57.1 gr		PLANE 2	57.1gr

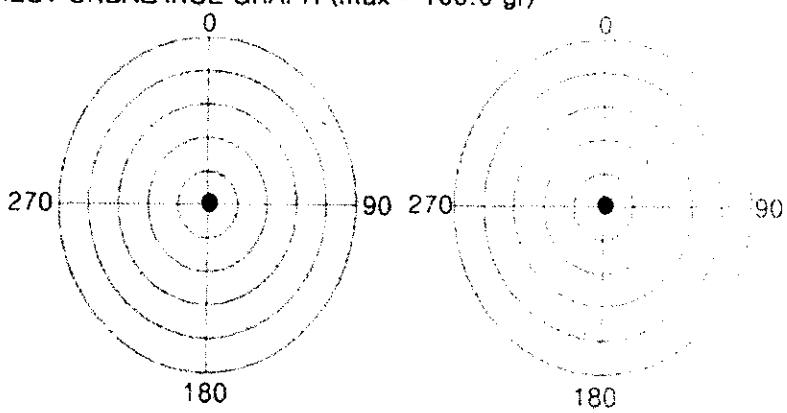
INITIAL UNBALANCE

	PLANE 1	PLANE 2
UNBALANCE	0.7 gr	0.8 gr
ANGLE	258 deg	348 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE 1	PLANE 2
UNBALANCE	0.7 gr	0.8 gr
ANGLE	258 deg	348 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 100.0 gr)



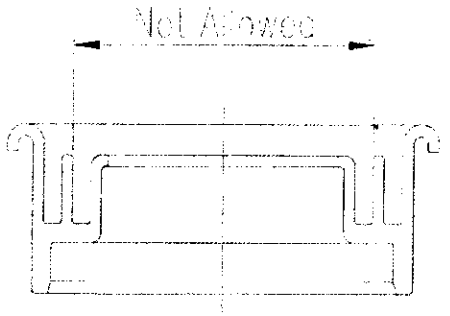
INSPECTION RESULTS

Page :

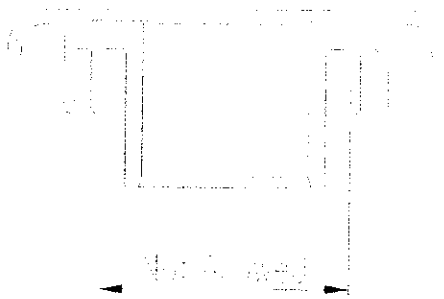
PROJECT NAME	TPC COAL SYSTEM	SIZE	H7	DRAWING NO.	
ITEM	☐ CARRIER ☐ RETURN	Q"TY(N)		INSPECTOR	
CHECK	DUST PROOF	Q"TY(n)		INSPECTION DATE	

SPEC

1. INFILTRATION RANGE NOT ALLOWED



OUTER SEAL



INNER SEAL

2. DUST CAN NOT GET INTO THE BEARINGS

RESULTS (Photo shall be attached)

Decision ☐ Good ☐ Not good

Tested by POSMEC

2007. . .

Witnessed by TPC

2007. . .

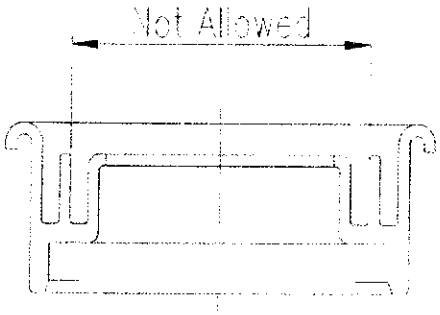
INSPECTION RESULTS

Page :

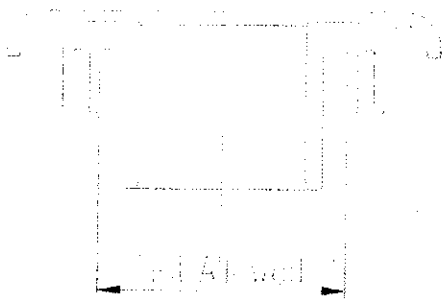
PROJECT NAME	TPC COAL SYSTEM	SIZE	H7	DRAWING NO.	
ITEM	☐ CARRIER ☐ RETURN	Q"TY(N)		INSPECTOR	
CHECK	WATER PROOF	Q"TY(n)		INSPECTION DATE	

SPEC

1. INFILTRATION RANGE NOT ALLOWED



OUTER SEAL



INNER SEAL

2. WATER CAN NOT GET INTO THE BEARINGS

RESULTS (Photo shall be attached)

Decision ☐ Good ☐ Not good

Tested by POSMEC

2007. . .

Witnessed by TPC

2007. . .

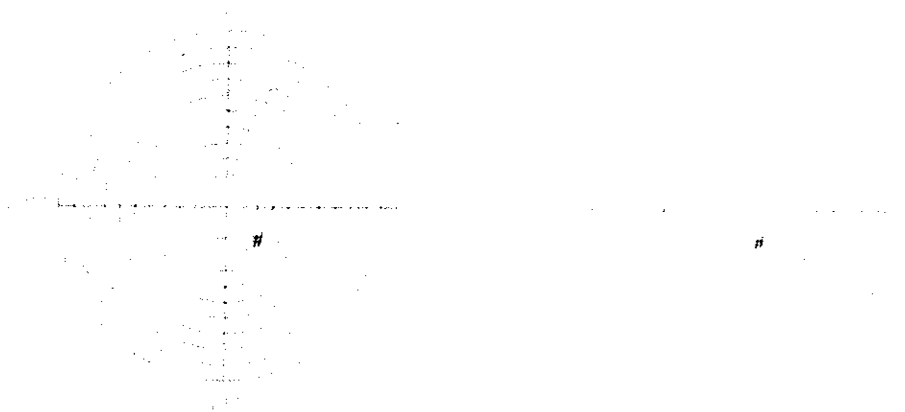
TEST REPORT OF DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	CARRYING ROLLER D168 L=... 6307 2RS-1
PART NAME	ROLLER		
TEST DATE	2007. 10. 15.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	29.7 g	∠	135 Deg	24.6 g	∠	135 Deg
FINAL	29.7 g	∠	135 Deg	24.6 g	∠	135 Deg
JUDGE	ACCEPT			ACCEPT		

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	601 RPM	RATING SPEED (N)		385 RPM
WEIGHT (M)L	6 KG	WEIGHT (M)R		6 KG
GRADE OF BALANCE	G 40 (40 mm / s)	CORRECTION	LEFT (r)L	82.6 mm
QUALITY(V)	KS B 0612(JIS B 0905)	RADIUS	RIGHT (r)R	82.6 mm
ACCEPTABLE	ε = 9550 X V / n = 992 ㎛	LEFT (mr)L	[illegible] gmm	72 g
UNBALANCE	m r = M X ε (g mm) = 11,906 gmm	RIGHT (mr)R	[illegible] gmm	72 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 10. 15. 이 재원 (signature)	2007. . .	2007. . .

대 구 광 역 시 북 구 검 단 동 838-88 / TEL : 053) 381 - 9632 / FAX : 053) 383 - 664

4. Stand Sampling Criteria

4.1 Introduction

This Criteria define the amount of rollers for belt conveyor which would be inspected for a visit of inspection

4.2 Standard : KS B 6229 (Rollers and stand for belt conveyor)

4.3 Criteria

Basically the inspection shall be done by sampling method and if the result of inspection is failed all of the stands of Lot shall be inspected completely. The amount of stands' sample which will be inspected shall conform the standard which is shown in the table.

(unit:EA)

Lot size	Sample size	Lot size	Sample size
Max. 100	5	501~1000	10
100~500	7	Min.1000	15

INSPECTION RESULTS

Sample No. D-C-1

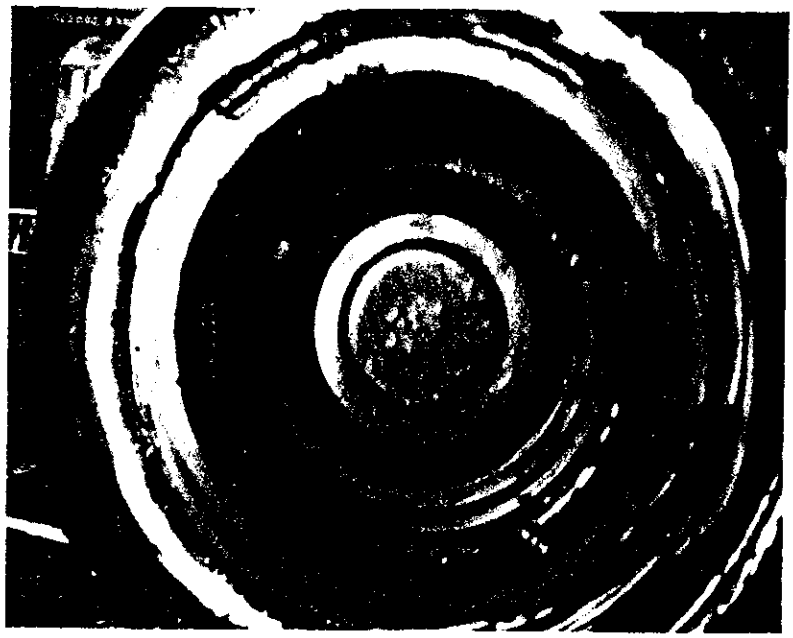
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	DUST PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.20

TEST CONDITION

(1) Test Duration : turns 10hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Dust : 300 mesh
(5) Dust Quantity : 30g per 100cc volume

SPEC Dust can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. D-C-2

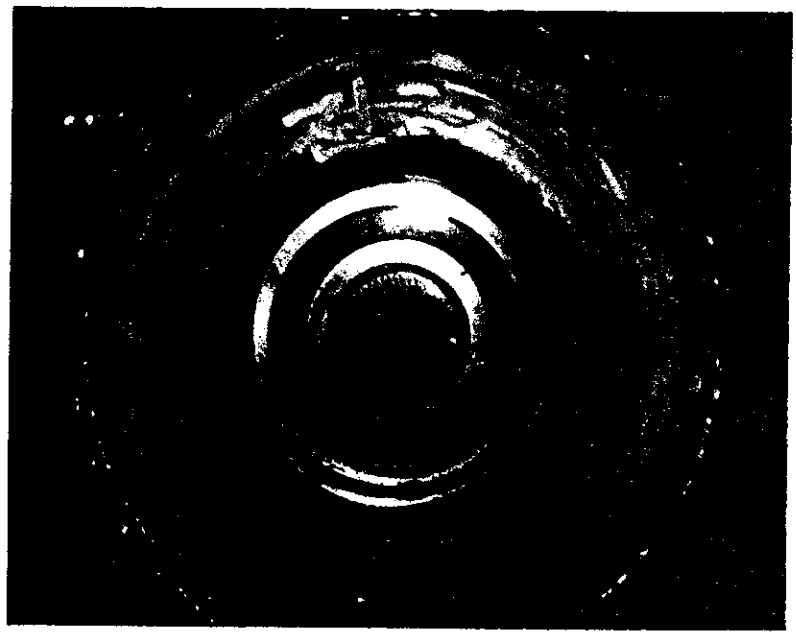
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	DUST PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11. 21

TEST CONDITION

(1) Test Duration : turns 10hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Dust : 300 mesh
(5) Dust Quantity : 30g per 100cc volume

SPEC Dust can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. D-C-3

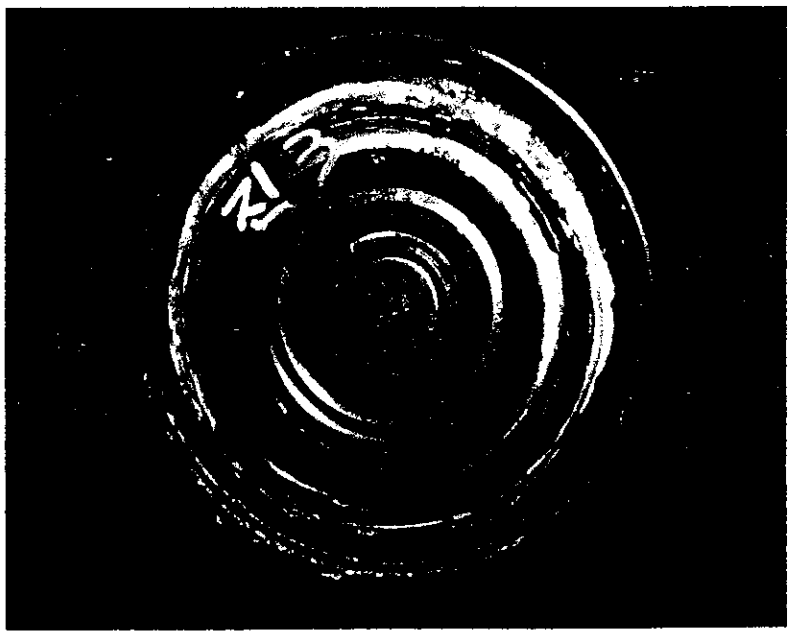
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	DUST PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.21

TEST CONDITION

(1) Test Duration : turns 10hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Dust : 300 mesh
(5) Dust Quantity : 30g per 100cc volume

SPEC Dust can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. D-R-1

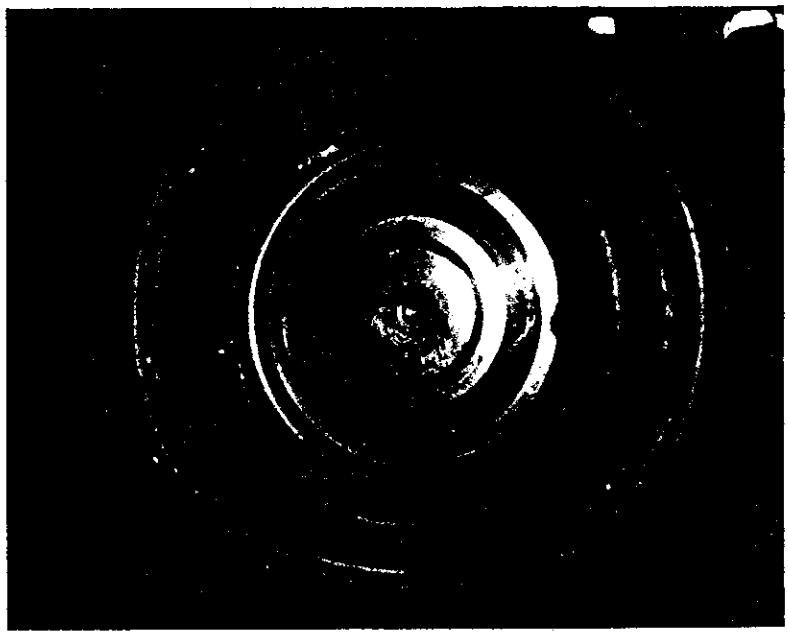
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ166x2000L	DRAWING NO.	TPC-M-CS-9101
ITEM	☐ CARRIER ☑ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	DUST PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.20

TEST CONDITION

(1) Test Duration : turns 10hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Dust : 300 mesh
(5) Dust Quantity : 30g per 100cc volume

SPEC Dust can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. D-R-2

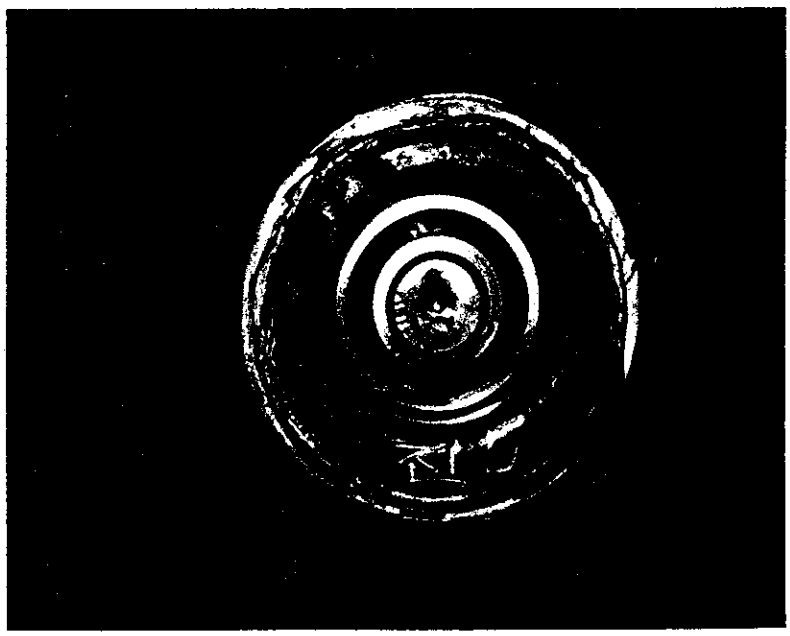
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ166x2000L	DRAWING NO.	TPC-M-CS-9101
ITEM	☐ CARRIER ☑ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	DUST PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.21

TEST CONDITION

(1) Test Duration : turns 10hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Dust : 300 mesh
(5) Dust Quantity : 30g per 100cc volume

SPEC Dust can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-C-1

PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.20

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)

Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-C-2

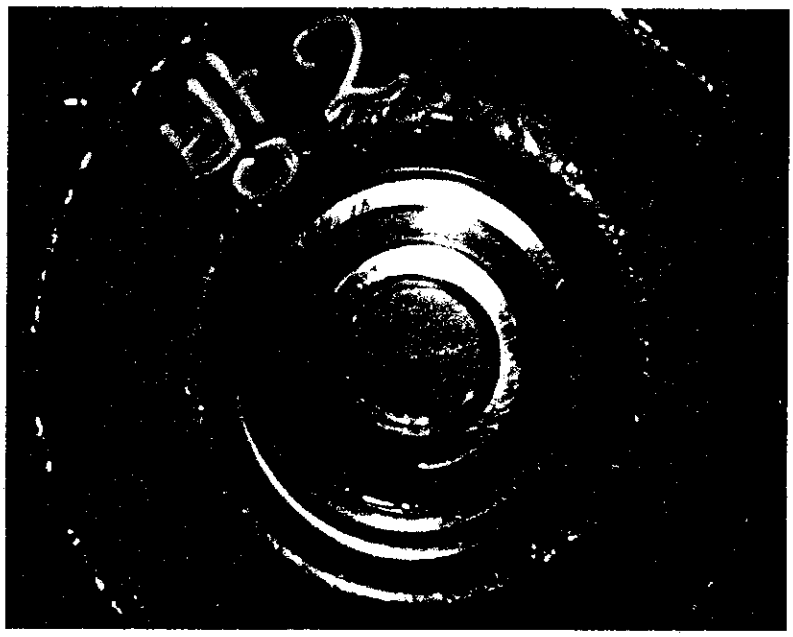
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11. 2

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-C-3

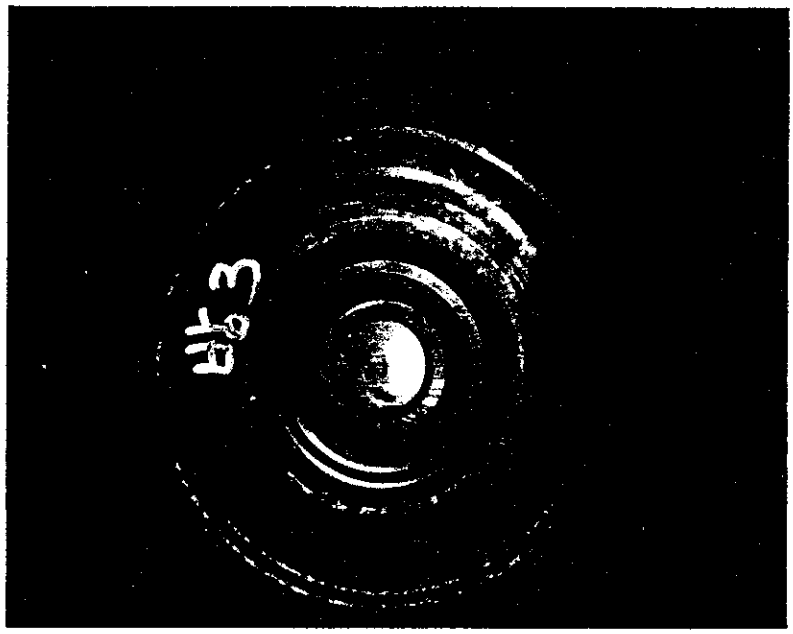
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.21

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-C-4

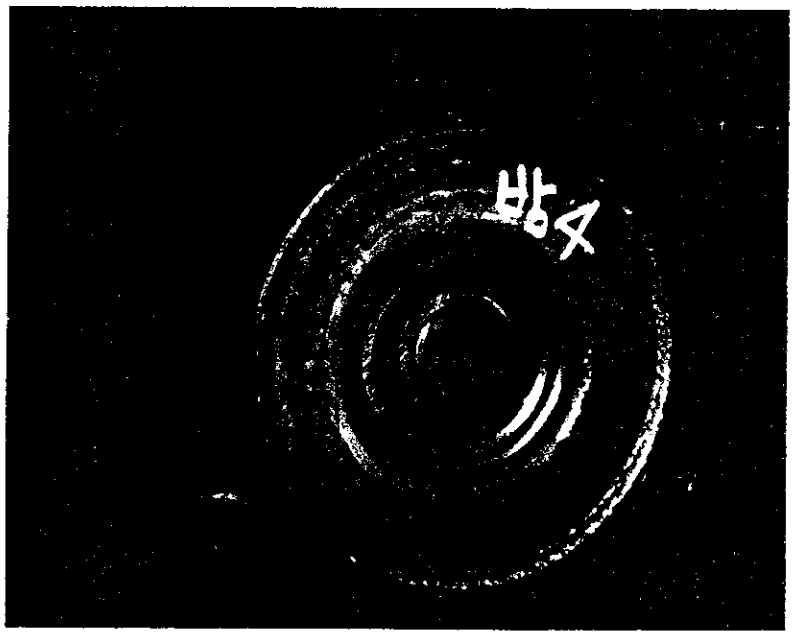
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.21

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-C-5

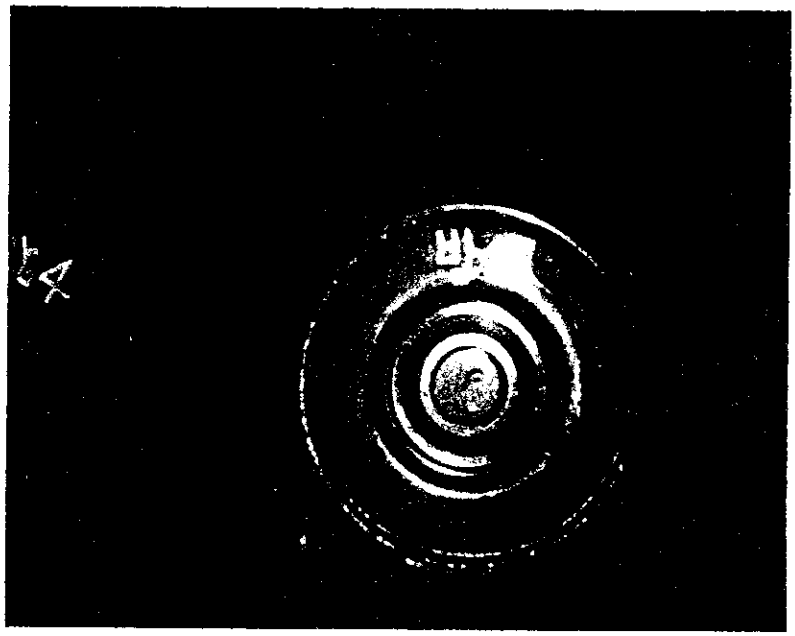
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11. 22

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-C-6

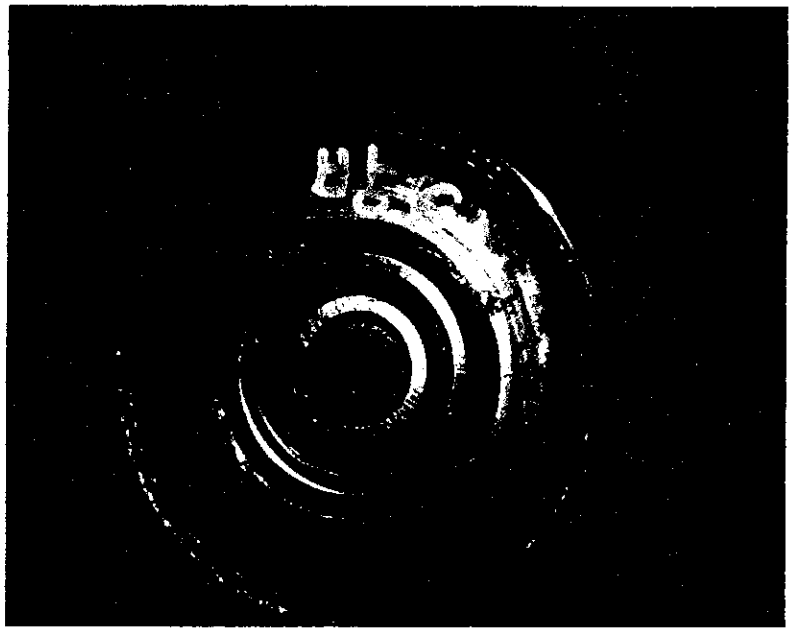
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.27

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-C-7

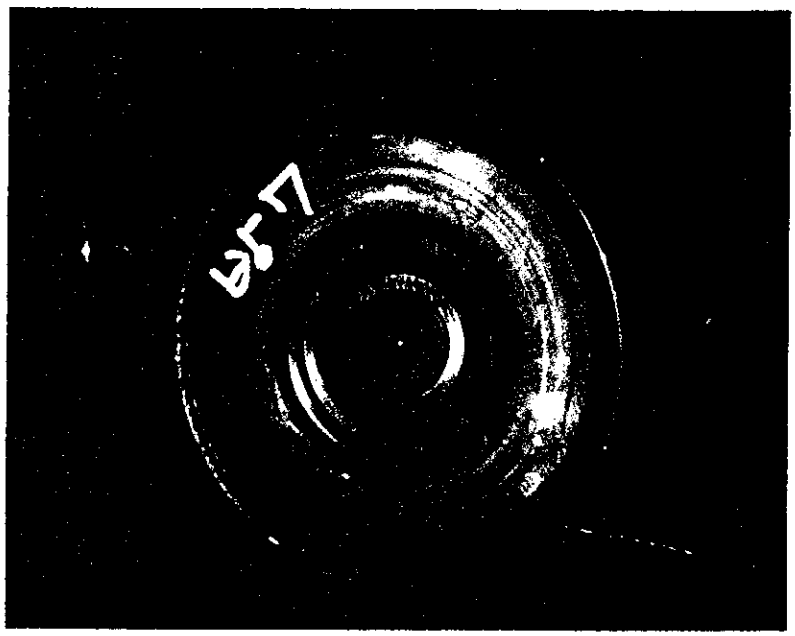
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ165.2x650L	DRAWING NO.	TPC-M-CS-9101
ITEM	☑ CARRIER ☐ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.9

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-R-1

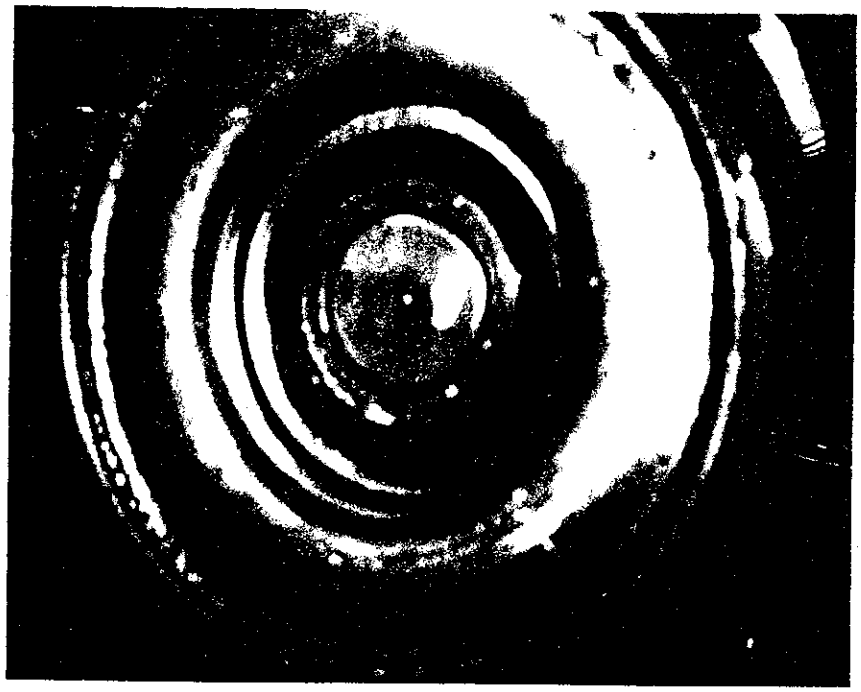
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ166x2000L	DRAWING NO.	TPC-M-CS-9101
ITEM	☐ CARRIER ☑ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11. 21

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-R-2

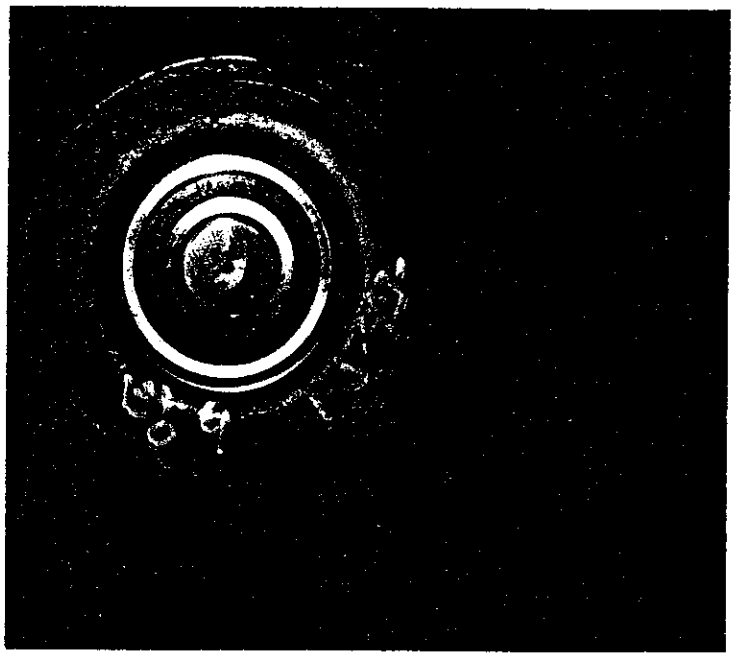
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ166x2000L	DRAWING NO.	TPC-M-CS-9101
ITEM	☐ CARRIER ☑ RETURN	Q"TY(N)	-	INSPECTOR	H.D.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11.27

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

INSPECTION RESULTS

Sample No. W-R-3

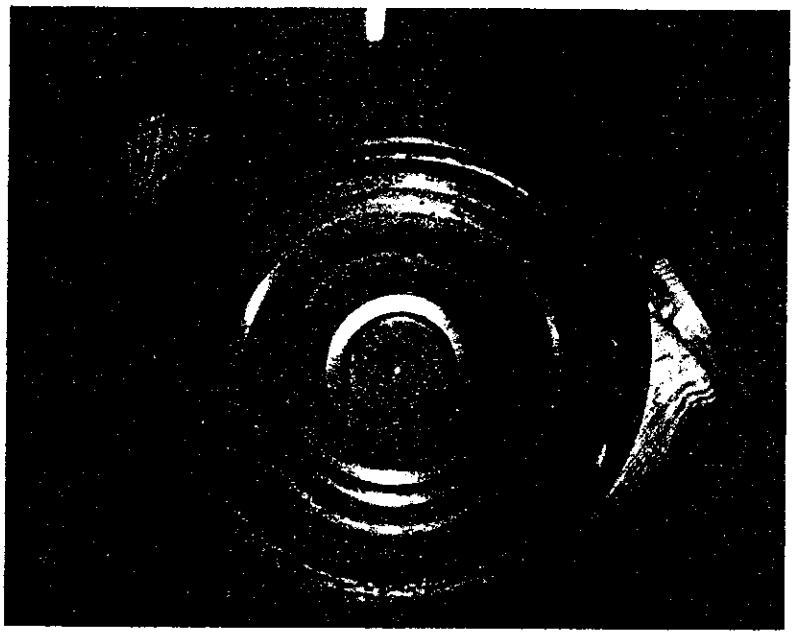
PROJECT NAME	TPC COAL SYSTEM	SIZE	Φ166x2000L	DRAWING NO.	TPC-M-CS-9101
ITEM	☐ CARRIER ☑ RETURN	Q"TY(N)	-	INSPECTOR	H.O.Kang
CHECK	WATER PROOF	Q"TY(n)	-	INSPECTION DATE	2007.11. 22

TEST CONDITION

(1) Test Duration : turns 2hrs
(2) Inclination Angle : 30°
(3) Peripheral Speed : 200m/min
(4) Water Pressure : 1.5Kgf/cm2
(5) Water Capacity : 1.5L/min

SPEC Water can not get into the bearings per the above test conditions

RESULTS (Photo shall be attached)



Decision ☑ Good ☐ Not good

Witnessed by POSMEC

Ahn Seong Soo

Witnessed by TPC

Lee An-Chu

BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	: R1				
CUSTOMER	:				
TEST TIME	: 2007.11.21 14:14:12				
GRADE	: G 40		RATING SPEED	:	200 rpm
WEIGHT	: 50.000 kg		TESTING SPEED	:	403 rpm
RADIUS	: 82.5 mm	82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	: 578.8 gr		PLANE2	:	578.8 gr

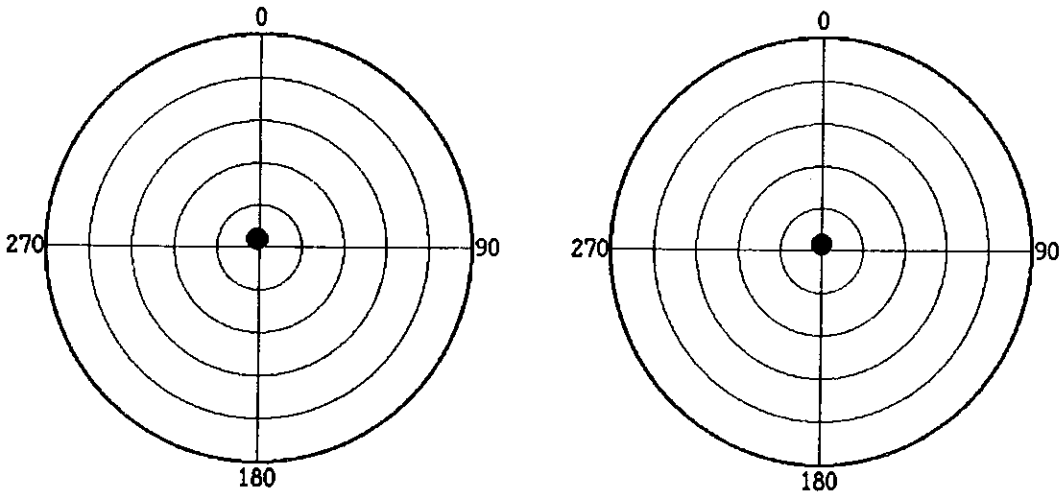
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	42.5 gr	31.8 gr
ANGLE	342 deg	358 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	42.5 gr	31.8 gr
ANGLE	342 deg	358 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 1000.0 gr)



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053-383-6641

witness by TBC

2007.11.21

JINWON ENGINEERING

BOYOUNG RUBBER

BY

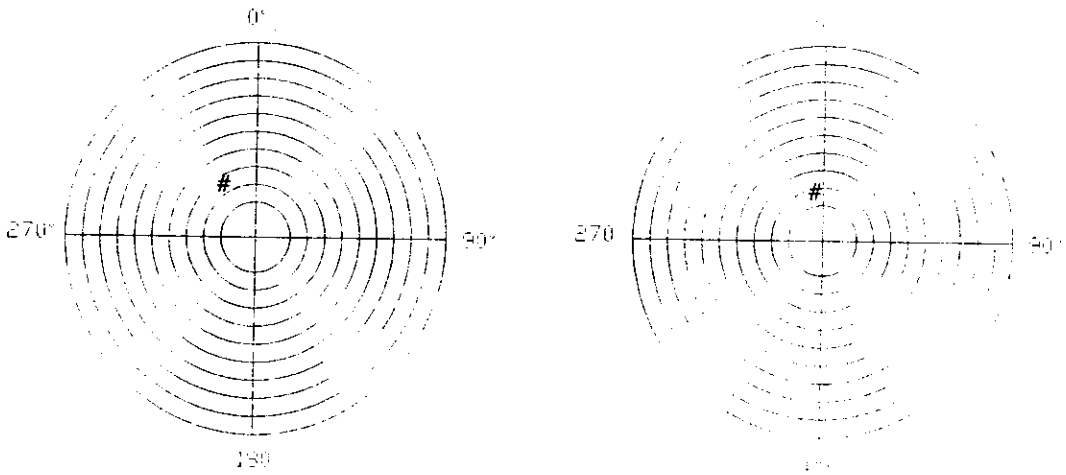
TEST REPORT
OF
DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	RETURN ROLLER D166*2000L-1
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT	RIGHT
BEFORE	42.5 g ∠ 342 Deg	31.8 g ∠ 358 Deg
FINAL	42.5 g ∠ 342 Deg	31.8 g ∠ 358 Deg
Q / C	ACCEPT	ACCEPT

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	403 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	25 KG	WEIGHT (M)R	25 KG	
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	83 mm
	KS B 0612(JIS B 0905)		RIGHT (r) R	83 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	47,750 gmm	575 g
	m r = M X ε (g mm) = 95,500 gmm	RIGHT (mr)R	47,750 gmm	575 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee An Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME : R2 CUSTOMER : TEST TIME : 2007.11.21 14:16:23					
GRADE WEIGHT RADIUS	: G 40 : 50.000 kg : 82.5 mm	82.5 mm	RATING SPEED TESTING SPEED CORRECTION	: 200 rpm : 403 rpm : ADD	
ACCEPTABLE UNBALANCE PLANE1	: 578.8 gr		PLANE2	: 578.8 gr	

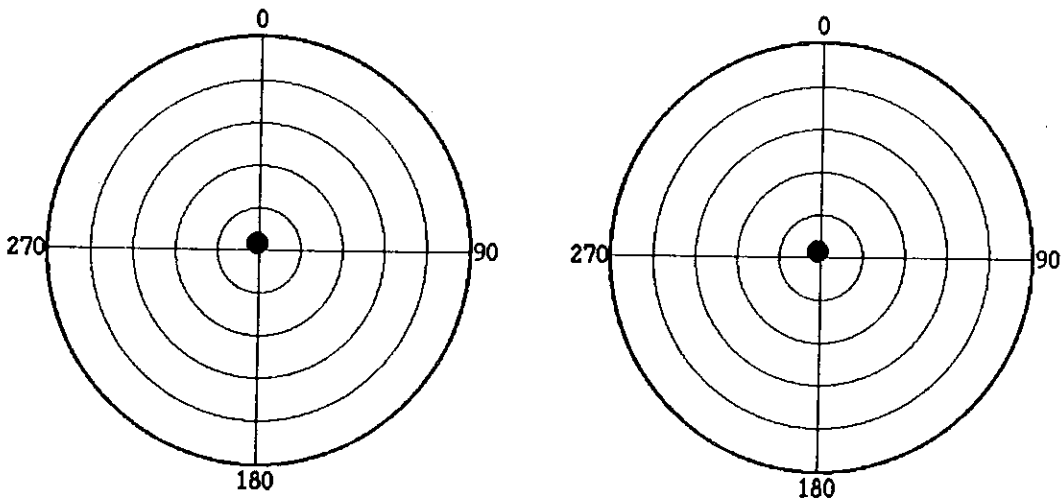
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE ANGLE RESULT	38.6 gr 344 deg ACCEPT	35.6 gr 333 deg ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE ANGLE RESULT	38.6 gr 344 deg ACCEPT	35.6 gr 333 deg ACCEPT

CORRECT UNBALANCE GRAPH (max = 1000.0 gr)



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2007. 11. 21

JINWON ENGINEERING

BOYOUNG RUBBER

BY

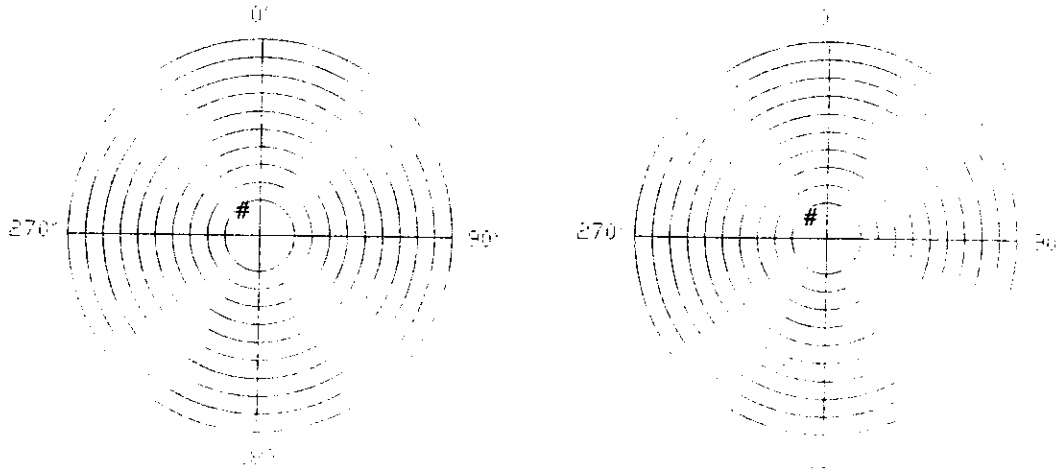
TEST REPORT
OF
DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	RETURN ROLLER D166*2000L-2
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	38.6 g	∠	344 Deg	35.6 g	∠	333 Deg
FINAL	38.6 g	∠	344 Deg	35.6 g	∠	333 Deg
Q / C	ACCEPT			ACCEPT		

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	403 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	25 KG	WEIGHT (M)R	25 KG	
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	83 mm
	KS B 0612(JIS B 0905)		RIGHT (r) R	83 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	47,750 gmm	575 g
	m r = M X ε (g mm) = 95,500 gmm	RIGHT (mr)R	47,750 gmm	575 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Woo	2007. 11. 21. Ahn Seong Goo	2007. 11. 21. Lee Ann Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME : R3					
CUSTOMER :					
TEST TIME : 2007.11.21 14:18: 8					
GRADE	:	G 40	RATING SPEED	:	200 rpm
WEIGHT	:	50.000 kg	TESTING SPEED	:	403 rpm
RADIUS	:	82.5 mm 82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	:	578.8 gr	PLANE2	:	578.8 gr

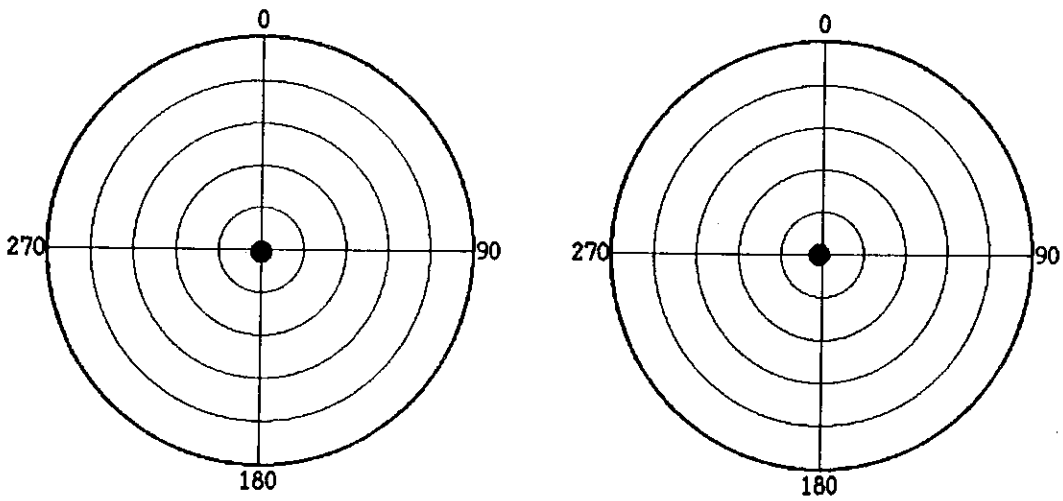
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	12.9 gr	19.2 gr
ANGLE	169 deg	274 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	12.9 gr	19.2 gr
ANGLE	169 deg	274 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 1000.0 gr)



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2007.11.21

JINWON ENGINEERING

BOYOUNG RUBBER	BY

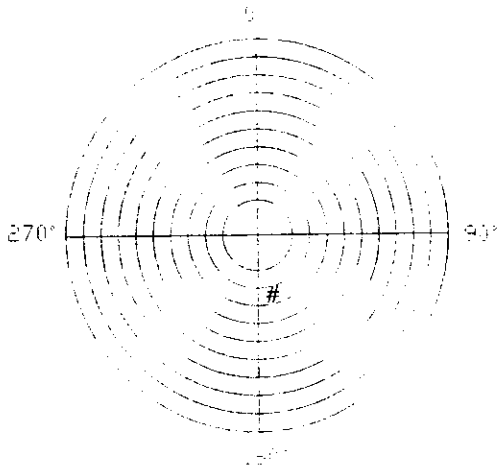
TEST REPORT
OF
DYNAMIC BALANCING

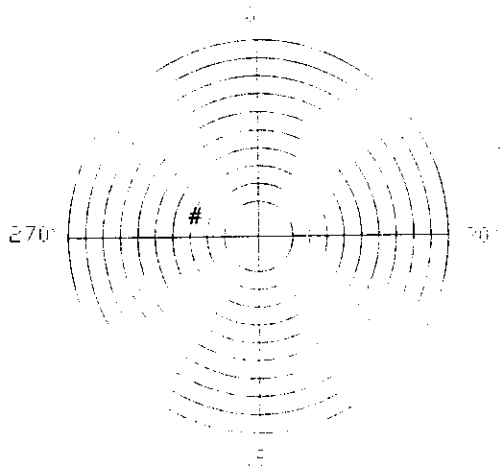
CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	RETURN ROLLER D166*2000L-3
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	12.9 g	∠	169 Deg	19.2 g	∠	274 Deg
FINAL	12.9 g	∠	169 Deg	19.2 g	∠	274 Deg
Q / C	ACCEPT			ACCEPT		

Polar Chart





ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	403 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	25 KG	WEIGHT (M)R	25 KG	
GRADE OF BALANCE	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	83 mm
QUALITY(V)	KS B 0612(JIS B 0905)		RIGHT (r) R	83 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	47,750 gmm	575 g
	m r = M X ε (g mm) = 95,500 gmm	RIGHT (mr)R	47,750 gmm	575 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee Ahn Ku

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	: R4				
CUSTOMER	:				
TEST TIME	: 2007.11.21 14:19:59				
GRADE	: G 40		RATING SPEED	:	200 rpm
WEIGHT	: 50.000 kg		TESTING SPEED	:	404 rpm
RADIUS	: 82.5 mm	82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	: 578.8 gr		PLANE2	:	578.8 gr

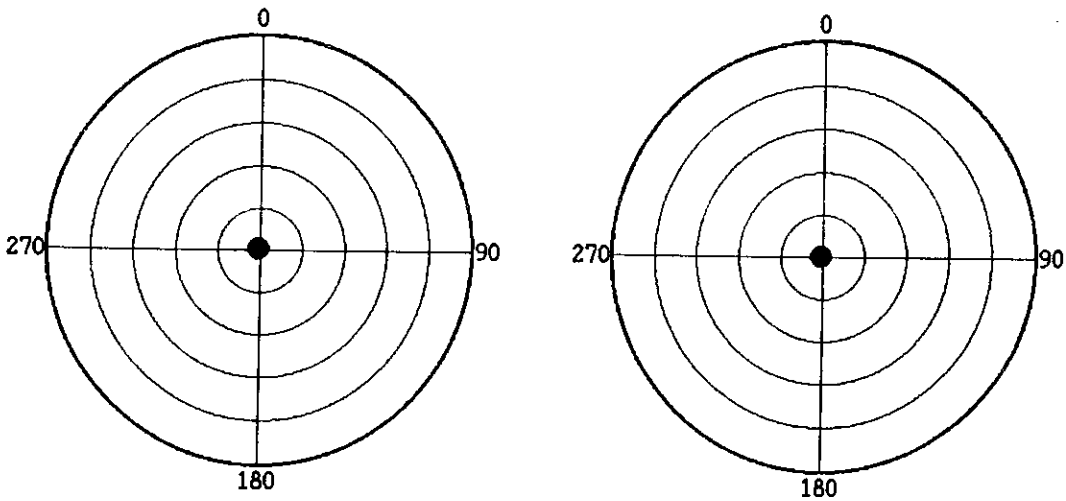
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	15.1 gr	17.6 gr
ANGLE	316 deg	303 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	15.1 gr	17.6 gr
ANGLE	316 deg	303 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 1000.0 gr)



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2007. 11. 21

JINWON ENGINEERING

BOYOUNG RUBBER

BY

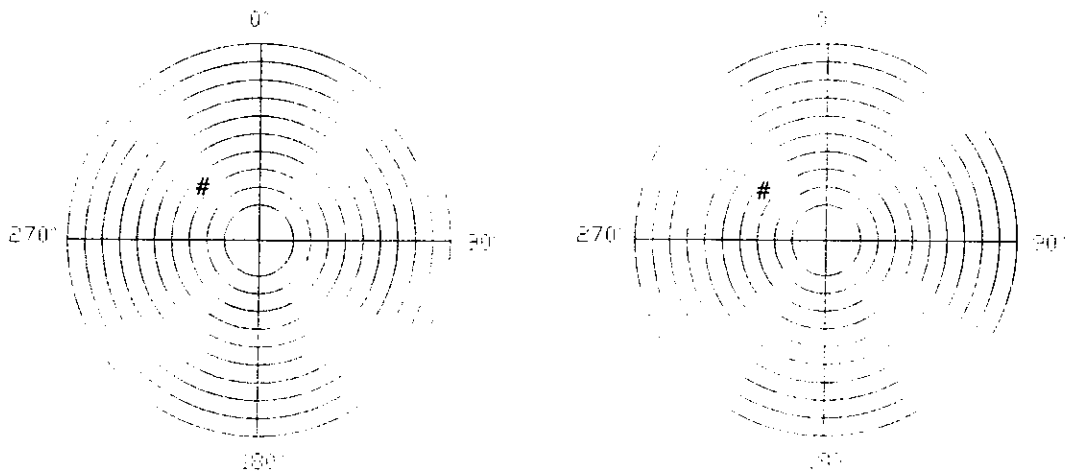
TEST REPORT OF DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	RETURN ROLLER D166*2000L-4
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	15.1 g	∠	316 Deg	17.6 g	∠	303 Deg
FINAL	15.1 g	∠	316 Deg	17.6 g	∠	303 Deg
Q / C	ACCEPT			ACCEPT		

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	403 RPM	RATING SPEED (N)		200 RPM
WEIGHT (M)L	25 KG	WEIGHT (M)R		25 KG
GRADE OF BALANCE	G 40 (40 mm / s)	CORRECTION	LEFT (r)L	83 mm
QUALITY(V)	KS B 0612(JIS B 0905)	RADIUS	RIGHT (r) R	83 mm
ACCEPTABLE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	47,750 gmm	575 g
UNBALALNCE	m r = M X ε (g mm) = 95,500 gmm	RIGHT (mr)R	47,750 gmm	575 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee Ah-Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	: R5				
CUSTOMER	:				
TEST TIME	: 2007.11.21 14:21:44				
GRADE	: G 40		RATING SPEED	:	200 rpm
WEIGHT	: 50.000 kg		TESTING SPEED	:	403 rpm
RADIUS	: 82.5 mm	82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	: 578.8 gr		PLANE2	:	578.8 gr

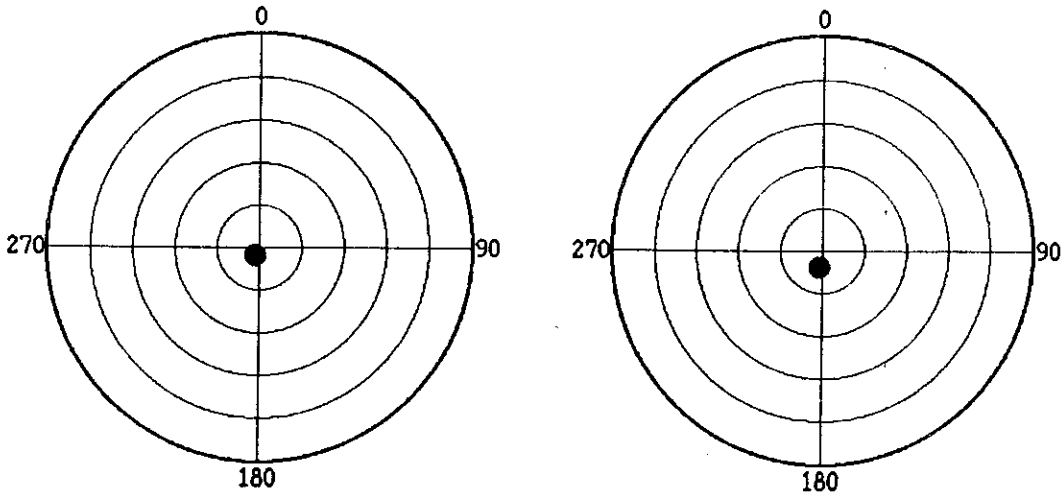
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	41.9 gr	79.8 gr
ANGLE	209 deg	193 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	41.9 gr	79.8 gr
ANGLE	209 deg	193 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 1000.0 gr)



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2007. 11. 21

JINWON ENGINEERING

BOYOUNG RUBBER

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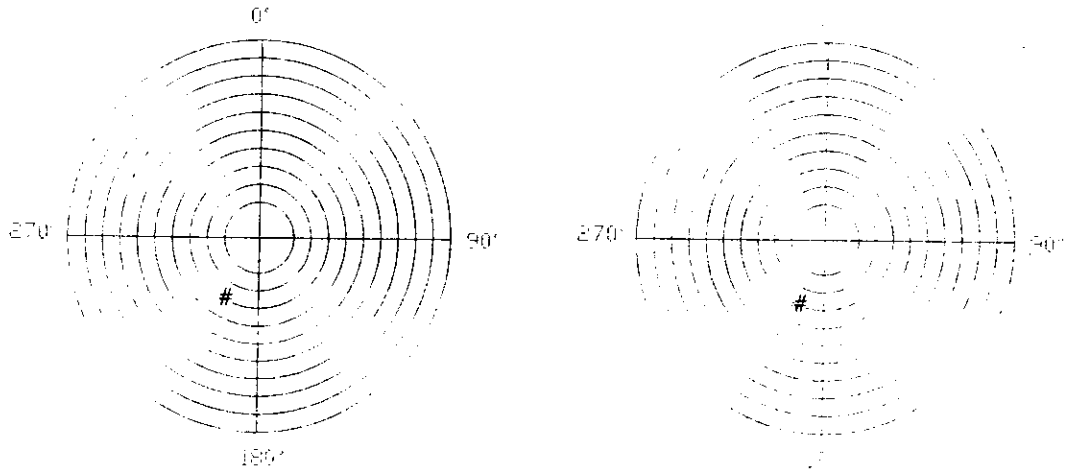
TEST REPORT OF DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	RETURN ROLLER D166*2000L-5
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	41.9 g	∠	209 Deg	79.8 g	∠	193 Deg
FINAL	41.9 g	∠	209 Deg	79.8 g	∠	193 Deg
Q / C	ACCEPT			ACCEPT		

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	403 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	25 KG	WEIGHT (M)R	25 KG	
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	83 mm
	KS B 0612(JIS B 0905)		RIGHT (r) R	83 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 μm	LEFT (mr)L	47,750 gmm	575 g
	m r = M X ε (g mm) = 95,500 gmm	RIGHT (mr)R	47,750 gmm	575 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee An Gu

* Grade of Balance G40 is better and more stricktly than G60.

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BOYOUNG RUBBER

BY

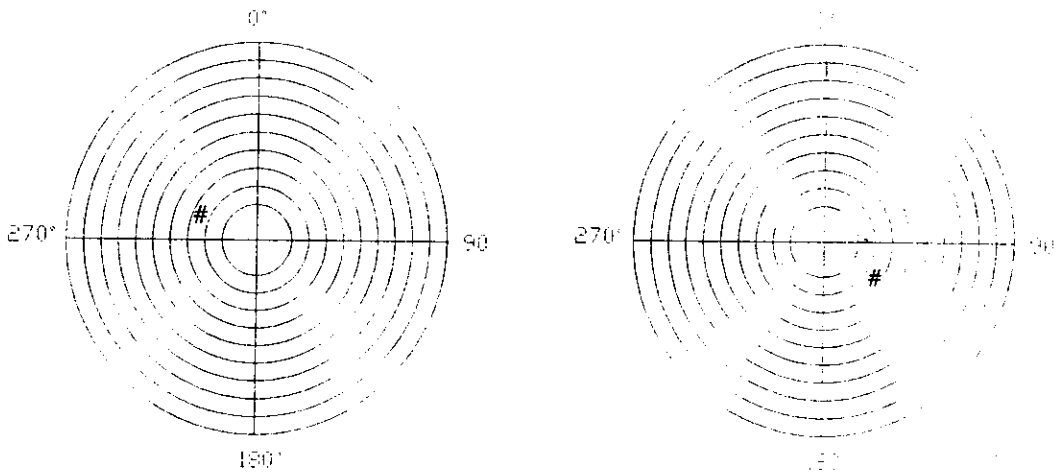
TEST REPORT
OF
DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2×650L 6307 2RS-1
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT	RIGHT
BEFORE	14.8 g ∠ 294 Deg	14.6 g ∠ 118 Deg
FINAL	14.8 g ∠ 294 Deg	14.6 g ∠ 118 Deg
Q / C	ACCEPT	ACCEPT

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)		200 RPM
WEIGHT (M)L	12.5 KG	WEIGHT (M)R		12.5 KG
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	82.5 mm
	KS B 0612(JIS B 0905)		RIGHT (r) R	82.5 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23,875 gmm	289 g
	m r = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23,875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Woo	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee Ho Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME : 1 CUSTOMER : TEST TIME : 2007.11.21 13:50:36					
GRADE :	G 40		RATING SPEED :	200 rpm	
WEIGHT :	25.000 kg		TESTING SPEED :	342 rpm	
RADIUS :	82.5 mm	82.5 mm	CORRECTION :	ADD	
ACCEPTABLE UNBALANCE PLANE1 :	289.4 gr		PLANE2 :	289.4 gr	

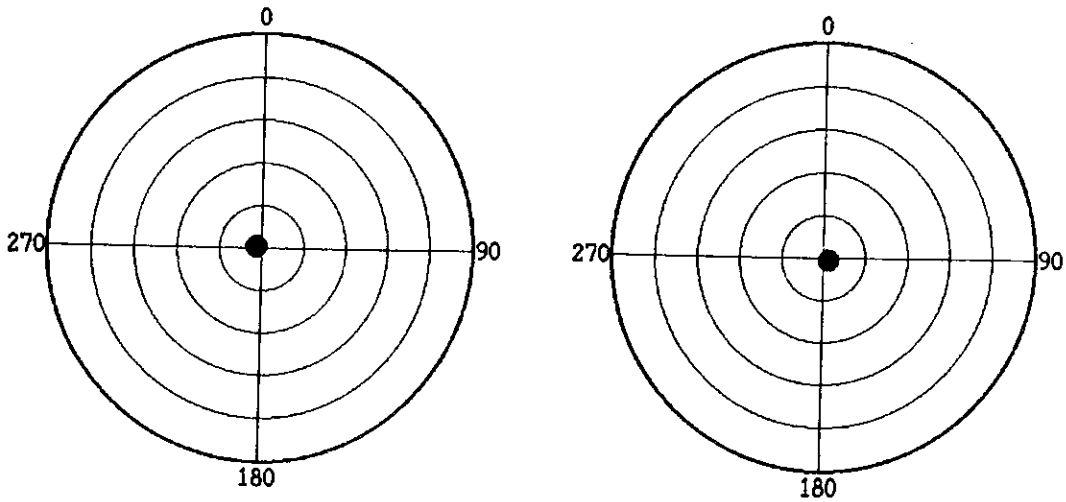
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE ANGLE RESULT	14.8 gr 294 deg ACCEPT	14.6 gr 118 deg ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE ANGLE RESULT	14.8 gr 294 deg ACCEPT	14.6 gr 118 deg ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



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witness by TPC

2007.11.

JINWON ENGINEERING

BOYOUNG RUBBER

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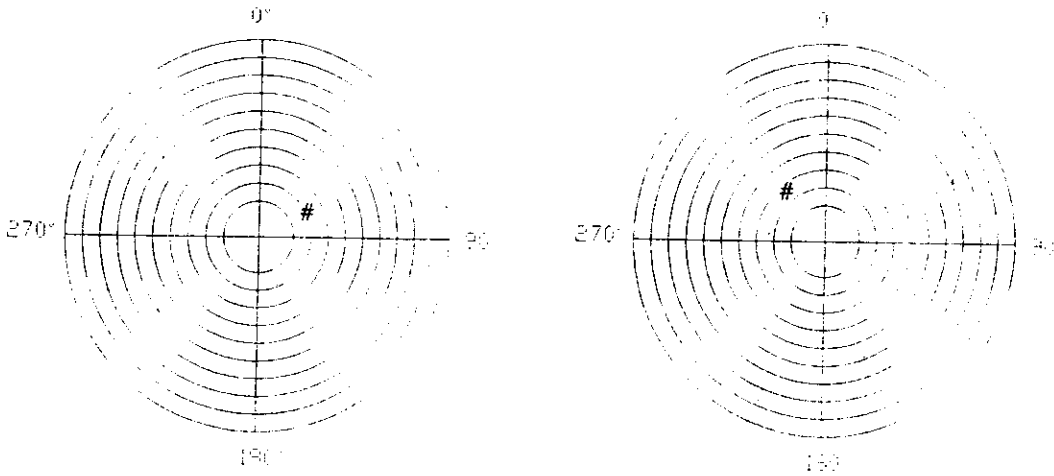
TEST REPORT OF DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2*650L 6307 2RS-3
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	29.3 g	∠	52 Deg	27.2 g	∠	328 Deg
FINAL	29.3 g	∠	52 Deg	27.2 g	∠	328 Deg
Q / C	ACCEPT			ACCEPT		

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	12.5 KG	WEIGHT (M)R	12.5 KG	
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	82.5 mm
	KS B 0612(JIS B 0905)		RIGHT (r) R	82.5 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23,875 gmm	289 g
	mr = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23,875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae [signature]	2007. 11. 21. Ahn Seong Soo [signature]	2007. 11. 21. Lee Ae Chu [signature]

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	:	2			
CUSTOMER	:				
TEST TIME	:	2007.11.21 13:53:11			
GRADE	:	G 40	RATING SPEED	:	200 rpm
WEIGHT	:	25.000 kg	TESTING SPEED	:	342 rpm
RADIUS	:	82.5 mm 82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	:	289.4 gr	PLANE2	:	289.4 gr

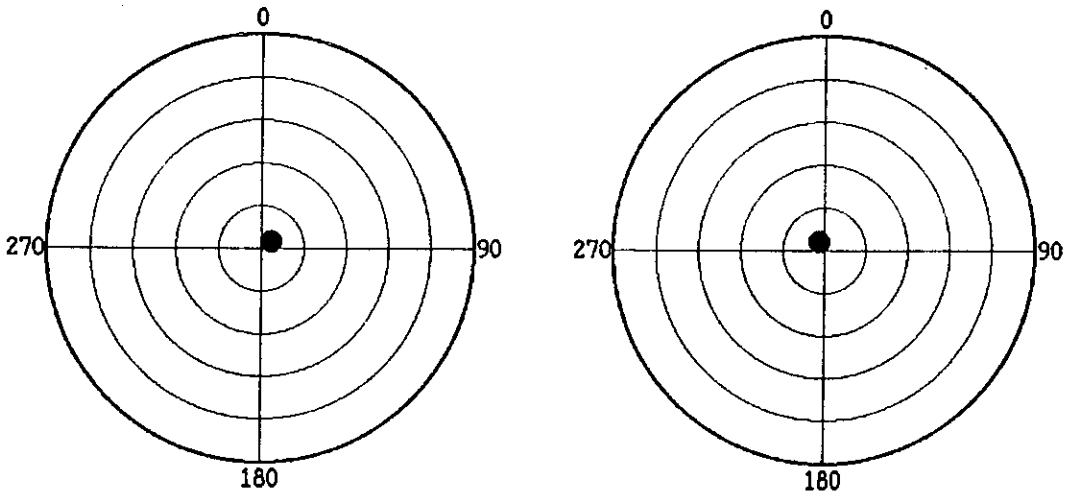
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	29.3 gr	27.2 gr
ANGLE	52 deg	328 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	29.3 gr	27.2 gr
ANGLE	52 deg	328 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



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053-383-6641

Witness by TPL

2007. 11. 21

JINWON ENGINEERING

BOYOUNG RUBBER

BY

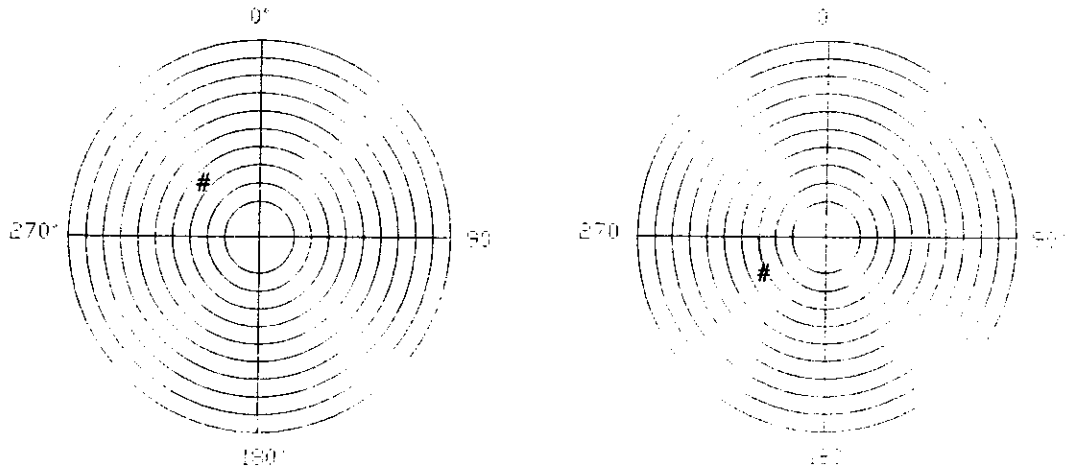
TEST REPORT
OF
DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2*650L 6307 2RS-3
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT	RIGHT
BEFORE	45.4 g ∠ 317 Deg	8.8 g ∠ 251 Deg
FINAL	45.4 g ∠ 317 Deg	8.8 g ∠ 251 Deg
Q / C	ACCEPT	ACCEPT

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	12.5 KG	WEIGHT (M)R	12.5 KG	
GRADE OF BALANCE	G 40 (40 mm / s)	CORRECTION	LEFT (r)L	82.5 mm
QUALITY(V)	KS B 0612(JIS B 0905)	RADIUS	RIGHT (r) R	82.5 mm
ACCEPTABLE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23,875 gmm	289 g
UNBALALNCE	m r = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23,875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee Ah Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	: 3				
CUSTOMER	:				
TEST TIME	: 2007.11.21 13:56: 2				
GRADE	: G 40		RATING SPEED	:	200 rpm
WEIGHT	: 25.000 kg		TESTING SPEED	:	342 rpm
RADIUS	: 82.5 mm	82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	: 289.4 gr		PLANE2	:	289.4 gr

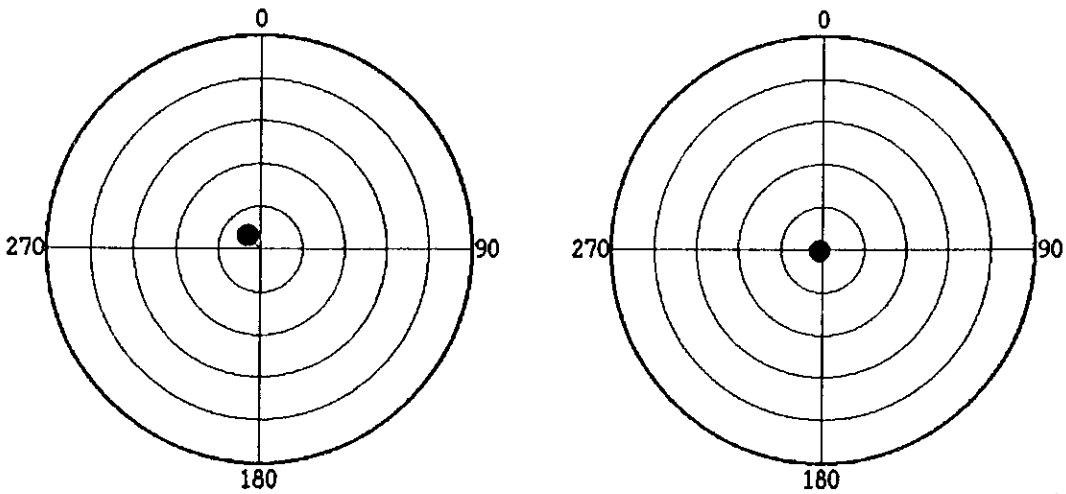
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	45.4 gr	8.8 gr
ANGLE	317 deg	251 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	45.4 gr	8.8 gr
ANGLE	317 deg	251 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



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2007. 11. 21

JINWON ENGINEERING

BOYOUNG RUBBER

BY

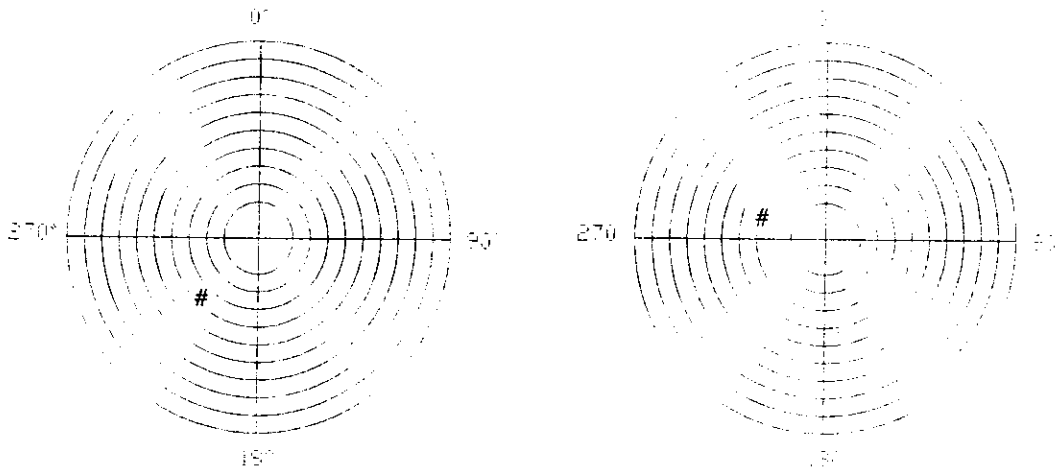
TEST REPORT
OF
DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2*650L 6307 2RS-4
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	26.8 g	∠	233 Deg	50.6 g	∠	278 Deg
FINAL	26.8 g	∠	233 Deg	50.6 g	∠	278 Deg
Q / C	ACCEPT			ACCEPT		

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	12.5 KG	WEIGHT (M)R	12.5 KG	
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s) KS B 0612(JIS B 0905)	CORRECTION RADIUS	LEFT (r)L	82.5 mm
			RIGHT (r) R	82.5 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23,875 gmm	289 g
	m r = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23,875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Wook	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee Ah Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME : 4			
CUSTOMER :			
TEST TIME : 2007.11.21 13:57:54			
GRADE : G 40		RATING SPEED :	200 rpm
WEIGHT : 25.000 kg		TESTING SPEED :	342 rpm
RADIUS : 82.5 mm	82.5 mm	CORRECTION :	ADD
ACCEPTABLE UNBALANCE			
PLANE1 : 289.4 gr		PLANE2 :	289.4 gr

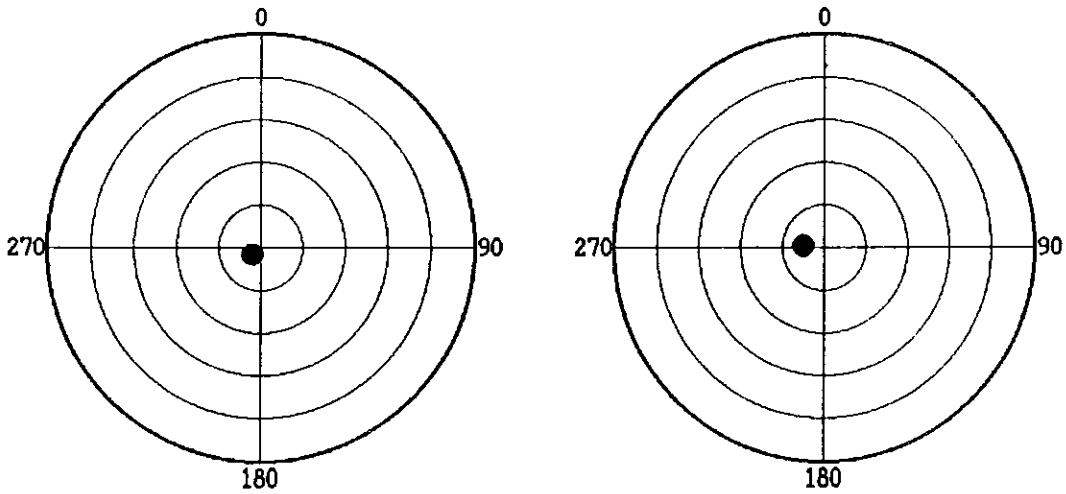
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	26.8 gr	50.6 gr
ANGLE	233 deg	278 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	26.8 gr	50.6 gr
ANGLE	233 deg	278 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



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2007.11.21

JINWON ENGINEERING

BOYOUNG RUBBER

BY

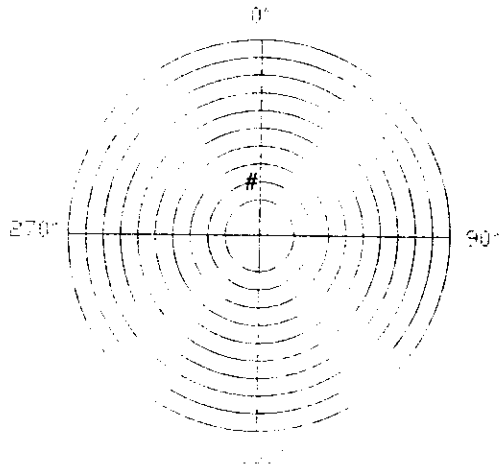
TEST REPORT OF DYNAMIC BALANCING

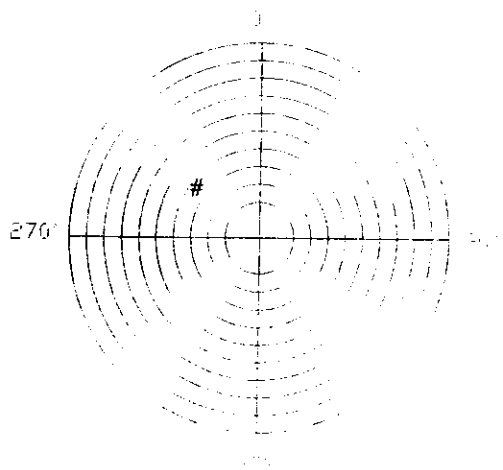
CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2•650L 6307 2RS-5
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	40 g	∠	359 Deg	14.1 g	∠	313 Deg
FINAL	40 g	∠	359 Deg	14.1 g	∠	313 Deg
Q / C	ACCEPT			ACCEPT		

Polar Chart





ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	12.5 KG	WEIGHT (M)R	12.5 KG	
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s) KS B 0612(JIS B 0905)	CORRECTION RADIUS	LEFT (r)L	82.5 mm
			RIGHT (r) R	82.5 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23,875 gmm	289 g
	m r = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23,875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee Ah Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	: 5				
CUSTOMER	:				
TEST TIME	: 2007.11.21 13:59:25				
GRADE	: G 40		RATING SPEED	:	200 rpm
WEIGHT	: 25.000 kg		TESTING SPEED	:	342 rpm
RADIUS	: 82.5 mm	82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	: 289.4 gr		PLANE2	:	289.4 gr

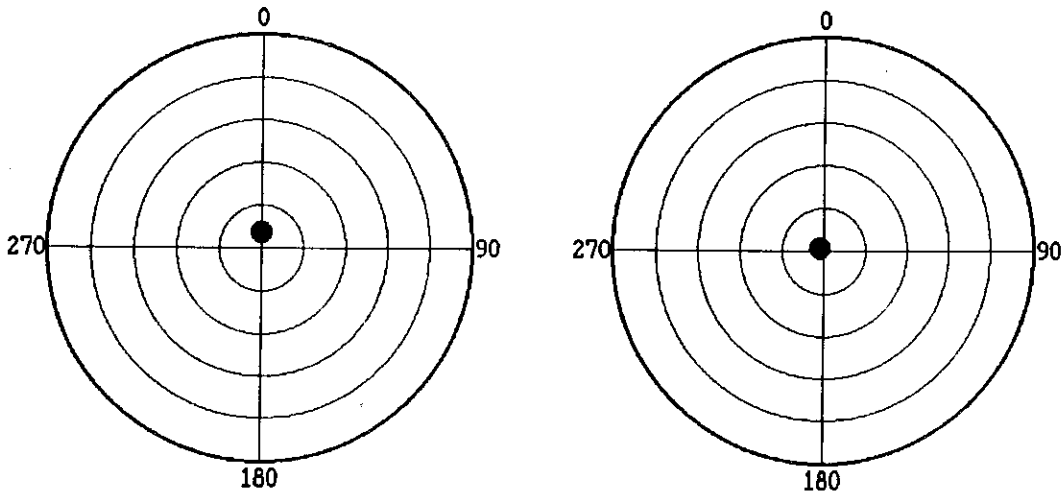
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	40.0 gr	14.1 gr
ANGLE	359 deg	313 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	40.0 gr	14.1 gr
ANGLE	359 deg	313 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



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2007.11.21

JINWON ENGINEERING

BOYOUNG RUBBER	BY

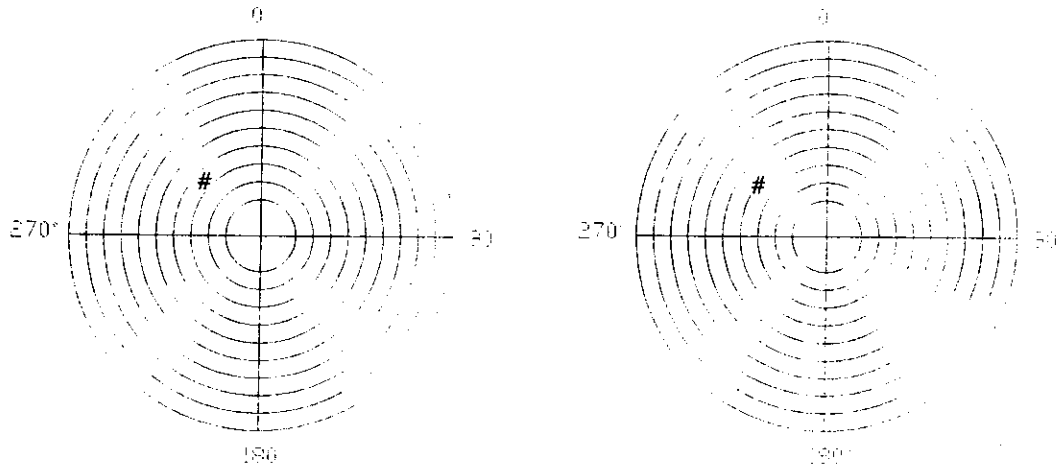
TEST REPORT OF DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2•650L 6307 2RS-6
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	9.1 g	∠	315 Deg	43.4 g	∠	303 Deg
FINAL	9.1 g	∠	315 Deg	43.4 g	∠	303 Deg
Q / C	ACCEPT			ACCEPT		

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	12.5 KG	WEIGHT (M)R	12.5 KG	
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	82.5 mm
	KS B 0612(JIS B 0905)		RIGHT (r) R	82.5 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23,875 gmm	289 g
	m r = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23,875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee An Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	: 6				
CUSTOMER	:				
TEST TIME	: 2007.11.21 14: 0:50				
GRADE	: G 40		RATING SPEED	:	200 rpm
WEIGHT	: 25.000 kg		TESTING SPEED	:	342 rpm
RADIUS	: 82.5 mm	82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	: 289.4 gr		PLANE2	:	289.4 gr

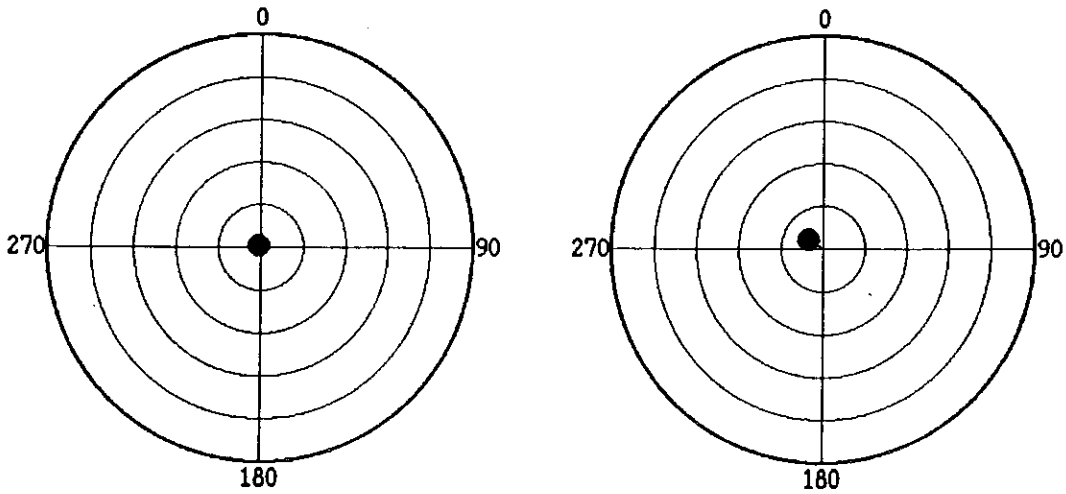
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	9.1 gr	43.4 gr
ANGLE	315 deg	303 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	9.1 gr	43.4 gr
ANGLE	315 deg	303 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



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witness by TPC
李安德
2007, 11, 21

JINWON ENGINEERING

BOYOUNG RUBBER

BY

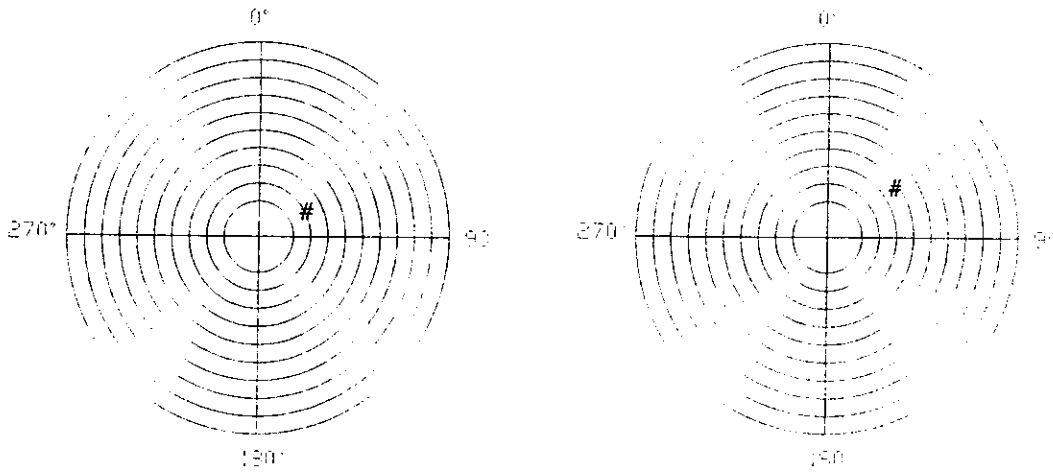
TEST REPORT
OF
DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2*650L 6307 2RS-7
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT	RIGHT
BEFORE	19.1 g ∠ 75 Deg	25.1 g ∠ 63 Deg
FINAL	19.1 g ∠ 75 Deg	25.1 g ∠ 63 Deg
Q / C	ACCEPT	ACCEPT

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	12.5 KG	WEIGHT (M)R	12.5 KG	
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	82.5 mm
	KS B 0612(JIS B 0905)		RIGHT (r) R	82.5 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23,875 gmm	289 g
	m r = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23,875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee Ah Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	: 7				
CUSTOMER	:				
TEST TIME	: 2007.11.21 14: 3:18				
GRADE	: G 40		RATING SPEED	:	200 rpm
WEIGHT	: 25.000 kg		TESTING SPEED	:	342 rpm
RADIUS	: 82.5 mm	82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	: 289.4 gr		PLANE2	:	289.4 gr

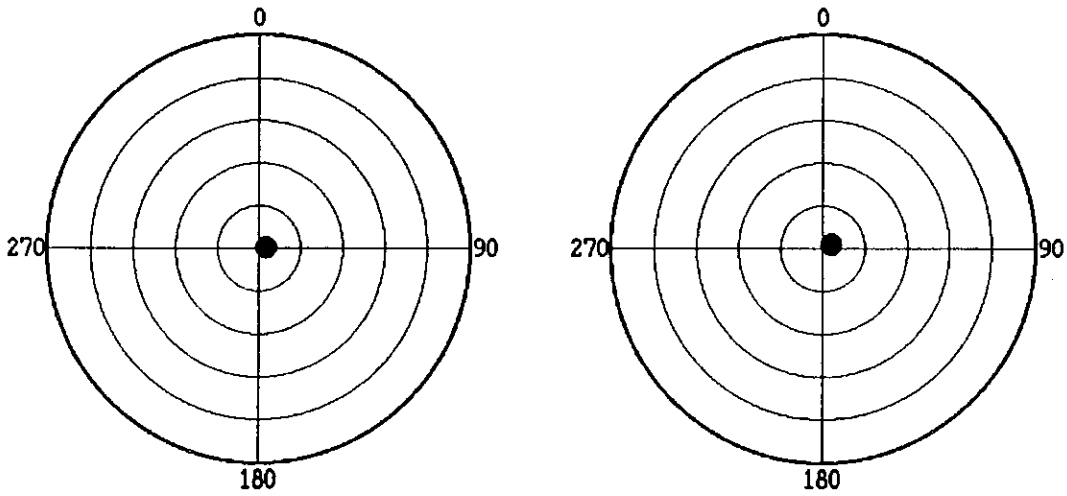
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	19.1 gr	25.1 gr
ANGLE	75 deg	63 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	19.1 gr	25.1 gr
ANGLE	75 deg	63 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



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2007. 11. 21

JINWON ENGINEERING

BOYOUNG RUBBER

BY

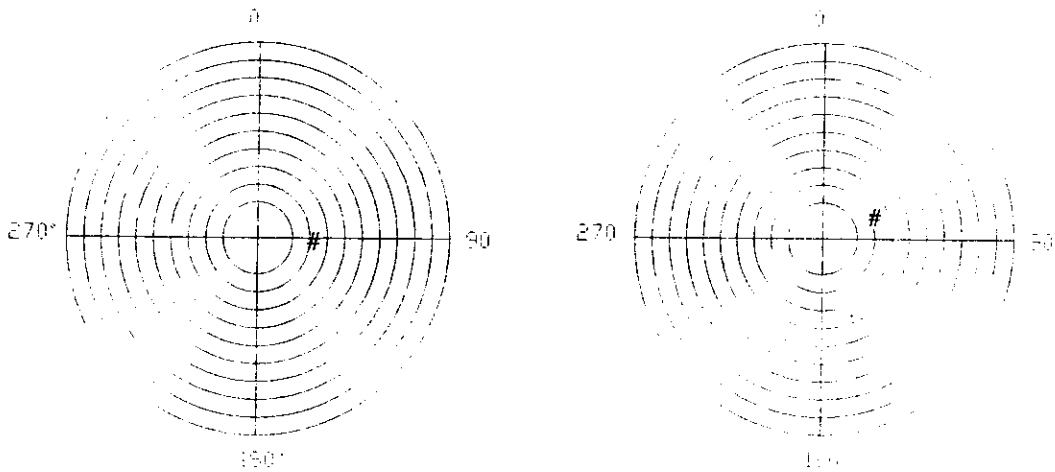
TEST REPORT
OF
DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2*650L 6307 2RS-8
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT	RIGHT
BEFORE	22 g ∠ 90 Deg	26.6 g ∠ 77 Deg
FINAL	22 g ∠ 90 Deg	26.6 g ∠ 77 Deg
Q / C	ACCEPT	ACCEPT

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	12.5 KG	WEIGHT (M)R	12.5 KG	
GRADE OF BALANCE	G 40 (40 mm / s)	CORRECTION	LEFT (r)L	82.5 mm
QUALITY(V)	KS B 0612(JIS B 0905)	RADIUS	RIGHT (r) R	82.5 mm
ACCEPTABLE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23,875 gmm	289 g
UNBALALNCE	m r = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23,875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Woo	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee Ki-Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	: 8				
CUSTOMER	:				
TEST TIME	: 2007.11.21 14: 4:53				
GRADE	: G 40		RATING SPEED	:	200 rpm
WEIGHT	: 25.000 kg		TESTING SPEED	:	342 rpm
RADIUS	: 82.5 mm	82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	: 289.4 gr		PLANE2	:	289.4 gr

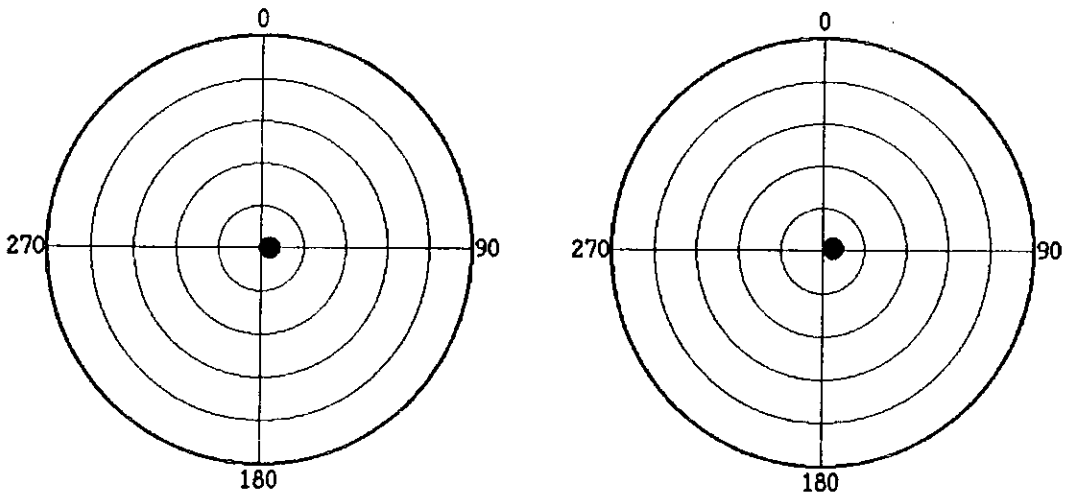
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	22.0 gr	26.6 gr
ANGLE	90 deg	77 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	22.0 gr	26.6 gr
ANGLE	90 deg	77 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



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2007.11.21

JINWON ENGINEERING

BOYOUNG RUBBER

BY

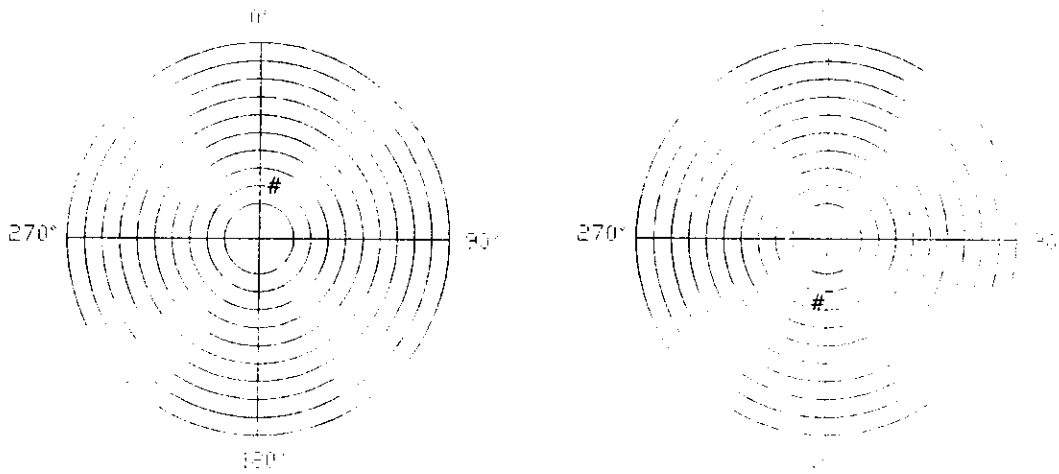
TEST REPORT
OF
DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2•650L 6307 2RS-9
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT	RIGHT
BEFORE	21.6 g ∠ 18 Deg	13.4 g ∠ 183 Deg
FINAL	21.6 g ∠ 18 Deg	13.4 g ∠ 183 Deg
Q / C	ACCEPT	ACCEPT

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)		200 RPM
WEIGHT (M)L	12.5 KG	WEIGHT (M)R		12.5 KG
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	82.5 mm
	KS B 0612(JIS B 0905)		RIGHT (r) R	82.5 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23.875 gmm	289 g
	m r = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23.875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soon	2007. 11. 21. Lee An-Cho

* Grade of Balance G40 is better and more stricktly than G60.

대 구 광 역 시 북 구 검 단 동 838-88 / TEL : 053) 381 - 9632 / FAX : 053) 383 - 6641

BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME	: 9				
CUSTOMER	:				
TEST TIME	: 2007.11.21 14: 6:18				
GRADE	: G 40		RATING SPEED	:	200 rpm
WEIGHT	: 25.000 kg		TESTING SPEED	:	342 rpm
RADIUS	: 82.5 mm	82.5 mm	CORRECTION	:	ADD
ACCEPTABLE UNBALANCE					
PLANE1	: 289.4 gr		PLANE2	:	289.4 gr

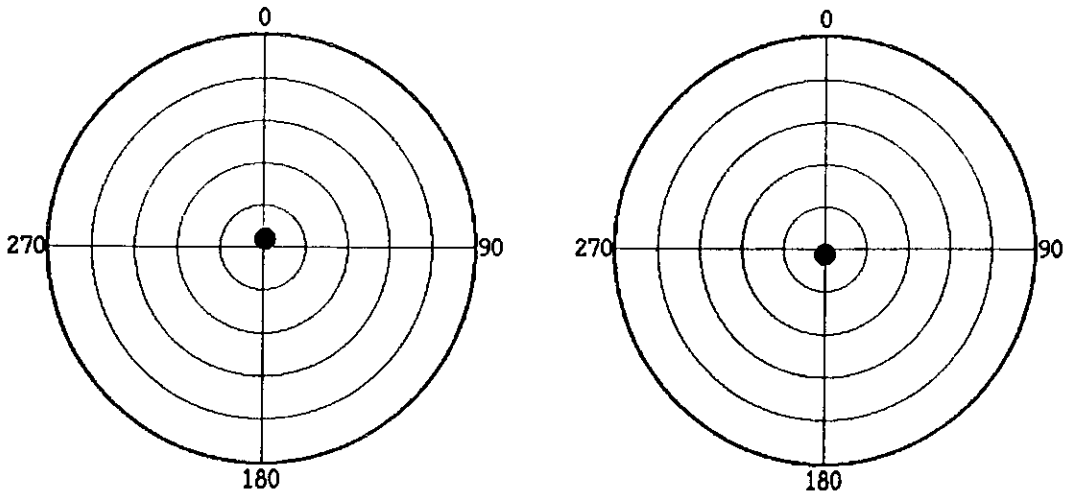
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE	21.6 gr	13.4 gr
ANGLE	18 deg	183 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE	21.6 gr	13.4 gr
ANGLE	18 deg	183 deg
RESULT	ACCEPT	ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



보영특수고무
대구 북구 검단동 838-88
053-381-9632
053-383-6641

witness by TPL
정준철
2007.11.21

BOYOUNG RUBBER

BY

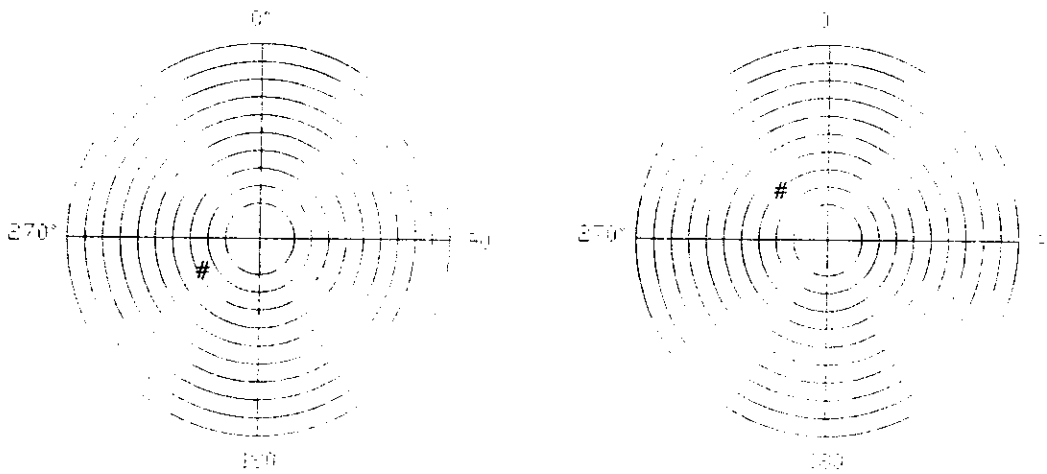
TEST REPORT
OF
DYNAMIC BALANCING

CUSTOMER	TAWAN POWER COMPANY	PROJECT NAME	COAL UNLOADING SYSTEM IMPROVEMENT
PART NAME	ROLLER	TYPE	CARRYING ROLLER D165.2*650L 6307 2RS-10
TEST DATE	2007. 11. 21.	ITEM NO	N/A

RESULTS OF CORRECTION (BALANCE UNIT : g)

	LEFT			RIGHT		
BEFORE	11.6 g	∠	253 Deg	38.8 g	∠	323 Deg
FINAL	11.6 g	∠	253 Deg	38.8 g	∠	323 Deg
Q / C	ACCEPT			ACCEPT		

Polar Chart



ACCEPTABLE UNBALANCE CALCULATING FORMULA

TESTING SPEED	342 RPM	RATING SPEED (N)	200 RPM	
WEIGHT (M)L	12.5 KG	WEIGHT (M)R	12.5 KG	
GRADE OF BALANCE QUALITY(V)	G 40 (40 mm / s)	CORRECTION RADIUS	LEFT (r)L	82.5 mm
	KS B 0612(JIS B 0905)		RIGHT (r) R	82.5 mm
ACCEPTABLE UNBALALNCE	ε = 9550 X V / n = 1,910 ㎛	LEFT (mr)L	23,875 gmm	289 g
	m r = M X ε (g mm) = 47,750 gmm	RIGHT (mr)R	23,875 gmm	289 g

TESTED BY BOYOUNG	WITNESSED BY POSMEC	WITNESSED BY TPC
2007. 11. 21. Lee Jae Won	2007. 11. 21. Ahn Seong Soo	2007. 11. 21. Lee An-Chu

* Grade of Balance G40 is better and more stricktly than G60.

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BALANCING INSPECTION REPORT

SETUP

KSB 0612(ISO 1940)

PART NAME : 10 CUSTOMER : TEST TIME : 2007.11.21 14: 7:43					
GRADE WEIGHT RADIUS	: G 40 : 25.000 kg : 82.5 mm	82.5 mm	RATING SPEED TESTING SPEED CORRECTION	: 200 rpm : 342 rpm : ADD	
ACCEPTABLE UNBALANCE PLANE1	: 289.4 gr		PLANE2	: 289.4 gr	

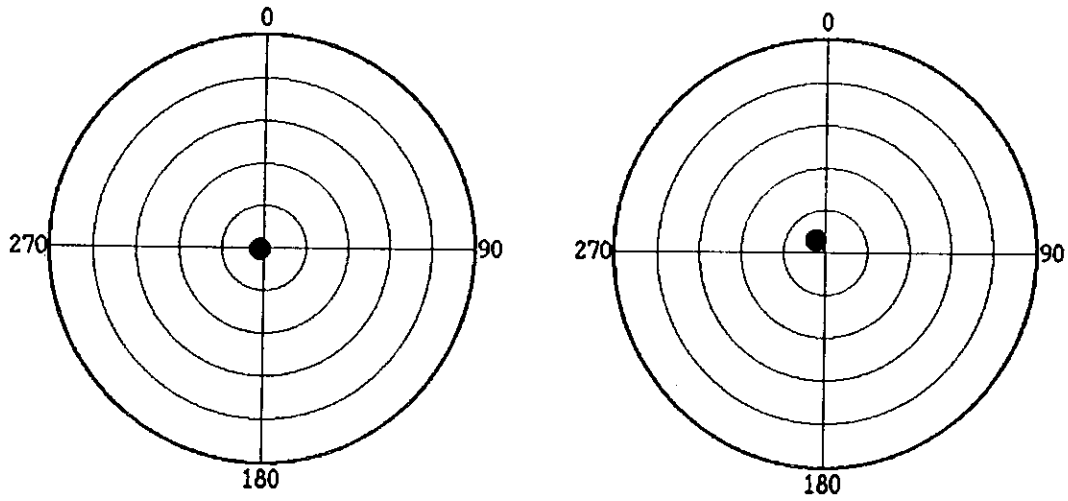
INITIAL UNBALANCE

	PLANE1	PLANE2
UNBALANCE ANGLE RESULT	11.6 gr 253 deg ACCEPT	38.8 gr 323 deg ACCEPT

CORRECT UNBALANCE

	PLANE1	PLANE2
UNBALANCE ANGLE RESULT	11.6 gr 253 deg ACCEPT	38.8 gr 323 deg ACCEPT

CORRECT UNBALANCE GRAPH (max = 500.0 gr)



보영특수고무
대구 북구 검단동 838-88
053-381-9632
053-383-6641

witness by TPL
2007. 11. 21

JINWON ENGINEERING

Agreement of Technology

1. The technology of POSMEC's roller including the water/dust proof and manufacturing shall be protected.

2. TPC's staff (Lee An-Chu, Mechanical Engineer, Steam Section, TPC) shall not open all of the POSMEC's technology which can be witnessed during the inspection time.

3. All of the pictures taken by TPC's staff shall not be used any other purpose in any case.

Written by POSMEC' staff

Ahn Seong Soo

2007.11.22

Agreed by TPC's staff

Lee An-Chu

2007.11.22