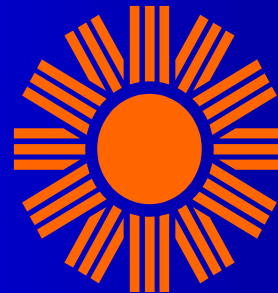


# Development of Real-time Information Management System(RIMS) to Continuous Galvanizing Line(CGL) at the Asan Bay Works, Dongbu Steel Co., Ltd.

May 11–14, 2003  
2003 OSIsoft Users Conference



Dongbu Steel Co., Ltd.

**[www.dongbusteel.co.kr](http://www.dongbusteel.co.kr)**

# Contents

- Who are we?
- Motivation
- The Goal
- What is new?
- The results
- Developed applications : #1~#4

Who are we?

# Products

Cold Rolled



Galvanized



Prepainted



TP / TFS



Pipe



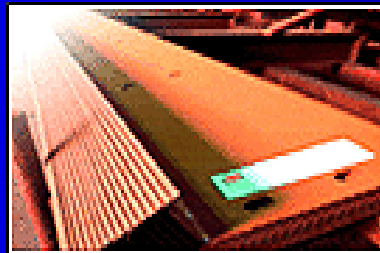
H Beam



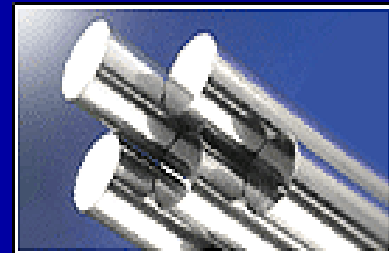
CHQ Wire



P.E.B



CD Bar



Who are we?

# Works & Offices

**Headquarters**

**Inchon Works**



**Asan Bay Works**



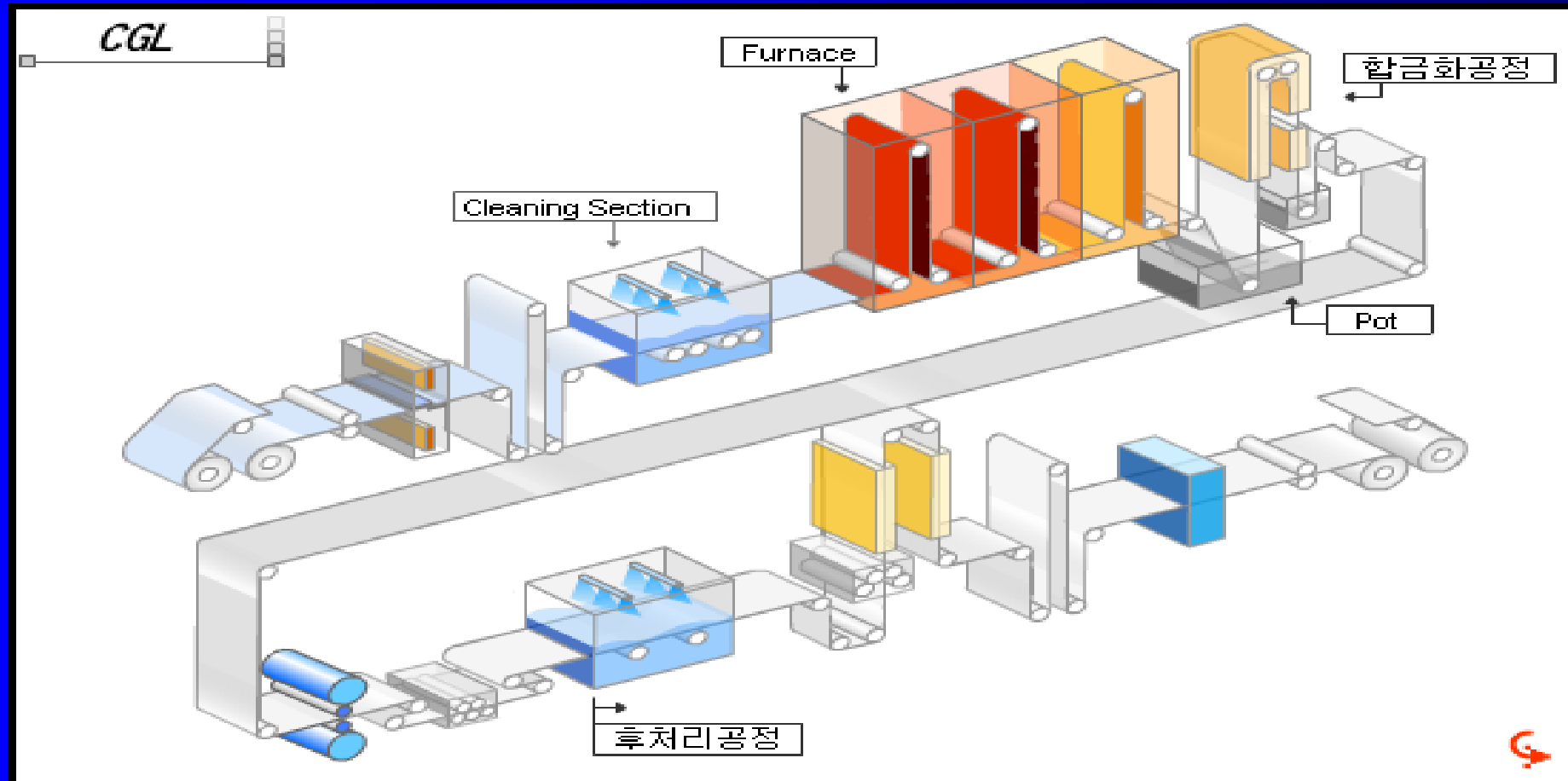
**Pohang Works**



# Motivation

What does the CGL (Continuous Galvanizing Line) make?

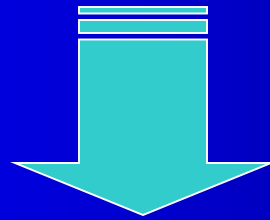
By utilizing the “**sacrifice anode effects**” of zinc layer over steel  
it gives steel the corrosion resistance capability  
with lower production cost





## For what and ...?

- Improvement of Quality
- Low Production Cost



## By What and How?

## What we need?

Data type

Large amount of real-time data

Application

Unrestricted for operator,  
maintenance and technical members

Data reliability

Real-time monitoring

Storage

Challenge

On-line storage over 3 years

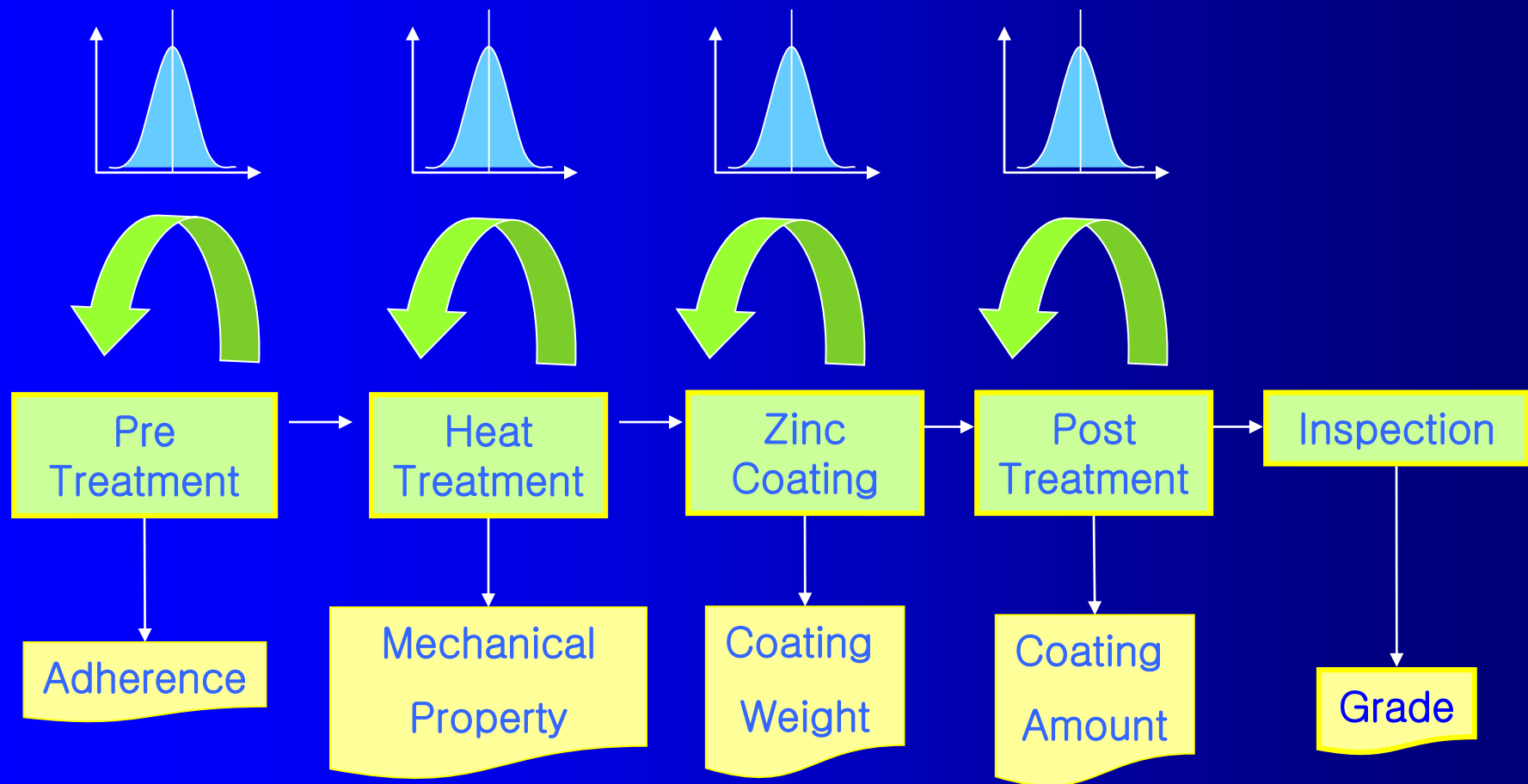
Accessibility

Intranet / Internet  
Korean Language

Analysis tools

In-house control

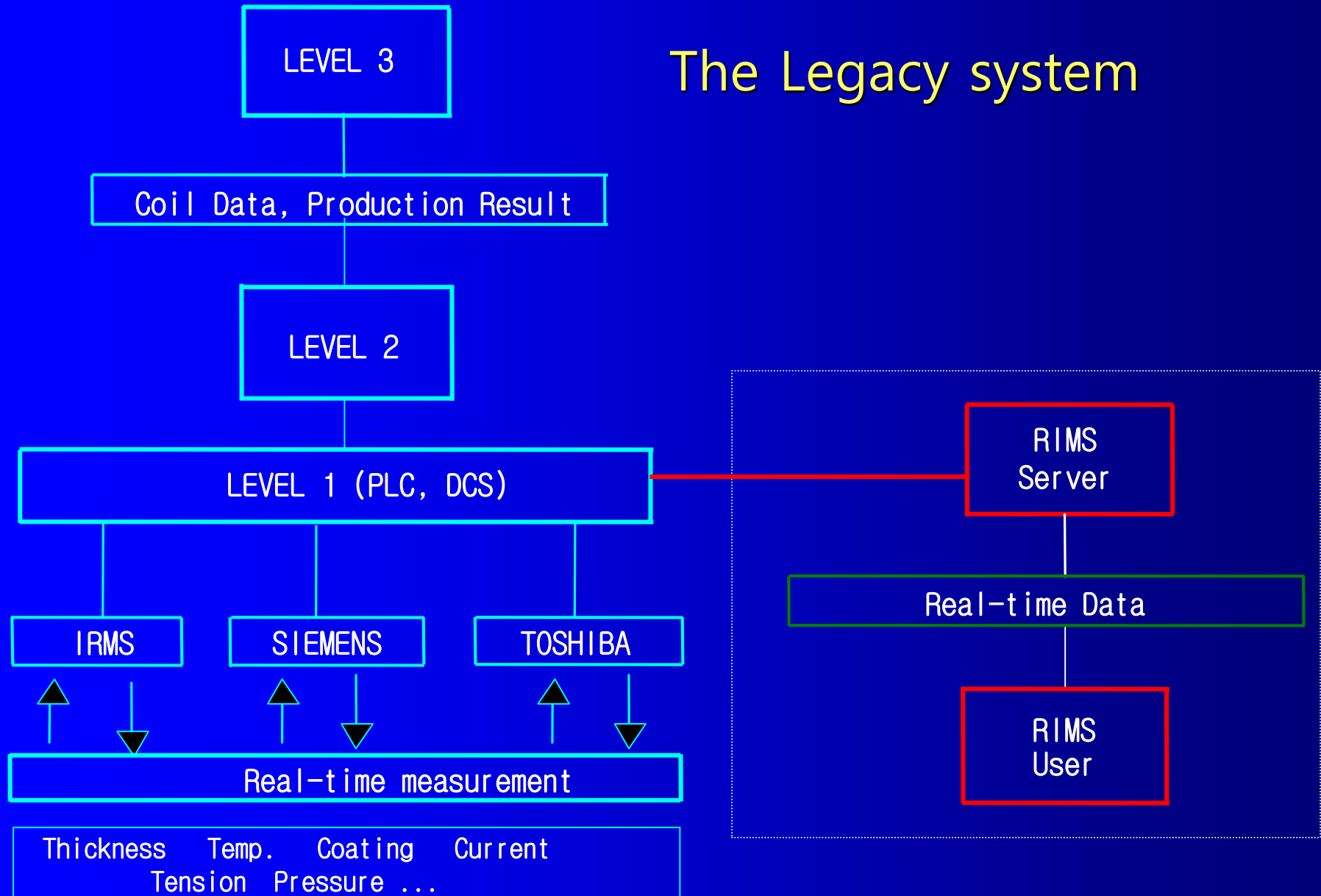
## Improving Process Capabilities



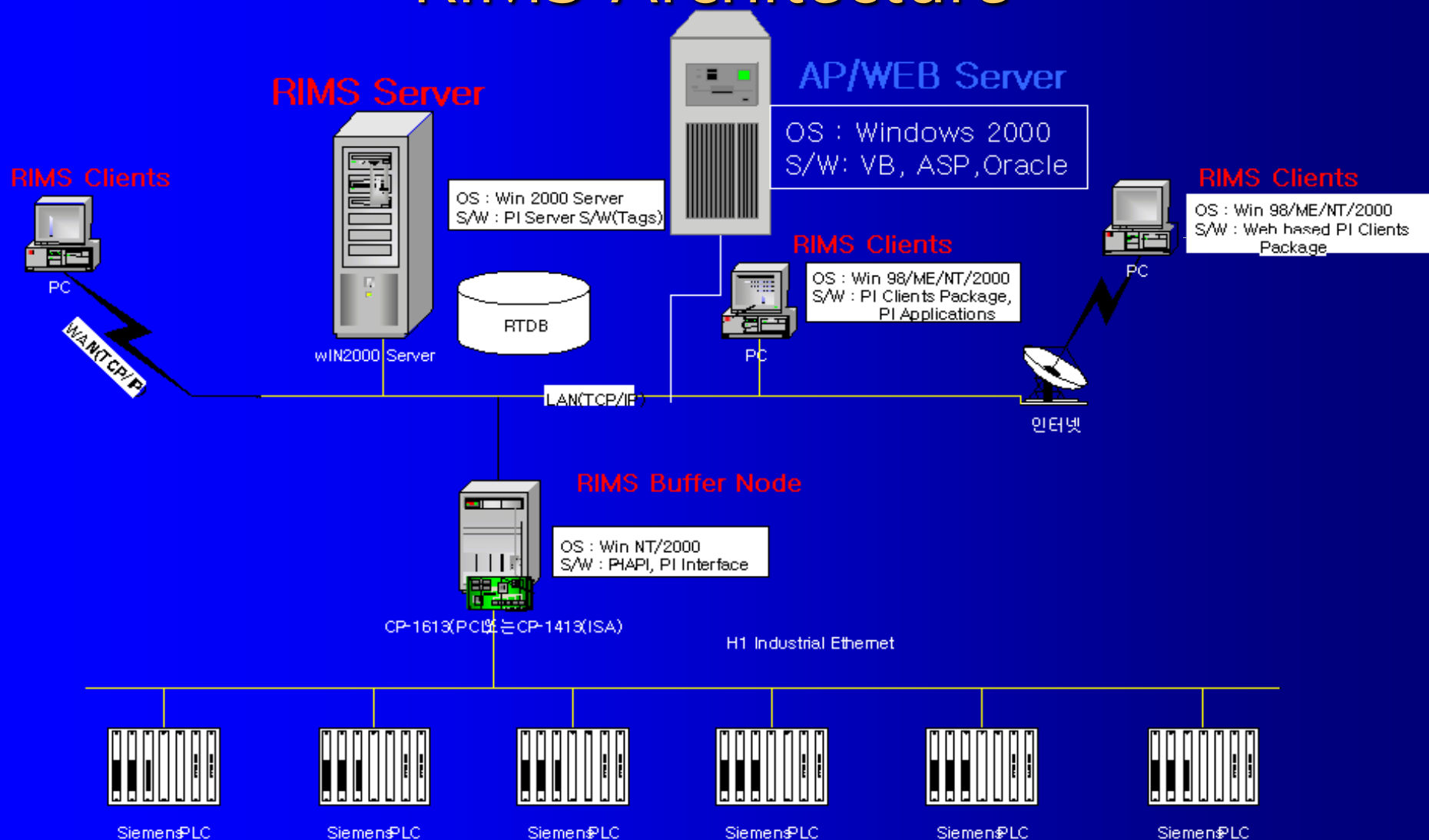


# What is new?

## The Legacy system



# RIMS Architecture

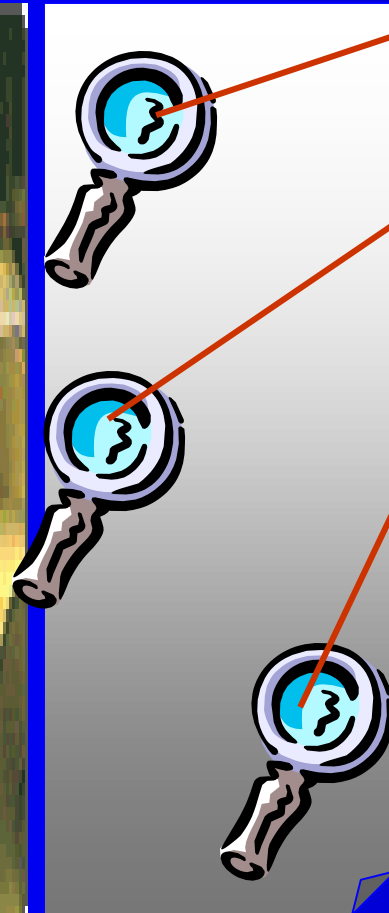


## 1<sup>st</sup> Stage Development Results

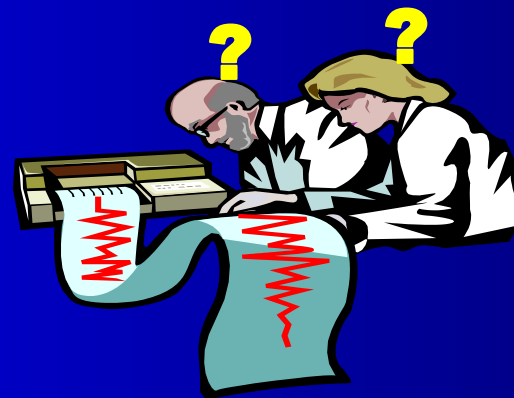
<b>Tag</b>	<b>820ea (Sensors : 270ea   Coil Length Tracking : 550ea)</b>
<b>Development</b>	<b>Retrieval of archived Real-time Data</b>
	<b>Coil based data handling (from time based)</b>
	<b>Process Book and WEB Environment with VB and ASP</b>
	<b>Inquiry and Analyzing of Production Coils</b>
<b>System Access</b>	<b>Process Book and WEB with ASP</b>
<b>OS</b>	<b>Windows 2000</b>
<b>Service</b>	<b>Process Book with Application Program</b> ✓ Real-time Coil Inspection, Inquiry – 1 screens 6 charts ✓ Real-time Trend Data chart - 10 screens with 93 charts
	<b>WEB with ASP</b> ✓ The same as Process Book ✓ Inquiry and Analyzing of Production Coils 10 screen with 108 charts

# Main Task : Real-time Coil Inspection

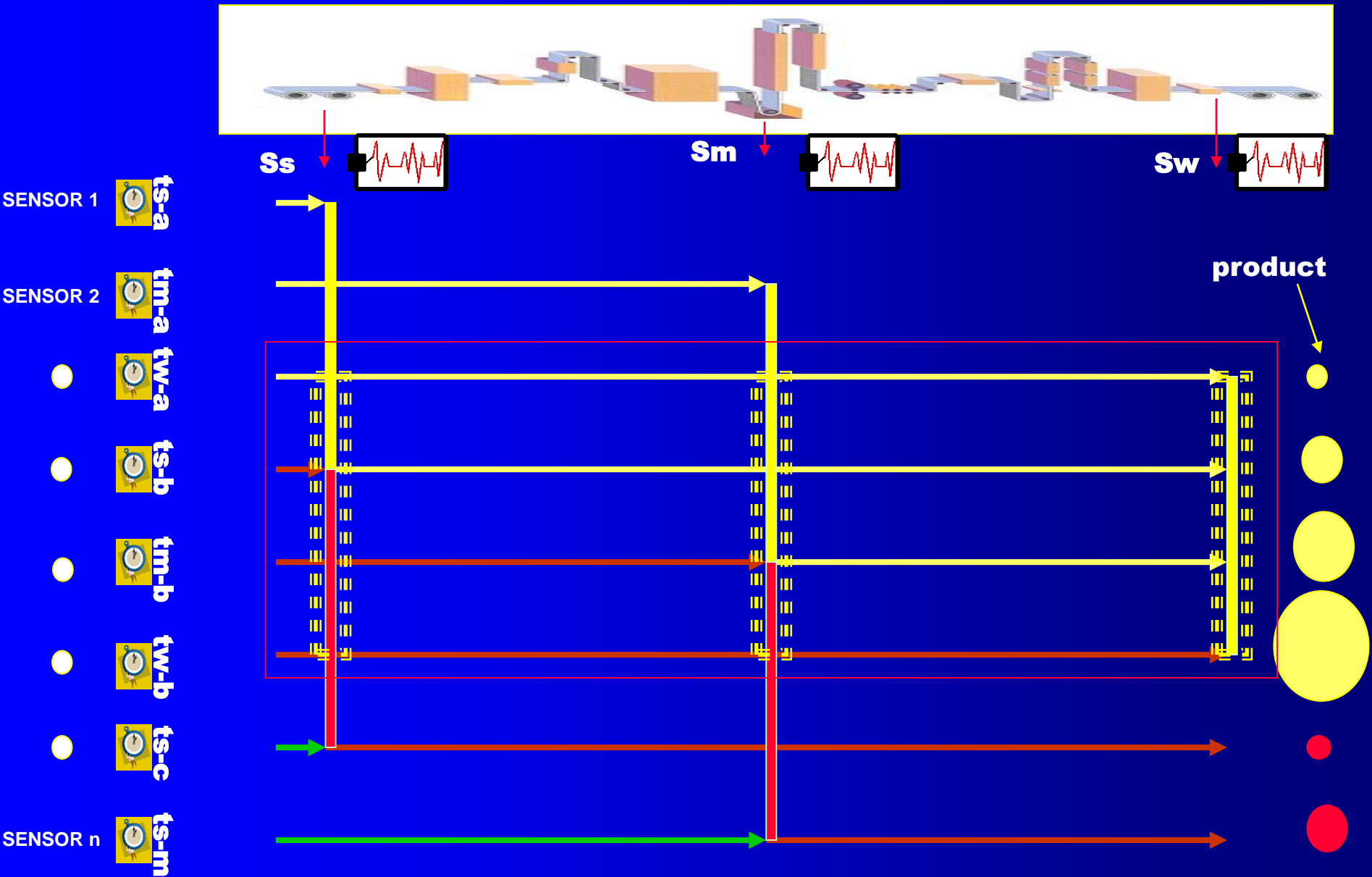
**Customers are expecting no-defects.**



**On every point,  
what is the history?**  
**Thickness, Pre-treatment,  
Heat treatment, Bath temp.,  
Coating amount, Roll force,  
Elongation, Amount of oil etc.**

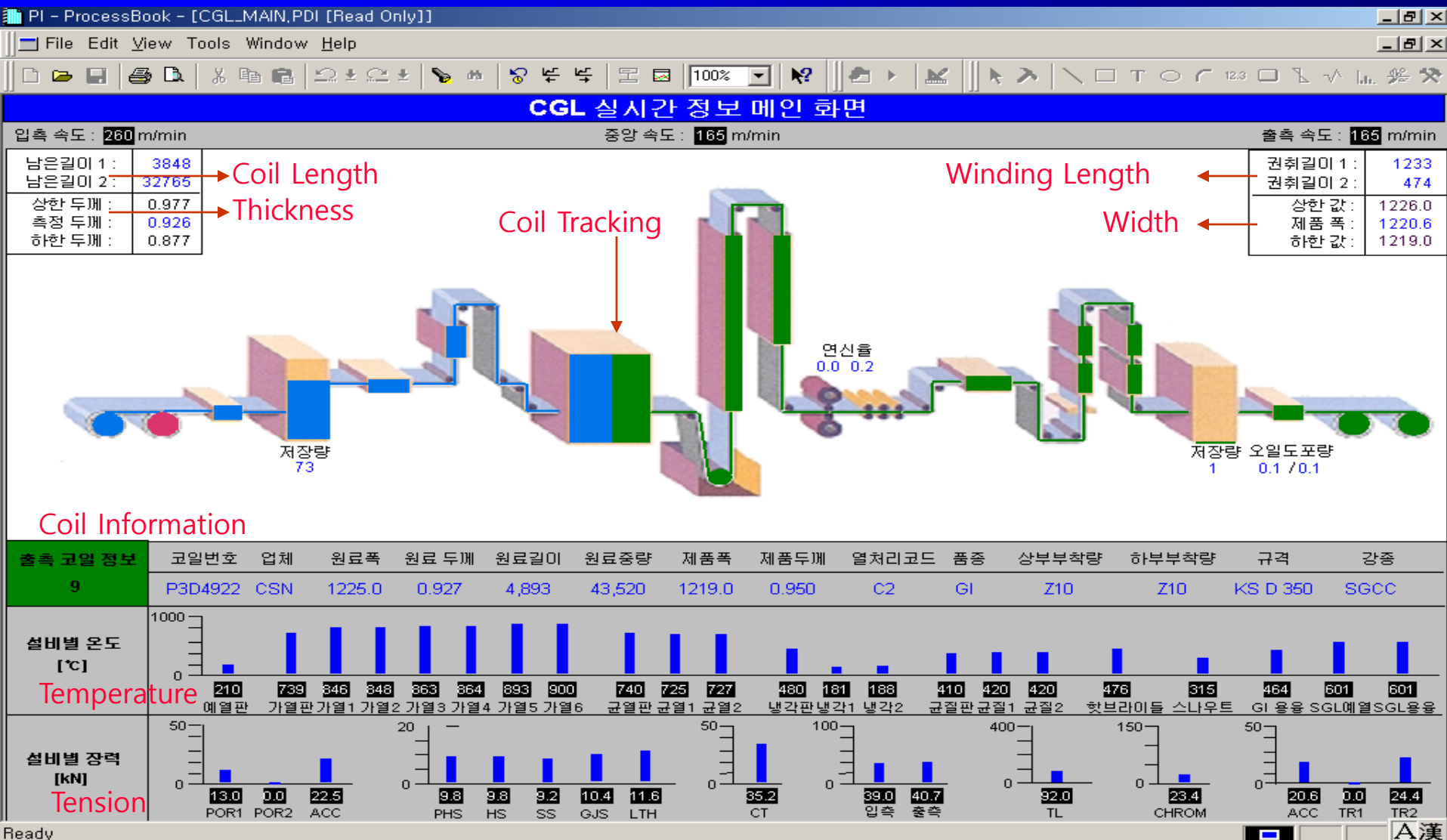


# COIL LENGTH TRACKING



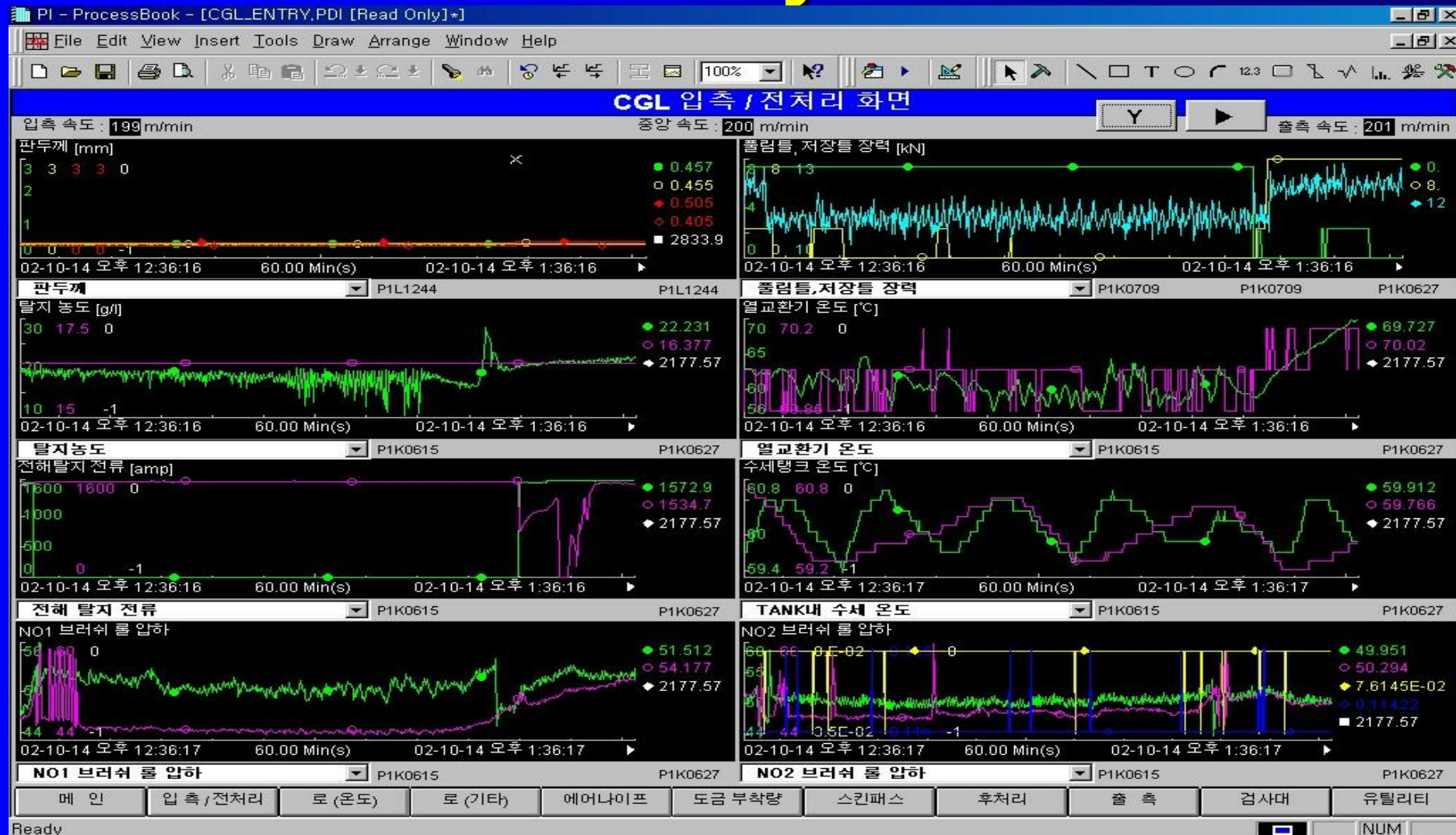


## Main Screen



# Main Task : Results

## Entry



# Main Task : Results

# Inspection



# Main Task : Results

Chart

# WEB version

Sheet





# Appl. #1 : Retrieval of Operation Data

# Menu

1

CGL RIMS 검색 화면

날짜 선택

시작시간 2002-4-11 12:00:00

종료시간 2002-4-11 13:30:54

선택된 센서

D

D

D

ALL DEL

센서 선택

입측 센서

증양1 센서

증양2 센서

출측 센서

조회 Group

검색

종료

3

CGL RIMS 검색 화면

날짜 선택

시작시간 2002-4-11 12:00:00

종료시간 2002-4-11 13:30:54

선택된 센서

D

D

D

ALL DEL

센서 선택

입측 센서

증양1 센서

증양2 센서

출측 센서

조회 Group

검색

종료

2

CGL RIMS 검색 화면

날짜 선택

시작시간 2002-4-11 12:00:00

종료시간 2002-4-11 13:30:54

선택된 센서

D

D

D

ALL DEL

센서 선택

입측 센서

증양1 센서

증양2 센서

출측 센서

조회 Group

검색

4

진행

종료

센서수[3] Coi수[3] 소요시간[3] 분[2002-04-12 오후 1:38:23]

센서[3] Coi정보[3,P2D1375] 시간[2002-04-12 오후 1:58:19]

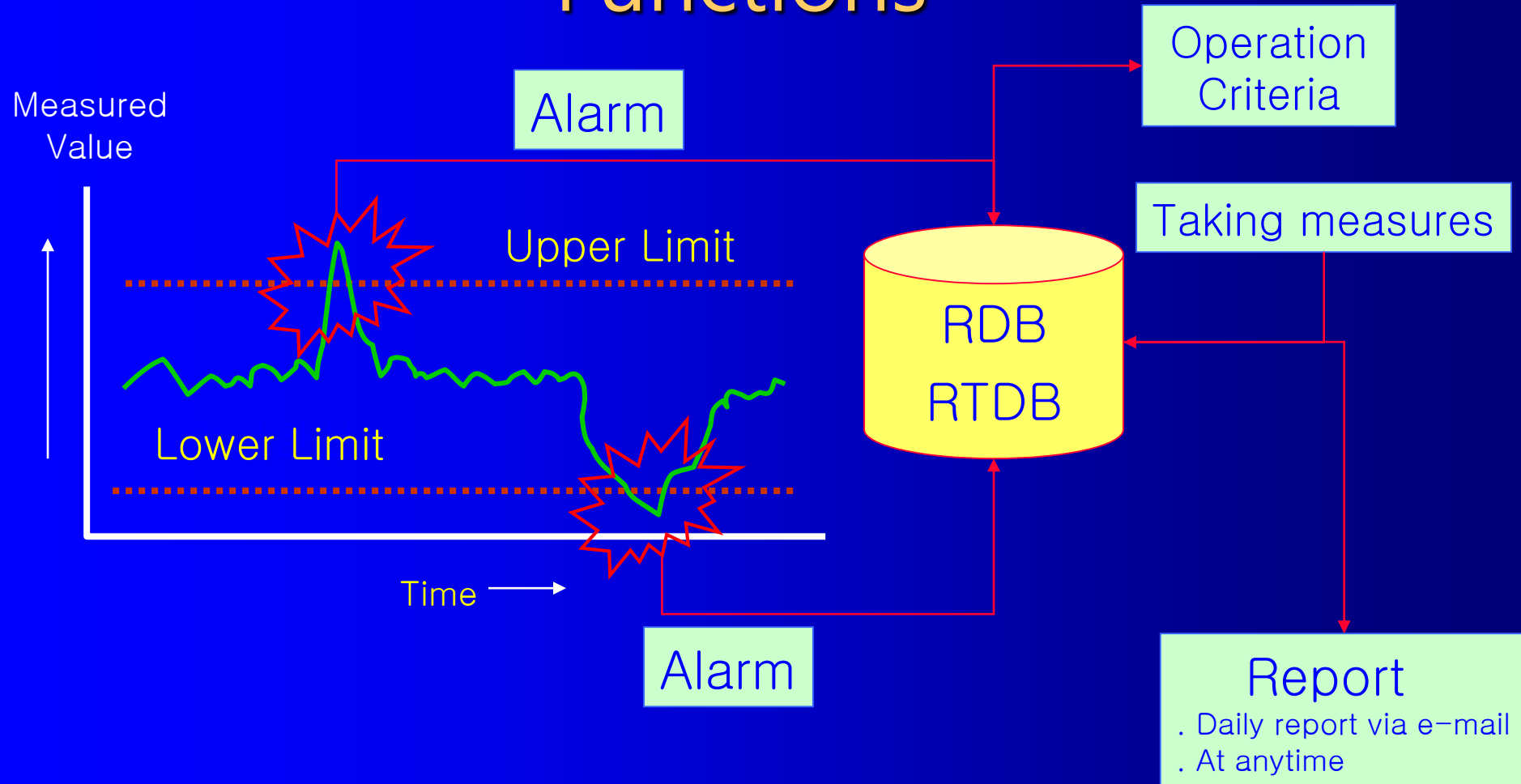


# Export to Excel

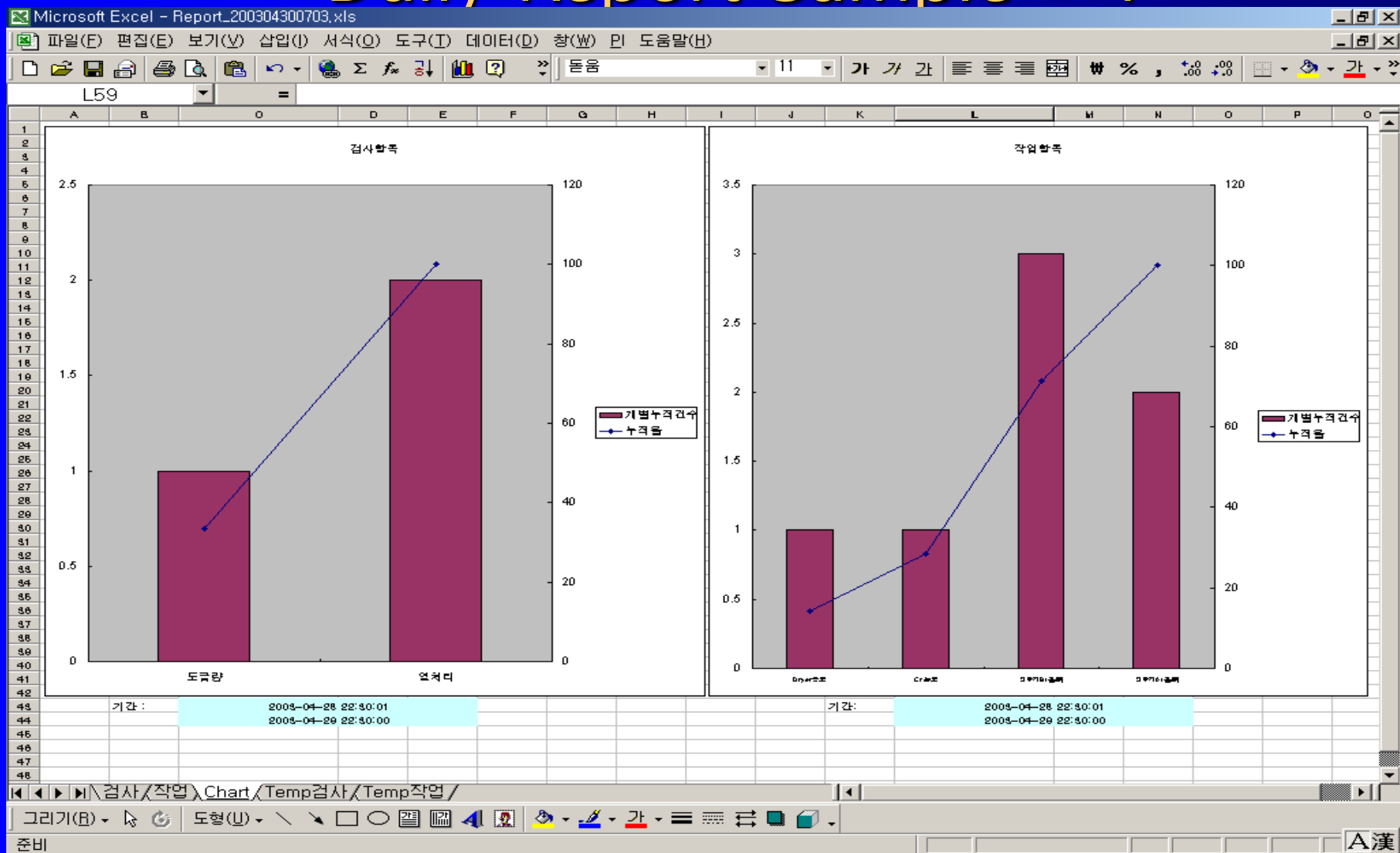
[illegible]

# Appl. #2 : Monitoring and Daily Report System - Line Operation and Quality Related Items

# Functions



# Daily Report Sample #`1



# E-mail



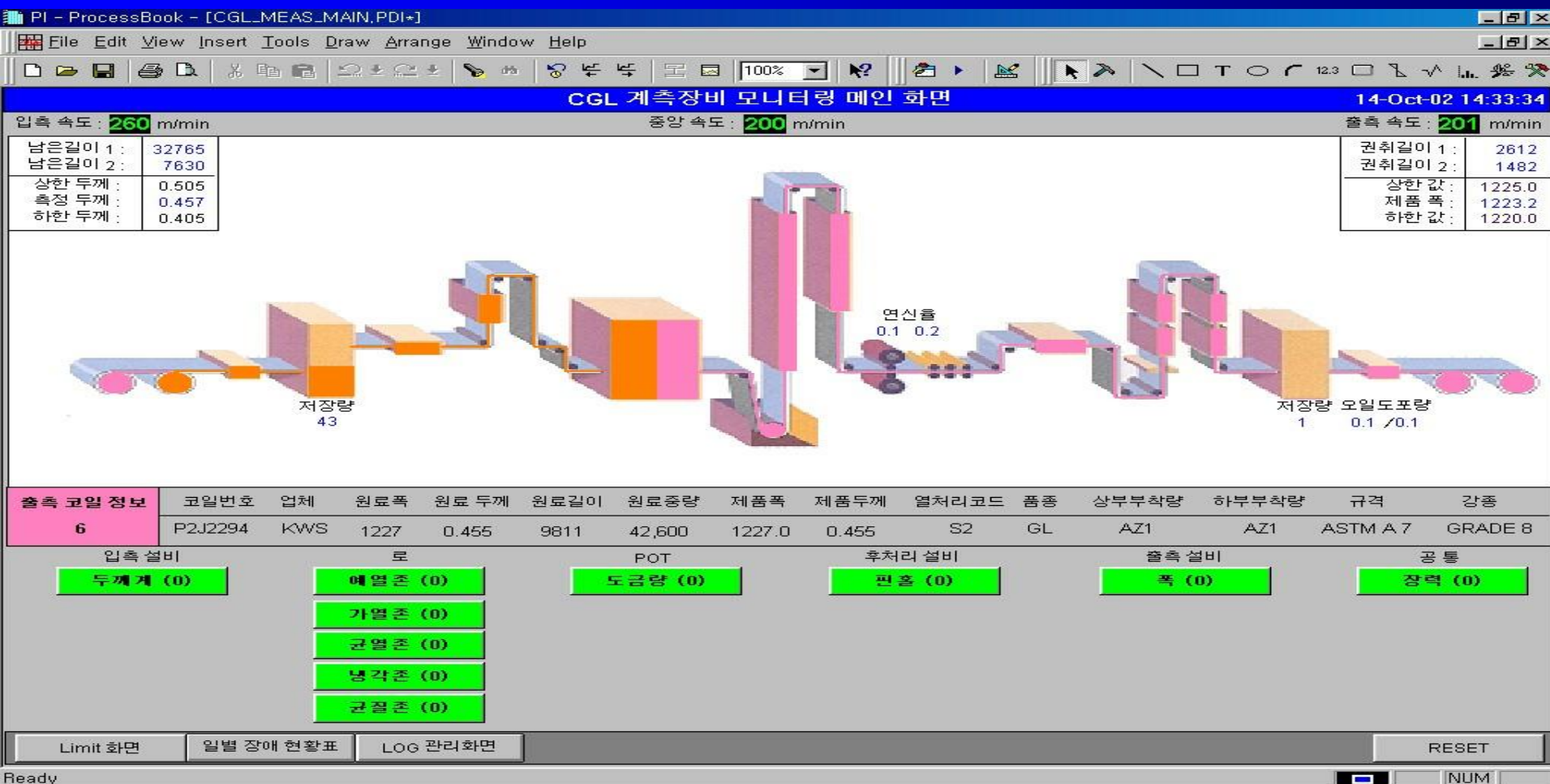
# Appl. #3 : Analysis of Measuring Devices



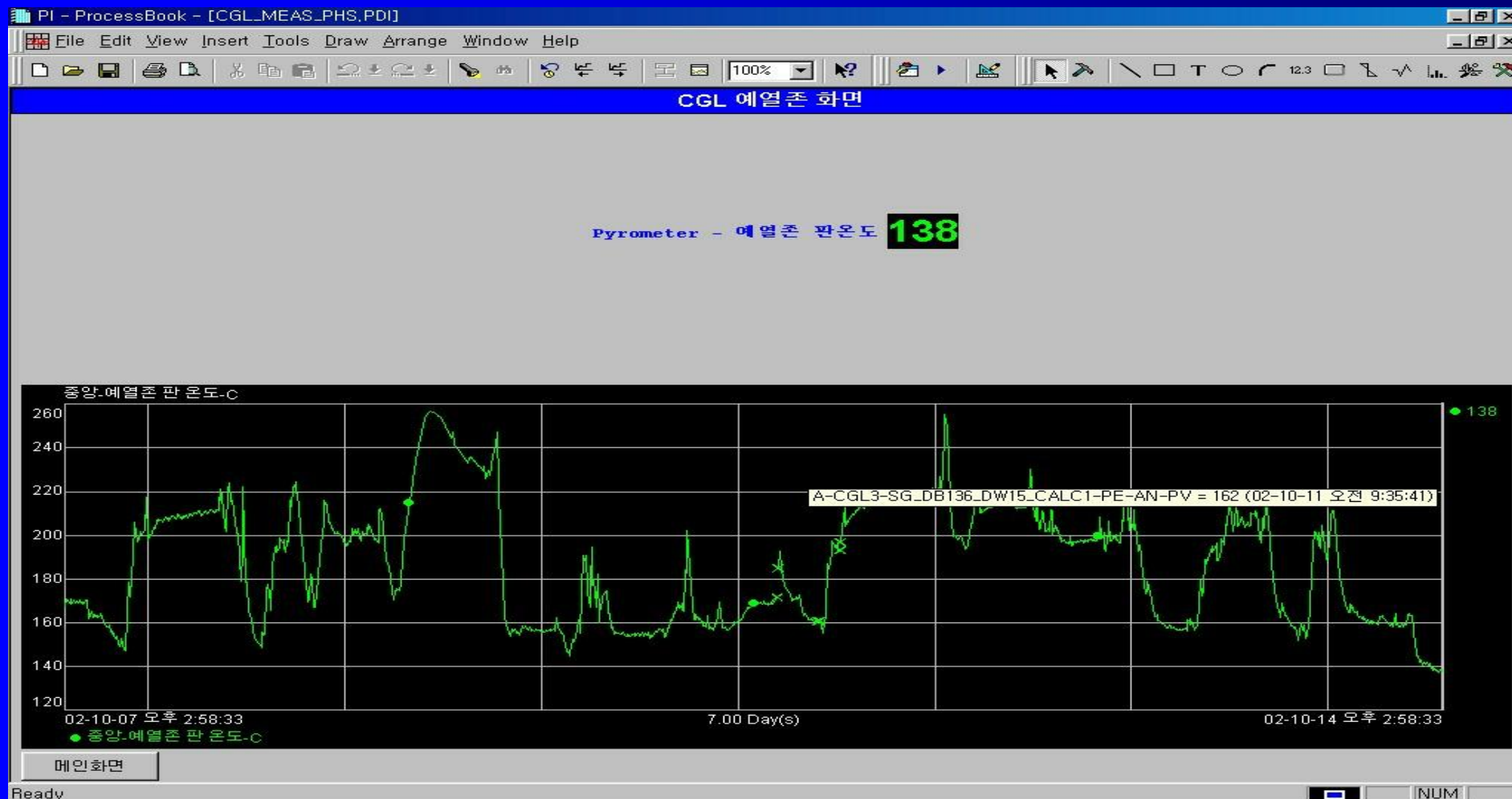
# Main Screen

## Major Measuring Devices

- \* Thickness Gauge
- \* Furnace Thermometers
- \* Zinc Coating Weight
- \* Tension Meters
- \* Pin Hole Detector



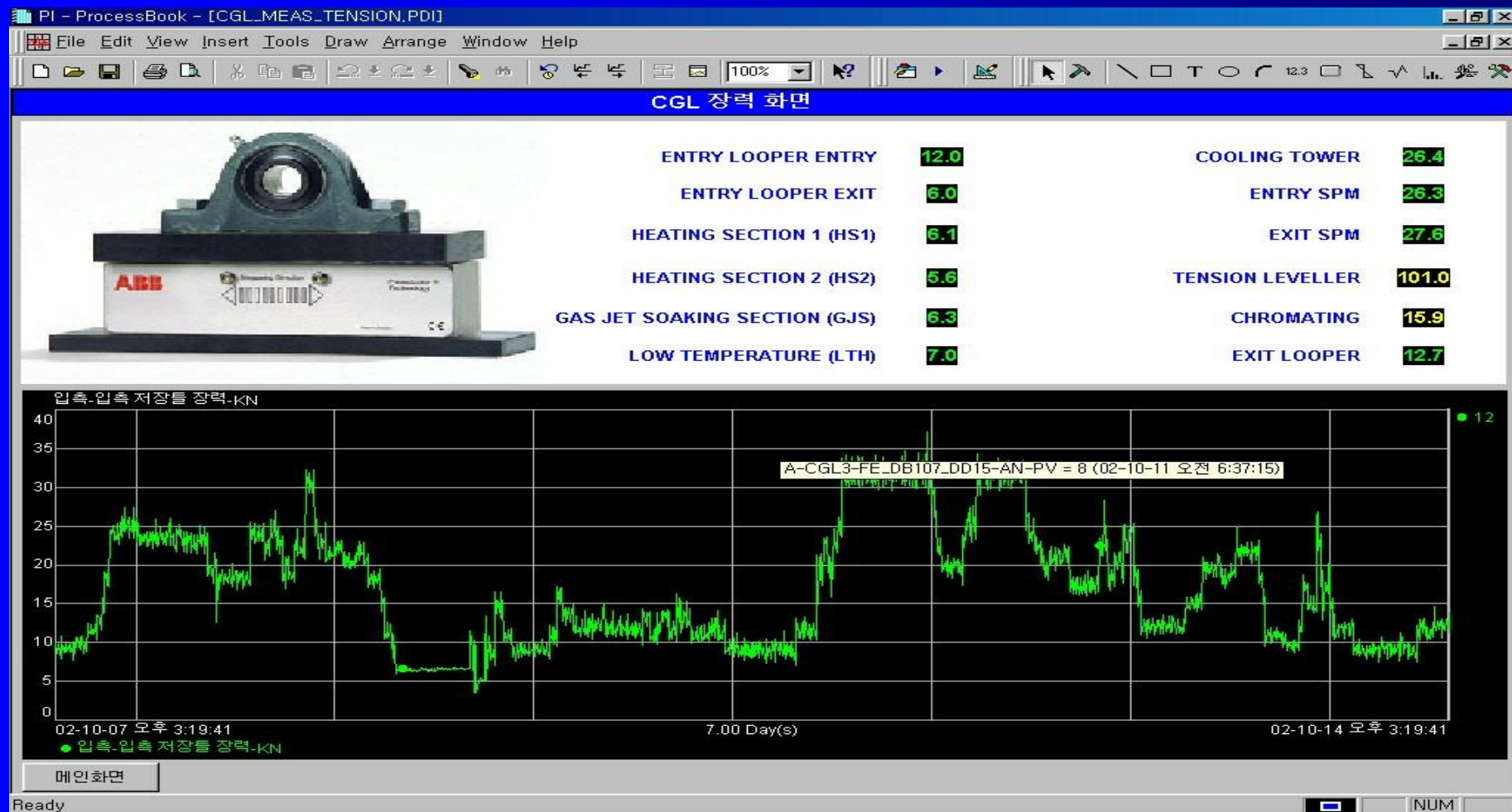
# Furnace Temperature



# Zinc Coating Weight



# Tension





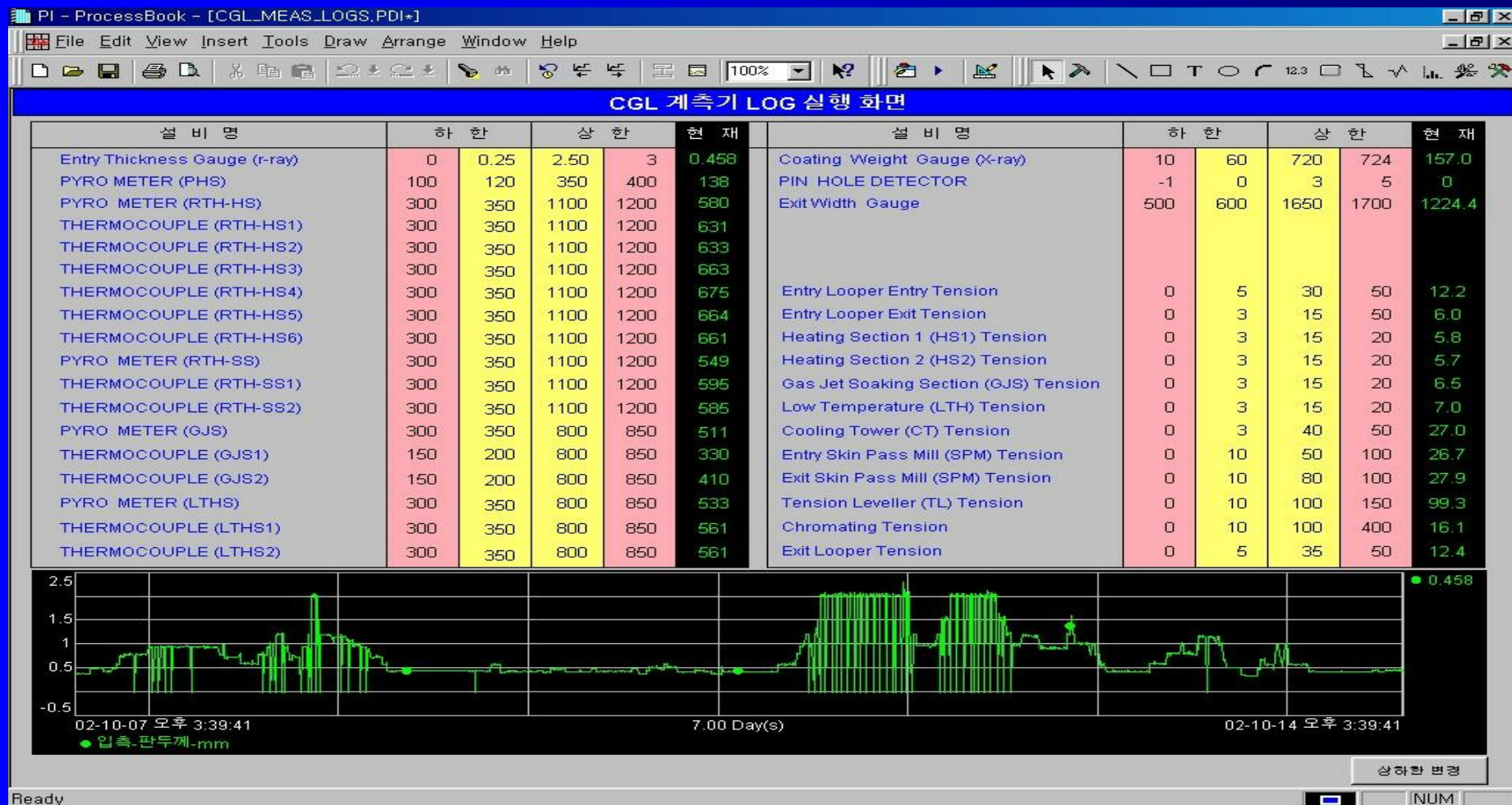
# Daily Report – Sensor Trouble

Microsoft Excel - Limit\_Table.xls

파일(F) 편집(E) 보기(V) 삽입(I) 서식(O) 도구(T) 데이터(D) 창(W) 인 도움말(H)

<

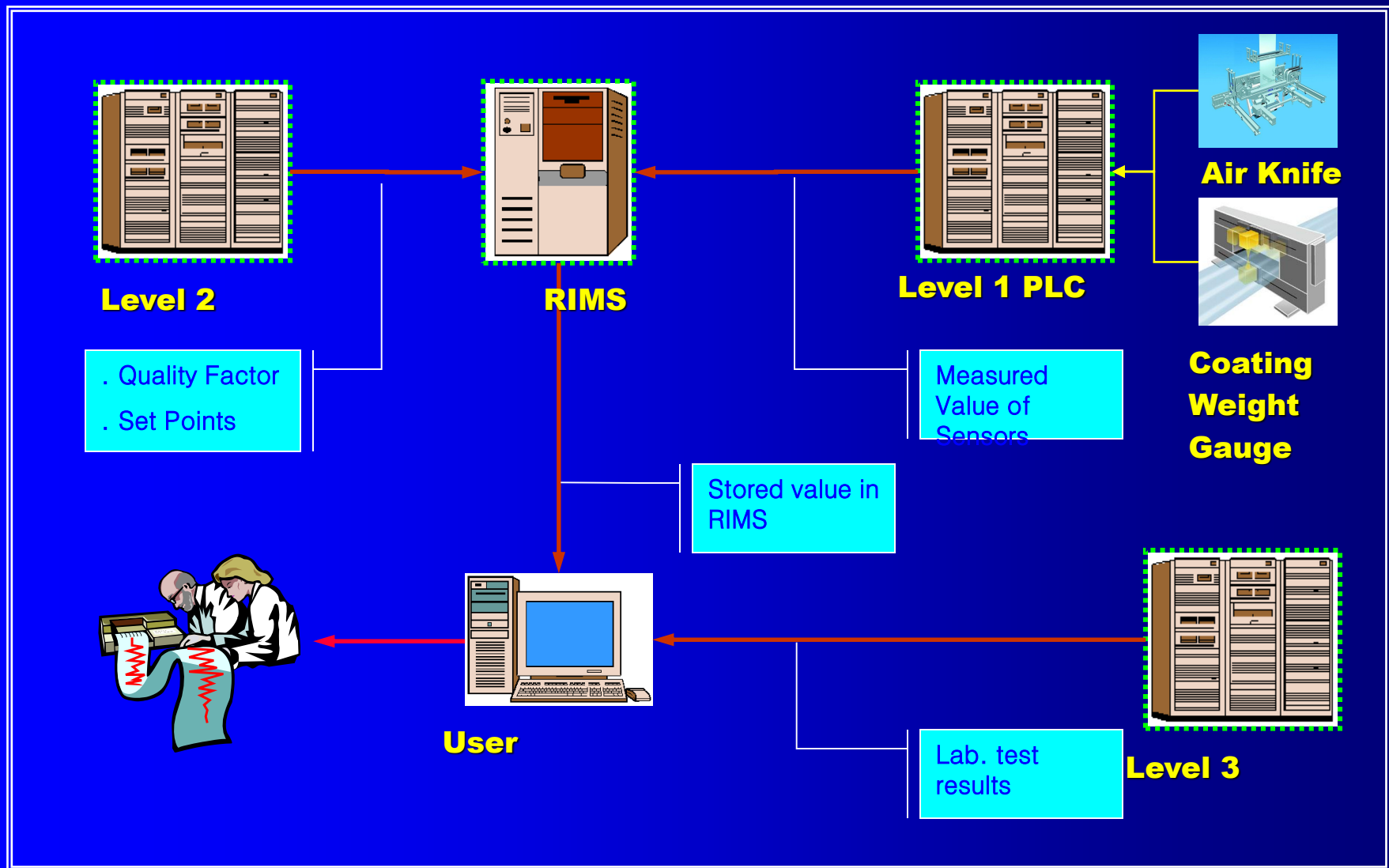
# Logging



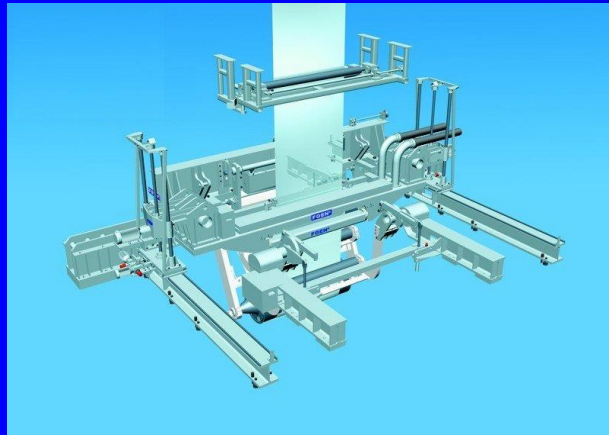


# Appl. #4 : Analyzing Zinc Coating Weight

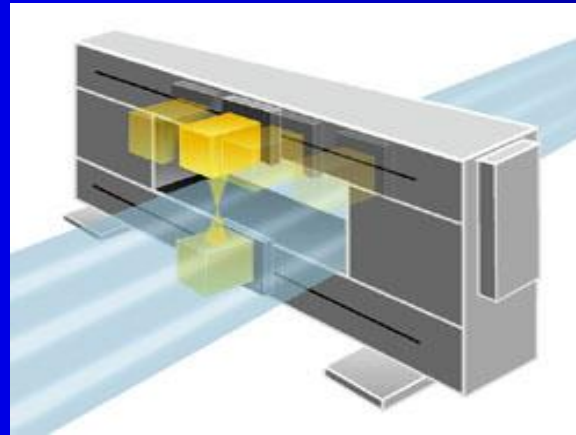
## Analysis System Configuration



## Data Sources



Air Knife

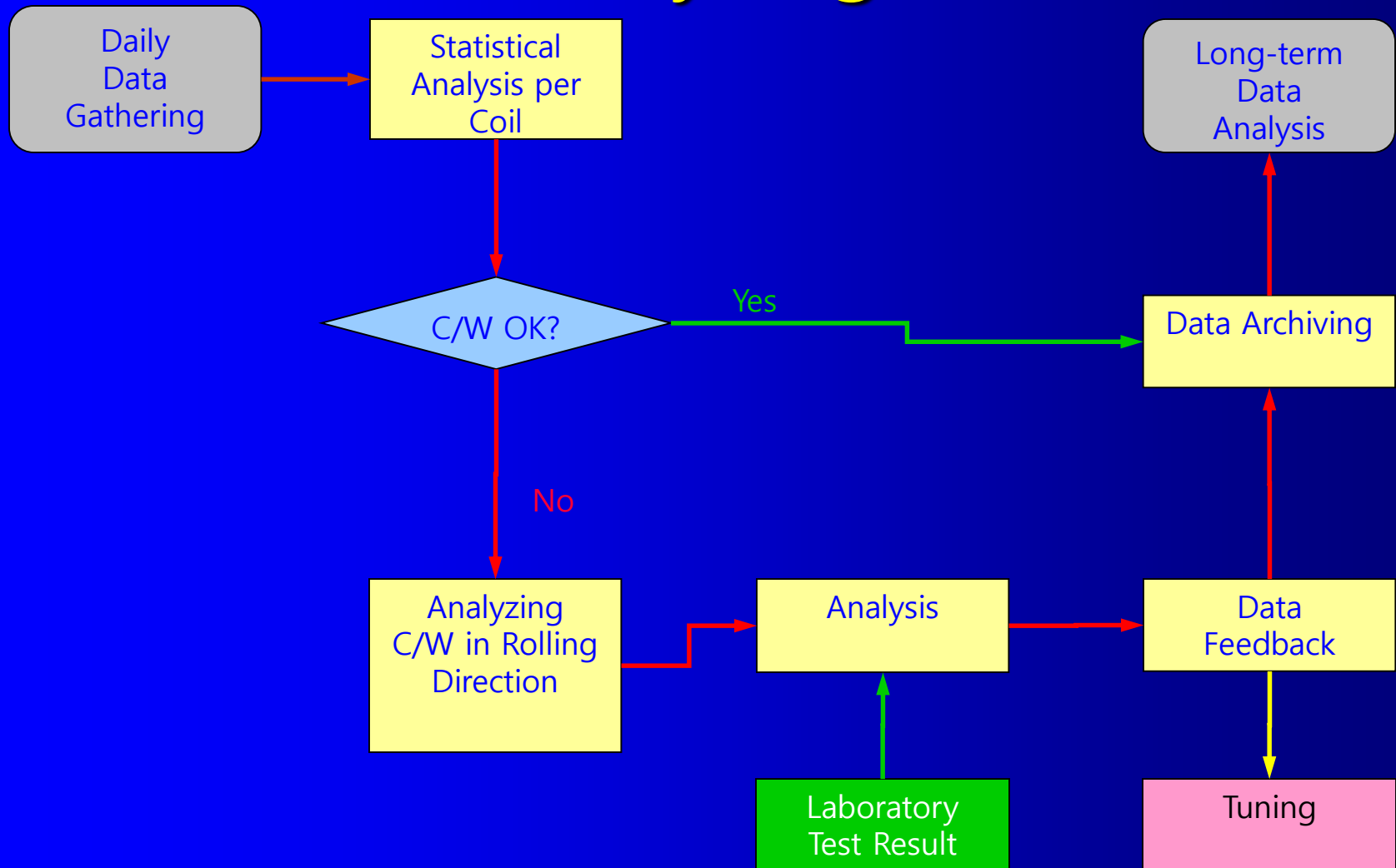


Coating Weight  
Gauge



Laboratory Test  
Results

# Analyzing Flow



# Results

Microsoft Excel - CGLCLC 작업 실적-030409.xls

파일(F) 편집(E) 보기(V) 삽입(I) 서식(O) 도구(T) 데이터(D) 창(W) 킷 도움말(H)

E53 = P3C3748

No.	시작시간	종료시간	코일번호	OP	CEN	DR	판정	변경	작업시간	사용시간	두께	폭	평균도금	솔
1	2003-03-21 22:38:17	2003-03-21 23:06:09	P3C3733B	166.2	167.2	164.8	11	0	00:00:27	00:00:27	2705	6725551	885164	
2	2003-03-21 23:06:09	2003-03-21 23:51:21	P3C3710	162.4	164.2	161.8	11	0	00:00:45	00:00:45	4340	11084764	1428190	
3	2003-03-21 23:51:21	2003-03-22 00:33:31	P3C3712	156.7	159.8	158.2	11	0	00:00:42	00:00:42	4053	10351403	1306618	
4	2003-03-22 00:33:31	2003-03-22 00:43:17	P3C3727	162.5	165.5	161.8	11	0	00:00:09	00:00:09	823	2337748	301146	
5	2003-03-22 00:43:17	2003-03-22 01:34:35	P3C3728	162.4	164.8	160.6	11	14	00:00:51	00:00:49	4353	12362676	1613294	
6	2003-03-22 01:34:35	2003-03-22 02:00:33	P3C3729	161.4	166.4	162.7	11	0	00:00:25	00:00:25	2208	6270354	814976	
7	2003-03-22 02:00:33	2003-03-22 02:52:01	P3C3730	166.5	168.5	164.8	11	0	00:00:51	00:00:51	4377	12429589	1614507	
8	2003-03-22 02:52:01	2003-03-22 03:17:12	P3C3731	162.4	165.8	163.3	11	0	00:00:25	00:00:25	2142	6083040	790411	
9	2003-03-22 03:17:12	2003-03-22 03:34:13	P3C3732	164.2	166.5	163.8	11	0	00:00:17	00:00:17	1582	3934536	511895	
10	2003-03-22 03:34:13	2003-03-22 03:34:15	P3C3732	164.2	166.5	163.8	11	0	00:00:00	00:00:00	0	0	0	
11	2003-03-22 03:34:15	2003-03-22 04:02:17	P3C3732	164.2	166.5	163.8	11	0	00:00:28	00:00:28	4379	10888941	1415819	
12	2003-03-22 04:02:17	2003-03-22 04:47:39	P3C3735	162.8	165.4	163.8	11	0	00:00:45	00:00:45	4401	10942714	1420850	
13	2003-03-22 04:47:39	2003-03-22 05:07:09	P3C3734	161.2	164.9	162.5	11	0	00:00:19	00:00:19	1894	4710139	612415	
14	2003-03-22 05:07:09	2003-03-22 05:52:01	P3C3736	163.2	166.4	162.9	11	0	00:00:44	00:00:44	4356	10832226	1410279	
15	2003-03-22 05:52:01	2003-03-22 06:13:31	P3C3737	161.8	165.6	163.4	11	0	00:00:21	00:00:21	2083	5180680	673951	
16	2003-03-22 06:13:31	2003-03-22 06:58:39	P3C3738	165.5	169.2	164.9	11	0	00:00:45	00:00:45	4383	10897934	1417979	
17	2003-03-22 06:58:39	2003-03-22 07:24:43	P3C3694A	158.7	162.5	157.9	11	1	00:00:26	00:00:03	2178	6286896	814312	
18	2003-03-22 07:24:43	2003-03-22 07:50:15	P3C3694B	157.4	161.6	158.6	11	1	00:00:25	00:00:14	2171	6267195	807083	
19	2003-03-22 07:50:15	2003-03-22 08:39:15	P3C3695	158.6	162.2	161.5	11	0	00:00:49	00:00:49	4152	11985727	1535696	
20	2003-03-22 08:39:15	2003-03-22 09:26:14	P3C3688	157.9	161.6	158.7	11	0	00:00:46	00:00:46	3875	11196777	1431266	
21	2003-03-22 09:26:14	2003-03-22 09:52:32	P3C3689	159.0	163.2	161.5	11	0	00:00:26	00:00:26	2013	5816926	743932	
22	2003-03-22 09:52:32	2003-03-22 10:20:32	P3C3690	158.4	161.4	160.5	11	0	00:00:28	00:00:28	2195	6342369	809607	
23	2003-03-22 10:20:32	2003-03-22 11:14:42	P3C3691	158.6	162.2	159.5	11	0	00:00:54	00:00:54	4377	12646611	1615564	
24	2003-03-22 11:14:42	2003-03-22 12:09:36	P3C3692	159.1	163.2	160.8	11	2	00:00:54	00:00:45	4437	12821123	1632693	
25	2003-03-22 12:09:36	2003-03-22 12:37:20	P3C3693	157.6	161.3	160.9	11	1	00:00:27	00:00:25	2140	6184769	791471	
26	2003-03-22 12:37:20	2003-03-22 13:16:34	P3C3761	110.4	111.4	109.6	11	1	00:00:39	00:00:06	3751	7123323	851761	
27	2003-03-22 13:16:34	2003-03-22 13:35:58	P3C3762	109.0	109.7	107.2	11	0	00:00:19	00:00:19	1883	3575647	415542	
28	2003-03-22 13:35:58	2003-03-22 13:58:00	P3C3757	105.1	106.3	104.4	11	0	00:00:22	00:00:22	1915	4054804	470984	
29	2003-03-22 13:58:00	2003-03-22 14:41:44	P3C3758	103.6	104.3	103.0	11	13	00:00:43	00:00:39	3804	8054273	934620	
30	2003-03-22 14:41:44	2003-03-22 15:22:22	P3C37261	168.5	169.3	165.7	11	1	00:00:40	00:00:34	3029	8601447	1116835	
31	2003-03-22 15:22:22	2003-03-22 15:34:06	P3C3725A1	159.2	161.9	157.4	11	0	00:00:11	00:00:11	897	2548585	328983	

Summary Data Sheet GL GA GI

준비

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# Questions

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