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資料 5. 協議議事録

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR IMPROVING THE QUALITY OF PRODUCTS
AND INCREASING THE COMPETITIVENESS OF THE INDUSTRIAL SECTOR
IN THE HASHEMITE KINGDOM OF JORDAN

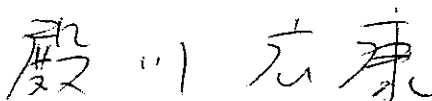
Based on the results of the Preparatory Study, the Government of Japan decided to conduct a Basic Design Study on the Project for Improving the Quality of Products and Increasing the Competitiveness of the Industrial Sector (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the Hashemite Kingdom of Jordan (hereinafter referred to as "Jordan") the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Hiroyasu TONOKAWA, First Project Management Division, Grant Aid Management Department, JICA, and is scheduled to stay in the country from January 18, 2004 to February 13, 2004.

The Team held discussions with the officials concerned of the Government of Jordan and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Amman, January 22, 2004



Mr. Hiroyasu Tonokawa
Leader,
Basic Design Study Team
Japan International Cooperation Agency
(Japan)



Dr. Seyfeddin Muaz
Acting President,
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(Jordan)

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the technical capabilities of the Royal Scientific Society in order to improve the quality of products and to increase the competitiveness of the industrial sector in Jordan.

2. Project Sites

The site of the Project is in Amman.

3. Responsible and Implementing Agency

3-1. The Responsible and Implementing Agency is the Royal Scientific Society (RSS)

3-2. The organization chart of RSS is attached as ANNEX-1

4. Items requested by the Government of Jordan

After discussions with the Team, the items described in ANNEX-2 were finally requested by the Jordanian side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid Scheme

The Jordanian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Jordan as explained by the Team and described in ANNEX-3 and ANNEX-4 of the Minutes of Discussions signed by both parties on June 12, 2003

6. Schedule of the Study

6-1. The consultants will proceed to further studies in Jordan until February 13, 2004

6-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around May, 2004.

6-3. In case that the contents of the report are accepted in principle by the Government of Jordan, JICA will complete the final report and send it to the Government of Jordan around August, 2004.

7. Other Relevant Issues

7-1. Equipment covered by the Project

Equipment covered by the Project will be selected from the list of items attached as ANNEX-2. Final decision on this matter will be made by the Japanese side during the further study in Japan on the basis of the result of the field survey and in accordance with "the criteria for selection of equipment and decision of quantity and specifications" attached as ANNEX-3.

7-2 Priority of Equipment

Requested equipment shall be squeezed to minimum items, numbers and specifications necessary for the achievement of the project objective. The Jordanian side will submit to the Team the priority areas to be covered by the Project and the priority of requested equipment before February 11, 2004.

7-3. Equipment requested from the Environmental Research Center

Equipment requested from the Environmental Research Center is categorized as follows.

- (1) Equipment for testing quality of products
- (2) Equipment for testing quality of raw materials
- (3) Equipment for testing environmental performance of manufactures

The Jordanian side explained that the above (2) testing was directly related to the quality of products and that the above (3) testing was directly related to the competitiveness of the industrial sector. The Team explained that the eligibility of the above (2) and (3) equipment should be examined carefully from the viewpoint of the extent of contribution to the project objective

7-4. Explanation by the Jordanian side on the National Calibration Laboratory

(1) The objective of the establishment of the national calibration laboratory is to provide internationally traceable calibration services to both RSS's laboratories and the industrial sector in Jordan.

(2) The idea to establish the national calibration laboratory in RSS has already been approved by the national steering committee for metrology.

(3) Calibration activities of RSS, which are now conducted by the Electronics Services & Training Center, the Mechanical Design & Technology Center and the Building Research Center, will be integrated into the existing standards & calibration laboratory of the Electronics Services & Training Center as the national calibration laboratory, but it is expected that the integrated laboratory will become an independent center of RSS in the future.

(4) It is not prerequisite for the implementation of the Project to name the integrated

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laboratory as the national calibration laboratory because the calibration services expanded by the implementation of the Project is within the present function of RSS.

7-5. Operation and Maintenance

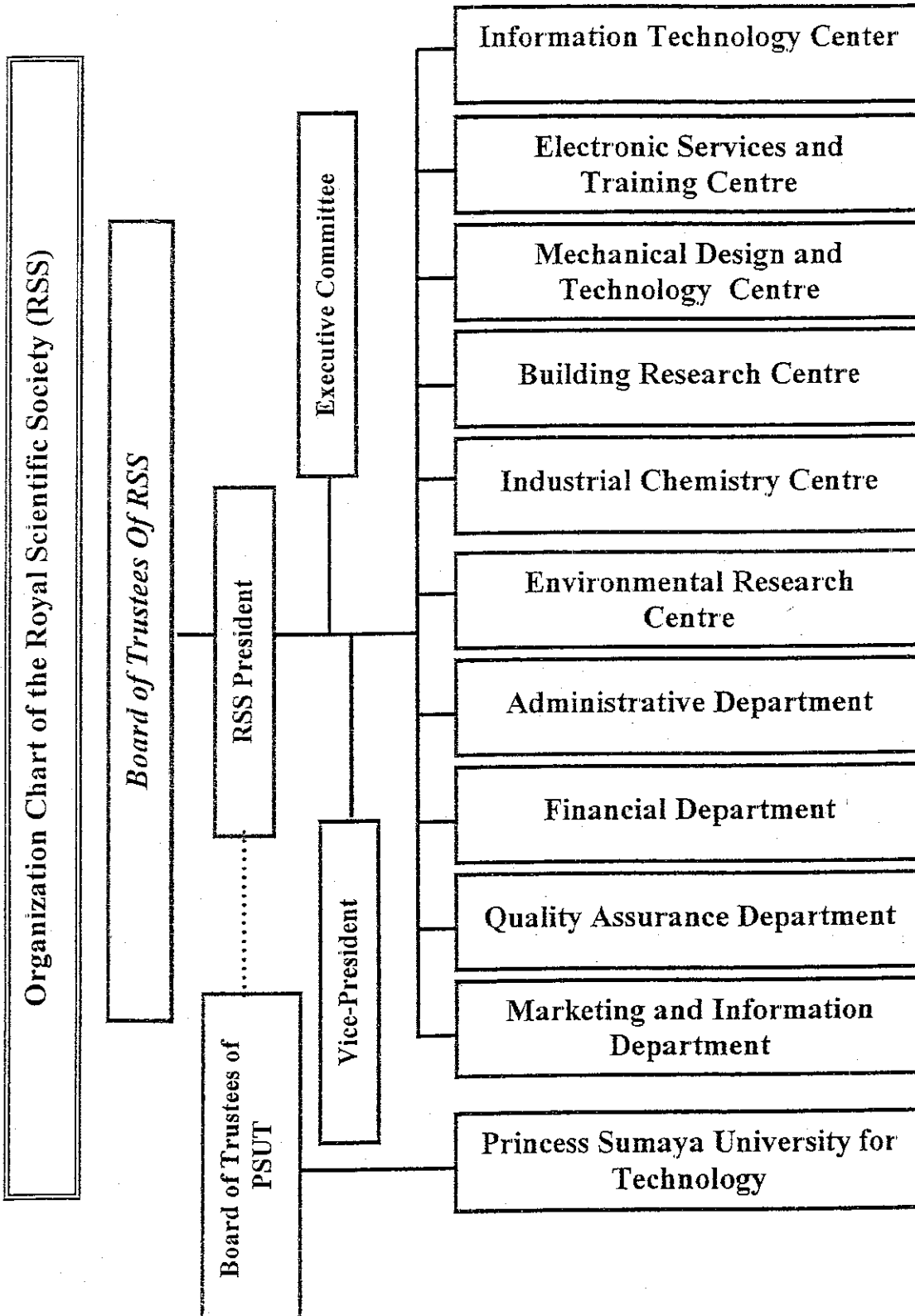
The Jordanian side will allocate sufficient number of staff and enough budget in order to operate and maintain equipment covered by the Project properly

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ANNEX-1: Organization Charts



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ANNEX-2: Items Requested by the Government of Jordan

NATIONAL CALIBRATION LABORATORY (NCL)		
No.	Description	Quantity
A. Electrical Calibration System		
A-1	Direct Voltage Reference Standard	1
A-2	Resistance Standards (complete set, all range)	1
A-3	Direct Voltage Standard	1
A-4	Oscilloscope Calibrator with Options & Accessories	1
A-5	DC Null Detector	1
A-6	Digital Multimeter	1
A-7	Spectrum Analyzer	1
A-8	Power Meter Calibrator	1
A-9	Power Supply	1
A-10	High Voltage Digital Voltmeter	1
A-11	1000A AC/DC Current Source	1
A-12	Current Probe	1
A-13	Function Generator	1
A-14	High Voltage Source	1
A-15	Microwave Frequency Counter	1
A-16	Variable Auto Transformer	1
A-17	High Voltage Probe	1
A-18	Scope Meter	1
A-19	Standard Capacitances (4 kinds)	1
A-20	Decade Capacitor	1
A-21	Standard Inductance (6 kinds)	1
A-22	Global Positioning System with time interval counter	1
A-23	Power sensor	1
A-24	Calibration Asset Track/Management software	1
A-25	Multifunction Calibrator	1
B. Temperature Calibration System		
B-1	Water Bath	1
B-2	Fluid Bath	1
B-3	Fluid Bath	1
B-4	Salt Bath	1
B-5	Ice Point Reference	1
B-6	Ice Machine with crusher	1
B-7	Triple Point of Water Cell	1
B-9	Freezing Point of Indium Cell	1
B-11	Freezing Point of Aluminum Cell	1
B-12	Freezing Point of Tin Cell	1
B-14	Freezing Point of Copper Cell	1
B-15	Bath for Maintaining Triple point of Water and Gallium Cells	1
B-16	Bath for Maintaining Indium, Tin, Zinc and Aluminum Cells	1
B-17	Bath for Maintaining Silver and Copper cells	1
B-18	Dry Block calibrator	2
B-19	Spherical furnace	1
B-20	Humidity / Temperature Recorder	1
B-21	Humidity / Temperature Chamber	1
B-22	Reference Standard Thermocouples and Resistance thermometers	4
B-23	Working Standard Thermocouples and Resistance thermometers	4
B-24	Digital Precision Thermometers	4
B-25	Liquid In Glass Thermometers	10
B-27	Clamps for holding thermometers and thermocouples	10
B-28	Cold Junction comparison	1
B-29	Multiplexer Selector Switch	1
B-30	Pyrometer	1
B-31	Portable Infrared calibrator (Black Spot)	1
C. Length Calibration System		
C-1	Gauge Block Set / Steel / 112 pcs	2
C-2	Gauge Block Set	2
C-3	Gauge Block Set	2
C-4	Gauge Block Set	2
C-5	Angle Block Set (12 pcs)	2
C-6	Gauge Block Accessory Kits	2
C-7	Caliper checker	2
C-8	Inside Micro Checker	2
C-9	Depth Micro Checker	2
C-10	Digital Tape Measure	2
C-11	Set of control glasses for parallelism	2

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No.	Description	Quantity
C-12	Black Granite Surface Plate and Tables	4
C-13	Optical Flat Set	2
C-14	Digital Micrometer	4
C-15	Digital Calipers	4
C-16	Bore Gauges	4
C-17	Digital Angle protractor	2
C-18	Micrometer stand	2
C-19	Dial Gauge stand	2
C-20	Dial Gauge Tester	1
C-21	Precision Level	1
C-22	Granite Comparator stand	2
C-23	Peak wide stand Microscope	1
C-24	Edge Scale for measurement of parallelism of vernier calipers	2
C-25	Maintenance Kit for gauge blocks	2
C-26	Linear Scale (up to one meter steel)	2
C-27	Automatic Gauge Block Comparator	1
C-28	Surface Roughness Tester	1
C-29	Machine for calibration of length standards, steel rulers, etc.	1
C-31	Special Gauge block set for vernier caliper with control ring for inner diameter and height	2
C-32	Plate for tempering gauge blocks	2
D. Mass Calibration System		
D-1	Weight Sets E1 Class	2
D-2	Weight Sets E2 Class	2
D-3	Weight Sets F1 Class	1
D-4	Weight Sets M1 Class	1
D-5	Electronic Digital Balance	1
D-6	Electronic Digital Balance	1
D-7	Electronic Digital Balance	1
D-8	Digital Balance Comparator	1
D-9	Digital Balance Comparator	1
D-10	Digital Balance Comparator	1
D-11	Digital Balance Comparator	1
D-12	Apparatus for Measuring Density of Weights	1
D-13	Apparatus for Measuring Magnetic Susceptibility of Weights	1
D-14	Desiccator	1
D-15	Balance Tables , Apparatus Tables and Accessory kits	9
D-16	Humidity controlled cabinets for maintain of reference weights	1
E. Pressure Calibration System		
E-1	Dead weight Testers complete with	2
E-2	Low , Medium , and High range pressure piston and	3
E-3	Weight set high range 20-700 bar	1
E-4	Precision pressure and vacuum gauges	4
E-5	Hydraulic Digital Pressure Calibrators (Fluid and Air)	2
E-6	Vacuum pump with pipe and valve system	1
E-7	Vacuum meter calibrated with indicator	1
E-8	Mercury manometers	2
E-9	Barometer	1
E-10	Fittings, Valves, & pressure tubes. (sets)	2
F. Force Calibration System		
F-2	Digital Force Read Out	2
F-3	Reference Standard Machine for calibration of Load Cells	1
F-4	Load Cell / Compression & Tension	2
F-5	Load Cell / Compression & Tension	2
F-6	Load Cell / Compression & Tension	2
F-7	Load Cell / Compression & Tension	2
F-8	Load Cell / Compression & Tension	2
F-9	Load Cell / Compression & Tension	2
F-10	Proving Rings / Compression & Tension	6
F-11	Torque Calibration System	1
G. Volume & Density Calibration System		
G-1	Weighing machine	1
G-2	Balance	1
G-3	Standard Flasks	10
G-4	Standard Pipettes	10
G-5	Standard Burette	8
G-6	Standard Tanks	3
G-7	Standard Hydrometer	1
G-8	Specific gravity meter	1
G-9	Temperature Bath	1
G-10	Water Distillation Apparatus	1

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No.	Description	Quantity
G-11	Manometer	1
G-12	Plastic Tubing	1
G-13	Dry Oven	1
G-14	Pycnometer	1
G-15	Barometer	1
G-16	Hydrometer	1
G-17	Desiccator	1
H. Flow Calibration System		
H-1	Reference Standard and Working Flow Meters (Fluid and Air)	4
H-2	Standard Apparatus for calibration of flow meters (Fluid and Air)	1
I. Speed Calibration System		
I-1	Reference Standard and Working Tachometers	2
I-2	Standard Apparatus for calibration of Tachometers	1
J. Light Calibration System		
J-1	Reference Standard and Working Luxmeters	2
J-2	Reference Standard Source in IR and UV region	2
J-3	Standard Apparatus for calibration of Luxmeters	1

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ELECTRONIC SERVICES AND TRAINING CENTER (ESTC)

No.	Description	Quantity
1. Equipment needed for testing safety of Home Use Electronic Apprience		
1	Insulation and breakdown tester	1
2	Leakage current meter	2
3	Ball pressure test set	1
4	Spring operated impact hammer	2
5	Needle flame test apparatus	1
6	Water pressure apparatus	2
7	Heating cabinet	2
8	Proof tracking test apparatus	1
9	IP Rating Test equipment with all accessories	1
10	Creepage Gauge set	1
11	Torque screw drivers/spanners	1
12	Inclined plane	1
13	High frequency power supply	1
14	Door endurance tester for microwave ovens	1
15	Hot winding ohmmeter	1
16	Digital Tachometer	2
17	Digital Power Meter	1
18	Digital Lux meter	1
19	Torque tester for lamps	1
20	Life cycling tester for lamps	1
21	- Rigid Test finger with Force meter	1
	- Test Pin Dia. 3 - Dia. 4, J = 15	1
	- Test Nail	1
	- Test probe Dia. 30 x 80 mm	1
	- Jointed Test Finger with Guard Dia. 50 x 20 x 100	1
22	Variable transformers	2
23	Resistance Battery	1
24	Surface resistivity meter	1
25	Digital clamp-on Ammeters	2
26	Multimeters	5
27	RCL Meter	1
28	Glass fibers insulation	2
29	Test corner	1
2. Equipment needed for testing of Electric Irons		
1	Balance	1
2	Circular blade crosscut tester	2
3	Steam pressure measuring apparatus	1
4	Apparatus for measuring temperature drop under load	1
5	Test apparatus for total steaming time	1
6	Digital Thermometer with recording option	2
7	Fall Down Tester	1
3. Equipment needed for testing of Switches, Plugs and Sockets		
1	Tumbling barrel	1
2	Pendulum impact test apparatus-mechanism	1
3	Mounting device for impact test	1
4	Apparatus for checking the withdrawal force	1
5	Apparatus for cord retention testing	1
6	Impact Weight Apparatus with:	1
	- Intermediate Piece for Low Temperature Test	1
	- Intermediate piece for Pin Insulating Sleeves	1
	- Falling Weight 1000g	1
	- Falling Weight 100 g	1
7	Intermediate piece for low temperature test	1
8	Intermediate piece for pin insulating sleeves	1
9	Pendulum impact test apparatus-polamide hammer	1
10	Mounting block for flush type equipment	1
11	Arrangement for mechanical strength test on multiple socket outlets	1
12	Apparatus for socket-outlets breaking capacity and normal operation test	1
13	Apparatus for flexing test	1
14	Device for testing non-solid pins	1
15	Arrangement for compression test	1
16	Apparatus for plug pin abrasion test	1
17	Tracking test apparatus	1
18	Apparatus for pressure test at high temperature	1
19	Dynamometer	1
20	Device for checking the resistance to lateral strain	1
21	4-step double programmable timer	1

No.	Description	Quantity
22	Programmable off switching counter	1
23	Pneumatic drive unit	1
23	Test apparatus for making and breaking capacity for switches	1
25	Conductor damage test set	1
26	Corrosion test apparatus	1
27	Endurance test system	1
28	Gauge for Non-Accessibility Checking	1
29	Gauge for Non-Accessibility Checking after the Normal Operation Test	1
30	Gauge for verification of Grooves, Holes, and Reverse Tapers	1
31	Gauge for the verification of the Outline of Covers or Cover-Plates	1
32	Apparatus for compression test for verification of resistance to heat	1
33	AC current source	2
34	Inductive Loads:	
	- Air core inductor 100 mH, 25 A	1
	- Air core inductor I _{max} 63 A, cos ϕ max 0.6	1
	- Resistive Loads:	
	- Resistance Battery 10 kW	1
35	Tungsten Filament Lamp Loads	1
4. Equipment needed for testing of Refrigerators, Freezers, and Bottle Coolers		
1	Multi-Channel Temperature Logger (PC Based Data Acquisition) with PC and software.	3
2	Test Packages with suitable filling materials (chemicals)	1
3	50/60 Hz Frequency Converter	1
4	Digital KW.h Meter	2
5	Temperature and Humidity Chamber	1
6	Water Evaporation Apparatus	2
5. Equipment needed for testing of Lead Acid Starter Batteries		
1	Temperature Chamber	1
2	Vibration Tester	1
3	High Rate Discharge Tester with accessories	1
4	Universal Battery Tester	1
5	Water Bath	1
6. Equipment needed for testing of Television Receivers:		
1	Ionization meter	1
2	Several special equipment for laser classification	1
3	Temperature recorder (multi-channel) with thermocouples	2
4	Pink noise generator	1
5	Testing box	1
6	Band-pass filter for wide-band noise measurement	2
7	Oscilloscope	1
8	Softening temperature-testing equipment	1
9	Discharge meter	1
10	Test finger (Test probe B of IEC 61032)	1
11	Test pin (Test probe 13 of IEC 61032)	1
12	Test pin (Diameter 4 mm, length 100 mm)	1
13	Test pin (Test probe 16 of IEC 61032)	1
14	Straight test probe (Test probe D of IEC 61032)	1
15	Test probe C of IEC 61032	1
16	Test hook (Fig 4, 180 mm by 5 mm by 8 mm)	1
17	Rigid test finger (Test probe 11 of IEC 61032)	1
18	Test tool	1
19	Surge test generator	1
20	Dielectric strength tester	1
21	Dielectric strength for sheet material test instrument	1
22	Spring hammer	1
23	Test plug	1
24	Torque (fixings, knobs, screw terminals, strain relief of flexible cord)	1
25	Pull / Push	1
26	Antenna plug tester	1
27	Microscope	1
28	Full draught oven	1
29	Endurance Test for switches	1
30	Flexing apparatus	1
31	Test equipment for strain relief	1
32	Torque gauges	1
33	Inclined plane 10°	1
34	Resistance to fire test equipment	1
35	Oven	1
36	Test probe	1
37	Video test signal generator	2

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No.	Description	Quantity
38	Audio test signal generator	1
39	Teletext test signal generator	1
40	RF signal generator	1
41	Spectrum analyzer with digital frequency counting function	1
43	Video noise meter	1
44	Vectorscope	1
45	Audio level / distortion meter	1
46	Passive devices	1
47	Television test modulator	2
48	Low capacitance probe	3
50	Luminance meter and colorimeter with telescopic lens	1
51	Optical measurement instruments	1
7. Equipment needed for testing of Circuit breakers:		
1	Short circuit current test set with all accessories	1
2	Mechanical shock test apparatus	1
3	Glow wire test apparatus	1
4	Mounting support for mechanical impact test	1
5	Mechanical impact test apparatus	1
6	Uninterrupted duty test set with all accessories	1
7	Making and Breaking Tester	1

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MECHANICAL DESIGN AND TECHNOLOGY CENTER (MDTC)

Nö.	Description	Quantity
1. Plastics & Rubber Unit		
1	Universal testing machine	1
2	Melt flow indexer	1
3	Analytical balance	1
4	Forced circulation oven	1
6	Computerized tensile film tester	1
7	Sample preparation machine (lathe)	1
8	Dial gauge calipers	3
9	Punch dies for plastic tensile samples	3
10	Certified mercury thermometers	
10-1	15°C -30°C ± 0.05°C	3
10-2	15°C -15°C ± 0.05°C	4
10-3	20°C -80°C ± 0.1°C	4
10-4	70°C -120°C ± 0.1°C	4
10-5	110°C -150°C ± 0.1°C	4
10-6	170°C -220°C ± 0.1°C	4
10-7	-10°C to 30°C ± 0.1°C	4
11	End caps for pressure testing of pipes	1
2. Strength of Materials Unit		
1	Automated Universal tensile/compression testing machine	1
2	Analytical balance SB 24001	1
3	Thermocouple	1
4	Impact testing machine	1
6	Hydrostatic pressure tester	1
3. Measurement & Calibration Unit		
1	Dogmatic height master	1
2	Ring gauge	1
3	Metric long series gauge block	1
4	Procession steel cubes	1
5	Calibrated steel balls	1
6	Set of standard specimens for roughness tester	1
7	Flow meters	1
8	Cement lining thickness gauge	1
9	Digital balance	1
10	Digital balance	1
11	Digital balance	1
12	Ultrasonic thickness gauge	1
13	Ultrasonic thickness gauge	1
14	Coating and oxidation thickness gauge	1
4. Metallography & Heat Treatment Unit		
1-1	Scanning Electron Microscope with:- WDX (Wave length Despersive X-ray) microanalysis.	1
1-2	CSN Analyzer	1
2	Cutting Machine:	1
3	Grinding and polishing machines.	
3-1	- Grinding: using twin wheel machine	1
3-2	- Polishing: single wheel machine.	1
4-1	Digital Universal Hardness Tester (Brinel, Vickers, and Rockwell)	1
4-2	Mini-load hardness (Micro-hardness) tester (Vickers)	1
5	Portable Spectrometer	1
6	Carbon Sulphur Analyzer references material:	16
7	Universal Hardness Tester References Blocks	10
8	Electronic Balance	1
9	Electric Furnace	1
10	Salt Sprav cabinet	1
11	Four pins meggar for measuring soil resistivity	1
12	Water Testing Kit, Portable	1
13	Automatic Mounting Press Machine for Sample preparation	1
14	Lacquer thickness measurement	1
15	Oxgen meter computerized (portable)	1
16	pH meter computerized (portable)	1
17	Cu/CuSO ₄ reference electrode computerized (portable)	1
18	Calomel & Ag/AgCl reference electrodes for corrosion experiments	1
5. Thermal Testing Unit		
1	Establishing a facility (closed room) to test radiator	1
2	Establishing a facility to test domestic gas cookers	1
6. Non-Destructive Testing Unit		
1	Directional X-Ray machine for industrial radiography	1
3	Digital Ultrasonic flow detectors with probes for testing of welds and casting.	2

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No.	Description	Quantity
4	Digital Ultrasonic thickness gauges	2
7. Radiation Measurement and Calibration Lab.		
1	Low level Gamma spectroscopy system	1
2	Gamma - Ray spectroscopy analysis software	1
3	Portable Gamma spectroscopy system	1
4	Radon / Radon daughter detector	1
5	Gross Alpha / Beta Counter	1
6	Neutron Dose / Dose Rate Meter	1
7	Four - input Multi - Channel Buffer	1
9. Casting Technology Unit		
1	Portable Hardness Tester	1
2	Induction Furnace	1
3	Mobile Sand testing Laboratory for foundry industry	1
4	Standardization and calibration kit for sand test specimens	1

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INDUSTRIAL CHEMISTRY CENTER (ICC)

No.	Description	Quantity
1. Textile & Paper Unit		
1	Nu-Martindale tester	1
2	Washing Machine	1
3	Steaming Cylinder with steam generator	1
4	Air Permeability of Paper	1
5	Driven Precision Yarn Reel Instrument	1
6	Motor driven water penetration tester	1
7	Reflectometer	1
8	Tensile machine	1
2. Cigarettes Unit		
1	Linear Smoking Machine	1
2	Gas Chromatograph	1
3. Organic & Food Unit		
1	Gas Chromatography/Mass Spectrometer (GC/MS) & Accessories	1
2	Gas Chromatography/Flame Ionization (GC/FID)	1
3	High Performance Liquid Chromatography (HPLC) (Preparative)	1
4	Automatic Kjeldahl Nitrogen Analyzer	1
5	Milk Analyzer	1
6	Meat Analyzer	1
7	Polarimeter	1
8	Titration Apparatus	1
9	Amino Acid Analyzer	1
10	Automatic Melting Point Apparatus	1
11	Moisture Meter	2
12	Density meter & accessories for oils and alcohols	1
13	Muffle Furnace	1
14	pH/Ion Meter	1
15	CHNO (Carbon-Hydrogen-Nitrogen-Oxygen)	1
16	Food Lab System	1
4. Petrol & Lubricants Laboratory		
1	Lubricant Test Machine	1
2	Dielectric Breakdown Voltage of Insulating Liquids	1
3	Evaporating Loss of Lubricating Oils (Noack Test)	1
4	Drop Test Apparatus	1
5	Determination of Vapor pressure acc.	1
6	Determination of Air Release Value	1
7	Demulsibility Characteristics	1
8	Rapid Flash point Tester	1
9	Automatic Oxygen Bomb Calorimeter	1
10	Bench top XRF	1
5. Paints, Lacquers & Solvents Laboratory		
1	Constant Climate Chamber	1
2	Cone and Plate Viscometer	1
3	Digital Constant Temperature Bath/ circulator & cooler	1
4	Drying Time Recorder & Film Applicator	1
6	Superchroma Spectrocolori Meter	1
7	Low Voltage Holiday Detector	1
6. Inorganic Material Div.		
1	Atomic Absorption Spectrophotometer	1
2	XRD - (X-Ray Diffractometer)	1
3	Sequential Plasma Emission Spectrometer (ICPS)	1
4	XRF- Sequential Spectrometer	1

BUILDING RESEARCH CENTER (BRC)

No.	Description	Quantity
1	Traxial apparatus, fully computerized according to BS 1377 and ASTM D 2850 standards.	1
2	Auto Test Compression/Flexural Machine	1
3	Guarded Hot Plate apparatus	1
4	Accelerated Weathering Chamber	1
5	Equipment and accessories to test Sanitary Ware	1
8	Non-Destructive Ultrasonic testing device	1
9	Water Permeability of Concrete	1

ENVIRONMENTAL RESEARCH CENTER (ERC)

No.	Description	Quantity
1	Multi stage Cyanide distillation system	1
2	Ion chromatograph	1
3	Purge & Trap concentrator	1
4	Precision Integrated sound level meter/ noise dosimeter.	1
5	Environmental cabinet assembly (environmental chamber) for testing resistance to growth of mold on the surface of interior coatings	1
6	Gas Chromatograph/ Electron Capture Detector (GC/ECD)	1
7	Rotary Evaporator System	1
8	Total Kjeldahl Nitrogen Digester/Distillator	1
9	Different equipments to establish a new soil analysis laboratory including: Soil Mill accompanied with	1
	i - 2mm Sieve sheet	1
	ii - Replacement brush strips	1
	iii- Dust collection system	1
	- Shaker	1
	- Analytical Balance	2
	- Oven	1
	- Ultrasonic batch cleaner	1
	- Fume hood	1
10	Occupational Air Quality Portable Analyzer	1
11	Occupational Volatile Organic Compounds (VOC's) Portable Analyzer	1
12	Provision of up-to-date Windows operated software	1
13	Continuous Fine Dust Monitor	1
14	Dynamic Gas Calibration System	1
15	Primary Roots Meter Calibrator	1
16	Total Reflection X-Ray Fluorescence (TXRF) / Fluorescent EDX	1

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ANNEX-3: Criteria for selection of equipment and decision of quantity and specification

	Calibration equipment	Testing equipment
Selection of equipment (Necessity)	<ul style="list-style-type: none"> ① Calibration equipment for laboratory equipment of RSS ② Calibration equipment for measuring or testing equipment of firms etc. 	<ul style="list-style-type: none"> ① Testing equipment for Jordanian industrial products
Selection of equipment (Propriety)	<p>Not to fall into any one of the following categories:</p> <ul style="list-style-type: none"> ① Items without reliable allocation of staff and budget necessary for good operation and maintenance after procurement ② Items which require high technique, expensive cost or many staff members for good operation, maintenance and traceability/calibration ③ Items which require large-scale modification/construction of buildings for installation ④ Items for which installation areas or storage places are not secured. ⑤ Items for which frequency of use is low or needs of calibration or testing from the industrial sector are rare ⑥ Items necessary for calibration or testing which is conducted more efficiently by other institutions ⑦ Items which may be prepared by other donors at present or in future ⑧ Simple equipment, tools, standards etc. which can be easily procured by RSS ⑨ Items which can be substituted by existing equipment ⑩ Items which have difficulty to procure spare parts or consumables locally ⑪ Short-lived items ⑫ Consumables ⑬ Items which are manufactured or supplied by only one company 	
Quantity	<ul style="list-style-type: none"> ① Setting up necessary quantities based on frequency of use, necessary time of use and traceability/calibration ② Planning common use of equipment among centers/divisions/units/laboratories ③ Deducting the numbers of existing equipment 	
Specifications	<ul style="list-style-type: none"> ① Considering specifications (ranges, accuracies, etc.) of testing equipment for calibration or those of industrial products for testing ② Considering ranges, accuracies, etc. required by standards in Jordan or countries importing Jordanian products ③ Considering specifications necessary for keeping or acquisition of accreditation of international authoritative institutions ④ Setting up specifications provided that more than one (generally three or more) manufacturers are applicable. 	

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31/5/2004

MINUTES OF DISCUSSIONS

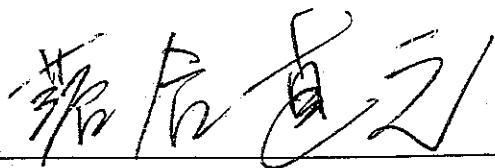
ON BASIC DESIGN STUDY ON THE PROJECT
FOR IMPROVING THE QUALITY OF PRODUCTS
AND INCREASING THE COMPETITIVENESS OF THE INDUSTRIAL SECTOR
IN THE HASHEMITE KINGDOM OF JORDAN
(EXPLANATION ON DRAFT REPORT)

In January 2004, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Improving the Quality of Products and Increasing the Competitiveness of the Industrial Sector, (hereinafter referred to as "the Project") to the Hashemite Kingdom of Jordan (hereinafter referred to as "Jordan"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult Jordan on the components of the draft report, JICA sent to Jordan the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Naoyuki OCHIAI, Deputy Resident Representative, JICA Jordan Office, from May 23 to June 1, 2004.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Amman, May 31, 2004



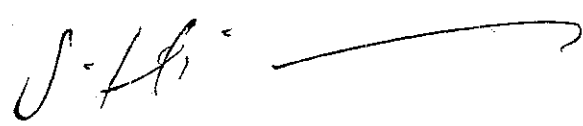
Mr. Naoyuki OCHIAI

Leader

Basic Design Study Team

Japan International Cooperation Agency

(Japan)



Prof. Dr. Sa'ad Hijazi

President

The Royal Scientific Society

(Jordan)

ATTACHMENT

1. Components of the Draft Report

The Government of Jordan agreed and accepted in principle the components of the draft report explained by the Team.

2. Japan's Grant Aid scheme

The Jordanian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Jordan as explained by the Team and described in Annex-3 and Annex-4 of the Minutes of Discussions signed by both parties on June 12, 2003.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed specified items and send it to the Government of Jordan by the end of August, 2004.

4. Other relevant issues

4-1. Request on the Components covered by the Project

The Jordanian side requested to modify the draft report as ANNEX-1.

The final decision on this matter will be made by the Japanese side after further studies on the contents of request in Japan.

4-2. Necessary Works to be covered by the Project

The Jordanian side will conduct the necessary works described in the draft report before the commencement of the installation of the equipment covered by the Project.

4-3. Proper Operation and Maintenance of the Equipment

The Jordanian side will operate and maintain properly and effectively the equipment procured under the Project by means of allocating necessary budget, recruiting required personnel and training the newly recruited personnel as described in the draft report.

4-4. Replacement of the Equipment

The Jordanian side will make sincere efforts to secure necessary fund for the replacement

and upgrading of the equipment procured under the Project.

4-5. Confidentiality of the Draft Report

Both sides agreed that the contents of the draft report including specifications of the equipment would be confidential, be dealt with carefully and not be disclosed to any third parties until the tendering stage of the Project will be completed.



ANNEX-1.

No.	Equipment	Contents of Request	Reason	Priority
F-3	Reference Standard Machine for Calibration of Load Cells	Restore 1 unit to the planned equipment.	There are many demands on calibrations of load cells for 4 laboratories and enterprises, which is about 100-200 times/year. External calibration takes about 6 months in Germany or more than 1 year in Egypt.	1
A-20	Decade Capacitor	Restore 1 unit to the planned equipment.	A-20 as a working standard is absolutely necessary for calibration services of condensers for enterprises.	2
F-11-B	Torque Transducer Calibration System	Restore 1 unit to the planned equipment.	This is very important for F-11-A Torque Calibration System	3
H-1-b	Reference Standard and Working Flow Meters (Fluid, medium flow)	Restore 2 units to the planned equipment.	It is indispensable as primary standard and working standard for the flow calibration system.	4
H-1-c	Reference Standard and Working Flow Meters (Fluid, low flow)	Restore 2 units to the planned equipment.	It is indispensable as primary standard and working standard for the flow calibration system.	5
ESTC-6-38	Audio test signal generator	Restore 1 unit to the planned equipment.	It is indispensable to generate audio signals for testing of TV sets. And, there are many demands on the testing.	1
ESTC-6-37	Video test signal generator	The second apparatus for the equipment including Teletext signal generator.	It is indispensable to generate video signals and teletext signals for testing of TV sets. And, there are many demands on the testing.	2
ESTC-6-50	Luminance meter and colorimeter with telescopic lens	Restore 1 unit to the planned equipment.	It is indispensable to test input of CRT of TV sets. And, there are many demands on the testing.	3
ESTC-6-2	Several special equipment for laser classification	Restore 1 unit to the planned equipment.	Many TV sets are equipped with optical disk drives (DVD etc.) in Jordan. It is indispensable to test safety of laser devices of the drives. And, there are many demands on the testing.	4
ESTC-6-28	Full draught oven	Restore 1 unit to the planned equipment.	It is indispensable to test heating resistance of TV sets. And, there are many demands on the testing.	5
ESTC-7-1	Short circuit current test set with all standard accessories	Restore 1 unit to the planned equipment.	It is indispensable to test circuit breakers. And, there are many demands on the testing.	6
ESTC-3-20	Device for checking the resistance to lateral strain	Restore 1 unit to the planned equipment.	It is indispensable to test sockets. And, there are many demands on the testing.	7
ESTC-1-20	Life cycling tester for lamps	Restore 1 unit to the planned equipment.	It is indispensable to test lamps. And, there are many demands on the testing.	8
ESTC-1-14	Door endurance tester for microwave ovens	Restore 1 unit to the planned equipment.	It is indispensable to test microwave ovens. And, there are many demands on the testing.	9

No.	Equipment	Contents of Request	Reason	Priority
ESTC-2-4	Apparatus for measuring temperature drop under load	Restore 1 unit to the planned equipment.	It is indispensable to test electric irons. And, there are many demands on the testing	10
ESTC-2-5	Test apparatus for total steaming time	Restore 1 unit to the planned equipment.	It is indispensable to test steaming time of electric irons. And, there are many demands on the testing.	11
MDTC-7-5	Gross Alpha / Beta Counter	Restore 1 unit to the planned equipment.	It is necessary not only for testing of raw materials but also for testing of mainly final products (foods, beverages etc.) MDTC-7-4 Radon/Radon Daughter Detector can be deleted instead, if budget is not enough.	1
MDTC-6-3	Digital Ultrasonic Flow Detectors with probes	2 units are necessary.	Frequency of use is very much high, and 2 units are necessary. Almost accessories can be deleted to increase the number of main unit.	2

In case of a shortage of the budget, items to be deleted from planned equipment instead of the above items are as follows (to be deleted from the bottom).

No.	Equipment	Quantity	Priority
ESTC-6-40	RF Signal Generator	1	1
ESTC-1-4	Spring operated impact hammer	2	2
ESTC-4-3	50/60 Hz Frequency Converter	1	3
ESTC-1-17	Digital Power Meter	1	4
ESTC-2-2	Circular blade crosscut tester	1	5
ESTC-4-4	Digital kWh Meter	2	6
ESTC-1-3	Ball pressure test set	1	7
ESTC-7-2	Mechanical shock test apparatus	1	8
ESTC-2-3	Steam pressure measuring apparatus	1	9
ESTC-3-2	Pendulum impact test apparatus-mechanism with polyamide hammer and mounting device	1	10

資料 6. 基本設計概要表

基本設計概要表

1. 案件名
ヨルダン・ハシェミット王国 工業部門品質向上競争力強化計画
2. 要請の背景（協力の必要性・位置付け）
<p>(1) ヨルダン国は、世界貿易機関加盟、アラブ・欧米諸国との自由貿易協定締結、アカバ経済特別区の創設等、外貨導入と自由貿易の促進による一層の経済成長を図っている。それに伴い輸出市場や国内市場において工業製品間の競争が激化しており、品質面での競争力向上のために工業製品の品質管理に対する要求が高まっている。同国の「経済社会開発三ヶ年計画（2004-2006）」では、ヨルダン国製品の品質を向上させて国内市場と国際市場において競争力を高めることが目標に挙げられている。</p> <p>(2) 同国では現在実施中の「工業政策の一般枠組みおよび工業セクターの適格と発展の国家計画」や「社会・経済転換計画」に基づき、企業に対する技術・金融支援、ISO9001 の認証取得奨励、国際レベルに適合する試験所認定制度確立のための施策等、ヨルダン国製品の品質向上による競争力付加のために様々な取組が行われている。その一環として本計画は、王立科学院に計量校正用機材および品質試験用機材を整備し、同院の計量校正および品質試験サービス機能を向上させるものである。</p>
3. プロジェクト全体計画概要
無償資金協力案件を投入の1つとする相手国政府によるプロジェクト全体計画
<p>下線部：本無償資金協力を直接関係する成果、活動及び投入</p> <p>(1) プロジェクト全体計画の目標（裨益対象の範囲及び規模） 王立科学院の計量校正および品質試験サービス機能が向上する。 （裨益対象の範囲及び規模：ヨルダン国工業セクターの企業約 18,000 社、従業員約 140,000 人）</p> <p>(2) プロジェクト全体計画の成果 ア 王立科学院のプロジェクト運営体制が整備される。 イ <u>王立科学院に計量校正用機材および品質試験用機材が整備される。</u></p> <p>(3) プロジェクト全体計画の主要活動 ア プロジェクト運営のための人員を配置する。 イ <u>計量校正用機材および品質試験用機材を調達して、据付を行う。</u> ウ 上記機材および現有機材を使用して活動を行う。</p> <p>(4) 投入（インプット） ア <u>日本側（=本案件）：無償資金協力 9.05 億円</u> イ 相手国側 （ア）必要な人員の配置 （イ）建物内部の改修、機材基礎作成、現有機材移設 （ウ）運営・維持管理に係る経費</p> <p>(5) 実施体制 実施機関：王立科学院 主管官庁：計画・国際協力省</p>

4. 無償資金協力案件の内容 * 期分け案件の場合は、通期の内容を記載する。								
(1) サイト ヨルダン国アンマン市								
(2) 概要 王立科学院における計量校正用機材および品質試験用機材の調達								
(3) 相手国側負担事項 建物内部の改修、機材基礎作成、現有機材移設								
(4) 概算事業費 9.14 億円（無償資金協力 9.05 億円、ヨルダン国側負担 0.09 億円）								
(5) 工期 実施設計・入札期間を含め約 11 ヶ月（予定）								
(6) 貧困、ジェンダー、環境及び社会面の配慮 特になし。								
5. 外部要因リスク（プロジェクト全体計画の目標の達成に関するもの）								
・計量校正および品質試験サービスに対する需要が減少しない。								
6. 過去の類似案件からの教訓の活用								
特になし。								
7. プロジェクト全体計画の事後評価に係る提案								
(1) プロジェクト全体計画の目標達成を示す成果指標 王立科学院の計量校正及び品質試験サービスの項目数								
<table border="1"> <thead> <tr> <th>指標</th> <th>2002 年</th> <th>2008 年</th> </tr> </thead> <tbody> <tr> <td>計量校正及び品質試験サービスの項目数</td> <td>147</td> <td>199</td> </tr> </tbody> </table>			指標	2002 年	2008 年	計量校正及び品質試験サービスの項目数	147	199
指標	2002 年	2008 年						
計量校正及び品質試験サービスの項目数	147	199						
(2) その他の成果指標 なし								
(3) 評価のタイミング 2009 年以降（機材稼働開始から 3 年経過後の 1 年間の集計を翌年に評価）								

資料7. 参考資料/収集資料リスト

参考資料リスト

調査名: ヨルダン国工業部門品質向上競争力強化計画

番号	名称	形態 図書・ビデオ、 地図・写真等	オリジナル ・コピー	発行機関	発行年
1	ヨルダン・ハシェミット王国品質管理体制強化計画予備調査報告書	図書	コピー	国際協力事業団	2003
2	ジョルダン国企業経営能力強化計画調査報告書	図書	コピー	国際協力事業団	2001
3	Economic & Social Development Plan (1999-2003) Chap. 15, 1999-11-02	図書	コピー	計画・国際協力省	1999
4	General Framework of National Industrial Policy, The National Program for Jordan's Industrial Sector Qualification and Development, Executive	図書	コピー	産業貿易省	2001
5	Social & Economic Transformation Program	図書	コピー	計画・国際協力省	2002
6	Central Bank of Jordan Monthly Statistical Bulletin	図書	オリジナル	ヨルダン中央銀行	2003
7	Standards and Metrology Law	図書	コピー	ヨルダン国政府	2000
8	Jordan in Figures 2001	図書	オリジナル	ヨルダン統計局	2002
9	Emerging Jordan 2003	図書	オリジナル	Oxford Business Group	2003
10	Jordan Economic Overview 2000	図書	コピー	計画・国際協力省	2000
11	Jordan Institution for Standards & Metrology	図書	オリジナル	ヨルダン標準計量庁	2002
12	Jordan Standards Catalogue 2001	図書	オリジナル	ヨルダン標準計量庁	2001
13	Jordan Standards Catalogue 1999	図書	オリジナル	ヨルダン標準計量庁	1999

収集資料リスト

調査名: ヨルダン国工業部門品質向上競争力強化計画

番号	名称	形態 図書・ビデオ、 地図・写真等	オリジナル ・コピー	発行機関	発行年
1	Jordan's Competitiveness Book	図書	オリジナル	計画・国際協力省	2003
2	User Guide for Calibration and Verification Activities in Jordan	図書	コピー	ヨルダン標準計量庁	2001
3	Royal Scientific Society, Annual Report 2002	図書	オリジナル	王立科学院	2003
4	Royal Scientific Society, Intellectual Capital Report 2002	図書	オリジナル	王立科学院	2003
5	Jordan in Figures 2002	図書	オリジナル	ヨルダン統計局	2003
6	The Global Competitiveness Report 2003-2004	図書	オリジナル	World Economic Forum	2004
7	Central Bank of Jordan Annual Report 2002	図書	オリジナル	ヨルダン中央銀行	2002
8	Support to the Implementation of the EU-Jordan Association Agreement First Project Steering Committee Meeting	図書	コピー	計画・国際協力省	2003
9	Jordan's National Social & Economic Action Plan (2004-2006)	図書	コピー	計画・国際協力省	2003
10	Jordan Institution for Standards & Metrology	図書	オリジナル	ヨルダン標準計量庁	2003
11	JAS Accreditation News	図書	オリジナル	ヨルダン標準計量庁	2002
12	Accreditation Unit, JAS	図書	オリジナル	ヨルダン標準計量庁	2002
13	Industry, Trade and Investment Bulletin, December 2003	図書	コピー	産業貿易省	2003
14	Industrial Sector (unofficial draft)	図書	コピー	産業貿易省	2004
15	Monthly Data of Meteorology	図書	コピー	気象局	2004
16	Jordan Phosphate Mines Co.	図書	オリジナル	Jordan Phosphate Mines Co.	2003
17	Jordan Paper and Cardboard Factories Co. Ltd. (JPCFCL)	図書	オリジナル	JPCFCL	2003
18	Jordan Petroleum Refinery Company (JPRC) "47th Annual Report"	図書	オリジナル	JPRC	2002
19	JOPETROL Jordan Lubricating Oils 2002"	図書	オリジナル	JPRC	2002
20	General Deluxe	図書	オリジナル	Abu Haltam for Electronic and Electric Industries Corp.	2003
21	General Deluxe "Electronics The World of technology" (Catalogue)	図書	オリジナル	同上	2003
22	Quality Manual to BS EN ISO 9002; 1994	図書	コピー	同上	1994
23	Universal (Catalogue)	図書	コピー	Jordan Universal Gas Cookers and Washing	2003

資料8. 既存機材リスト

電子サービス訓練センター：標準校正部門

分野	No.	機材	製造業者	モデル	数	測定範囲	精度	原産国	使用頻度		校正頻度、方法、費用				
									回数	時間/回	回数	時間/回	方法	費用/JD/y	
F. 力	1	Digital Force Read Out	GTM	VN-Digitizer	1	2mV/V	10000 count		not used		not complete				
	2	Load Cell/ Compression and Tension	GTM	KTN-100KN, KTN-500KN	2	500kN/100kN	0.10%		not used		not complete				
C. 長さ	1	Gauge Block Set/ Tung.-car, and Ceramic	Johansson	990054,86463 / M8,M112	2	1mm to 500mm	Grade 0		2 per day	2 hrs	1 per year	2 month	by SP Sweden	1050	
	2	Digital Caliper	Mitsutoyo	CD-112°C	1	300mm	10 micro m		2 per day	2 hrs	1 per year	4 hrs	Internal		
D. 質量	1	Weight Sets E2 Class	Mettler	15885,15883,15881	1	1mg to 10kg	E2		2 per day	2 hrs	1 per year	2 months	by SP Sweden	700	
	2	Weight Sets F1 Class	Mettler	15889,15891	1		F1		2 per day	3 hrs	1 per year	2 months	by SP Sweden	490	
E 圧力	1	Digital Pressure Calibrator	Druck	DPI-605	1		0.025% + 1 digit		2 per day	1 hr	1 per year	2 months		700	
B. 温度	1	Dry Block Calibrator	Pegasus	1200B	1	150 to 1100 deg. C	0.1 deg. C		2 per day						
	2	Reference Standard Thermo Couples and Resistance Thermometers	Hart	PT 100, 5650	4	-40 to 1200 deg. C	0.1 to 0.5 deg. C		daily	continuous	1 per year	5 hrs	Internal		
	3	Digital Precision Thermometer	Hart	1560	1	all range	0.01 deg. C		daily	continuous	1 per year	2 month	by SP Sweden	350	
	4	Liquid in Glass Thermometer		ASTM XXC	17	-51 to 300 deg. C	0.1 deg. C		daily	continuous	1 per year	5 hrs/pc	Internal		
A. 電気量	1	AC/DC Transfer Standard	Fluke	792A	1	2mV to 1000V	± 10 ppm	USA	not used		not complete				
	2	AC Voltage/ Current Standard	YEW	2558	1	1000V 50A	± 0.08%, ± 0.04%	Japan	2 per day	1 hr	1 per year	5 hrs	Internal		
	3	Current Shunt Set	Fluke	A40	2	10A/20A	± 0.02 %	USA	2 per day	1 hr	1 per year	5 hrs	Internal		
	4	RMS Differential Voltmeter	Fluke	931B	1	AC100mV to 1000V	± 3 %	USA	2 per day	1 hr	1 per year	5 hrs	Internal		
	5	Primary Frequency Standard	HP	5071A	1	5 or 10MHz/1pps	± 12*10 ⁻¹⁰ %	USA	2 per day	1 hr	Need GPS				
	6	Frequency Difference Meter	Tracor	537A	1	100 KHz to 10 MHz	± 0.5 %		2 per day	1 hr	Need GPS				
	7	Quartz Frequency Standard	HP	105B		100kHz, 1MHz or 5MHz		USA	2 per day	1 hr	Need GPS				
	8	Radio Receiver	Anritsu	RQ53A	1	100 KHz to 35 MHz	± 0.5 ppm	Japan	not used		no function				
	9	RF Level Controller	TEGAM	1805B	1	10 MHz to 18 GHz 0.5 to 10 mW	±1.2% to ± 2.5%		1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
	10	Dual Type IV Power Meter	TEGAM	1806	1				1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
	11	Feedthrough Thermister Mount	TEGAM	1807A	1	0.1 MHz to 26.5 GHz	± 0.5 %		1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
	12	Terminating Thermister Mount	TEGAM	M1110	1				1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
	13	Signal Source	HP	83623B	1	10 MHz to 20 GHz Upto 316 mW	± 1 %	USA	1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
	14	8 1/2 Digital Voltmeter	HP	3458A	1	100 mV to 1000 V	±0.004% to ± 0.5%	USA	1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
	15	Thermister Mount	HP	478A				USA	1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
	16	Power Sensor	HP	8481A	1	10 MHz to 18 GHz 1 uW to 100 mW	± 0.025 ppm	USA	1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
	17	Power Meter	HP	436A	1	100 KHz to 18 GHz 10 uW to 100 mW	± 0.5 %	USA	1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
	17	Power Meter	HP	437B	1	100 KHz to 50 GHz 100 pW to 25 W	± 0.5 %	USA	1 per day	1 hr	2 per year	2 months	by Tegam /USA	350	
18	Power Meter	HP	432B	1	10 uW to 10 mW	± 1 %	USA	1 per day	1 hr	2 per year	2 months	by Tegam /USA	350		

分野	No.	機材	製造業者	モデル	数	測定範囲	精度	原産国	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
	19	Reference Divider	Fluke	752A	1	0 to 100V, 0 to 1000V	±0.2 ppm, ±0.5 ppm	USA	2 per day	1 hr	2 per year	2 months	Siemens / Germany	175
	20	Transconductance Amplifier	Fluke	5220A	1	20A	500 ppm	USA	2 per day	1 hr	2 per year	2 months	Siemens / Germany	227.5
	21	Current Shunt Set	Fluke	Y5020	1	20A	0.10%	USA	2 per day	1 hr	2 per year	5 hrs	Internal	
	22	Multi-Function Calibrator	Fluke	5720A	1	1100V, 2.2A, 100Mohm	3.5, 4.5, 8.5 ppm	USA	2 per day	1 hr	2 per year	5 hrs	Siemens / Germany	280
	23	Amplifier	Fluke	5725A	1	10A	120 to 700 ppm	USA	2 per day	1 hr	2 per year	5 hrs	Siemens / Germany	245
	24	Digital Multimeter	Agilent	3458A	1	DC: 1000V/1A/1.2Gohm AC: 1000V/10MHz	0.004% to 0.5%	USA	2 per day	1 hr	2 per year	5 hrs	Siemens / Germany	297.5
	25	Transvolt Standard Cell Enclosure	Guideline	9154D	1	1.018V	2 ppm		2 per day	1 hr	2 per year	5 hrs	Siemens / Germany	700
	26	Resistance Calibrator	Fluke	5450A	1	1 ohm to 100Mohm	10 to 600 ppm	USA	2 per day	1 hr	1 per year	5 hrs	Internal	
	27	Standard Shunts	YEW	2743	2	50A	500ppm	Japan	2 per day	1 hr	1 per year	5 hrs	Erb / Germany	490
	28	Unsaturated Standard Cells	YEW	2749	5	1V	50 ppm	Japan	2 per day	1 hr	1 per year	5 hrs	Internal	
	29	DC Voltage Standard	YEW	2552	1	1000V	30 ppm	Japan	2 per day	1 hr	1 per year	5 hrs	Internal	
	30	DC Voltage Standard & Current Unit	YEW	2561.52	1	30A	0.01% to 0.2%	Japan	2 per day	1 hr	1 per year	5 hrs	Internal	
	31	Precision Digital Meter	YEW	2501	1	DC: 1000V/1000Mohm AC: 500V	0.01%	Japan	2 per day	1 hr	1 per year	5 hrs	Internal	
	32	Decade Resistance Box	YEW	2786	1	1 ohm to 100Kohm	0.01% to 1%	Japan	2 per day	1 hr	1 per year	5 hrs	Internal	
	33	Decade Resistance Box	YEW	2793	3	1 ohm to 100Mohm	0.01% to 1%	Japan	2 per day	1 hr	1 per year	5 hrs	Internal	
	34	Digital Clamp-on Meter	Extexh	380926	1	70A to 2000A	0.4A to 5A		2 per day	1 hr	1 per year	2 months	by SP, Sweden	245

電子サービス訓練センター：試験品質管理部門

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Digital Thermometer	Siemens	B4003	1	Germany		B		15 times/day	1/2 h	once / year	3 days	in RSS	
2	Digital Thermometer	Tsuruga	3528	1	Japan		B		2 times/day	3.5 h	once / year	3 days	in RSS	
3	Surface Thermometer	Yokogawa	NPA-550	1	Japan		B		10 times/day	1/2 h	once / year	3 days	in RSS	
4	Colour TV Pattern Generator	Philips	PM5518-TX	1	Netherlands		B		5 times/day	1 h	once / year	5 days	in RSS	
5	PAL Pattern Generator	Leader	LCG-399	1	Japan		B		10 times/day	1/2 h	once / year	5 days	in RSS	
6	Micro Ohmmeter	Ductor	T441	1			C	Unstable	8 times/day	1/4 h	once / year	3 days	in RSS	
7	Tripping current Tester for circuit breaker	Westinghouse	TQC-15	1		1980	C	narrow range, low accuracy	3 times/day	2 h	once / year	1 day	in RSS	
8	Oscilloscope	HP	1741A	1	USA		B		25 times/ week	1 h	once / year	5 days	in RSS	
9	Signal Generator	R&S	SMS2	1			B		25 times/week	1 h	once / year	5 days	in RSS	
10	Signal Generator	HP	8654A	1	USA		B		10 times/week	2 h	once / year	5 days	in RSS	
11	Portable Recorder	Yokogawa	3057	1	Japan		B		10 times/week	2 h	once / year	3 days	in RSS	
12	Temperature & Humidity Chamber	Tabai	PL-4	1	Japan	1982	D	out of order						
13	Rated Capacity Tester	Digatron	DLEG518	3	Germany	1982	2C, 1D	out of order	10 times/week	24 h	once / year	1 day	in RSS	
14	Charge Acceptance Tester	Digatron	CAT60-6	1	Germany	1982	C		10 times/week	24 h	once / year	1 day	in RSS	
15	High Rate Discharge Tester	Digatron	HEW1000-6	1	Germany	1982	C		10 times/week	1 h	once / year	1 day	in RSS	
16	Vibration Tester	Irohseik	UBC-8A	1		1982	B		10 times/week	1 h	once / year	1 day	in RSS	
17	Hydrometer		TOC-30	1	Germany		B		20 times/week	1/2 h	once / year	60 days	Externally	200
18	Electric Oven			1			B	low accuracy	10 times/week	2 h	once / year	1 day	in RSS	
19	Withstanding Voltage Tester 5 milli Amper			1			B	Note 1						
20	Insulation & Breakdown Tester 50 milli Amper			1			B	Note 2	30 times/day	1/4 h	once / year	3 days	in RSS	
21	Digital Power Meter			1		1980	B		70 times/week	1/2 h	once / year	60 days	Externally	600
22	Power Meter			1			B		40 times/week	1/2 h	once / year	3 days	in RSS	
23	AC Current/ Voltage Meter	YEW		3	Japan		B	low accuracy	30 times/day	1/4 h	once / year	3 days	in RSS	
24	Microwave Detector	Robin	TX90	1			A		4 times/day	1/2 h	once / year	60 days	Externally	400
25	Slidat Transformer	Slide AC		2			B		16 times/day	2 h			NCR	
26	Water Heater	Julab		1			C		5 times/week	All day long			NCR	
27	Refrigerator	RSS		1			C		5 times/week	24 h			NCR	
28	Digital Multimeter	Philips	DM251810	1			D	Out of order						
29	Caliper	Mitsutoyo		2	Japan		B		30 times/week	1/2 h	once / year	3 days	in RSS	
30	Digital Micrometer	Mitsutoyo	601-906	1	Japan	1972	B		20 times/week	1/2 h	once / year	3 days	in RSS	
31	Stopwatch	Hand Hart	TQC100	1			A		10 times/day	1/4 h	once / year	3 days	in RSS	
32	Balance		1946635	1			B	low accuracy	3 times/day	1/2 h	once / year	3 days	in RSS	
33	Tape Meter	Stanley	TQC2	1			A		15 times/week	2 h	once / year	60 days	Externally	200
34	Torque Driver	RS	547-379	1			A		30 times/week	1/2 h	once / year	60 days	Externally	200
35	Digital Tachometer	RS	224-5261	1			A		10 times/week	1 h	once / year	60 days	Externally	200
36	Temp. & Humidity Chamber 41.5x50x60	Ogawa	AE-215	1	Japan		A	small volume	Continuous	All day long	once / year	1 day	in RSS	
37	Multi-amp " Current Source "	AVO	MS-2-23-	1	USA		A		6 times/day	1 h	once / year	3 days	in RSS	
38	Watt Meter	extech	Dw-6060	1			A		7 times/day	1 h	once / year	3 days	in RSS	
39	Digital Multimeter	Fluke	73	1			A		12 times/day	1/2 h	once / year	3 days	in RSS	
40	DC Variable Load (0 to 150 ohm/Low current)			1			A	narrow range	2 times/day	1-4 h			NCR	
41	Dual Tracking Power Supply	Kikusui	PAC70-2.5	1	Japan		B		2 times/day	1-4 h	once / year	3 days	in RSS	
42	RF Vector Impedance	HP	4851A	1			B		10 times/week	1 h	once / year	3 days	in RSS	
43	Thermocouple	Fluke	52II	1			A		6 times/day	1-2 h	once / year	3 days	in RSS	
44	Multi-amp "Current Source"	AVO	3520I	3	USA		B		12 times/week	2 h	once / year	3 days	in RSS	

A: 稼働, B: 稼働 (問題あり, 低精度) C: 部分的に稼働 D: 故障中 E: 使用停止 (部品や消耗品の入手が不可能)

Note1: 国際標準に不適合

Note2: 国際標準に不適合

機械設計技術センター

プラスチック・ゴムユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用				
									回数	時間/回	回数	時間/回	方法	費用/JD/y	
1	Electromechanical Testing Machine	Schenel-Trebel	RME-5	1	Germany	1974	A	Class II		daily	7h	1/y	4-6h	Egypt	
2	Infrared Extensometer	Lloyds	TTOX100/1000	1	UK	1989	A			daily	7h	1/y	6h	RSS	
3	Melt Flow Indexer	Karl Frank	72592	1	Germany	1979	B	troublesome		daily	6h	1/y	5-7h	RSS	
4	Differential Scanning Calorimeter	Mettler	DSC30	1	Switzerland	1987	A			4-5/w	7h	2/y	8h	RSS	
5	Hydrostatic Pressure Tester	IPT	1158	1	Germany	1993	A			daily	24h	1/y	6-8h	RSS	
6	Forced Circulation Ovens		FED53	1	Germany	1996	A								
		Picslone	PB5113	1	Germany	1997	A			daily	24h	1/y +	6h	RSS	
		Karl Schroder	940	1	UK	1978	A			daily	24h	1/y +	6h	RSS	
		Karl Schroder	VT5042E/M	1	Germany	1971	A			daily	24h	1/y +	6h	RSS	
7	Pendulum Impact Tester	Trebel	No.105	1	Germany	1974	A	lack of S/P		1-2/w	1h	1/y	4-6h	Egypt	
8	Film Drop Impact Tester	Daventest	FD50/247		UK		A			1/w	1h	1/y +	2h	RSS	
9	Haze Meter	Daventest	57		UK		A			1/w	4-6h	1/y +	3-5h	RSS	
10	Analytical Balance	Mettler	H35-AR	1		1986	B	old		daily	2-3h	1/y	2h	RSS	
Others (Extensometer, Proving Ring, Pipe Pressure Tester, GFL and Memmert Water Bath, Temp /Humid Monitor, Ovens, Calipers, Sample Preparation Lathe, Punching Press Dies, Band Saw, End Caps for Pressure Test, etc.)									+ : international verification						

材料強度ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用				
									回数	時間/回	回数	時間/回	方法	費用/JD/y	
1	Electromechanical Testing Machine	Schenek-Trebel	RME-25	1	Germany	1974	C	tyre test only		limited use		1/y	1h	RSS	
			LPM60	1		1974	C	bending only		1/w	5h	-	-	-	
	Hydraulic Universal testing machine	Schenek-Trebel	RBO1000	1		1985	B	low accuracy		daily	5h	1/y	1h	RSS	
2	Impact Testing Machine	Schenek-Trebel	PSW30-15	1	Germany	1974	C	not ASTM		1/m	5h	1/y	1h	External	
3	Electronic Digital Balance	Sartorius	3862-MP	1	Germany	1986	A	low capacity		daily	5h	1/y	1h	RSS	
4	Deep Drawing Machine	Erichson	142-40	1		1977	C			1/m	3h	-	-	-	
5	Windows Performance Tester	Rushoff	ASK	1	Germany	1983	B	troublesome		1/m	3h	-	-	-	
6	Hydraulic Press	Wernigero	Kmer13254	1	Germany	1980	A			daily	4h	-	-	-	
7	Steel Tube Bending Bath			1		1980	A			1/m	3h	-	-	-	
8	Calipers & Micrometers	Mitsutoyo		3			A			daily	10h	1/y	1h	RSS	
9	Calipers	Tesa		2			D			out of use	-	-	-	-	
10	Electric Pump	RSS		1	RSS	2000	A	low capacity		1/w	10h	2/y	-	-	
11	Dial Scale Balance	Busch	2000-A1	1		1985	A			1/w	3h	-	-	-	
12	Torston Testing Machine	Schenek-Trebel	RTP400	1	Germany	1976	A			1/y	1h	-	-	-	

A: 稼働 B: 稼働 (問題あり 低精度) C: 部分的に稼働 D: 故障中 E: 使用停止 (部品や消耗品の入手が不可能)

測定・校正ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用				
									回数	時間/回	回数	時間/回	方法	費用/JD/y	
1	CMM	POLI	SKY3	1	Germany	1992	B		1/w	2h	1/y	1h		RSS	
2	LDDM	OPTODYNE		1		1992	A		1/w	2h	1/y	1h		RSS	
3	Roundness Tester			1		1992	A		1/w	2h	1/y	1h		RSS	
4	Profile Projector	DELTRONIC		1		1992	A		1/w	2h	1/y	1h		RSS	
5	Dial Height Gauge 600 Mm	MITUTOYO		1		1992	A		1/w	2h	1/y	1h		RSS	
6	Digital Height Gauge 600mm	TRIMOS	TC600-1060	1		1992	A		1/w	2h	1/y	1h		RSS	
7	Electronic Vertical Gauge 600mm	TRIMOS	TVA600	1		1992	A		1/w	2h	1/y	1h		RSS	
8	Steel Comparator Stand	MAUSER		1		1992	A		1/w	2h	1/y	1h		RSS	
9	Granite Surface Plate 1000x800 Mm			1		1992	A		1/w	2h	1/y	1h		RSS	
10	Granite Plate 450x300 Mm	OPUS		1		1992	A		1/w	2h	1/y	1h		RSS	
11	Granite Comparator Stand	CONTEC		1		1992	A		1/w	2h	1/y	1h		RSS	
12	Granite Comparator Stand	CONTEC		1		1992	A		1/w	2h	1/y	1h		RSS	

A: 稼働 B: 稼働(問題あり 低精度) C: 部分的に稼働 D: 故障中 E: 使用停止(部品や消耗品の入手が不可能)

金相学・熱処理ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Digital Scanning Microscope	Carl Zeiss	DSM950	1	Germany	1987	A		4/week	8	--	--	--	--
2	X-ray Micro Analysis System (EDX)	Tracor Nerthen	TN5402BBAA	1	Germany	1987	B		4/week	8	2/year	3days	Internal	Reference material
3	"MeF2" Universal Camera Microscope	Reichert	MeF2	1	Austria	1980	A		4/week	7	1/year	1 hr	Internal	--
4	Vacuum Coating Machine	Edwards	142-40	1	England	1987	E		E	E	--	--	--	--
5	Stereo Microscope	Leitz	ASK	1	Germany	1974	A		3/week	5	--	--	--	--
6	Stereo Microscope	Leitz	301-213.003	1	Germany	1974	A		3/week	5	--	--	--	--
7	Salt Spray Test Chamber	Weiss	S400/2864	1	Germany	1973	C		5/year	500 hr	1/year	1 day	Internal	--
8	Specimen Cutting Machine	Jean Wirtz		1	Germany	1973	C		Daily	7	--	--	--	--
9	Grinding-Polishing Machine (Twin Wheel)	Jean Wirtz	TE200/2	1	Germany	1973	C		Daily	10	--	--	--	--
10	Grinding-Polishing Machine (Single Wheel)	Jean Wirtz	GT250	1	Germany	1973	C		Daily	10	--	--	--	--
11	Electro plating Machine	Carl Dittman		1	Germany	1976	E		E	E	--	--	--	--
12	Miniload Hardness Tester	Leitz	060-366 012	1	Germany	1974	C	Equipment failed in calibration for accreditation (suspended)	Daily	3-5h	1/year	1 day	NIS	210
13	Universal Hardness Tester	Welpen	Dia Tester2RC	1	Germany	1974	C		Daily	10-15h	1/year	1 day	NIS	210
14	Carbon & Sulphur Analyzer	Rosemount	CSA2003	1	Germany	1984	E		Daily	10-20h	Daily	Before testing	Internal	Reference material
15	Portable C-Clamp Hardness Tester	Tony MFI	PZ3	1		1986	C		1/week	4	On each test	Before testing	Internal	Reference material
16	Grinding-Polishing Machine (Twin Wheel)	Bueler	95 C2 345 250	1	England	1989	C		Daily	7	--	--	--	--
17	Grinding-Polishing Machine (Single Wheel)	Bueler	95 C2 345 250	1	England	1989	C		Daily	7	--	--	--	--
18	Furnace	Ruhrstrat	KG-KKD30/50	1	Germany	1974	B+E	- Difficult to calibrate	1/week	1	1/year	1 day	CS/ESTC	--
19	Furnace	Ruhrstrat	KF-KDRI	1	Germany	1974	B+E	- Temperatures can not be detected by furnace controller	1/week	1	1/year	1 day	CS/ESTC	--
20	Furnace	Heracus	KSL 170	1	Germany	1976	B+E		1/week	1	1/year	1 day	CS/ESTC	--
21	Furnace	Heracus	KA320	1	Germany	1976	B+E		1/week	1	1/year	1 day	CS/ESTC	--
22	Large Field Metallographic Microscope	Leitz	Orthoplan	1	Germany	1974	A		Daily	10-15h	1/year	1 day	CS/ESTC	--
23	Carbon Sulphur Determinator	Eltra	CS800	1	Germany	1997	E		Daily	10-20h	On each test	Before testing	Internal	Reference material
24	Electronic Balance	Laboror	AEG-120	1		1996	A		Daily	10-20h	1/year	1 day	CS/ESTC	--
25	Electronic Balance	Mettler	PC220-52	1		1984	A		Daily	10-20h	1/year	1 day	CS/ESTC	--
26	Electronic Balance	AND	FX-1200	1		1997	B		Daily	10-20h	1/year	1 day	CS/ESTC	--
27	Hydride Recorder	Chino	AAH560-NNN	1	Japan	1997	A		1/week	1	1/year	1 day	CS/ESTC	--
28	High Frequency Induction Machine	Denko	TG2-100-75	1	Japan	1999	A		1/week	20	--	--	--	--
29	Universal Vernier Caliper	Multipre	Inox	1		1995	A		Daily	10-20h	1/year	1 day	CS/ESTC	--

A: 稼働 B: 稼働 (問題あり、低精度) C: 部分的に稼働 D: 故障中 E: 使用停止 (部品や消耗品の入手が不可能)

温度試験ユニット

No	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Flue Gas Analyzer	IMR	IMR 3000P	1		1998	B		8 times/year	7h	1/y	6h	RSS	
2	Weight Balance	Kern	TB60K2	1		1998	A		25 times/year	7h	1/y	6h	RSS	
3	Flowmeter DFE-10	Datam Flutec	DFE - 10	1		1998	A		8 times/year	7h	1/y	8h	RSS	
4	Data Acquisition	National	SCXI-1000	1		1997	A		8 times/year	7h	-	-	-	
5	PC Pentium	Instruments	166 MHz	1		1997	A		8 times/year	7h	-	-	-	
6	RTD for Gas	KTX	PT-100	1		1997	C		8 times/year	7h	1/y	6h	RSS	
7	RTD for Liquid	Inotek	PT-100	1		1997	A		8 times/year	7h	1/y	6h	RSS	
8	Circulating Pump	Inotek	UPS 25-60	1		1997	A		8 times/year	7h	-	-	-	
9	3 Way Valve	Grundfos	STB 21	1			A		8 times/year	7h	-	-	-	
10	Water Bath	Landis & GYR	W15	1		1995	A		2 times/year	1h	-	-	-	
11	Open Bath Circulator	HAAKE	DC5	1		1995	A		2 times/year	1h	1/y	2h	RSS	
12	Circulating Pump	HAAKE	UPS 36-80	1		1991	A		6 times/year	7h	-	-	-	
13	Electrical Heater	Grundfos		1		1991	A		6 times/year	7h	-	-	-	
14	PID Controller	Hotset	818 S	1		1991	A		6 times/year	7h	-	-	-	
15	Flowmeter	Eurotherm	IFS 4000/6	1		1991	A		6 times/year	7h	1/y	8h	RSS	
16	Data Acquisition	Krohne	SCXI -1000	1			A		6 times/year	7h	-	-	-	
17	PC Pentium III	Instruments	550MHz	1		2000	A		6 times/year	7h	-	-	-	
18	RTD for Air Temp.	PC World	RTD	1		1996	A		6 times/year	7h	-	-	-	
19	PT-100 for Liquid Temp.	Cole Parmer	PT 100	1		1991	A		6 times/year	7h	-	-	-	
20	Solenoid Valve	Instrument	EVS1 12	1			A		6 times/year	7h	-	-	-	
21	Pyranometer (Dir)	Rossel	CM 11	1		1984	A		2 times/year	7h	1/2y	8h	RSS	
22	Pyranometer (Dif)	Grundfos	CM 11	1		1984	A		2 times/year	7h	1/2y	8h	RSS	
23	Flowmeter	Kipp & Zonen	Altoflux x-1000	1		1984	A		2 times/year	7h	1/y	8h	RSS	
24	Signal Convertor	Kipp & Zonen	T900182F	1		1984	A		2 times/year	7h	-	-	-	
25	Power Source 500 VA	Krohne	CNU 501/3	1		1984	A		2 times/year	7h	-	-	-	
26	Sun Tracking	Altometer		1		1984	A		2 times/year	7h	-	-	-	
27	Hygrometer	Dornier		1		1984	A		2 times/year	7h	-	-	-	
28	Luada Solar Test		ST8000	1		1984	A		2 times/year	7h	-	-	-	
29	Temperature Sensors	THIES Clima	PT 100	1		1984	A		2 times/year	7h	1/y	6h	RSS	
30	PC Pentium	LAUDA	100 MHz	1		1996	A		2 times/year	7h	-	-	-	
31	Data Acquisition	LEMO Swiss I	SCXI -1000	1			A		2 times/year	7h	-	-	-	
32	PC Pentium	PETRA	100 MHz	1		1996	A		2 times/year	7h	-	-	-	
Others (Extensometer, Proving Ring Pipe Pressure Tester, GFL and Memmert Water Bath, Temp./Humid Monitor, Ovens, Calipers, Sample Preparation Lathe, Punching Press Dies, Band Saw, End Caps for Pressure Test, etc.)														

A: 稼働 B: 稼働 (問題あり、低精度) C: 部分的に稼働 D: 故障中 E: 使用停止 (部品や消耗品の入手が不可能)

非破壊試験ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	X-ray Panoramic	Rich Seirvert	300kV/5mA	1	Germany	1976	B		2/m	2h	2/y	1d	RSS	
2	Gamma ray Projector	Tech OPS	660/664	2	Germany	1980-1982	A		2/w	6h	-	-	-	
3	Gamma ray Projector	Rich Seirvert	KowMat SU100N	2	Germany	1988	D		-	-	-	-	-	
4	Radio Isotope pipeline crawler	IsotoPen-Technik	Gamma Mat M18	2	Germany	1988	E		-	-	-	-	-	
5	Radio Isotope pipeline crawler	IsotoPen	Gamma Mat M16	1	Germany	1985	E		-	-	-	-	-	
6	Gamma ray Projector Vacuum	Tech OPS	Vacuum 616	1	Germany	1980	D		-	-	-	-	-	
7	Ultrasonic flaw Detector	Gilardoni	MG-9S	2	Italy	1988	B		3/m	6h	before each test	30min	RSS	
8	Ultrasonic flaw Detector (Universal)	Gilardoni	RG-21	1	Italy	1988	C		1/m in lab.	6h	before each test	30min	RSS	
9	Permanent magnetic yoke	Magnaflux	YM5	1	England	1994	A		2/y	2h	before each test	10min	RSS	
10	Portable crack Detector	CGM	Magiscope	1		1988	B		2/y	2h	before each test	10min	RSS	
11	Universal Magnetic Particle Unit	CGM	Minicemsa600	1		1988	B		2/y	2h	before each test	10min	RSS	
12	Portable A.C. Yoke	John & Allen		4	England	2000	A		1/w	6h	before each test	10min	RSS	
13	Magnetic Coil 25cm I.D.	Magnaflux	L10	1	England	1994	A		4/y	2h	before each test	10min	RSS	
14	Demagnetizer	Magnaflux		1	England	2000	A		2/y	2h	1/y	20min	RSS	
15	Calibration Lifting Weight	Magnaflux		1	England	2000	A		1/w	10min	2/y	1d	RSS	
16	Fluorescent Dye penetrant Testing Unit		ZA37E	1	England	1985	B		2/y	2h	2/y	20min	RSS	
17	Colour contrast-spray cans	Magnaflux		1	England	2000	A		1/w	6h	-	-	-	
18	Crack Depth Meter	Karl Deutsch	RMG4011	1		1988	B		10/y	6h	before each test	20min	RSS	
19	Industrial Radiography Equipment	Ferex		10		1988	A		2/w	3h	before each test	20min	RSS	
20	Vacuum Leak Testing Box	Whites		2		1980	A		3/y	6h	-	-	-	
21	Ultrasonic Machine (thickness measurement)	Karutkramer	DM-1	1	Germany	1976	B		2/m	3h	before each test	20min	RSS	

放射線測定校正ラボ

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Analog to Digital Converter	Canberra	8075	1	USA	1989	A		continuous		2/y	1d	RSS	
2	MIM BIN Power Supply	Canberra	7022	1	USA	1985	C		continuous		2/y	1d	RSS	
3	High Voltage Power Supply	Canberra	3002	1	USA	1985	A		continuous		2/y	1d	RSS	
4	High Voltage Power Supply	Canberra	3105	1	USA	1989	A		continuous		2/y	1d	RSS	
5	Spectroscopy Amplifier	Canberra	2024	1	USA	1989	A		continuous		2/y	1d	RSS	
6	HPGe Coaxial Detector System	Tennelec	CPVDS30-20190	1		1988	A		3-8/d	1-15h	2/y	1h-7d	RSS	2100
7	Personal Computer Analyzer Card	Tennelec	PCA-AT	1		1988	A		continuous					
8	Personal Computer Analyzer Card	Canberra	S-100	1	USA	1989	A		continuous					
9	MIM BIN Power Supply	Canberra	2000	1	USA	1988	A		continuous		2/y	1d	RSS	
10	High Voltage Power Supply	Canberra	3105	1	USA	1988	A		continuous		2/y	1d	RSS	
11	Spectroscopy Amplifier	Canberra	2020	1	USA	1989	A		continuous		2/y	1d	RSS	
12	Scintomat Dose/Dose Rate Meter	Automess	6134A	1		1991	A		5-10/m	2h-1d	1/2y	1w	RSS	
13	Calibration Irradiator	IZINTA	DCI-01-J	1		1991	A		6/m	1d	1/2y	4w	RSS	
14	Alpha-Beta Contamination Monitor	Berthold	1210C	1		1988	A							
15	HPGe Coaxial Detector	Canberra	7229P	1	USA	1986			3-8/d	1-15d	1/d, 1/3m	1h-7d	RSS	1050
16	Window type AC.	Gibson	24000BTU	1		1999			continuous					

A: 稼働 B: 稼働 (問題あり、低精度) C: 部分的に稼働 D: 故障中 E: 使用停止 (部品や消耗品の入手が不可能)

鑄造技術ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Induction Furnace	Calamari	MF02	1	Italy	1989	A		3/w	1d	-	-	-	-
2	Shell Molding Machine	Imafond	SM40R	1	Italy	1989	A		4/y	1d	-	-	-	-
3	Sand Mixer	RSS		1	Jordan	1992	A		4/w	1d	-	-	-	-
4	Electric Balance			1		1986	A		5/w	1d	2/y	1d	RSS	80
5	Impact Brake Shoes Machine	RSS		1	Jordan	1992	A		3/w	1d	-	-	-	-

A: 稼働 B: 稼働 (問題あり、低精度) C: 部分的に稼働 D: 故障中 E: 使用停止 (部品や消耗品の入手が不可能)

工業化学センター

繊維・紙ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Air permeability tester	Shirley		1	Germany	1978	A		1/m	2h				
2	Splitting machine	Fortuna		1	Germany	1978	A		1/m	1h				
3	Bursting tester	Karl Schroeder	MTP2	1	Germany	2001	A		15/m	1h	1/y	3h	RSS	
4	Tearing resistance (Elmendorf)	Karl Frank	53983	1	Germany	1980	D							
5	Appearance tester	Karl Schroeder		1	Germany	1977	A	no manual	1/m	1h				
6	Bursting strength (Shopper)	Karl Schroeder		1	Germany	1977	A		1/m	1h				
7	Water permeability tester	Karl Schroeder		1	Germany	1977	B							
8	Floor tile measuring device	Karl Schroeder		1	Germany	1977	D							
9	Staple sorter (Zweigle)	Zweigle		1	Germany	1977	A							
10	Cobb tester	Karl Frank		1	Germany	1977	A	no manual	2/m	1h				
11	Bending resistance (Nauman)	Karl Schroeder		1	Germany	1977	A		1/y					
12	Water vapour penetration	Karl Schroeder		1	Germany	1977	E							
13	Abrasion tester	Karl Schroeder		1	Germany	1977	E							
14	Drying oven (Hergeth)	Karl Schroeder	KO3	1	Germany	1977	C							
15	Blotting tester	Karl Schroeder		1	Germany	1977	A		1/m	1h				
16	Puncture tester	Karl Schroeder		1	Germany	1977	A		1/m	1h				
17	Micronair tester	Tex Test		1	Germany	1977	B							
18	Thickness tester	Karl Schroeder		1	Germany	1977	A		5/m	1h	1/y	2h	RSS	
19	Wrapreel tester	Hans Bear	2701	1	Switzerland	1977	B	low accuracy	2/m	3h	1/y	2h	RSS	
20	Ink line tester	Karl Frank		1	Germany	1977	A		1/m	1h				
21	Wx tester	Dennison		1	USA	1977	A		1/m	1h				
22	Projectina	Projectina AG		1	Switzerland	1977	A		1/m	5h				
23	Twin tester	N. Zivy, Ciesa		1	Switzerland	1979	A		1/m	5h				
24	Pressly tester	Tec Test		1	Switzerland	1977	D							
25	Abrasion tester (Lisson)	Karl Schroeder		1	Germany	1977	D							
26	Tensile tester (Amsler)	Amsler Wolpert	ITZM748	1	Germany	1977	B	low accuracy						
27	Microscope (Wild)	Wild/switz	373497	1	Switzerland	1978	A		22/m	5h				
28	Hydraulic cutter press	Flitz/Turk	FKP35	1	Turkey	1996	A	no manual	15/m	1h				
29	Linitest	Linitest Han	7421	1	Germany	1977	A		5/m	1h	1/y	2h	RSS	
30	Perspiration and water tester	Karl Schroeder		1	Germany	1977	A	no manual	5/m	4h				
31	Crock meter tester	Fryma		1	Switzerland	1977	A		5/m	1h				
32	Iron Device	National	NI-21AWT	1	Japan	1977	A	no manual	5/m	1h				
33	Hot plate		A-160	1		2002	A		22/m	4h				
34	Smoothness tester	Karl Frank	33811	1	Germany	1977	D							
35	Light fastness tester	James Heal		1	England	1987	A		1/m	80h				
36	Washing machine	Schulthess	8042	1	Switzerland	1980	A		5/m	1h				
37	Folding endurance tester	Karl Schroeder		1	Germany	1977	A		1/m	2h	1/y	2h	RSS	
38	Monsanto - wrinkle recovery	Hans Bear		1	Switzerland	1977	D							
39	Deformation tester	Hepa tex AG		1	Switzerland	1977	D							
40	Bursting machine (Mullen)	Karl Schroeder		1	Germany	1977	A		5/m	1h	1/y	2h	RSS	
41	Spray tester	RSS		1	Jordan	1977	A	no manual						
42	Pressing tester	Karl Schroeder		1	Germany	1977	A	no manual						
43	Expansion tester	Karl Frank	68935	1	Germany	1977	D							
44	Drum tester	Karl Schroeder		1	Germany	1977	E							
45	Heating cabinet (Haro)	Karl Schroeder		1	Germany	1977	A		22/m	24h	1/y	4h	RSS	
46	Balance	Mettler	H35AB	1	Switzerland	1977	A		220/m	1h	1/y	2h	RSS	
47	Compression tester	Karl Frank	18937	1	Germany	1980	A		1/m	2h	1/y	2h	RSS	
48	Tongue tearing tester	Karl Frank	89830	1	Germany	1977	A							
49	Ahipa (Flammability)	Karl Schroeder	V720	1	Germany	1977	A		1/m	2h				
50	Sole Adhesion tester	Satra		1	England	1977	D							
51	Climate chamber	Nuve Fabrica		1	Turkey	2001	A		15/m	24h	1/d	24h	RSS	

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
52	Temperature & humidity recorder	Karl Schroeder	P12	1	Germany	1977	A	no manual	15/m	24h	1/y	72h	RSS	
53	Temperature & humidity recorder	Karl Schroeder	H85	1	Germany	1977	A	no manual	15/m	24h	1/y	72h	RSS	
54	Cutting device for compression tester	Karl Frank		1	Germany	1980	A	no manual	1/m	1h				
55	Punch & die cutter			1	Switzerland	1977	A		5/m	1h				
56	Tensile machine	L.Loyd		1	England	1986	B	low accuracy	20/m	2h	1/y	48h	Egypt	
57	Pole thickness tester	Karl Schroeder		1	Germany	1977	A	no manual	1/m	1h	1/y	2h	RSS	
58	Chair leg	Hartleb & sohne		1			A	no manual	1/m	1h	1/y	2h	RSS	
59	Brightness & opacity tester	Dr Lange		1	Germany	1977	B	low accuracy, no manual	1/m	1h				
60	Temperature & humidity recorder	Dickson	THDX-CE	1	USA		A		15/m	24h	1/y	72h	RSS	

煙草ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Smoking Machine	Filtrona	SM342	1	UK	1997	A		2/d	3h	1/y	2d	Mfr	5000JD
2	Quality Test Modules	Filtrona	QTM1,2 &3	1	UK	1997	A		4/d	1h	each use	1h	RSS	
3	Gas Collection Unit	Filtrona	COM342	1	UK	1997	A		2/d	3h	1/y	2d	Mfr	
4	CO Analyzer	Filtrona	COA100	1	UK	1997	A		2/d	3h	1/y	2d	Mfr	
5	VPS102	Schiltknecht	VPS102	1	Switzerland	1997	A		2/d	1h	1/y	2w	Mfr	300JD
6	VMD100	Filtrona	VMD100	1	UK	1997	A		2/d	1h	1/y	2w	Mfr	
7	Gas Chromatograph	Shimazu	GC-17A	1	Japan	1997	A	MEMCORP	3/d	3h	each use	30min	RSS	
8	Analytical Balance	Metler	AB204	1	Switzerland	1997	A	Al Khomasia	4/d	1h	1/y	2h	RSS	
9	Conditioning Cabinet	Sanyo	PSC062	1	Japan		A		1/d	2h	1/d	24h	RSS	
10	Oven	Carbolite	NR-120	1	UK	1997	A	Technical Arab	1/d	4h	each use	4h	RSS	
11	Refrigerator	Lab-Line	3763-1	1	USA	1997	A	Qashou For Trade	1/d	24h				
12	Microwave Moisture Measuring System	Tews Elektronik	MW2150	1	Germany	1997	A		1/d	4h				

A: 稼働, B: 稼働 (問題あり、低精度) C: 部分的に稼働 D: 故障中, E: 使用停止 (部品や消耗品の入手が不可能)

有機・食品ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/ID/y
1	Analytical Balance	Ohaus	AP2105	1	Switzerland		A		30/d	8h/d	1/d	30min	RSS	60
2	Analytical Balance	Sartorius	A200s	1	Germany		A		30/d	8h/d	1/d	30min	RSS	60
3	Analytical Balance	Sartorius	2253	1	Germany		B		10/d	8h/d	1/d	30min	RSS	60
4	Analytical Balance	Mettler	HK60	1	Germany		A		12/d	8h/d	1/d	30min	RSS	60
5	Refrigerator	GFL	6473	1	Germany		C		-	24h	-	-	RSS	-
6	Refrigerator	Philips	222801	1	Netherlands		C		-	24h	-	-	RSS	-
7	Refrigerator	Candy	NB490009	1	Italy		A		-	-	-	-	RSS	-
8	Water Bath	Buchi	461	1	Switzerland		B		5/d	10h/d	1/d	1h	RSS	60
9	Water Bath	Buchi	B-480	1	Switzerland		A		5/d	10h/d	1/d	1h	RSS	60
10	Furnace	Bicasa	BE43	1	Italy		E		10d	8h/d	1/d	1h	RSS	60
11	Oven	Memmert	U50	1	Germany		A		10d	8h/d	1/d	8h	RSS	-
12	Oven	Heraus	VT5040EK	1	Germany		A		10d	8h/d	1/d	8h	RSS	-
13	Oven	Heraus	1306	1	Germany		A		10d	8h/d	1/d	8h	RSS	-
14	Oven	Heraus	VT5050EK	1	Germany		A		20d	8h/d	1/d	8h	RSS	-
15	Distillation Unit	Buchi	B-316	1	Germany		A		4/d	10min	1/w	10min	RSS	-
16	Centrifuge (Gerber)	Super-Nova		1	Germany		A		3/y	30min	-	-	RSS	-
17	Lobibond	Tintomer	Model-E	1	England		B		12/d	15min	-	-	RSS	-
18	Digestion Unit	Buchi	B-435	1	Germany		A		8/d	4h/d	-	-	RSS	-
19	Digestion Unit	Buchi	B-436	1	Switzerland		C		6/d	4h/d	-	-	RSS	-
20	Refractive Index	H.Jurgens	Lauda	1	Germany		B		2/d	1h/d	1/d	10min	RSS	-
21	Slip Melting Point Apparatus	Buchi		1	Switzerland		C		6/d	2h/d	-	-	RSS	-
22	Refractometer	H.Jurgens	RFM81	1	Germany		A		2/d	1h/d	1/d	10min	RSS	-
23	UV-Vis	UNICAM	UVA	1	England		A		-	1h/d	1/d	2h	RSS	-
24	Circulator Water Bath	Fisher	T013S	1	USA		B		-	8h/d	1/d	1h	RSS	60
25	Circulator Water Bath	Poly	1150A	1	USA		B		10/d	8h/d	1/d	1h	RSS	60
26	pH Meter	Omega	PHB-62	1	Spain		B		10/d	8h/d	1/d	30min	RSS	-
27	Dostimat	Metrohm	665	1	Switzerland		E		10/d	8h/d	1/d	30min	RSS	-
28	Dostimat	Metrohm	665	1	Switzerland		B	Al Khomasia	10/d	8h/d	1/d	30min	RSS	-
29	Dostimat	Metrohm	665	1	Switzerland		B	Al Khomasia	6/d	8h/d	1/d	-	RSS	-
30	Dostimat	Metrohm	715	1	Switzerland		E	Al Khomasia	6/d	8h/d	1/d	-	RSS	-
31	Dostimat	Metrohm	776	1	Switzerland		B	Al Khomasia	6/d	8h/d	1/d	-	RSS	-
32	Dostimat	Metrohm	776	1	Switzerland		B	Al Khomasia	2/y	8h/d	1/d	-	RSS	-
33	Microscope	Zeiss	Std14	1	Germany		D		4/d	30min	-	-	RSS	-
34	pH Meter	WTW	PH530	1	Germany		D		-	8h/d	1/d	30min	RSS	-
35	Freezer	Admiral	577001	1	Germany		A		-	24h	-	-	RSS	-
36	Oven	Memmert	U-50	1	Germany		A		-	9h	1/d	1h	RSS	-
37	Refrigerator	Nord	317	1			A		-	-	-	-	RSS	-
38	UV Cabinet	CAMAG	022-923	1			A		-	-	-	-	RSS	-
39	Distillation Unit	Buchi	B-324	1	Germany		A		-	-	-	-	RSS	-
40	Rotary Evaporator	Buchi		1	Switzerland		A		-	-	-	-	RSS	-
41	Rotary Evaporator	Buchi		1	Switzerland		A		2/y	-	-	-	RSS	-
42	Octagon Test Sieve Shaker			1	England		A		12/d	30min	-	-	RSS	-
43	Gas Chromatograph	Dani	8510	1	Italy	1987	A		12/d	10min	8/d	10min	RSS	-
44	Gas Chromatograph	HP	6890	1	USA	1999	A	MEMCORP	30/d	10min	8/d	10min	RSS	-
45	Gas Chromatograph	HP	6890plus	1	USA	1998	A	MEMCORP	50/d	20min	15/d	20min	RSS	25
46	Gas Chromatograph	HP	6890	1	USA	1997	A	MEMCORP	6-8/d	15min	2-3/d	15min	RSS	30
47	Gas Chromatograph	HP	5890 seriesII	1	USA	1994	A	MEMCORP	4/d	44min	2/d	44min	RSS	100
48	FTIR	Shimadzu	IR Prestige-21	1	Japan	2002	A		4/d	10min	1/w	10min	RSS	40
49	IR	Philips	PU9512	1	USA		B		5-10/d	10min	1/w	10min	RSS	40
50	HPLC	Philips	PU4100	1	USA		B	MEMCORP	-	15min	5/d	15min	RSS	30
51	HPLC	Milton Roy	CM4000	1	USA		D		5/w	-	-	-	RSS	-
52	Gel Column Chromatograph	Buchi	684	1	Switzerland	1997	A		-	30min	-	-	RSS	-

石油・潤滑油ラボ

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/ID/y
1	KF-Coulometer	Metrohm	652	1	Switzerland	1986	A	Al Khomasia	2/d	1h/d	-	-	RSS	
2	Shearing Stability	Hamburger	CECL-14-T-74	1	Germany	1989	A	Al Khomasia	1/d	1h/d	-	-	RSS	
3	Automatic Distillation	Herzog	MC625	1	Germany	1989	A	Al Khomasia	1/d	1h/d	-	-	RSS	
4	Flash Point (Pensky Martens)	Herzog	327	1	Germany	1989	B	Al Khomasia	8/d	2h/d	-	-	RSS	
5	Automatic Flash Point (cleavland)	Herzog	SC355+356	1	Germany	1989	C	Al Khomasia	2/d	4h/d	-	-	RSS	
6	Portable Conductivity Set	Chertsy Syrrey	MC15	1	England	1978	A		1/d	1h/d	-	-	RSS	
7	Cold Cranking Simulator	Cannon	CCS2	1	USA	1984	A		8/d	4h/d	-	-	RSS	
8	Cold Filter Plugging Point	Herzog		1	Germany	1978	B		2/d	2h/d	-	-	RSS	
9	Cloud & Pour Point	Coesfeld	CAPP IV	1	Germany	1984	A		8/d	4h/d	-	-	RSS	
10	Foaming Test	Sur Berlin		1	Germany	1984	B		2/d	1h/d	-	-	RSS	
11	Seta Flash	Stanhope Seta	I3740-0	1	England	1989	B		1/d	1h/d	-	-	RSS	
12	Smoke Point	Stanhope Seta	I040	1	England	1978	A		1/d	1h/d	-	-	RSS	
13	Color Meter	Stanhope Seta		1	England	1978	A		1/d	1h/d	-	-	RSS	
14	Penetro Meter	Herzog		1	Germany	1978	B	Al Khomasia	8/d	4h/d	-	-	RSS	
15	Rotating Bomb Oxidation Stability	Stanhope Seta	1520	1	England	1989	A		8/d	4h/d	-	-	RSS	
16	Bomb Calorimeter	Berger		1	Germany	1984	B		2/d	2h/d	-	-	RSS	
17	Existent Gun	Herzog		1	Germany	1978	B	Al Khomasia	1/d	1h/d	-	-	RSS	
18	Centrifuge	Heraeus		1	Germany	1984	B	Al Khomasia	1/d	1h/d	-	-	RSS	
19	Corrosion Preventive	Sur Berlin	K74	1	Germany	1978	A		8/d	4h/d	-	-	RSS	
20	Brookfield	Lawler	LVDV-II	1	USA	2002	A		8/d	1h/d	-	-	RSS	
21	MRV	Cannon	CMRV-1-F	1	USA	1984	C		1/d	1h/d	-	-	RSS	
22	Falling Sand	Metrohm	682	1	Switzerland	1994	A	Al Khomasia	1/d	1h/d	-	-	RSS	

A: 稼働 B: 稼働 (問題あり、低精度) C: 部分的に稼働 D: 故障中 E: 使用停止 (部品や消耗品の入手が不可能)

塗料・溶剤ラボ

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Hegman Grindomet	Erichsen	232	1	Germany	1978	A		8/d	4h/d	-	-	RSS	
2	Bookfield	Bookfield	LVD-II+	1	USA	1978	A		1/d	1h/d	-	-	RSS	
3	Digital Stomer Vs	Sheen	480	1	England	2000	A		1/d	1h/d	-	-	RSS	
4	ICI Rotothinners V	Filtrona	411	1	England	1978	A		8/d	4h/d	-	-	RSS	
5	Grido Pac	Erichsen	442	1	Germany	1978	A		2/d	2h/d	-	-	RSS	
6	Cross Hatch Cutter	Erichsen	430/2	1	Germany	1978	A		8/d	4h/d	-	-	RSS	
7	Multi Cross Hatch Cutter	Erichsen	295	1	Germany	1978	A		1/d	1h/d	-	-	RSS	
8	Film Applicator	Erichsen	335/III	1	Germany	1978	A		8/d	4h/d	-	-	RSS	
9	Pencil Hardness	Erichsen	318	1	Germany	1978	A		1/d	1h/d	-	-	RSS	
10	Salt Spray	Erichsen	606/R	1	Germany	1978	A		1/d	1h/d	-	-	RSS	
11	Isoscope mp	Fisher	MP2	1	Germany	1978	A		2/d	2h/d	-	-	RSS	
12	Delta Scop Ferrus	Fisher	MP2	1	Germany	1978	A		1/d	1h/d	-	-	RSS	
13	Cupping Test	Erichsen	202/E	1	Germany	1978	A		8/d	4h/d	-	-	RSS	
14	Kong Pendulum	Braive	3041	1	Belgium	1978	A		1/d	1h/d	-	-	RSS	
15	Accelerating Weathering QUV	Q-Panel		1	England	1978	A		1/d	1h/d	-	-	RSS	
16	Scrub Resistance	Braive	1720M004	1	Belgium	2000	A		1/d	1h/d	-	-	RSS	
17	Super 3 Gloss Fe/nFe	Braive	5900M004	1	Belgium	2000	A		2/d	2h/d	-	-	RSS	
18	Variable Impact	Braive	1615M003	1	Belgium	2000	A		1/d	1h/d	-	-	RSS	
19	Bend Test Cylindrical	Braive	1506M001	1	Belgium	2002	A		1/d	1h/d	-	-	RSS	
20	Falling Sand	Braive	1700M001	1	Belgium	2002	A		8/d	4h/d	-	-	RSS	

無機部門

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Atomic Absorption Spectrometer	Unicam	Uni-939	1	Netherlands	1986	C	Al-Masher	150/w	10min	300/y	3min	RSS	300
2	Atomic Absorption Spectrometer	Per.El.	P.E.5000	1	USA	1994	B	Al Khornasia	100/w	10min	300/y	3min	RSS	300
3	ICP-Spectrometer	Job.Yvo.	TY38II	1	Italy	1986	B	Quashoa	25/w	15min	250/y	15min	RSS	300
4	Flame Photometer	Eppendorf	Elex6361	1	Germany	1989	A	Amine Shoquare	30/w	10min	200/y	5min	RSS	100
5	XRF	Philips	PW1404	1	Netherlands	1988	A	Philips	300/w	5min	1/m	2d	RSS	300
6	pH Meter	WTW	pH530	1	Germany	1990	A			5min	1/y	1d	RSS	
7	pH/Ion Meter F electrode	WTW	Level2	1	Germany	2002	B			2h	1/y	1d	RSS	
8	Digital Balance	AND	HM-200	1	Japan		A			2min	3/y	1d	RSS	
9	Digital Balance	Mettler	AE-200S	1	Switzerland		B			2min	3/y	1d	RSS	
10	Digital Balance	Scaltec	SBA	1	Germany		A			2min	3/y	1d	RSS	

A:稼働 B:稼働(問題あり、低精度) C:部分的に稼働 D:故障中 E:使用停止(部品や消耗品の入手が不可能)

建築リサーチセンター

セメント・コンクリートユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Balance	Sartorius	Stressen test	1	Italy	1983	A		daily	3h/d	1/y	1d	RSS	
2	Schmidt Hammer with recorder	ELE	12052	1	England	1982	D		3/y	2d	1/y	1d	RSS	
3	Pull-out testing device	ELE	35-2585	1	England	1995	A		1/y	1d	1/y	1d	RSS	
4	Concrete core drill machine	ELE	35-5010	1	England	1990	B		1/y	1d	-	-	-	
5	Electric generator		Robin	1		1985	B		1/w	1d	-	-	-	
6	Melting Pot		S-6418/123/8	1		1982	A		1/w	1d	1/y	1d	RSS	
7	Water permeability test			1	Germany	1983	B		1/m	1d	1/y	1d	RSS	
8	Slump tester	ELE	24-0580	1	England	1995	A		1/w	1d	-	-	-	
9	Concrete mixer 240V		HIB102	1		1983	B		1/w	1d	1/y	1d	RSS	
10	Surface abrasion for tiles			1	Germany	1983	A		1/w	1d	1/y	1d	RSS	
11	Vibration table		5109	1	Germany	1983	A		1/w	1d	-	-	-	
12	Accelerated curing tank	Control	C.190	1	Italy	1984	B		-	-	-	-	-	
13	Compression machine for greep		21000	1		1980			-	-	-	-	-	
14	Flexural machine	ELE	114481192	1	England	1985	B		daily	1h/d	1/y	1d	RSS	
15	Compression testing machine	Terbel	REM71/32569	1	Germany	1980	B		daily	1h/d	1/y	1d	RSS	
16	Electronic Stopwatch	Magma	Hanhart	1	England	1995	A		daily	1h/d	1/y	1d	RSS	
17	Vernier Caliper		51401	1	Germany	1985	A		daily	1h/d	1/y	1d	RSS	
18	Digital workshop caliper			1	England	1995	A		daily	1h/d	1/y	1d	RSS	
19	Cube mould (150x150x150)			1	England	1985	B				1/y	1d	RSS	
20	Oven	ELE	46-410/01	1	England	1986	-		daily	3h/d	1/y	1d	RSS	
21	Steel mould (25x25x100mm)	ELE	-39-058	1	England	1985	-				1/y	1d	RSS	
22	Vicat apparatus & Modified apparatus		100284	1	England	1985	B		1/w	1d	1/y	1d	RSS	
23	Oven	Control		1	Italy	1980	B		daily	3h/d	1/y	1d	RSS	
24	Flexual testing machine	ELE	1481192	1	England	1985	-		daily	3h/d	1/y	1d	RSS	
25	200mm dia. Sieve, 150 µm & 1.18mm	Retch		1	Germany	1985	A				-	-	-	
26	Curing tank	Local		1	Jordan	1985	C		daily	3h/d	-	-	-	
27	Compacting factor apparatus	ELE		1	England	1986	A				-	-	-	
28	Slump tester	ELE		1	England	1980	A		1/w	1d	1/y	1d	RSS	
29	Vibro Consistometer V.B test	ELE		1	England	1985	B				-	-	-	
30	Oven	Memert	Strassen test	1	Germany	1985	A				-	-	-	
31	Compression machine	IPC B109	101/2000H	1	Germany	1984	-				-	-	-	
32	Balance heavy duty solution	Control	D0610	1	Italy	1984	-				-	-	-	

A: 稼働 B: 稼働(問題あり、低精度) C: 部分的に稼働 D: 故障中 E: 使用停止(部品や消耗品の入手が不可能)

セラミック・ガラスラボ

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/3D/y
1	Plucometer HZ3	Gabbrielli	HZ3 C/02312)	1	Italy	1998	A		Daily	3-4hrs	1/y		RSS	240
2	En spessonorm	Gabbrielli	(C/023)	1	Italy	1998	A		Daily	3-4hrs	1/y		RSS	40
3	Ebonorm large	Gabbrielli	(C/03609)	1	Italy	1998	A		Daily	4-6 hrs	1/y		RSS	60
4	Crometro CR5 - E1	Gabbrielli	CR5 - E1 (C/04216) & (C/02347)	1	Italy	1998	A		Daily	3-4hrs	1/y		RSS	60
5	Abrasimetro / W3B	Gabbrielli	W3B (C/02369)	1	Italy	1998	A		Daily	1-2hrs	1/y		RSS	
6	Abralux en	Gabbrielli	(C/03516)	1	Italy	1998	A		Daily	2-3hrs	1/y		RSS	
7	Abrasimetro CAP/2	Gabbrielli	CAP/2 (C/02933)	1	Italy	1998	A		Daily	1-2hrs	1/y		RSS	
8	Autoclave	Karl Kojib	D-6072	1	Germany	--	B		Daily	3-4hrs	1/y		RSS	40
9	Electronic balance1	Sartorius	E12000S	1	Germany	--	B		Daily	3-4hrs	1/y		RSS	60
10	Electronic balance2	Scaltec	Scal SBA/51	1	Germany	2000	A		Daily	3-4hrs	1/y		RSS	60
11	Diamond blade electric cutter	Gabbrielli	ST89 (C/02683)	1	Italy	1998	A		Daily	1hr			--	--
12	Moisture Conditioning Oven	Memmert	F N.R 830333	1	Germany	--	C		Daily	24hrs	1/y		RSS	60
13	Manual Cutter	Gabbrielli	Super 40	1	Italy	1998	A		Daily	1hr			--	--
14	Digital Light Meter	Gabbrielli	L 474370	1	Italy	1998	A		Daily	0.5hr	1/y		--	--
15	Stop Watch	Hanhart	CWG-02	1	Germany	1999	A		Daily	2hrs	1/y		RSS	45
16	Mohs Pen Set	Gabbrielli	--	1	Italy	1998	A		Daily	Not used now	1/y		--	--
17	Mohs Mineral Set	Gabbrielli	--	1	Italy	1998	A		Daily	Not used now	1/y		--	--
18	Glaze stress tester	NETZSCH	--	1	Germany	1983	E							
19	Dilatometer	NETZSCH	--	1	Germany	1983	E							
20	Hot load kiln	NETZSCH	--	1	Germany	1983	E							
21	Thermal conductivity	NETZSCH	--	1	Germany	1983	E							

A: 稼働, B: 稼働 (問題あり, 低精度) C: 部分的に稼働 D: 故障中, E: 使用停止 (部品や消耗品の入手が不可能)

セメントラボ

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Autoclave	ELE		1	England		B		2/w	3h	1/y	1d	RSS	
2	Incubator	Verda		1	England		B		daily	8h	1/y	1d	RSS	
3	Humidity cabinet	ELE		1	England		B		daily	8h	1/y	1d	RSS	
4	Flow table	ELE		1	England		A		daily	2h	1/y	1d	RSS	
5	Mixer	ELE		1	England		A		daily	1h	1/y	1d	RSS	
6	Jolting table	Matest		1	Italy		A		daily	8h	1/y	1d	RSS	
7	Vibrator	-		1	Italy		D							
8	Water boiler apparatus	-		1	Germany		B		daily	8h	1/y	1d	RSS	
9	Water distillation device	-		1			-							
10	Humidity cabinet	ELE		1	England		-		daily	8h	1/y	1d	RSS	
11	Comparator	-		1	Italy		A		2/w	2h	1/y	1d	RSS	
12	Heat of hydration apparatus	-		1			D							
13	Electronic Balance		ADP360	1	Germany		A		daily	1h	1/y	1d	RSS	
14	Compression machine	ELE		1	England		A		daily	3h	1/y	1d	RSS	
15	Mixer	ELE		1	England		-							
16	Oven	ELE		1	England		-							

建材・断熱材ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	balance	Sartorius	1501mp8	1	GB	1985	B	hmcompany	daily	1h	1/y	2d	RSS	
2	Pipe Testing Machine	Controls	C96/B	1	Italy	1983	A	Q Ashou	daily	3-4h	1/y	3h	RSS	
3	Hydrostatic Testing Machine	-	B1101B	1	Austria	1983	A	-	daily	3-4h	1/y	2d	RSS	
4	Oven	Blue M	OV-18CY	1	USA	1980	B	-	daily	24h	1/y	1d	RSS	
5	Vernier Caliper	Buhl & Faubel	-	1	Germany	1996	A	-	daily	2-3h/d	1/y	2d	RSS	
6	Measuring Device-Crack Width	Waxham	W10X 15.1mm	1	England	1986	A	-	daily	1h	-	-	-	
7	Dial Gauge	Saginomiya	TCM-1030	1	Japan	1985	A	-	1/w-m	24-48h	1/y	2d	RSS	
8	Universal Testing Machine	Terbel	-	1	Germany	1983	B	-	-	-	1/y	24h	RSS	
9	Hot Box	SES	-	1	Italy	1989	D	-	-	-	-	-	-	
10	Heat flow Instrument	Ahl Born-Thern	Thern7320-1	1	Germany	1986	B	-	1/m	48h	1/y	24-48h	RSS	

A: 稼働 B: 稼働 (問題あり、低精度) C: 部分的に稼働 D: 故障中 E: 使用停止 (部品や消耗品の入手が不可能)

環境リサーチセンター

微生物試験ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用				
									回数	時間/回	回数	時間/回	方法	費用/円/y	
1	Air sampler	Bpi		1	Japan	1987	A		1/y	1d					
2	Autoclave	Webco	H	1	Germany	1987	A		1-2/d	3h	1/y	1d	RSS	85	
3	Centrifugal minifuge	Heracus	RF	1	Germany	1988	A	Arab Co.	1/d	2h					
4	Circulation water bath	Kottermann	3048	1	Germany	1985	A		1/d	3h	1/y	1d	RSS	60	
5	CO2 incubator	Heracus	B5060	2	Germany	1988	A	Technical Arab	1/d	3h	1/y	1d	RSS	45	
6	Fluorometer	Sequoia	112	1	USA	1985	A		1/m	1d	1/y	1d	RSS		
7	Incubator	Kottermann	2736	1	Germany	1987	A		1/d	3h	1/y	1d	RSS	45	
8	Incubator	Memmert	B-15, B-30	3	Germany	1988	A		1/d	3h	1/y	1d	RSS	45	
9	Inverted light microscope	Nikon		1	Japan	1989	A	Technical Arab	1/m	1d					
10	Laminor flow cabinet	Gelair	BSB4	2	Italy	1987	A	Technical Arab	1/d	3h					
11	Refrigerator	Hitachi	R-320	4	Japan	1999	A		1/d	3h	1/y	1d	RSS	40	
12	Lypholization machine	Edwards	Micro	1	UK	1996	A		1/m	1d					
13	pH meter	Mettler-Toledo	MP-220	1	UK	2000	A	Technical Arab	1/d	3h	1/y	1d	RSS		
14	Centrifuge	Sigma	3-15, 4-15	2	Germany	2000	A	Tetra-group	1-2/d	3h					
15	Microscope	Olympus	OF20	1	Japan	2000	A	Khoury-group	3-4/d	3h					
16	Balance	Kern	EW3000	1	Germany	2001	A	Sahoury Co.	3-4/d	3h	1/y	1d	RSS	60	
17	Filta-max	Indexx		1	USA	2001	A	Biolife Co.	1/m	1d					
18	Microscope/Fluorecent	Nikon	E-600	1	Japan	2003	A	Technical Arab	1/m	1d					
19	Autoclave	Yamato	SP200	1	Japan	2003	A		2-3/d	3h	1/y	1d	RSS	45	
20	6-way channel filtration system	Advantec	KM-6	1	Japan	2003	A		1-2/d	3h					

A: 稼働 B: 稼働(問題あり、低精度) C: 部分的に稼働 D: 故障中 E: 使用停止(部品や消耗品の入手が不可能)

化学分析ラボ

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/ID/y
1	Conductometer	Metrohm	712	1	Switzerland	1996	A	Al Khomasia	5/w	2h	1/w	1h	RSS	
2	pH/Ion meter	Metrohm	692	1	Switzerland	1996	A	Al Khomasia	5/w	2h	5/w	1h	RSS	
3	pH meter	Metrohm	654	1	Switzerland	1986	A	Al Khomasia	5/w	3h	1/w	1h	RSS	
4	Photometer	Metrohm	662	1	Switzerland	1986	A	Al Khomasia	5/w	3h	4/y	1d	RSS	
5	Spectrophotometer	Unicam	UV4	1	UK	1995	A	SMS	2/w	2h	4/y	1d	RSS	
6	COD digester	Behrotest	TRS100	1	Germany	1990	A	Amin Shokair	3/w	3h	-	-	RSS	
7	Digestion unit	Buchi	4305	1	Switzerland	1992	A	JMSCO	3/w	3h	-	-	RSS	
8	Distillation unit	Buchi	315	1	USA	1987	A	JMSCO	-	-	-	-	RSS	
9	Titroprocessor	Metrohm	682	2	USA	1986	A	Al Khomasia	5/w	2h	-	-	RSS	
10	Balance	Mettler	AE200	1	Switzerland	1988	A	Techrab	5/w	3h	1/y	1d	RSS	40
11	Muffle furnace	Naber		1	Switzerland	1986	A		1/w	3h	1/y	1d	RSS	40
12	Ultrapure water system	Barnstead	D4742	1	Switzerland	1996	A		5/w	2h	-	-	RSS	
13	Titroprocessor	Metrohm	672	1	Switzerland		B	Scientific Spectrum	-	-	-	-	RSS	
14	Turbidimeter	Hach	18900	1	USA	1992	A	Al Khomasia	5/w	2h	2/y	1d	RSS	
15	Digestor	Buchi	B425	1	Switzerland	1986	A	Sokitan	3/w	3h	-	-	RSS	
16	Softner	Rainsoft	RF735	1	USA	1989	A	JMSCO	3/w	3h	-	-	RSS	
17	DO meter	YSI	57&58	4	USA	1985	A	JEDCA	5/w	3h	each use	-	RSS	
18	Iodimeter	Carloerba	F300	2	Italy	1992	A	Al Khomasia	5/w	2h	-	-	RSS	
19	Kjeldahl distillation unit	Buchi	B324	1	Switzerland	1998	A	JMSCO	3/w	2h	-	-	RSS	
20	Incubator	Precision	815	1	USA	2000	A	Technical Supplies	contunuous	-	1/y	1d	RSS	40
21	Titrimo	Metrohm	7195	1	Switzerland	2001	A	Al Khomasia	5/w	2h	-	-	RSS	
22	Drying oven	Binder	ED115	2	Germany	2000/1	A	Sokitan	contunuous	-	1/y	1d	RSS	40
23	Automatic titration system	TDA DKK	AUT-301TTT	1	Japan	2003	E		-	-	-	-	RSS	

A:稼働 B:稼働(問題あり、低精度) C:部分的に稼働 D:故障中 E:使用停止(部品や消耗品の入手が不可能)

環境有機分析ラボ

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	ICP-MS	Shimazu	8500	1	Japan	2003	A	ME & MC	1/ week	4 hours	1	1hr	LSM	
2	AAS	ThermoElement	M6	1	England	2002	A	SMS	3/week	3 hours	per analyze	0.5hr	LSM	
3	Flame photometer	Eppendorf		1	Germany	1996	A	Amen Shuker	2/week	2 hours	every run	0.5hr	LSM	
4	Ion chromatography instrument	Diorex		1	USA	1994	A	Al-Mansor	4/week	6 hours	every run	0.5hr	LSM	
5	Mercury analyzer	Nippon	MA-15	1	Japan	2003	D		-	-	-	-	-	-
6	Heating furnace	HayashiDenko		1	Japan	2003	A		-	-	-	-	-	-
7	Ultra pure water system	ToyoSeisakusho		1	Japan	2003	A		every day	8 hours	-	-	LSM	
8	Ultra deionized water system	ToyoSeiki		1	Japan	2003	E		-	-	-	-	-	-

環境有機分析ラボ

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	Gas Chromatograph ECD	HP	5890	1	USA	1987	C	MEMCORP	4/day	1 hour	1/ 6 months	2 hour	RSS	
2	Gas Chromatograph NPD-FID	HP	5890	1	USA	1987	C	MEMCORP	2/month	1 hour	1/ 6 months	2 hour	RSS	
3	Gas Chromatograph MS	HP	5890-II	1	USA	1995	A	MEMCORP	3/day	1 hour	1/ 6 months	2 hour	RSS	
4	Gas Chromatograph ECD/HS	Thermo Quest	AS-2000	1	Italy	2000	A	Hijaz Company	10/day	20 min	1/day	2 hour	RSS	
5	HPLC	Shimazu		1	Japan	1998	A		6/day	15 min	1/day	2 hour	RSS	
6	TOC	Yanaco	TOC-800	1	Japan	1998	C		-	-	-	-	-	-
7	Rotary Evaporator	Buchi	B-480	1	Germany	1995	A		7/day	10 min	1/ 6months	1 day	RSS	

A:稼働 B:稼働(問題あり、低精度) C:部分的に稼働 D:故障中 E:使用停止(部品や消耗品の入手が不可能)

大気質ユニット

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービスマニ店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
1	SO ₂ /H ₂ S Analyzer	Environment	AF20M	4	France	85-90	A	El-Atresh	1/d	24h	1/2w	1h	RSS	
2	SO ₂ /H ₂ S Analyzer	Environment	AF21M	3	France	94-96	A	El-Atresh	1/d	24h	1/2w	1h	RSS	
3	SO ₂ Analyzer	Environment	AF21M	1	France	1994	A	El-Atresh	1/d	24h	1/2w	1h	RSS	
4	SO ₂ /H ₂ S Analyzer LCD	Environment	AF21M	1	France	2002	A	El-Kumasia	1/d	24h	1/2w	1h	RSS	
5	NOX Analyzer	Environment	AC30M	1	France	1985	A	El-Atresh	1/d	24h	1/2w	1h	RSS	
6	NOX/NH ₃ Analyzer	Environment	AC31M	1	France	1994	A	El-Atresh	1/d	24h	1/2w	1h	RSS	
7	NOX Analyzer	Monitor Labs	8840	1	USA	1988	A		1/d	24h	1/2w	1h	RSS	
8	CO Analyzer	Environment	CO11M	2	France	96-98	A	El-Atresh	1/d	24h	1/2w	1h	RSS	
9	CO Analyzer LCD	Environment	CO11M	1	France	2002	A	El-Kumasia	1/d	24h	1/2w	1h	RSS	
10	High volume sampler (TSP)	Andersen	GMWL-2000	5	USA	85-98	A	El-Atresh	1/d	24h	1/2 sample	1h	RSS	
11	High volume sampler (PM10)	Andersen	321b	8	USA	85-03	A	El-Atresh	1/d	24h	1/2 sample	1h	RSS	
12	Mech. Meteorological Unit	Lambrech	Woelfle	9	Germany	85-03	A	El-Atresh	1/d	24h	-	-	-	
13	Electrical Meteorological Unit	BTW	EWS	1		1985	A	Al-Fawaris	1/d	24h	-	-	-	
14	Electrical Meteorological Unit	Climat	101760	1	England	1985	A		1/d	24h	-	-	-	
15	Radon Analyzer	Pylon	WLX	1	Germany	1990	A		1/d	24h	1/y	3h	RSS	
16	Spore Pollen Grain Traps	Bukard agro.		1	England	1996	A		1/d	24h	-	-	-	
17	Flue Gas Analyzer	Testo	350	1	Germany	1996	A		10/m	1d	1/2w	3h	RSS	
18	Flue Gas Analyzer	Land	Lancorn	1	England	2000	A		10/m	1d	1/2w	3h	RSS	
19	Stack Dust Sampler	Andersen	M9096	1	England	2000	A		15/m	1d	-	-	-	
20	Automobile Exhaust Analyzer	Environment	Coreg	1	England	1998	A	El-Atresh	25/m	1d	1/m	3h	RSS	
21	Automobile Exhaust Analyzer	Environment	AG4000	1	England	1988	A	El-Atresh	25/m	1d	1/m	3h	RSS	
22	Calibration Case	Environment	VE3M	1	England	1996	A	El-Atresh	3/w	1d	-	-	-	
23	Acquisition system	Environment	SAM32	1	Italy	84-93	E	El-Atresh			-	-	-	
24	Drying Oven	Environment		1	England	1996	A		1/d	4h	1/y	1d	RSS	
25	Sound level Meter	WTB Binder	NL-18	1	Germany	1990	A	Al-Ghanem			-	-	-	
26	Electrical Balance	Rion	A2005	1	Jordan	1998	E				-	-	-	
27	Analytical Electronic Balance	Sartorius	LA130S-F	1	England	1994	A		3/w	1d	1/y	1d	JISM	
28	Polymeter	Drager		1	England		A		4/m	1d	-	-	-	
29	Accuro gas detector pump	Drager		1	England		A		4/m	1d	-	-	-	
30	Accuro2000, Automatic pump	Drager		1	Germany		A		4/m	1d	-	-	-	
31	Computer PC	Tulip	DT4/50Si	1	Germany	1996	A		30h/w		-	-	-	
32	Computer PC locally assembled			1			A		30h/w		-	-	-	
33	Computer OCTEK	Local	TX-14H20FETB6	1		1995	A		30h/w		-	-	-	
34	PC	Aopen	EX5P	1		00-01	A		30h/w		-	-	-	
35	Printer	Star Mirronics	LC24-15	1		1995	A		20/w	1h	-	-	-	
36	Printer	Seikosha	SL-90	1	Japan	1996	A		20/w	1h	-	-	-	
37	Printer	HP	C2127A	1		1995	A		100/w	1h	-	-	-	
38	Printer	HP	1000C	1		1998	A		100/w	1h	-	-	-	
39	PC with system manager software	Gateway	2000	1	USA	1998	A		30h/w	1h	-	-	-	
40	Gas Analyzer	Drager	CMS	1	Germany	2003	A	Ekbar Safety Center	10/m	1h	-	-	-	
41	Gas Monitor	Drager	PACIII	1	Germany	2003	A	Ekbar Safety Center	10/m	1h	-	-	-	
42	High Volume Sampler	Staplex	TFIA	2	USA	2003	A	El-Atresh	5/m	1h	1/12 samples	1h	RSS	
43	Mobile Laboratory			1			A		1d	24h	-	-	-	
44	SO ₂ Analyzer	Therm Env	43C	1	USA	1998	A	Al-Ghanem	1d	24h	1/2w	1h	RSS	
45	CO Analyzer	Therm Env	48C	1	USA	1998	A	Al-Ghanem	1d	24h	1/2w	1h	RSS	
46	NOX Analyzer	Therm Env	42C	1	USA	1998	A	Al-Ghanem	1d	24h	1/2w	1h	RSS	
47	O ₃ Analyzer	Therm Env	49C	1	USA	1998	A	Al-Ghanem	1d	24h	1/2w	1h	RSS	
48	Methane, Non-m/Methane Hydrocarbon Analyzer	Therm Env	55C	1	USA	1998	B	Al-Ghanem	1d	24h	1/2w	1h	RSS	
49	Particulate Monitoring Inst.	Eberline Ins	FH62-1	1	USA	1998	A	Al-Ghanem	1d	24h	1/2w	1h	RSS	
50	Meteorological Monitoring System	Met One Ins		1	USA	1998	A	Al-Ghanem	1d	24h	-	-	-	
51	Multigas Calibration System	Therm Env	146	1	USA	1998	A	Al-Ghanem	1d	24h	-	-	-	

No.	機材	製造業者	モデル	数	原産国	製造年	状態	サービス代理店	使用頻度		校正頻度、方法、費用			
									回数	時間/回	回数	時間/回	方法	費用/JD/y
52	Zero Air Supply	Therm Env		1	USA	1998	A	Al-Ghanem	1d	24h	-	-	-	-
53	Hydrogen Generator	Packard Ins		1	USA	1998	B	Al-Ghanem	1d	24h	-	-	-	-
54	PC with Station Manager Software	Gateway	2000	1	USA	1998	A	Al-Ghanem	1d	24h	-	-	-	-

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