| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/155 | CYBERNETICS | C5 | COL | ENG | 10 | PAL |
| U60/183 | DIGITAL COUNTER | D4 | COL | JAP | 20 | NTSC |
| U60/068 | DIGITAL TROUBLESHOOTING 1-3 | C4 | COL | ENG | 48 | NTSC |
| U60/072 | DIGITAL TROUBLESHOOTING 11-12 | C4 | COL | ENG | 60 | NTSC |
| U60/073 | DIGITAL TROUBLESHOOTING 13-14 | C4 | COL | ENG | 36 | NTSC |
| U60/069 | DIGITAL TROUBLESHOOTING 4-5 | C4 | COL | ENG | 54 | NTSC |
| U60/070 | DIGITAL TROUBLESHOOTING 6-8 | C4 | COL | ENG | 63 | NTSC |
| U60/071 | DIGITAL TROUBLESHOOTING 9-10 | C4 | COL | ENG | 61 | NTSC |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/226 | A HOME OF OUR OWN | E4 | COL | MAN | 23 | PAL |
| V120/043 | AN UNREMARKABLE BIRTH | E2 | COL | ENG | 50 | PAL |
| U60/105 | APPAREL INDUSTRY | A5 | COL | ENG | 14 | PAL |
| U60/180 | ARTICLE ON JSTC | C5 | COL | JAP | 20 | PAL |
| V120/008 | ASSAULT ON MT. EVEREST | D2 | COL | ENG | 50 | PAL |
| U60/126 | BETTER YARDS FOR BETTER SHIPS | B5 | COL | ENG | 21 | PAL |
| V120/046 | BUILDING A BETTER TOMORROW | E2 | COL | ENG | 30 | PAL |
| U60/100 | CAPROLACTAM PLANT IN TURKEY | A5 | COL | ENG | 30 | PAL |
| V180/123 | CHRISTOPHER AT THE BEACH | F1 | COL | ENG | 10 | PAL |
| U60/048 | CICADAS | B4 | COL | ENG | 10 | PAL |
| U20/036 | CLEVER HICKO - ICHI | B2 | COL | ENG | 10 | PAL |
| V60/045 | COMEDIANS | E3 | COL | ENG | 15 | PAL |
| U60/133 | CORRUGATED PAPER BOARDS | B5 | COL | ENG | 25 | PAL |
| U20/004 | COUNTER ENCOUNTER | A2 | COL | ENG | 20 | PAL |
| U20/050 | DISCOVERIES BY THE CURIES | B2 | B/W | F | 14 | PAL |
| U60/024 | DRY BATTERY MANUFACTURING PLANT | A4 | COL | ENG | 14 | PAL |
| V60/038 | DYING FOR A SMOKE | D3 | COL | ENG | 45 | PAL |
| U60/012 | FISH CULTIVATION | A4 | COL | ENG | 33 | PAL |
| U60/099 | FISH SAUSAGE MANUFACTURING PLANT | A5 | COL | ENG | 15 | PAL |
| U60/009 | FISHING NETS | A4 | COL | MAL | 26 | PAL |
| V60/035 | FOCUS ON TOMORROW | D3 | COL | ENG | 20 | PAL |
| U60/041 | FOR GREENER EARTH | B4 | COL | ENG | 26 | PAL |
| V60/051 | FREE TO CHOOSE - HOW TO CURE INFLATION | E3 | COL | ENG | 50 | PAL |
| V60/036 | FRIEDMAN IN SINGAPORE | D3 | COL | ENG | 50 | PAL |
| U60/105 | GARBAGE WAR | A5 | COL | ENG | 27 | PAL |
| U60/125 | GRASSHOPPERS | B5 | COL | ENG | 6 | PAL |
| U60/082 | GREAT BARRIER REEF | C4 | COL | ENG | 25 | PAL |
| U60/106 | HOW TO DEVELOP STEAM POWER | A5 | COL | ENG | 27 | PAL |
| U60/024 | INSTANT NOODLE MANUFACTURING PLANT | A4 | COL | ENG | 13 | PAL |
| U60/132 | JAPANESE PRINTING AND BOOKBINDING MACHINE | B5 | COL | ENG | 30 | PAL |
| V120/049 | JAPANING NOW #4 - 40 YRS. SINCE SHONANTO | E2 | COL | JAP | 50 | PAL |
| V120/050 | JAPANING NOW #4 - 40 YRS. SINCE SHONANTO | E2 | COL | JAP | 50 | NTSC |
| V60/055 | JAPANING NOW NO. 4 - "40 YEARS SINCE SHONANTO" | E3 | COL | JAP | 45 | NTSC |
| V180/061 | JAPANING NOW VOL 1 & 2 | E1 | COL | JAP | - | NTSC |
| V180/062 | JAPANING NOW VOL 3 & 4 | E1 | COL | JAP | - | NTSC |
| U60/009 | KNOTLESS NETS | A4 | COL | ENG | 30 | PAL |
| U60/134 | MAHOOTSUKAI CHAPPI | B5 | COL | JAP | 23 | PAL |
| U60/023 | MAN IN A MECHANICAL ENVIRONMENT | A4 | COL | ENG | 30 | PAL |
| U60/100 | MARKET MILK MAKING PLANT | A5 | COL | ENG | 15 | PAL |
| U60/099 | MATCH MAKING PLANT | A5 | COL | ENG | 15 | PAL |
| U20/069 | MEI INTERNATIONAL '82 | C2 | COL | ENG | 17 | PAL |
| U60/048 | NATIONAL RESEARCH AND DEVELOPMENT PROJECT | B4 | COL | ENG | 24 | PAL |
| U60/052 | OHAIYO 720 - CARAVAN II | B4 | COL | JAP | 60 | NTSC |
| U20/056 | PANASERT MACHINES | B2 | COL | ENG | 10 | PAL |
| U60/117 | PAST MEETS PRESENT IN MINDANI HAMLET | A5 | COL | ENG | 28 | PAL |
| U60/100 | PENCIL MAKING PLANT | A5 | COL | ENG | 15 | PAL |
| U60/106 | PLYWOOD MAKING PLANT | A5 | COL | ENG | 14 | PAL |
| U30/060 | POWER ON EARTH | B3 | COL | ENG | 22 | PAL |
| U60/128 | PUMPS AND AIR COMPRESSOR | B5 | COL | ENG | 25 | PAL |
| U60/102 | PVC PIPE MANUFACTURING PLANT | A5 | COL | ENG | 15 | PAL |
| U60/099 | PVC WALLCOVERING MAKING PLANT | A5 | COL | ENG | 15 | PAL |
| U60/214 | REALITE CONCORDE | E4 | COL | ENG | 10 | PAL |
| U60/024 | REFACTORY BRICKS | A4 | COL | ENG | 10 | PAL |

comment : * refers to number of slides
f11,61,4,7,6,6,6,/4

VIDEO LIBRARY CATALOG - DOCUMENTARY (16. 7.83) F45

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/105 | RICE MILLING PLANT | A5 | COL | ENG | 10 | PAL |
| U60/133 | SEIKO TIME | B5 | COL | ENG | 12 | PAL |
| U60/126 | SHIPBUILDING TODAY | B5 | COL | ENG | 20 | PAL |
| U60/178 | SINGAPORE | C5 | COL | JAP | 30 | NTSC |
| V180/104 | SINGAPORE '81 | F1 | COL | ENG | 46 | PAL |
| V180/104 | SINGAPORES' ECONOMY '81 | F1 | COL | ENG | 30 | PAL |
| U30/075 | STANDARDS IN ACTION | C3 | COL | ENG | 22 | PAL |
| U60/128 | STEEL FOR PROSPERITY | B5 | COL | ENG | 20 | PAL |
| U60/102 | STOL SEARCH AND RESCUE AMPHIBIAN US-1 | A5 | COL | ENG | 21 | PAL |
| U60/099 | TABLEWARE MANUFACTURING PLANT | A5 | COL | ENG | 15 | PAL |
| U20/067 | TAI CHI DEMONSTRATION | C2 | COL | SIL | 15 | PAL |
| U20/068 | TAI CHI DEMONSTRATION (2ND EDITION) | C2 | COL | SIL | 22 | PAL |
| U20/074 | TAI CHI DEMONSTRATION (3RD EDITION) | C2 | COL | ENG | 16 | PAL |
| U60/012 | TANCHO-JAPANESE CRANES | A4 | COL | ENG | 28 | PAL |
| U60/236 | TEAMWORK | E4 | COL | ENG | 11 | PAL |
| U20/053 | TELEPHONE MANNERS | B2 | COL | ENG | 12 | PAL |
| U60/049 | TELEPHONE MANNERS | B4 | COL | ENG | 10 | PAL |
| V120/044 | THE AMAZING DR. ISAAC NEWTON | E2 | COL | ENG | 50 | PAL |
| V120/011 | THE BODY HUMAN PART 1 - THE RED RIVER | D2 | COL | ENG | 45 | PAL |
| V120/011 | THE BODY HUMAN PART 2 - THE VITAL CONNECTION | D2 | COL | ENG | 45 | PAL |
| V120/012 | THE BODY HUMAN PART 3 - THE MAGIC SENSE | D2 | COL | ENG | 45 | PAL |
| V120/012 | THE BODY HUMAN PART 4 - THE MIRACLE MONTHS | D2 | COL | ENG | 45 | PAL |
| U60/003 | THE GOLDEN DAYS | A4 | COL | JAP | 44 | PAL |
| V120/011 | THE HUMAN BRAIN | D2 | COL | MAND | 10 | PAL |
| V180/019 | THE HUMAN FACES OF CHINA : SOMETHING FOR EVERYONE | D1 | COL | ENG | 50 | PAL |
| U60/118 | THE MAIN EVENT PART 1 | A5 | COL | ENG | 62 | PAL |
| U60/119 | THE MAIN EVENT PART 2 | A5 | COL | ENG | 45 | PAL |
| U20/058 | THE MONKEY & THE CRAB | B2 | COL | ENG | 13 | PAL |
| V120/020 | THE SINGAPORE LECTURE | D2 | COL | ENG | 50 | PAL |
| U60/133 | THE SUN OVER THE CHAO PHRAYA RIVER | B5 | COL | ENG | 26 | PAL |
| V120/008 | TO THE TOP OF EVEREST | D2 | COL | ENG | 48 | PAL |
| U60/024 | TOILET PAPER MANUFACTURING PLANT | A4 | COL | ENG | 14 | PAL |
| U60/106 | TOILET SOAP PLANT | A5 | COL | ENG | 9 | PAL |
| U60/132 | TOMORROW'S FISHING BOATS | B5 | COL | ENG | 30 | PAL |
| U20/029 | TV EXERCISE | A2 | COL | JAP | 20 | NTSC |
| U60/049 | USING THE TELEPHONE | B4 | COL | ENG | 30 | PAL |
| U60/102 | WATER AND AGRICULTURE | A5 | COL | ENG | 23 | PAL |
| V180/123 | WELCOME BACK, NORMAN | F1 | COL | ENG | 10 | PAL |

comment : * refers to number of slides
F11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - DRAWING (GEOM. & MECH.) ( 1. 7.03) F30

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| F16/045 | BASIC OF DRAWING | C6 | COL | JAP | 18 | - |
| U30/044 | BASIC OF DRAWING | B3 | COL | JAP | 20 | PAL |
| V60/018 | BASIC OF DRAWING | D3 | COL | JAP | 18 | PAL |
| U60/086 | BEHIND THE SHOP DRAWING | C4 | COL | ENG | 16 | PAL |
| F16/048 | DRAWING & DESIGN PART 1 | C6 | B/W | JAP | 11 | - |
| U30/045 | DRAWING & DESIGN PART 1 | B3 | B/W | JAP | 11 | PAL |
| F16/049 | DRAWING & DESIGN PART 2 | C6 | B/W | JAP | 8 | - |
| U30/046 | DRAWING & DESIGN PART 2 | B3 | B/W | JAP | 8 | PAL |
| F16/050 | DRAWING & DESIGN PART 3 | C6 | B/W | JAP | 7 | - |
| U30/047 | DRAWING & DESIGN PART 3 | B3 | B/W | JAP | 7 | PAL |
| F16/051 | DRAWING & DESIGN PART 4 | C6 | B/W | JAP | 8 | - |
| U30/048 | DRAWING & DESIGN PART 4 | B3 | B/W | JAP | 8 | PAL |
| V60/018 | DRAWING & DESIGN PARTS 1 - 4 | D3 | COL | JAP | 34 | PAL |
| S50/004 | ENGINEERING DRAWING | A1 | COL | - | *80 | - |
| U60/086 | ENGINEERING DRAWING SERIES (SIMPLE DEVELOPMENT) | C4 | COL | ENG | 10 | PAL |
| U30/001 | EQUAL ANGLE PROJECTION PART 1 | A3 | B/W | JAP | 30 | NTSC |
| U30/002 | EQUAL ANGLE PROJECTION PART 2 | A3 | B/W | JAP | 30 | NTSC |
| U30/003 | EQUAL ANGLE PROJECTION PART 3 | A3 | B/W | JAP | 30 | NTSC |
| U30/004 | EQUAL ANGLE PROJECTION PART 4 | A3 | B/W | JAP | 30 | NTSC |
| V60/006 | EQUAL ANGLE PROJECTION PARTS 1 - 2 | D3 | B/W | JAP | 60 | PAL |
| V60/007 | EQUAL ANGLE PROJECTION PARTS 3 - 4 | D3 | B/W | JAP | 6 | PAL |
| S50/031 | HOW TO READ ENGINEERING DRAWING | B1 | COL | - | *72 | - |
| U60/086 | OTHOGRAPHIC PROJECTION | C4 | COL | ENG | 18 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - DOCUMENTARY ON EDB ( 4. 7.83) F26

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U20/063 | EDB APPRENTICESHIP SCHEME | C2 | COL | ENG | 16 | PAL |
| U20/064 | EDB APPRENTICESHIP SCHEME | C2 | COL | ENG | 16 | PAL |
| U20/065 | EDB APPRENTICESHIP SCHEME | C2 | COL | MAND | 16 | PAL |
| U60/194 | EDB'S 20TH ANNIVERSARY DINNER | D4 | COL | ENG | 47 | PAL |
| U60/232 | JSIST PRESENTATION CEREMONY | E4 | COL | ENG | 35 | PAL |
| V180/003 | NEWS ITEM | D1 | COL | ENG | - | PAL |
| U60/233 | OPENING CEREMONY OF JSIST | E4 | COL | ENG | 18 | PAL |
| U60/240 | PGTC 6TH GRADUATION CEREMONY | E4 | COL | ENG | 41 | PAL |
| U60/193 | RGTC PRESS CONFERENCE | D4 | COL | ENG | 30 | PAL |
| U20/060 | SINGAPORE - THE GATEWAY TO THE FUTURE | B2 | COL | JAP | 11 | PAL |
| V60/042 | SINGAPORE - THE GATEWAY TO THE FUTURE | D3 | COL | JAP | 11 | PAL |
| U20/037 | SINGAPORE - THE WINNING COMBINATION | B2 | COL | ENG | 10 | NTSC |
| U20/038 | SINGAPORE - THE WINNING COMBINATION | B2 | COL | ENG | 10 | PAL |
| U20/042 | SINGAPORE - THE WINNING COMBINATION | B2 | COL | MAND | 10 | PAL |
| U60/239 | TATA GOVERNMENT TRAINING CENTRE | E4 | COL | ENG | 24 | PAL |
| U20/006 | THE PRECISION GENERATION | A2 | COL | ENG | 20 | PAL |
| U20/007 | THE PRECISION GENERATION | A2 | COL | MAND | 20 | PAL |
| V60/043 | THE PRECISION GENERATION | E3 | COL | ENG | 20 | PAL |
| V60/044 | THE PRECISION GENERATION | E3 | COL | MAND | 20 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - ELECTRICAL/ELECTRONICS (16. 7.83) FGH

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/237 | A HEART THAT BEATS FOR SAFETY | E4 | COL | ENG | 18 | PAL |
| U60/020 | A.C. & D.C. | A4 | B/W | ENG | 10 | PAL |
| U60/020 | A.C. AND THE POWER FACTOR | A4 | B/W | ENG | 8 | PAL |
| U60/259 | A.C. PRINCIPLE OF GENERATOR | F4 | COL | ENG | 9 | PAL |
| U60/163 | ACHIEVEMENTS IN FRENCH ELECTRONICS (THE SIX SENSE) | C5 | COL | ENG | 19 | PAL |
| U60/260 | ASSEMBLY & DISASSEMBLY OF MAGNETIC CONTACTOR | F4 | COL | ENG | 13 | PAL |
| F16/041 | AUTOMATION | B6 | COL | JAP | 30 | - |
| F16/046 | BASIC OF RADIO | C6 | COL | JAP | 20 | - |
| S50/066 | CAMERA TUBES | C1 | COL | - | *29 | - |
| U60/016 | CAPACITORS | A4 | B/W | ENG | 13 | PAL |
| U60/001 | CATHODE RAY OSCILLOGRAPH | A4 | B/W | ENG | 20 | PAL |
| U60/258 | CIRCUIT TESTER | F4 | COL | ENG | 15 | PAL |
| U60/210 | COLOUR TELEVISION | D4 | COL | ENG | 17 | PAL |
| S50/079 | CONDUCTION IN GASES | C1 | COL | - | *26 | - |
| U60/021 | CONDUCTION OF HEAT | A4 | B/W | ENG | 7 | PAL |
| S50/078 | CONDUCTION ON SOLID | C1 | COL | - | *21 | - |
| U20/048 | CONTACTS | B2 | COL | ENG | 12 | PAL |
| U60/021 | CONVECTION OF WATER | A4 | B/W | ENG | 7 | PAL |
| U30/033 | DIODES & TRANSISTOR | B3 | COL | JAP | 27 | PAL |
| F16/036 | DIODES & TRANSISTORS | B6 | COL | JAP | 25 | - |
| U60/140 | DIODES AND TRANSISTOR | B5 | B/W | JAP | 25 | PAL |
| U60/247 | DISMANTLING AND ASSEMBLING OF 3-PHASE INDUCTION MOTOR | F4 | COL | ENG | 13 | PAL |
| U60/037 | DOMESTIC HOT WATER | B4 | B/W | ENG | 15 | PAL |
| F16/052 | ELECRONICS | C6 | COL | JAP | 22 | - |
| U60/223 | ELECTRIC CIRCUITS | E4 | COL | ENG | 20 | PAL |
| U60/037 | ELECTRIC INDUCTION HEATING | D4 | B/W | ENG | 20 | PAL |
| F16/047 | ELECTRIC WAVE | C6 | COL | JAP | 20 | - |
| U20/071 | ELECTRICAL ANALYSIS | C2 | B/W | ENG | 18 | PAL |
| U60/142 | ELECTRICAL AND HYDRAULIC SERVO MECHANISM | B5 | B/W | JAP | 21 | PAL |
| U60/140 | ELECTRICAL FIELD AND ELECTRIC POTENTIAL | B5 | B/W | JAP | 24 | PAL |
| U30/053 | ELECTRICAL I - AC | B3 | B/W | JAP | 20 | PAL |
| U30/054 | ELECTRICAL II - ELECTRONS | B3 | B/W | JAP | 20 | PAL |
| S50/024 | ELECTRICAL SAFETY | B1 | COL | - | *79 | - |
| U20/045 | ELECTRICITY ALL ABOUT US | B2 | COL | ENG | 11 | PAL |
| U60/021 | ELECTRO MAGNETIC INDUCTION | A4 | B/W | ENG | 16 | PAL |
| U20/023 | ELECTRODES | A2 | COL | ENG | 10 | PAL |
| F16/040 | ELECTROLYSIS & POTENTIAL | B6 | B/W | JAP | 25 | - |
| U30/041 | ELECTROLYSIS & POTENTIAL | B3 | B/W | JAP | 24 | PAL |
| U60/184 | ELECTROMAGNETISM | D4 | COL | JAP | 15 | NTSC |
| U30/039 | ELECTRONICS | B3 | COL | JAP | 27 | PAL |
| U60/218 | ELECTRONICS IN JAPAN TODAY | E4 | COL | ENG | 29 | PAL |
| U60/016 | ELECTRONS AND ELECTRONICS: AN INTRODUCTION | A4 | B/W | ENG | 11 | PAL |
| U60/138 | ELECTROSTATIC PRINCIPLE OF MATTER (ATOMIC THEORY) | B5 | B/W | ENG | 30 | PAL |
| S50/071 | ELEMENTARY PHYSICS - LIGHT PART I | C1 | COL | - | *28 | - |
| S50/072 | ELEMENTARY PHYSICS - LIGHT PART II | C1 | COL | - | *25 | - |
| S50/073 | ELEMENTARY PHYSICS - SOUND PART I | C1 | COL | - | *19 | - |
| S50/074 | ELEMENTARY PHYSICS - SOUND PART II | C1 | COL | - | *19 | - |
| U60/112 | ENGINEERING CRAFT STUDIES USING ELECTRICITY | A5 | COL | ENG | 19 | PAL |
| U60/019 | FILTERS AND POWER SUPPLY (FILTER ACTION I) | A4 | B/W | ENG | 26 | PAL |
| U60/183 | FREQUENCY COUNTER | D4 | COL | JAP | 20 | NTSC |
| S50/084 | GAS DISCHARGES IN COLD-CATHODE TUBE | C1 | COL | - | *28 | - |
| S50/076 | HIGH FREQUENCIES | C1 | COL | - | *30 | - |
| F16/038 | HOW A VACUUM TUBE WORK | B6 | COL | JAP | 24 | - |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/262 | HOW TO SOLDER | F4 | COL | ENG | 12 | PAL |
| U60/083 | HOW TO USE AN OSCILLOSCOPE PART 1-2 | C4 | COL | ENG | 51 | NTSC |
| U60/084 | HOW TO USE AN OSCILLOSCOPE PART 3 | C4 | COL | ENG | 25 | NTSC |
| U30/052 | INDUCTION MOTOR | B3 | B/W | ENG | 24 | PAL |
| U60/031 | INTRODUCTION TO AMPLITUDE MODULATION | B4 | B/W | ENG | 17 | PAL |
| U60/038 | JOINTS FOR COPPER TUBES | B4 | B/W | ENG | 10 | PAL |
| S50/075 | KLYSTRONS AND TRAVELLING WAVES | C1 | COL | - | *24 | - |
| U60/225 | LAYING OF AN UNDERGROUND CABLE IN THE CHANNEL | E4 | COL | ENG | 36 | PAL |
| S50/080 | LUMINESCENCE OF GASES | C1 | COL | - | *30 | - |
| S50/081 | MAGNETISM I | C1 | COL | - | *25 | - |
| U60/020 | MEASUREMENT OF ELECTRICITY | A4 | B/W | ENG | 10 | PAL |
| U20/049 | MODERN METHODS & ELECTRONIC MACHINES IN POST OFFICES | B2 | COL | ENG | 16 | PAL |
| U60/257 | NASA STANDARD SOLDERING | F4 | COL | ENG | 18 | PAL |
| U60/254 | OPERATION OF PHOTOCORDER | F4 | COL | ENG | 21 | PAL |
| S50/006 | OUTLINE OF ELECTRICITY I | A1 | COL | - | *93 | - |
| S50/070 | PHOTO-EMISSION | C1 | COL | - | *37 | - |
| U60/214 | PHYSICS | E4 | B/W | ENG | 12 | PAL |
| S50/053 | PHYSICS PART 5 - ELECTRO-MAGNETISM | C1 | COL | - | *60 | - |
| S50/054 | PHYSICS PART 6 - ELECTRONICS | C1 | COL | - | *60 | - |
| U60/032 | PIONEERS OF ELECTRONICS | B4 | COL | ENG | 15 | PAL |
| U60/020 | PLANNED ELECTRIFICATION | A4 | B/W | ENG | 21 | PAL |
| S50/064 | POPULAR INTRODUCTION TO NUCLEAR PHYSICS | C1 | COL | - | *33 | - |
| U60/256 | PRACTICAL APPLICATION OF COMMON IC - DIGITAL CLOCK | F4 | COL | ENG | 13 | PAL |
| U20/047 | PRELIMINARY STUDIES OF TIDAL POWER STATION | B2 | COL | ENG | 19 | PAL |
| U30/040 | PRINCIPLE OF ALTERNATING CURRENT MOTOR | B3 | B/W | JAP | 25 | PAL |
| F16/044 | PRINCIPLES OF AC. MOTOR | C6 | B/W | JAP | 28 | - |
| U60/016 | PRINCIPLES OF THE TRANSISTOR | A4 | B/W | ENG | 13 | PAL |
| U60/255 | PRINTED CIRCUIT BOARD FABRICATION | F4 | COL | ENG | 16 | PAL |
| U60/031 | PULSE MODULATION | B4 | B/W | ENG | 26 | PAL |
| U60/016 | PUTTING FREE ELECTRONS TO WORK | A4 | B/W | ENG | 10 | PAL |
| U60/034 | RADAR GOES TO SEA | B4 | B/W | ENG | 26 | PAL |
| U60/021 | RADIATION OF HEAT | A4 | B/W | ENG | 6 | PAL |
| U60/031 | RADIO ANTENNAS | B4 | B/W | ENG | 10 | PAL |
| U60/001 | RAYS FROM ATOM | A4 | B/W | ENG | 10 | PAL |
| U60/019 | REGULATED POWER SUPPLY | A4 | B/W | ENG | 14 | PAL |
| U60/032 | RESEARCH IN ENGINEERING | B4 | B/W | ENG | 40 | PAL |
| U60/138 | RL TRANSIENTS | B5 | B/W | ENG | 13 | PAL |
| U60/163 | SECAM | C5 | COL | ENG | 25 | PAL |
| S50/085 | SEMI-CONDUCTOR PHOTO-CELLS | C1 | COL | - | *30 | - |
| F16/037 | SEMI-CONDUCTORS | B6 | COL | JAP | 25 | - |
| U60/021 | SERIES & PARALLEL CIRCUITS | A4 | B/W | ENG | 10 | PAL |
| U30/025 | SERVO-MOTOR & ELECRIC | A3 | B/W | JAP | 21 | PAL |
| U30/026 | SERVO-MOTOR & HYDRAULIC CONTROL | A3 | B/W | JAP | 22 | PAL |
| F16/039 | SERVO-MOTOR, ELECTRIC & OIL PRESSURE | B6 | B/W | JAP | 24 | - |
| U60/224 | SOLAR ENERGY | E4 | COL | ENG | 16 | PAL |
| U60/237 | STOLZ - BROWN BOVERI | E4 | COL | ENG | 18 | PAL |
| U60/224 | TECHNOLOGY : RISKS & OPPORTUNITIES | E4 | COL | ENG | 10 | PAL |
| U60/001 | THE ATOMIC THEORY | A4 | B/W | ENG | 9 | PAL |
| S50/063 | THE CATHODE-RAY TUBE | C1 | COL | - | *29 | - |
| U30/032 | THE CHALLENGE OF CHOICE | B3 | COL | ENG | 24 | PAL |
| S50/055 | THE CRYSTAL DIODE PART I - BASIC PRINCPLES | C1 | COL | - | *33 | - |
| S50/056 | THE CRYSTAL DIODE PART II - A MORE ADVANCED TREATMENT | C1 | COL | - | *25 | - |
| S50/057 | THE CRYSTAL DIODE PART III - PRACTICAL CONSIDERATIONS | C1 | COL | - | *28 | - |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/037 | THE DEVELOPMENT OF THE GAS TURBINE | B4 | B/W | ENG | 20 | PAL |
| S50/068 | THE DIODE | C1 | COL | - | *41 | - |
| S50/059 | THE GAS-FILLED DIODE | C1 | COL | - | *31 | - |
| S50/060 | THE IGNITRON | C1 | COL | - | *28 | - |
| S50/058 | THE MAGNETRON | C1 | COL | - | *27 | - |
| S50/082 | THE MAGNETRON | C1 | COL | - | *23 | - |
| U60/001 | THE NUCLEAR STRUCTURE OF THE ATOM | A4 | B/W | ENG | 18 | PAL |
| S50/065 | THE PICTURE TUBE | C1 | COL | - | *31 | - |
| U60/138 | THE PRIMARY CELL | B5 | B/W | ENG | 10 | PAL |
| S50/069 | THE RELATIONSHIP OF ELECTRON TUBES | C1 | COL | - | *45 | - |
| U60/261 | THE SCR | F4 | COL | ENG | 5 | PAL |
| S50/077 | THE STRUCTURE OF MATTER | C1 | COL | - | *26 | - |
| U60/210 | THE TELEVISION CARRIER WAVE | D4 | COL | ENG | 17 | PAL |
| U60/210 | THE TELEVISION PICTURE TUBE | D4 | COL | ENG | 19 | PAL |
| S50/062 | THE TETRODE AND THE PETRODE | C1 | COL | - | *33 | - |
| S50/061 | THE THYRATRON | C1 | COL | - | *30 | - |
| S50/083 | THE TRANSISTOR | C1 | COL | - | *30 | - |
| S50/067 | THE TRIODE | C1 | COL | - | *34 | - |
| U60/137 | TOP OF THE TRADE - ELECTRICAL/ELECTRONICS | B5 | COL | ENG | 45 | PAL |
| U60/018 | TRANSISTOR TETRODES AND FIELD EFFECT TRANSISTOR | A4 | B/W | ENG | 13 | PAL |
| U60/017 | TRANSISTOR TRIODES & SPECIAL PURPOSE DEVICES (BIAS I) | A4 | B/W | ENG | 26 | PAL |
| U60/017 | TRANSISTOR TRIODES & SPECIAL PURPOSE DEVICES (BIAS II) | A4 | B/W | ENG | 25 | PAL |
| U60/018 | TRANSISTOR TRIODES AND SPECIAL PURPOSE DEVICES (OPERATION) | A4 | B/W | ENG | 20 | PAL |
| U60/018 | TRANSISTORISED REGULATED POWER SUPPLIES | A4 | B/W | ENG | 21 | PAL |
| U20/059 | TRANSMISSION | B2 | COL | ENG | 20 | PAL |
| U60/038 | TRANSMISSION LINES | B4 | B/W | ENG | 25 | PAL |
| U60/034 | UNI-JUNCTION SAWTOOTH GENERATOR | B4 | B/W | ENG | 28 | PAL |
| U60/017 | UNI-JUNCTION TRANSISTOR AND TUNNEL DIODE | A4 | B/W | ENG | 8 | PAL |
| U60/224 | USES OF SOLAR ENERGY | E4 | COL | ENG | 16 | PAL |
| U20/040 | VACUUM CLEANER | B2 | COL | ENG | 3 | PAL |
| U60/142 | VACUUM TUBES | B5 | B/W | JAP | 24 | PAL |
| U60/093 | WAVE GUIDE PART 1-3 | A5 | COL | ENG | 49 | PAL |
| U60/094 | WAVE GUIDE PART 4-5 | A5 | COL | ENG | 39 | PAL |
| U60/038 | WAVEGUIDE PLUMBING | B4 | B/W | ENG | 25 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - GENERAL MANAGEMENT ( 1. 7.83) F50

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| V120/002 | ALL I NEED IS A CONFERENCE | D2 | B/W | ENG | 28 | PAL |
| U60/211 | COMMUNICATING WITH A GROUP | E4 | COL | ENG | 21 | PAL |
| V120/002 | EFFECTIVE DECISIONS | D2 | COL | ENG | 21 | PAL |
| U60/143 | FOR THE WANT OF A NAIL | B5 | COL | ENG | 30 | PAL |
| U60/162 | HELPING PEOPLE PERFORM : WHAT MANAGERS ARE PAID FOR | C5 | COL | ENG | 21 | PAL |
| U60/158 | HOW TO MAKE THE ORGANIZATION WORK FOR YOU | C5 | COL | ENG | 30 | PAL |
| U60/091 | HOW TO MANAGE THE BOSS | A5 | COL | ENG | 24 | PAL |
| U60/158 | HOW TO TAKE THE RIGHT RISKS | C5 | COL | ENG | 30 | PAL |
| U60/091 | HOW TO WORK WITH YOUR FELLOW MANAGERS | A5 | COL | ENG | 21 | PAL |
| V120/002 | INTERNAL ORGANIZATION | D2 | B/W | ENG | 11 | PAL |
| V120/002 | INTERNATIONAL ZONE - "LYE CHIN GIRL" | D2 | B/W | ENG | 27 | PAL |
| V120/001 | MANAGEMENT - JAPANESE STYLE | D2 | COL | ENG | 45 | PAL |
| U60/005 | MANAGEMENT BY OBJECTIVES | A4 | COL | ENG | 23 | PAL |
| V60/035 | MANAGEMENT BY OBJECTIVES | D3 | COL | ENG | 25 | PAL |
| V180/001 | MANAGING TIME | D1 | COL | ENG | 20 | PAL |
| U60/078 | MANHUNT | C4 | COL | ENG | 32 | PAL |
| V180/001 | MARKETING PART 1 - THE MERITT CASE | D1 | COL | ENG | 20 | PAL |
| V180/001 | MARKETING PART 2 - WHAT BUSINESS ARE YOU REALLY IN? | D1 | COL | ENG | 31 | PAL |
| U60/089 | OVERCOMING RESISTANCE | C4 | COL | ENG | 31 | PAL |
| U60/065 | OVERCOMING RESISTANCE TO CHANGES | C4 | COL | ENG | 28 | PAL |
| U60/065 | PERSON TO PERSON COMMUNICATION | C4 | COL | ENG | 13 | PAL |
| U60/162 | PLANNING & GOAL SETTING : THE WASTE OR MANAGEMENT TOOL? | C5 | COL | ENG | 20 | PAL |
| U60/062 | SALES GRID: WHAT IT IS AND HOW IT WORKS | C4 | COL | ENG | 30 | PAL |
| U60/062 | SALES GRID:9.9 SOLUTION SELLING | C4 | COL | ENG | 32 | PAL |
| U60/064 | SELL PROUD | C4 | COL | ENG | 22 | PAL |
| V180/001 | STAFFING FOR STRENGTH | D1 | COL | ENG | 28 | PAL |
| U60/161 | THE BALANCE SHEET BARRIER | C5 | COL | ENG | 30 | PAL |
| U60/066 | THE BALL OF FIRE | C4 | COL | ENG | 4 | PAL |
| U60/090 | THE BOB KNOWFTON STORY | C4 | COL | ENG | 27 | PAL |
| U60/087 | THE BOSS AND HIS SECRETARY-TRY TO SEE IT MY WAY | C4 | COL | ENG | 28 | PAL |
| U60/087 | THE BOSS AND HIS SECRETARY-WE CAN WORK IT OUT | C4 | COL | ENG | 29 | PAL |
| V60/035 | THE CASE OF THE MISSING MAGNET | D3 | COL | ENG | 11 | PAL |
| U60/092 | THE FINE ART OF KEEPING YOUR COOL | A5 | COL | ENG | 20 | PAL |
| U60/066 | THE GILDED LILY | C4 | COL | ENG | 6 | PAL |
| U60/143 | THE GOYA EFFECT | B5 | COL | ENG | 30 | PAL |
| U60/066 | THE NICE GUY | C4 | COL | ENG | 4 | PAL |
| U60/066 | THE PACE SETTER | C4 | COL | ENG | 6 | PAL |
| U60/066 | THE PUZZLE | C4 | COL | ENG | 6 | PAL |
| U60/066 | THE ROAD BLOCK | C4 | COL | ENG | 6 | PAL |
| U60/088 | THE SALESMAN | C4 | COL | ENG | 25 | PAL |
| V180/001 | THEORY X AND THEORY Y PART 1 - DESCRIPTION OF THE THEORY | D1 | COL | ENG | 23 | PAL |
| V180/001 | THEORY X AND THEORY Y PART 2 - APPLICATION OF THE THEORY | D1 | COL | ENG | 24 | PAL |
| U60/066 | THIS MATTER OF MOTIVATION | C4 | COL | ENG | 29 | PAL |
| U60/088 | TIME AND TERRITORY | C4 | COL | ENG | 28 | PAL |
| U60/090 | TIME TO THINK | C4 | COL | ENG | 17 | PAL |
| V60/041 | TV FORUM : OPINION - PERSONNEL MANAGEMENT JAPANESE STYLE | D3 | COL | ENG | 50 | PAL |
| V180/001 | WHAT CAN I CONTRIBUTE? | D1 | COL | ENG | 21 | PAL |
| U60/065 | WHAT IS IT GOING TO COST YOU | C4 | COL | ENG | 9 | PAL |
| U60/078 | WHERE DO YOU GO FROM HERE | C4 | COL | ENG | 25 | PAL |
| U60/064 | WHO KILLED THE SALE? | C4 | COL | ENG | 20 | PAL |
| U60/089 | YOUR PRICE IS RIGHT, SELL IT | C4 | COL | ENG | 26 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - INDUSTRIAL SAFETY ( 1. 7.83) F32

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U20/017 | A GUIDE TO INTERLOCKING GUARDS | A2 | COL | ENG | 20 | PAL |
| F16/054 | BANISHMENT OF INSECURE CONDUCT AT WORKSITE | C6 | COL | JAP | 24 | - |
| U30/034 | BANISHMENT OF INSECURE CONDUCT IN WORKSITE | B3 | COL | JAP | 23 | PAL |
| S50/026 | BASIC FIRST AID PROCEDURES | B1 | COL | - | *60 | - |
| U20/011 | COLOR OF DANGER | A2 | COL | ENG | 15 | PAL |
| U20/020 | CONFINED SPACED HAZARDS | A2 | COL | ENG | 15 | PAL |
| U20/014 | CONTACTS | A2 | COL | ENG | 14 | PAL |
| U60/234 | DEMONSTRATION ON USE OF FIRE-FIGHTING EQUIPMENT | E4 | COL | ENG | 20 | PAL |
| U20/010 | EVERYTHING TO LOSE | A2 | COL | ENG | 20 | PAL |
| U20/026 | FALLS CAN CRIPPLE | A2 | COL | ENG | 15 | PAL |
| U30/035 | HE WHO DIED BY 100 VOLTS | B3 | COL | JAP | 24 | PAL |
| F16/053 | HE WHO DIED BY 100V | C6 | COL | JAP | 25 | - |
| V60/040 | HIGH RISE BUILDING : FIRE SAFETY AND YOU | D3 | COL | ENG | 10 | PAL |
| V60/040 | HORIZON - FIRE | D3 | COL | ENG | 50 | PAL |
| U20/019 | LISTEN WHILE YOU CAN | A2 | COL | ENG | 20 | PAL |
| U20/025 | ONE STEP AWAY | A2 | COL | ENG | 15 | PAL |
| U60/056 | PEOPLE AND ACCIDENTS | B4 | COL | ENG | 27 | PAL |
| U60/067 | PUTTING FIRE OUT | C4 | COL | ENG | 14 | PAL |
| U20/018 | SAFE SYSTEM OF WORK | A2 | COL | ENG | 20 | PAL |
| S50/025 | SAFETY INFORMATION FOR FRESHMAN | B1 | COL | - | *69 | - |
| U20/027 | SAFETY.....NUISANCE? | A2 | COL | ENG | 14 | PAL |
| U60/067 | SHIPYARD FIRE & EXPLOSION HAZARDS | C4 | COL | ENG | 42 | PAL |
| U20/024 | SLINGING | A2 | COL | ENG | 10 | PAL |
| U20/016 | WELD IN SAFETY | A2 | COL | ENG | 22 | PAL |
| U20/015 | YOUR GUARDIAN ANGEL | A2 | COL | ENG | 15 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - DOCUMENTARY ON JAPAN (16. 7.83) F52

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/217 | 100 MILLION VARIED CONSUMERS | E4 | COL | ENG | 17 | PAL |
| U60/030 | A BOY AND HIS RIVER | A4 | COL | ENG | 20 | PAL |
| U60/041 | A MOTHER'S WISH - BRINGING UP A CHILD | B4 | COL | ENG | 13 | PAL |
| U60/042 | ACCENT OF LIVING - MODERN CRAFTSMANSHIP OF JAPAN | B4 | COL | ENG | 26 | PAL |
| U60/125 | AIZU HOLIDAY | B5 | COL | ENG | 21 | PAL |
| V60/047 | BEYOND CONFRONTATION : JAPANESE LABOUR RELATIONS AT WORK | E3 | COL | ENG | 25 | PAL |
| U60/041 | CROSSROADS OF ASIA | B4 | COL | ENG | 15 | PAL |
| U60/036 | DECISION MAKING IN JAPAN | B4 | COL | ENG | 16 | PAL |
| U60/217 | DOING BUSINESS IN JAPAN | E4 | COL | ENG | 15 | PAL |
| V60/037 | EYE WITNESS - JAPAN : ENERGY | D3 | COL | ENG | 45 | PAL |
| V60/039 | IF JAPAN CAN ....WHY CAN'T WE ? | D3 | COL | MAND | 60 | PAL |
| U30/073 | INSIDE JAPAN : ECHOES OF THE WIND | C3 | COL | ENG | 28 | PAL |
| U30/066 | INSIDE JAPAN : FACTORY FLOWER OFFICE LADY | C3 | COL | ENG | 29 | PAL |
| U30/067 | INSIDE JAPAN : FROM MORNING TILL NIGHT | C3 | COL | ENG | 28 | PAL |
| U30/069 | INSIDE JAPAN : GREY YOUTH | C3 | COL | ENG | 29 | PAL |
| U30/072 | INSIDE JAPAN : HALF AN ETERNITY | C3 | COL | ENG | 29 | PAL |
| U30/064 | INSIDE JAPAN : THE CHRYSANTHEMUM PEOPLE | C3 | COL | ENG | 27 | PAL |
| U30/068 | INSIDE JAPAN : THE COMPANY COMES FIRST | C3 | COL | ENG | 28 | PAL |
| U30/065 | INSIDE JAPAN : THE HARMONY OF THE TEAM | C3 | COL | ENG | 28 | PAL |
| U30/071 | INSIDE JAPAN : WHITE ELEPHANTS | C3 | COL | ENG | 28 | PAL |
| U60/030 | JAPAN AND THE SUN | A4 | COL | ENG | 24 | PAL |
| U60/136 | JAPAN IN WINTER | B5 | COL | ENG | 18 | PAL |
| V60/034 | JAPAN INC : LESSONS FOR NORTH AMERICA ? | D3 | COL | ENG | 25 | PAL |
| U60/219 | JAPAN IS YOUR MARKET | E4 | COL | ENG | 19 | PAL |
| U60/042 | JAPAN'S MODERN CONSUMER | B4 | COL | ENG | 26 | PAL |
| U60/036 | KOJI - THE YOUNG MECHANIC | B4 | COL | ENG | 24 | PAL |
| U60/111 | LIGHTING TODAY IN JAPAN | A5 | COL | ENG | 29 | PAL |
| U60/055 | LIVE ON FOREVER - OZE PARK | B4 | COL | ENG | 18 | PAL |
| U60/023 | MODERN MATERIAL HANDLING IN JAPAN | A4 | COL | ENG | 25 | PAL |
| U60/030 | ON-THE-JOB TRAINING IN JAPAN | A4 | COL | ENG | 20 | PAL |
| U60/048 | RECENT SIGNALS OF JAPAN | B4 | COL | ENG | 27 | PAL |
| V60/053 | SCHOOLDAYS IN JAPAN | E3 | COL | ENG | 30 | PAL |
| U60/135 | SHINKANSEN | B5 | COL | ENG | 23 | PAL |
| U60/043 | SOURCE OF JAPAN'S VITALITY | B4 | COL | ENG | 27 | PAL |
| U60/055 | STORIES OF FOUR JAPANESE | B4 | COL | ENG | 26 | PAL |
| U60/050 | THE ART OF SUMO | B4 | COL | ENG | 50 | PAL |
| U60/043 | THE ARTISAN'S TOUCH | B4 | COL | ENG | 26 | PAL |
| U60/219 | THE DOOR IS OPEN (JAPAN'S IMPORT ON THE RISE) | E4 | COL | ENG | 19 | PAL |
| U60/117 | THE JAPANESE ECONOMY NOW | A5 | COL | ENG | 23 | PAL |
| U60/217 | THE JAPANESE ECONOMY NOW | E4 | COL | ENG | 23 | PAL |
| U60/213 | THE LIVING TREASURES OF JAPAN | E4 | COL | ENG | 57 | PAL |
| U60/126 | TIME FOR THOUGHT IN TSUBAME | B5 | COL | ENG | 20 | PAL |
| U60/125 | UNDERSTANDING JAPAN | B5 | COL | ENG | 27 | PAL |
| V60/046 | VOGEL ON JAPAN | E3 | COL | ENG | 45 | PAL |
| U60/036 | WHERE IS THE REAL JAPAN | B4 | COL | ENG | 22 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - DOCUMENTARY ON JSTC (16. 7.83) F25

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U20/028 | ARTICLE ON JSTC | A2 | COL | JAP | 20 | PAL |
| U60/028 | CAREER TALK | A4 | COL | ENG | 21 | PAL |
| U60/103 | CAREER TALK | A5 | COL | ENG | 30 | PAL |
| U20/030 | CAREERS' 81 EXHIBTION | A2 | COL | SIL | 11 | PAL |
| U60/186 | INTERVIEW FOR INPLANT TRAINING | D4 | COL | ENG | 52 | PAL |
| V120/013 | JAPAN-SINGAPORE TRAINING CENTRE | D2 | COL | JAP | 20 | PAL |
| V60/054 | JAPAN-SINGAPORE TRAINING CENTRE | E3 | COL | JAP | 20 | NTSC |
| U20/033 | JSTC COURSE INTRODUCTION | B2 | COL | ENG | 20 | PAL |
| U20/044 | JSTC NEWSLETTER | B2 | COL | ENG | 10 | PAL |
| U20/043 | JSTC OPEN HOUSE | B2 | COL | SIL | 10 | PAL |
| V120/015 | MOCK INTERVIEW 1981 | D2 | COL | ENG | 50 | PAL |
| U20/003 | MORNING EXERCISE & JAPANESE LANGUAGE CLASS | A2 | COL | JAP | 11 | PAL |
| U20/039 | NATIONAL DAY PARADE '81 | B2 | COL | ENG | 15 | PAL |
| V180/002 | OPENING CEREMONY OF JSTC | D1 | COL | ENG | 20 | PAL |
| U20/021 | PRESENTATION CEREMONY OF VIDEO EUIPMENT | A2 | COL | ENG | 9 | PAL |
| U20/034 | RADIO CALLISTHENICS | B2 | COL | ENG | 15 | PAL |
| U20/070 | VISIT BY AMBASSADOR OF JAPAN TO SINGAPORE | C2 | COL | SIL | 10 | PAL |
| U20/055 | VISIT BY DEPUTY LABOUR MINISTER OF JAPAN | B2 | COL | ENG | 10 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - LANGUAGE ( 1. 7.83) F23

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U20/001 | A VISIT TO A RADIO FACTORY | A2 | COL | JAP | 5 | PAL |
| U20/012 | CINESELL SERIES | A2 | COL | JAP | 20 | NTSC |
| U60/054 | CINESELL SERIES | B4 | COL | JAP | 60 | NTSC |
| U60/179 | CINESELL SERIES | C5 | COL | JAP | 60 | NTSC |
| V60/040 | CINESELL SERIES VOL . 2 | E3 | COL | JAP | 50 | NTSC |
| V120/017 | CINESELL SERIES VOL 1 | D2 | COL | JAP | 100 | NTSC |
| U60/253 | DISTINCTION BETWEEN 'I' AND 'NA' ADJECTIVES | F4 | COL | ENG | 8 | PAL |
| V180/020 | ENGLISH FOR BUSINESS - THE BELLCREST STORY | D1 | COL | ENG | 150 | PAL |
| V180/005 | FOLLOW ME | D1 | COL | ENG | 180 | PAL |
| U20/008 | HOW TO USE THE LANGUAGE LABORATORY | A2 | COL | ENG | 13 | PAL |
| U20/013 | HOW TO WRITE HIRAGANA | A2 | COL | SIL | 20 | PAL |
| U60/053 | HOW TO WRITE HIRAGANA CHARACTERS | B4 | COL | SIL | 55 | PAL |
| U60/220 | HOW TO WRITE KANJI | E4 | COL | SIL | 5 | PAL |
| U60/220 | HOW TO WRITE KATAKANA | E4 | COL | SIL | 5 | PAL |
| U60/051 | LET'S LEARN JAPANESE | B4 | COL | JAP | 27 | NTSC |
| U60/246 | USE OF LANGUAGE LABORATORY EQUIPMENT | F4 | COL | ENG | 9 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| F16/056 | A FESTIVAL OF YOUTHS | C6 | COL | JAP | 10 | - |
| F16/057 | A ROAD TO GLORY | C6 | COL | JAP | 12 | - |
| U60/121 | A SKILLED WORKER | B5 | COL | ENG | 16 | PAL |
| S50/028 | ABC OF CARBIDE CUTTING TOOL PART 1 | B1 | COL | - | *87 | - |
| S50/029 | ABC OF CARBIDE CUTTING TOOL PART 2 | B1 | COL | - | *115 | - |
| S50/048 | ADMINISTER OF PROCESS | C1 | COL | - | *73 | - |
| S50/047 | ADMINISTER OF QUALITY | C1 | COL | - | *52 | - |
| S50/045 | ADMINISTER TOOL | C1 | B/W | - | *66 | - |
| V60/024 | ADVENTURE IN ABRASIVE | D3 | COL | ENG | 23 | PAL |
| U60/108 | ADVENTURE IN ABRASIVES | A5 | COL | ENG | 22 | PAL |
| S50/022 | ARRANGEMENT & ORDER | B1 | COL | - | *79 | - |
| U60/124 | ATTENTION RADIATION | B5 | COL | ENG | 16 | PAL |
| U60/131 | AUTO LATHE NO. 1 | B5 | COL | SIL | 18 | PAL |
| U60/131 | AUTO LATHE NO. 2 | B5 | COL | SIL | 22 | PAL |
| V60/026 | AUTO LATHE PART 1 | D3 | COL | SIL | 18 | PAL |
| V60/026 | AUTO LATHE PART 2 | D3 | COL | SIL | 20 | PAL |
| F16/029 | AUTOMATIC LATHE | B6 | B/W | JAP | 20 | - |
| U30/031 | AUTOMATIC LATHE | B3 | B/W | JAP | 20 | PAL |
| V60/026 | AUTOMATIC LATHE | D3 | B/W | JAP | 20 | PAL |
| U60/241 | BANDSAWING MACHINE | F4 | COL | ENG | 20 | PAL |
| S50/011 | BASIC KNOWLEDGE OF GRINDING PROCESS | A1 | COL | - | *69 | - |
| U60/154 | BEARING TYPES AND SELECTING & FITTING | C5 | COL | ENG | 20 | PAL |
| U60/212 | BEARINGS | E4 | COL | ENG | 18 | PAL |
| U60/154 | BEARINGS ROUND THE WORLD | C5 | COL | ENG | 20 | PAL |
| F16/034 | BORING | B6 | B/W | JAP | 25 | - |
| V60/005 | BORING | D3 | B/W | JAP | 25 | PAL |
| U30/037 | BORING OPERATION | B3 | B/W | JAP | 25 | PAL |
| U60/075 | BORING UPDATE | C4 | COL | ENG | 11 | PAL |
| U30/063 | BUILDING A BETTER TOMORROW | C3 | COL | ENG | 30 | PAL |
| U20/046 | CAST IRON PIPE LINE | B2 | COL | ENG | 18 | PAL |
| U60/212 | CHAIN & CHAIN DRIVES | E4 | COL | ENG | 16 | PAL |
| U60/122 | CHIP BREAKING FILM (COROMANT SANDVIK) | B5 | COL | SIL | 13 | PAL |
| U60/075 | CHIP STUDY TURNING SEMINAR | C4 | COL | ENG | 12 | PAL |
| S50/013 | CHIPPING WORK | A1 | B/W | - | *47 | - |
| U60/079 | CLAMPING | C4 | B/W | ENG | 7 | PAL |
| U60/251 | CLOSE TOLERANCE FITTINGS | F4 | B/W | ENG | 9 | PAL |
| U60/206 | CNC MILLING SEMINAR | D4 | COL | ENG | 30 | PAL |
| U60/122 | COROMANT INTERNATIONAL | B5 | COL | ENG | 25 | PAL |
| U60/124 | COROMANT SANDVIK (MULTI-SERVICE) | B5 | COL | ENG | 22 | PAL |
| U30/049 | CUTING THEORY | B3 | COL | ENG | 28 | PAL |
| F16/026 | CUTTING THEORY | B6 | B/W | JAP | 20 | - |
| V60/021 | CUTTING THEORY | D3 | B/W | JAP | 20 | PAL |
| U60/113 | CUTTING TOOLS AT A CLOSER LOOK | A5 | COL | ENG | 19 | PAL |
| V60/021 | CUTTING TOOLS AT A CLOSER LOOK | D3 | COL | ENG | 20 | PAL |
| U60/127 | CYLINDER GRINDING | B5 | COL | SIL | 10 | PAL |
| V60/026 | CYLINDER GRINDING | D3 | COL | SIL | 10 | PAL |
| S50/012 | CYLINDRICAL AND CENTRELESS GRINDING PRACTICE | A1 | COL | - | *64 | - |
| U60/085 | CYLINDRICAL GRINDING | C4 | COL | ENG | 11 | PAL |
| F16/031 | DRILLING | B6 | B/W | JAP | 14 | - |
| U30/036 | DRILLING | B3 | B/W | JAP | 14 | PAL |
| U60/243 | DRILLING | F4 | COL | ENG | 13 | PAL |
| V60/005 | DRILLING | D3 | B/W | JAP | 14 | PAL |
| S50/019 | DRILLING WORK | A1 | B/W | - | *90 | - |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/216 | ECONOMIZER | E4 | COL | ENG | 5 | PAL |
| U20/052 | FACTS OF N.D.T. | B2 | COL | ENG | 22 | PAL |
| U20/057 | FILING | B2 | COL | ENG | 12 | PAL |
| S50/014 | FILING WORK | A1 | B/W | - | *49 | - |
| V60/023 | FIRST PRINCIPLE IN GRINDING | D3 | COL | ENG | 26 | PAL |
| U60/008 | FIRST PRINCIPLES IN GRINDING | A4 | COL | ENG | 28 | PAL |
| F16/035 | FORGING | B6 | B/W | JAP | 25 | - |
| S50/035 | FORGING | B1 | COL | - | *107 | - |
| U30/029 | FORGING | A3 | B/W | JAP | 25 | PAL |
| U60/085 | FORM GRINDING MACHINE | C4 | COL | ENG | 10 | PAL |
| U60/124 | FULL SPEED AHEAD | B5 | COL | ENG | 20 | PAL |
| U20/051 | GEARS & GEAR DRIVES | B2 | COL | ENG | 16 | PAL |
| U60/212 | GEARS & GEARS DRIVES | E4 | COL | ENG | 16 | PAL |
| S50/023 | GRINDING WHEEL AND ITS TEST WORK | B1 | COL | - | *79 | - |
| U60/107 | GRITS THAT GRIND | A5 | COL | ENG | 29 | PAL |
| V60/024 | GRITS THAT GRIND | D3 | COL | ENG | 27 | PAL |
| S50/018 | HACKSAWING | A1 | B/W | - | *67 | - |
| U60/241 | HACKSAWING MACHINE | F4 | COL | ENG | 23 | PAL |
| V60/025 | HAVE A HAPPY DAY ( GRINDING ) | D3 | COL | ENG | 19 | PAL |
| U60/109 | HAVE A HAPPY DAY (GRINDING) | A5 | COL | ENG | 21 | PAL |
| F16/033 | HEAT TREATMENT | B6 | B/W | JAP | 24 | - |
| U30/027 | HEAT TREATMENT | A3 | B/W | JAP | 20 | PAL |
| U60/251 | HEAT TREATMENT | F4 | B/W | ENG | 24 | PAL |
| V60/031 | HEAT TREATMENT | D3 | B/W | JAP | 30 | PAL |
| U30/061 | HEAVY DUTY VERTICAL MACHINING CENTER | C3 | COL | ENG | 16 | PAL |
| U60/110 | HOW TO SELECT A RIGHT GRINDING WHEEL | A5 | COL | ENG | 28 | PAL |
| V60/025 | HOW TO SELECT THE RIGHT GRINDING WHEEL | D3 | COL | ENG | 28 | PAL |
| S50/009 | HOW TO USE THE BLOCK GUAGE | A1 | COL | - | *85 | - |
| U60/120 | HOW TO USE THE ENGRAVING MACHINE | A5 | COL | ENG | 10 | PAL |
| S50/007 | HOW TO USE THE VERNIER CALIPER | A1 | COL | - | *55 | - |
| U60/252 | HYDRAULIC CIRCUITS | F4 | B/W | ENG | 18 | PAL |
| U60/240 | HYDRAULIC EQUIPMENT | F4 | B/W | ENG | 15 | PAL |
| F16/030 | HYDRAULIC MACHINE | B6 | B/W | JAP | 24 | - |
| U30/051 | HYDRAULIC MACHINE | B3 | B/W | JAP | 15 | PAL |
| S50/046 | IMPROVEMENT OF WORK | C1 | COL | - | *76 | - |
| S50/039 | INSTALL | C1 | COL | - | *76 | - |
| S50/010 | INTERNAL AND SURFACE GRINDING PRACTICE | A1 | COL | - | *66 | - |
| U30/074 | INTERNATIONAL MACHINE TOOL SHOW | C3 | COL | ENG | 23 | PAL |
| F16/028 | JIG | B6 | B/W | JAP | 20 | - |
| U30/030 | JIG | A3 | B/W | JAP | 20 | PAL |
| V60/032 | JIG | D3 | B/W | JAP | 20 | PAL |
| U60/154 | KNOW YOUR BEARINGS | C5 | COL | ENG | 20 | PAL |
| S50/003 | LATHE | A1 | COL | - | *74 | - |
| V60/033 | LATHE STANDARD SERIES | D3 | B/W | ENG | - | PAL |
| V60/001 | LATHE STANDARD SERIES PARTS 1 - 3 | D3 | B/W | JAP | 60 | PAL |
| V60/002 | LATHE STANDARD SERIES PARTS 4 - 5 | D3 | B/W | JAP | 50 | PAL |
| F16/004 | LATHE STANDARD WORK SERIES - FACING 1 | A6 | B/W | JAP | 4 | - |
| F16/005 | LATHE STANDARD WORK SERIES - FACING 2 | A6 | B/W | JAP | 7 | - |
| F16/001 | LATHE STANDARD WORK SERIES - PREPARATION FOR WORK 1 | A6 | B/W | JAP | 6 | - |
| F16/002 | LATHE STANDARD WORK SERIES - PREPARATION FOR WORK 2 | A6 | B/W | JAP | 2 | - |
| F16/003 | LATHE STANDARD WORK SERIES - PREPARATION FOR WORK 3 | A6 | B/W | JAP | 2 | - |
| F16/008 | LATHE STANDARD WORK SERIES - TAPER TURNING | A6 | B/W | JAP | 16 | - |
| F16/009 | LATHE STANDARD WORK SERIES - THREADING 1 | A6 | B/W | JAP | 9 | - |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| F16/010 | LATHE STANDARD WORK SERIES - THREADING 2 | A6 | B/W | JAP | 4 | - |
| F16/011 | LATHE STANDARD WORK SERIES - THREADING 3 | A6 | B/W | JAP | 4 | - |
| F16/012 | LATHE STANDARD WORK SERIES - THREADING 4 | A6 | B/W | JAP | 13 | - |
| F16/006 | LATHE STANDARD WORK SERIES - TURNING 1 | A6 | B/W | JAP | 8 | - |
| F16/007 | LATHE STANDARD WORK SERIES - TURNING 2 | A6 | B/W | JAP | 9 | - |
| U60/152 | LATHE STANDARD WORK VOL 1 | C5 | B/W | JAP | 53 | PAL |
| U60/153 | LATHE STANDARD WORK VOL 2 | C5 | B/W | JAP | 26 | PAL |
| U60/085 | LATHE TOOLS | C4 | COL | ENG | 15 | PAL |
| S50/002 | MACHINE ELEMENTS | A1 | COL | - | *80 | - |
| U30/005 | MACHINE PART 1 - CUTTING POWER | A3 | B/W | JAP | 30 | NTSC |
| V60/008 | MACHINE PART 1 - CUTTING POWER | D3 | B/W | JAP | 30 | PAL |
| V60/012 | MACHINE PART 10 - BROACHING | D3 | B/W | JAP | 30 | PAL |
| U30/014 | MACHINE PART 10 - BROADING | A3 | B/W | JAP | 30 | NTSC |
| U30/015 | MACHINE PART 11 - GEAR CUTTING | A3 | B/W | JAP | 30 | NTSC |
| V60/013 | MACHINE PART 11 - GEAR CUTTING | D3 | B/W | JAP | 30 | PAL |
| U30/016 | MACHINE PART 12 - GRINDING | A3 | B/W | JAP | 30 | NTSC |
| V60/013 | MACHINE PART 12 - GRINDING WHEEL | D3 | B/W | JAP | 30 | PAL |
| V60/014 | MACHINE PART 13 - GRINDING | D3 | B/W | JAP | 30 | PAL |
| U30/017 | MACHINE PART 13 - GRINDING WHEEL | A3 | B/W | JAP | 30 | NTSC |
| V60/014 | MACHINE PART 14 - HONING | D3 | B/W | JAP | 30 | PAL |
| U30/018 | MACHINE PART 14 - HOUSING | A3 | B/W | JAP | 30 | NTSC |
| U30/019 | MACHINE PART 15 - RAPPING | A3 | B/W | JAP | 30 | NTSC |
| V60/015 | MACHINE PART 15 - RAPPING | D3 | B/W | JAP | 30 | PAL |
| U30/020 | MACHINE PART 16 - SUPERSONIC MACHINING | A3 | B/W | JAP | 30 | NTSC |
| V60/015 | MACHINE PART 16 - SUPERSONIC MACHINING | D3 | B/W | JAP | 30 | PAL |
| U30/021 | MACHINE PART 17 - ELECTRIC DISCHARGE MACHINING | A3 | B/W | JAP | 30 | NTSC |
| V60/016 | MACHINE PART 17 - ELECTRIC DISCHARGE MACHINING | D3 | B/W | JAP | 30 | PAL |
| V60/016 | MACHINE PART 18 - ELECTRO GRINDING | D3 | B/W | JAP | 30 | PAL |
| U30/022 | MACHINE PART 18 - ELECTRO-GRINDING | A3 | B/W | JAP | 30 | NTSC |
| U30/023 | MACHINE PART 19 - MASS PRODUCTION METHOD | A3 | B/W | JAP | 30 | NTSC |
| V60/017 | MACHINE PART 19 - MASS PRODUCTION METHOD | D3 | B/W | JAP | 30 | PAL |
| U30/006 | MACHINE PART 2 - TOOL MATERIAL | A3 | B/W | JAP | 30 | NTSC |
| V60/008 | MACHINE PART 2 - TOOL MATERIAL | D3 | B/W | JAP | 30 | PAL |
| U30/024 | MACHINE PART 20 - NC MACHINE TOOL | A3 | B/W | JAP | 30 | NTSC |
| U30/007 | MACHINE PART 3 - BUILT UP EDGE | A3 | B/W | JAP | 30 | NTSC |
| V60/009 | MACHINE PART 3 - BUILT UP EDGE | D3 | B/W | JAP | 30 | PAL |
| U30/008 | MACHINE PART 4 - TURNING TOOL | A3 | B/W | JAP | 30 | NTSC |
| V60/009 | MACHINE PART 4 - TURNING TOOL | D3 | B/W | JAP | 30 | PAL |
| U30/009 | MACHINE PART 5 - KIND OF LATHE | A3 | B/W | JAP | 30 | NTSC |
| V60/010 | MACHINE PART 5 - KIND OF LATHE | D3 | B/W | JAP | 30 | PAL |
| U30/010 | MACHINE PART 6 - DRILL | A3 | B/W | JAP | 30 | NTSC |
| V60/010 | MACHINE PART 6 - DRILL | D3 | B/W | JAP | 30 | PAL |
| U30/011 | MACHINE PART 7 - PLANNING | A3 | B/W | JAP | 30 | NTSC |
| V60/011 | MACHINE PART 7 - PLANNING | D3 | B/W | JAP | 30 | PAL |
| U30/012 | MACHINE PART 8 - MILLING CUTTER | A3 | B/W | JAP | 30 | NTSC |
| V60/011 | MACHINE PART 8 - MILLING CUTTER | D3 | B/W | JAP | 30 | PAL |
| U30/013 | MACHINE PART 9 - VERTICAL MILLING | A3 | B/W | JAP | 30 | NTSC |
| V60/012 | MACHINE PART 9 - VERTICAL MILLING | D3 | B/W | JAP | 30 | PAL |
| U60/085 | MACHINE TOOL EQUIPMENT (ATTACHMENT ACCESSORIES) | C4 | COL | ENG | 13 | PAL |
| U60/160 | MACHINES & MEN | C5 | COL | ENG | 28 | PAL |
| U60/216 | MACHINING UPDATE | E4 | COL | ENG | 9 | PAL |
| U60/114 | MATERIAL REMOVING PRINCIPLES | A5 | COL | ENG | 20 | PAL |
| V60/021 | MATERIAL REMOVING PRINCIPLES | D3 | COL | ENG | 20 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/185 | MATSUSHITA GROUP TECHNICAL SKILLS CONTEST | D4 | COL | JAP | 32 | PAL |
| V120/014 | MATSUSHITA GROUP TECHNICAL SKILLS CONTEST | D2 | COL | ENG | 32 | PAL |
| S50/005 | MEASURING | A1 | COL | - | *53 | - |
| F16/043 | MECHANISM OF MACHINE | C6 | B/W | JAP | 26 | - |
| U30/043 | MECHANISM OF MACHINE | B3 | B/W | JAP | 22 | - |
| V60/028 | MECHANISM OF MACHINE | D3 | B/W | JAP | 20 | PAL |
| S50/036 | METAL ELECTROPLATING | B1 | COL | - | - | - |
| S50/001 | METALLIC MATERIAL | A1 | COL | - | *73 | - |
| S50/008 | MICROMETER | A1 | COL | - | *87 | - |
| V60/030 | MICROMETER | D3 | COL | ENG | 19 | PAL |
| U60/097 | MICROMETERS | A5 | COL | ENG | 19 | PAL |
| F16/042 | MILLING WORK | B6 | B/W | JAP | 22 | - |
| S50/027 | MILLING WORK | B1 | COL | - | *70 | - |
| U30/028 | MILLING WORK | A3 | B/W | JAP | 20 | PAL |
| U60/244 | MILLING WORK | F4 | COL | ENG | 22 | PAL |
| V60/005 | MILLNG WORK | D3 | B/W | JAP | 22 | PAL |
| V60/022 | MITSUTOYO | D3 | COL | ENG | 26 | PAL |
| U60/098 | MITUTOYO | A5 | COL | ENG | 30 | PAL |
| U60/216 | NEW DIMENSIONS IN METAL CUTTING | E4 | COL | ENG | 12 | PAL |
| U60/216 | NEW DIMENSIONS IN PROFIT POWER | E4 | COL | ENG | 12 | PAL |
| U60/248 | ORIENTATION OF METALWORKING DEPT. | F4 | COL | ENG | 16 | PAL |
| U60/079 | PARTS FEEDING | C4 | B/W | ENG | 8 | PAL |
| S50/049 | PHYSICS PART 1 - OPTICS | C1 | COL | - | *60 | - |
| S50/050 | PHYSICS PART 2 - STATICS | C1 | COL | - | *60 | - |
| S50/051 | PHYSICS PART 3 - MOTION | C1 | COL | - | *60 | - |
| S50/052 | PHYSICS PART 4 - WAVE | C1 | COL | - | *60 | - |
| F16/027 | PRECISION FINISHING WORK | B6 | B/W | JAP | 21 | - |
| U30/038 | PRECISION FINISHING WORK | B3 | COL | ENG | 20 | PAL |
| V60/032 | PRECISION FINISHING WORK | D3 | COL | ENG | 20 | PAL |
| U60/096 | PRECISION MEASURING INSTRUMENT | A5 | COL | ENG | 30 | PAL |
| V60/030 | PRESCISION MEASURING INSTRUMENT | D3 | COL | ENG | 30 | PAL |
| S50/037 | PRESS | B1 | COL | - | *84 | - |
| S50/038 | PRESS | B1 | COL | - | *83 | - |
| S50/043 | PRESS IN SAFETY | C1 | COL | - | - | - |
| F16/055 | PROFILE CONTROL OF MACHINE TOOL | C6 | B/W | JAP | 24 | - |
| U30/042 | PROFILE CONTROL OF MACHINE TOOL | B3 | B/W | JAP | 20 | - |
| V60/028 | PROFILE CONTROL OF MACHINE TOOL | D3 | B/W | JAP | 20 | PAL |
| U30/081 | PROPER USAGE OF MEASURING INSTRUMENT | C3 | COL | JAP | 30 | PAL |
| U60/181 | PULLMAX STUDENT'S PROJECTS | D4 | B/W | ENG | 19 | PAL |
| U60/216 | QUIET REVOLUTION | E4 | COL | ENG | 16 | PAL |
| U60/121 | RESEARCH FOR TOMORROW | B5 | COL | ENG | 17 | PAL |
| S50/017 | SCRAPING WORK | A1 | B/W | - | *77 | - |
| F16/032 | SERVO-MECHANISM (HYDRAULIC) | B6 | B/W | JAP | 20 | - |
| S50/030 | SHEET METAL PROCESSING | B1 | COL | - | *70 | - |
| U60/079 | SIMPLE COUNTING | C4 | B/W | ENG | 8 | PAL |
| U60/121 | SKILLED WORKER IN DEMAND | B5 | COL | ENG | 15 | PAL |
| U60/192 | SLANT TURN - 15 CNC LATHE | D4 | COL | ENG | 15 | PAL |
| U60/192 | SLANT TURN - 30 CNC LATHE | D4 | COL | ENG | 14 | PAL |
| U60/187 | STANDARD LATHE SERIES PART 1 & 2 | D4 | B/W | ENG | 8 | PAL |
| S50/020 | STRUCTURE AND OPERATION OF MILLING MACHINE | B1 | B/W | - | *71 | - |
| S50/021 | STRUCTURE AND OPERATION OF SHAPER | B1 | B/W | - | *61 | - |
| U60/116 | SURFACE GRINDING | A5 | COL | SIL | 14 | PAL |
| V60/026 | SURFACE GRINDING | D3 | COL | SIL | 14 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/144 | SWEDISH STEELS | B5 | COL | ENG | 37 | PAL |
| U20/035 | TALKING ABOUT CUTTING FLUID | B2 | COL | ENG | 15 | PAL |
| U30/062 | THE CHALLENGE OF MACHINNG CREATIVITY | C3 | COL | ENG | 27 | PAL |
| U60/127 | THE CUTTING EDGE | B5 | COL | ENG | 24 | PAL |
| V60/026 | THE CUTTING EDGE | D3 | COL | ENG | 24 | PAL |
| U60/123 | THE GERMAN SCENE | B5 | COL | ENG | 14 | PAL |
| U60/192 | THE NEW WAY FOR MACHINING | D4 | COL | ENG | 15 | PAL |
| U60/121 | THE POISONED ATMOSPHERE | B5 | COL | ENG | 16 | PAL |
| U60/075 | THE STORY OF A CARBIDE TIP | C4 | COL | ENG | 23 | PAL |
| V60/023 | THE WHEEL & THE WAY | D3 | COL | ENG | 19 | PAL |
| U60/008 | THE WHEEL AND THE WAY | A4 | COL | ENG | 24 | PAL |
| U60/181 | THE WOBBLING ACTION GRINDING DISC | D4 | B/W | ENG | 14 | PAL |
| S50/016 | THREADING WORK (HOW TO USE DIE) | A1 | B/W | - | *41 | - |
| S50/015 | THREADING WORK (HOW TO USE TAP) | A1 | B/W | - | *52 | - |
| U60/116 | TOOL ROOM GRINDING | A5 | COL | SIL | 10 | PAL |
| V60/026 | TOOL ROOM GRINDING | D3 | COL | SIL | 10 | PAL |
| U60/114 | TOOLS FOR CUTTING : STONE AXES TO LASERS | A5 | COL | ENG | 12 | PAL |
| U60/160 | TUNGALOY CEMENTED CARBIDE | C5 | COL | ENG | 19 | PAL |
| U60/192 | TURNING CENTER - NEW M-4 CELATHE | D4 | COL | ENG | 14 | PAL |
| U60/249 | TURRET LATHE | F4 | COL | ENG | 25 | PAL |
| V120/016 | TURRET LATHE - HEADSTOCK | D2 | COL | ENG | 80 | PAL |
| U60/242 | UNIVERSAL MILLING MACHINE | F4 | COL | ENG | 9 | PAL |
| U60/122 | VASTBERGA-GIMO (SANDVIK) | B5 | COL | ENG | 20 | PAL |
| V60/022 | VERNIER CALIPER & VERNIER HEIGHT GUAGE | D3 | COL | ENG | 25 | PAL |
| U60/095 | VERNIER CALIPER AND VERNIER HEIGHT GAUGE | A5 | COL | ENG | 30 | PAL |
| U60/123 | WIES' N MELODIE | B5 | COL | ENG | 15 | PAL |

comment : * refer to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOGUE - NUMERICAL CONTROL ( 1. 7.83) F19

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/150 | FANUC '81 | D5 | COL | ENG | 28 | PAL |
| V120/059 | FANUC '81 | E2 | COL | ENG | 29 | PAL |
| U60/235 | FANUC '82 | E4 | COL | ENG | 30 | PAL |
| V120/021 | FANUC NC TAPE PREPARATION SEMINAR | D2 | COL | ENG | 30 | PAL |
| V60/017 | MACHINE PART 20 - N. C. MACHINE TOOL | D3 | B/W | JAP | 30 | PAL |
| U30/079 | NCI MACHINE PART 1 | C3 | COL | JAP | 20 | PAL |
| U30/080 | NCI MACHINE PART 2 | C3 | COL | JAP | 20 | PAL |
| U60/058 | NUMERICAL CONTROL LESSON 1 - 3 | B4 | COL | ENG | 60 | NTSC |
| U60/061 | NUMERICAL CONTROL LESSON 11 - 12 | C4 | COL | ENG | 40 | NTSC |
| U60/059 | NUMERICAL CONTROL LESSON 4 - 7 | B4 | COL | ENG | 50 | NTSC |
| U60/060 | NUMERICAL CONTROL LESSON 8 - 10 | B4 | COL | ENG | 45 | NTSC |
| U60/159 | NUMERICAL CONTROL OF MACHINE TOOLS | C5 | COL | ENG | 20 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - PRODUCTION ENGINEERING ( 1. 7.83) F35

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/029 | A CASE OF INSUBORDINATION | A4 | COL | ENG | 20 | PAL |
| U60/029 | AVOIDING COMMUNICATION BREAKDOWN | A4 | COL | ENG | 25 | PAL |
| U60/044 | BASIS FOR DECISION - CUTTING THE QUEUE | B4 | B/W | ENG | 45 | PAL |
| U60/045 | BASIS FOR DECISION - PLAYING IT THROUGH | B4 | B/W | ENG | 44 | PAL |
| U60/046 | BASIS FOR DECISION - THE HUMAN FACTOR | B4 | B/W | ENG | 44 | PAL |
| U60/035 | DISPUTE | B4 | B/W | ENG | 35 | PAL |
| U60/006 | EVERY MINUTES COUNT | A4 | B/W | ENG | 10 | PAL |
| U60/013 | GRIEVANCE | A4 | B/W | ENG | 28 | PAL |
| U60/047 | HANDLING AND LAYOUT IN FACTORIES | B4 | B/W | ENG | 15 | PAL |
| U60/047 | HOW TO CONDUCT A WORK SAMPLING STUDY | B4 | B/W | ENG | 14 | PAL |
| U60/007 | INTERNAL ORGANIZATION | A4 | B/W | ENG | 10 | PAL |
| U60/007 | JOB EVALUATION | A4 | B/W | ENG | 10 | PAL |
| U60/013 | MEN AT WORK | A4 | B/W | ENG | 25 | PAL |
| U60/007 | METHODS ANALYSIS | A4 | B/W | ENG | 10 | PAL |
| U60/047 | METHODS ANALYSIS | B4 | B/W | ENG | 10 | PAL |
| U60/029 | MORE THAN WORDS | A4 | COL | ENG | 12 | PAL |
| U60/039 | NATURE OF WORK - GENERAL FOREMAN | B4 | B/W | ENG | 28 | PAL |
| U60/039 | NATURE OF WORK - THE CLERK | B4 | B/W | ENG | 28 | PAL |
| U60/007 | PHYSICAL FACILITIES | A4 | B/W | ENG | 10 | PAL |
| U60/115 | PROCESS OF ENGINEERING PRODUCTION | A5 | COL | ENG | 20 | PAL |
| U60/005 | PRODUCT DEVELOPEMENT | A4 | B/W | ENG | 10 | PAL |
| U60/130 | PRODUCTION CONTROL PART 1 | B5 | B/W | ENG | 10 | PAL |
| U60/130 | PRODUCTION CONTROL PART 2 | B5 | B/W | ENG | 10 | PAL |
| U60/007 | RISK & FORECASTING | A4 | B/W | ENG | 10 | PAL |
| U60/006 | SUPERVISING WORKERS ON THE JOB | A4 | B/W | ENG | 10 | PAL |
| U60/033 | THE INNER MAN STEPS OUT | B4 | B/W | ENG | 31 | PAL |
| U60/006 | THE SUPERVISOR AS A LEADER PART I | A4 | B/W | ENG | 15 | PAL |
| U60/006 | THE SUPERVISOR AS A LEADER PART II | A4 | B/W | ENG | 14 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - PLASTIC MOULDING ( 4. 7.83) F36

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| V60/019 | COMPRESSION MOULDING PART 1 | D3 | B/W | ENG | 10 | PAL |
| V60/019 | COMPRESSION MOULDING PART 2 | D3 | B/W | ENG | 10 | PAL |
| U60/015 | COMPRESSION MOULDING PART I | A4 | B/W | ENG | 10 | PAL |
| U60/015 | COMPRESSION MOULDING PART II | A4 | B/W | ENG | 10 | PAL |
| U60/015 | FINISHED MOULDED PARTS | A4 | B/W | ENG | 15 | PAL |
| V60/019 | FINISHED MOULDED PARTS | D3 | B/W | ENG | 13 | PAL |
| EDO/207 | INJECTION MOULDING MACHINE FS-55 | D4 | COL | ENG | 11 | PAL |
| V60/052 | INJECTION MOULDING MACHINE FS-55 | E3 | COL | ENG | 11 | PAL |
| V60/020 | INJECTION MOULDING PART 1 | D3 | B/W | ENG | 15 | PAL |
| V60/020 | INJECTION MOULDING PART 2 | D3 | B/W | ENG | 15 | PAL |
| U60/014 | INJECTION MOULDING PART I | A4 | B/W | ENG | 15 | PAL |
| U60/014 | INJECTION MOULDING PART II | A4 | B/W | ENG | 10 | PAL |
| U20/005 | MACHINING LAMINATED PLASTICS | A2 | B/W | ENG | 11 | PAL |
| V60/020 | MACHINING LAMINATION PLASTICS | D3 | B/W | ENG | 18 | PAL |
| S50/041 | MAINTENANCE OF TRANSFER & COMPRESSION MOULD | C1 | COL | - | *58 | - |
| U60/014 | METHODS OF PROCESSING PLASTICS MATERIAL | A4 | B/W | ENG | 23 | PAL |
| V60/019 | METHODS OF PROCESSING PLASTICS MATERIAL | D3 | B/W | ENG | 23 | PAL |
| S50/040 | PLASTIC MOULDING | C1 | COL | - | *89 | - |
| U60/207 | PLASTICS IN FIRE | D4 | COL | ENG | 6 | PAL |
| S50/042 | PRECISION MEASUREMENT OF PLASTIC PRODUCTS | C1 | COL | - | *86 | - |
| V60/020 | SEMI - AUTOMATIC & HAND MOULDING OF INTRICATE PARTS | D3 | B/W | ENG | 15 | PAL |
| U60/015 | SEMI-AUTOMATIC AND HAND MOULDING OF INTRICATE PARTS | A4 | B/W | ENG | 15 | PAL |
| U60/040 | THE SHAPE OF PLASTIC | B4 | COL | ENG | 16 | PAL |
| U60/040 | THE WORLD OF PVC | B4 | COL | ENG | 16 | PAL |
| U60/139 | TOP OF THE TRADE - PLASTIC MOULDING | B5 | COL | ENG | 45 | PAL |
| U60/014 | TRANSFER MOULDING | A4 | B/W | ENG | 10 | PAL |
| V60/019 | TRANSFER MOULDING | D3 | B/W | ENG | 10 | PAL |
| U20/002 | WHY DO WE USE PLASTICS? | A2 | COL | ENG | 18 | PAL |
| U60/040 | WORKING WITH THERMO-PLASTIC | B4 | COL | ENG | 15 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - QUALITY CONTROL ( 1. 7.83) F15

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/006 | MAINTAINING QUALITY STANDARD | A4 | B/W | ENG | 10 | PAL |
| U60/007 | MATERIAL CONTROL | A4 | B/W | ENG | 10 | PAL |
| V180/065 | MESA 1ST ANNUAL Q.C. PRESENTATION 1982 | E1 | COL | ENG | - | PAL |
| U60/209 | Q.C. SEVEN TOOLS | D4 | COL | ENG | 35 | PAL |
| U60/130 | QUALITY CONTROL | B5 | B/W | ENG | 10 | PAL |
| U60/047 | QUALITY CONTROL IS EVERYBODY'S BUSINESS | B4 | B/W | ENG | 14 | PAL |
| V120/045 | WHAT TICKS ON THE SHOP FLOOR | E2 | COL | ENG | 35 | PAL |
| U60/005 | ZERO DEFECTS | A4 | COL | ENG | 21 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

VIDEO LIBRARY CATALOG - ROBOTICS ( 4. 7.83) F17

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| U60/235 | ASEA INDUSTRIAL ROBOT SYSTEMS | E4 | COL | ENG | 11 | PAL |
| U60/235 | ASEA INDUSTRIAL ROBOTS - CAR INDUSTRY | E4 | COL | ENG | 7 | PAL |
| U60/235 | ASEA INDUSTRIAL ROBOTS - VARIOUS APPLICATIONS | E4 | COL | ENG | 13 | PAL |
| V180/041 | HORIZON : THE ROBOTS ARE COMING | D1 | COL | ENG | 45 | PAL |
| V180/006 | IF JAPAN CAN.....WHY CAN'T WE? | D1 | COL | ENG | 120 | PAL |
| U20/066 | ROBOTS IN SINGAPORE | C2 | COL | MAND | 20 | PAL |
| U60/238 | THE MARVELS OF INDUSTRICAL ROBOTS | E4 | COL | ENG | 37 | PAL |
| U20/054 | THE ROBOT REVOLUTION | B2 | COL | ENG | 20 | PAL |
| V180/042 | THE SILICON FACTOR | D1 | COL | ENG | 150 | PAL |
| U60/215 | TV EYE : WORLD BEATERS | E4 | COL | ENG | 52 | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| V180/021 | 1981 FRENCH OPEN BJORN BORG VS IVAN LENDL | D1 | COL | ENG | - | PAL |
| V180/039 | 1981 U.S. OPEN BJORN BORG VS JOHN McENROE | D1 | COL | ENG | - | PAL |
| V180/085 | 2ND WORLD JUNIOR SQUASH TEAM CHAMPIONSHIP (FINAL PLACINGS) | F1 | COL | ENG | - | PAL |
| V180/009 | ADVANTAGE BORG | D1 | COL | ENG | 50 | PAL |
| V180/106 | ALL ENGLAND BADMINTON CHAMPIONSHIPS | F1 | COL | ENG | - | PAL |
| V180/010 | BADMINTON | D1 | COL | MAL | 60 | PAL |
| V60/049 | BADMINTON FUNDAMENTALS | E3 | COL | ENG | 10 | PAL |
| V60/049 | BASEBALL | E3 | COL | ENG | 10 | PAL |
| V180/008 | G PERREGAUX TENNIS CLASSIC '81 - R. KRISHNA. VS A. PATTERSON | D1 | COL | ENG | 100 | PAL |
| V120/051 | GOLF - THE AUSTRALIAN WAY | E2 | COL | ENG | 28 | PAL |
| U60/081 | GREAT MOMENT IN THE HISTORY OF TENNIS | C4 | B/W | ENG | 41 | PAL |
| V180/040 | GREATEST MOMENTS OF FOOTBALL WORLD CUP | D1 | COL | ENG | 40 | PAL |
| V180/008 | INTERNATIONAL TENNIS CLASSIC - B. BORG VS V. GERULAITIS | D1 | COL | ENG | 71 | PAL |
| V180/088 | JOHN McENROE - THE RITES OF PASSAGE | F1 | COL | ENG | 55 | PAL |
| U60/080 | LAWN TENNIS PART 1-4 | C4 | COL | ENG | 42 | PAL |
| V180/094 | MAGNOLIAS' TENNIS CLASSIC | F1 | COL | ENG | - | PAL |
| V180/040 | PELE : THE DREAM OF A BOY | D1 | COL | ENG | 65 | PAL |
| V180/016 | PRO-BOWLERS TOURNAMENT | D1 | COL | ENG | 120 | PAL |
| U20/031 | SPORTLIGHT HOCKEY | B2 | COL | ENG | 19 | PAL |
| U20/022 | SPORTLIGHT TENNIS | A2 | COL | ENG | 20 | PAL |
| V120/051 | STAY STILL WHILE I HIT | E2 | COL | ENG | 28 | PAL |
| V180/007 | TABLE TENNIS | D1 | COL | ENG | 30 | PAL |
| U20/032 | TENNIS | B2 | COL | ENG | 12 | PAL |
| V180/009 | TENNIS PART 1-3 | D1 | COL | ENG | 62 | PAL |
| U60/057 | TENNIS PARTS 1-3 | B4 | COL | ENG | 62 | PAL |
| U60/063 | TENNIS TOURNAMENT '81 | C4 | COL | ENG | 52 | PAL |
| V60/049 | THE SPRINT | E3 | COL | ENG | 25 | PAL |
| V180/105 | U.S. MASTER GOLF 1981 | F1 | COL | ENG | - | PAL |
| V180/089 | US OPEN GOLF CHAMPIONSHIP | F1 | COL | ENG | - | PAL |
| V180/111 | WIMBLEDON '82 JIMMY CONNORS VS JOHN McENROE PART 1 | F1 | COL | ENG | 180 | PAL |
| V180/112 | WIMBLEDON '82 JIMMY CONNORS VS JOHN McENROE PART 2 | F1 | COL | ENG | - | PAL |
| V180/022 | WIMBLEDON MEN'S SINGLE FINAL BJORN BORG VS JOHN McENROE 1 | D1 | COL | ENG | 180 | PAL |
| V180/023 | WIMBLEDON MEN'S SINGLE FINAL BJORN BORG VS JOHN McENROE 2 | D1 | COL | ENG | - | PAL |
| V120/061 | WORLD CHAMPIONSHIP TENNIS - CONNORS VS GOTTFRIED | E2 | COL | ENG | 50 | PAL |
| U60/082 | WORLD CUP GOLF 1972 | C4 | COL | ENG | 26 | PAL |
| V120/064 | WORLD CUP SOCCER | E2 | COL | ENG | - | PAL |
| V180/115 | WORLD CUP SOCCER - AUSTRIA VS N.IRELAND | F1 | COL | ENG | - | PAL |
| V180/113 | WORLD CUP SOCCER - BRAZIL VS ARGENTINA | F1 | COL | ENG | - | PAL |
| V180/116 | WORLD CUP SOCCER - BRAZIL VS ITALY | F1 | COL | ENG | - | PAL |
| V120/063 | WORLD CUP SOCCER - BRAZIL VS SOVIET UNION | E2 | COL | ENG | - | PAL |
| V120/062 | WORLD CUP SOCCER - ENGLAND VS FRANCE | E2 | COL | ENG | - | PAL |
| V180/117 | WORLD CUP SOCCER - ENGLAND VS SPAIN | F1 | COL | ENG | - | PAL |
| V180/114 | WORLD CUP SOCCER - ENGLAND VS W.GERMANY | F1 | COL | ENG | - | PAL |
| V180/121 | WORLD CUP SOCCER - FRANCE VS W.GERMANY | F1 | COL | ENG | - | PAL |
| V180/120 | WORLD CUP SOCCER - N.IRELAND VS FRANCE | F1 | COL | ENG | - | PAL |
| V180/122 | WORLD CUP SOCCER - POLAND VS FRANCE | F1 | COL | ENG | - | PAL |
| V180/118 | WORLD CUP SOCCER - POLAND VS ITALY | F1 | COL | ENG | - | PAL |
| V180/119 | WORLD CUP SOCCER - POLAND VS PERU | F1 | COL | ENG | - | PAL |
| V120/065 | WORLD CUP SOCCER FINAL '82 - ITALY VS W. GERMANY | E2 | COL | ENG | - | PAL |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

| CODE | TITLE | LOC | C/B&W | NAR | MIN | SYS |
|---|---|---|---|---|---|---|
| V60/029 | A BRIEF VIEW OF OXY - ACETYLENE GAS CUTTING | D3 | COL | ENG | 10 | PAL |
| U60/022 | A BRIEF VIEW OF OXY-ACETYLENE GAS CUTTING | A4 | COL | ENG | 10 | PAL |
| U60/156 | ADHESIVES | C5 | COL | ENG | 20 | PAL |
| U60/140 | ARC WELDING SERIES 1-3 | B5 | COL | JAP | 60 | PAL |
| U60/149 | ARC WELDING SERIES 4-5 | B5 | COL | JAP | 40 | PAL |
| V60/003 | ARC WELDING STANDARD WORK PARTS 1 - 3 | D3 | COL | JAP | 60 | PAL |
| V60/004 | ARC WELDING STANDARD WORK PARTS 4 - 5 | D3 | COL | JAP | 28 | PAL |
| F16/013 | ARC WELDING STANDARD WORK SERIES - PART I - 1 | A6 | COL | JAP | 3 | - |
| F16/014 | ARC WELDING STANDARD WORK SERIES - PART I - 2 | A6 | COL | JAP | 6 | - |
| F16/015 | ARC WELDING STANDARD WORK SERIES - PART I -3 | A6 | COL | JAP | 6 | - |
| F16/016 | ARC WELDING STANDARD WORK SERIES - PART II - 1 | A6 | COL | JAP | 15 | - |
| F16/017 | ARC WELDING STANDARD WORK SERIES - PART II - 2 | A6 | COL | JAP | 4 | - |
| F16/018 | ARC WELDING STANDARD WORK SERIES - PART III - 1 | A6 | COL | JAP | 7 | - |
| F16/019 | ARC WELDING STANDARD WORK SERIES - PART III - 2 | A6 | COL | JAP | 5 | - |
| F16/020 | ARC WELDING STANDARD WORK SERIES - PART III - 3 | A6 | COL | JAP | 10 | - |
| F16/021 | ARC WELDING STANDARD WORK SERIES - PART III - 4 | A6 | COL | JAP | 6 | - |
| F16/022 | ARC WELDING STANDARD WORK SERIES - PART IV - 1 | A6 | COL | JAP | 8 | - |
| F16/023 | ARC WELDING STANDARD WORK SERIES - PART IV - 2 | A6 | COL | JAP | 8 | - |
| F16/024 | ARC WELDING STANDARD WORK SERIES - PART V - 1 | A6 | COL | JAP | 6 | - |
| F16/025 | ARC WELDING STANDARD WORK SERIES - PART V - 2 | A6 | COL | JAP | 6 | - |
| U60/156 | FASTENING | C5 | COL | ENG | 20 | PAL |
| V60/029 | OXY - ACETYLENE GAS CUTTING BY HAND | D3 | COL | ENG | 7 | PAL |
| V60/029 | OXY - ACETYLENE WELDING ( ADVANCE ) | D3 | COL | ENG | 8 | PAL |
| U60/022 | OXY-ACETYLENE GAS CUTTING BY HAND | A4 | COL | SIL | 7 | PAL |
| U60/022 | OXY-ACETYLENE WELDING (ADVANCE) | A4 | COL | ENG | 8 | PAL |
| S50/044 | SAFETY IN GAS WELDING WORK | C1 | COL | - | *82 | - |
| S50/033 | SAFETY OF ARC WELDING | B1 | COL | - | *67 | - |
| U60/104 | THE CRAFTSMAN WELDER | A5 | B/W | ENG | 21 | PAL |
| V60/029 | THE CRAFTSMAN WELDER | D3 | B/W | ENG | 21 | PAL |
| U60/022 | WELD IN SAFETY | A4 | COL | ENG | 22 | PAL |
| U60/156 | WELDING AND SOLDERING | C5 | COL | ENG | 20 | PAL |
| S50/032 | WELDING I - ARC WELDING | B1 | COL | - | *69 | - |
| S50/034 | WELDING II - GAS WELDING | B1 | COL | - | *95 | - |

comment : * refers to number of slides
f11,61,6,7,6,6,6,/4

付属資料02

科別問題点及び措置一覧

科名：工業電子科

| 問　題　点 | 現　行　措　置 | 備　考（今後の対応等） |
|---|---|---|
| 1) 第4期に行われるプロジェクトの担当者が，その分野に関係するインストラクターのみに決定され，個人別に授業を受けもつため，そのインストラクターにとっては，非常に時間的に負担となる。 | 1) 2期生より，各プロジェクトに全インストラクターをはりつけ，全員でプロジェクトに協力するよう決定。 | |
| 2) 訓練生定員数増に対する教材不足 | 2) 現在は，1台あたりに訓練生を2～3名割り当てている。 | 2)① 自作可能なものはJSTI内で複製を作成し不可能なものは時間割を変更し，訓練生をグループ別けしてシフトしながら訓練を行う。（全体的には自作可能なものが多い）<br>② JICA供与機材，従来から希望している追加供与が認められればこれで対応。 |
| 3) HODの科運営とSTOグループの機能強化 | 3) JICA研修等を除き，実戦力となっているIEEのC/Pは現在24名,他の2科に比べて科の運営が大変である。科長が英国留学の為，科長代理がこの任にあたっている。<br>この科長代理の科運営を補佐するべくSTO会議を持っている。 | 3) STO全体が科を運営していかなければならないという考え方がまだ浸透していないため，STO会議が充分に機能しているとはいえない。基本的な考え方を理解してもらうべく努める。 |

科別問題一及び措置一覧

科名：メカトロニクス科

| 問　題　点 | 現　行　措　置 | 備　考（今後の対応等） |
|---|---|---|
| 1) C／Pの受持ち授業時間数が過大のため専門家による技術移転の時間が十分取れない，（過大の原因はC／P 20名中6名がシ内研修，2名が日本研修に行っているためである） | わずかの空き時間に週2時間ずつ程度実施 | シ内研修者6名中2名が来年2月に，さらに2名が来年8月に終了するので，それ以後は改善される。 |
| 2) 現有のCNCは3年間無償リースといの形でシ政府が借りているものであり，3年過ぎた後（来年10月以後）CNCが引き上げられるおそれあり | 来年10月までは現有の機械使用 | シ政府が現有の機械を買い取るか，新機械を購入するよう望む。 |

科別問題点及び措置一覧

科名：計装制御科

| 問　題　点 | 現　行　措　置 | 備　考（今後の対応等） |
|---|---|---|
| 1) カウンターパートの「デジタル制御」知識不足。科内でデジタル制御について充分な知識をもつインストラクタは，現在科長を入れて3名にすぎない。 | 企業のデジタル制御講習会に出席させる。<br>ＩＬＯによる日本への研修。<br>短期専門家の派遣要請。<br>アドバイザーによるセミナー実施。 | ＩＬＯによる日本への研修。<br>短期専門家の派遣要請。 |
| 2) 卒業生の就職状況の変化。<br>ＪＳＴＣの卒業生の 51 %は石油精製，石油化学業界，35 %は工業計器（含制御コンピュータ）業界に就職している。現在石油業界が不況のため，工業計器業界の比率が高くなっている。 | 石油関連以外の工業計器業界の経営陣に，計装制御科の実体をよく知ってもらうために，卒業生の既就職先，予想就職先を科長とアドバイザーが訪問する。 | 巡回指導の「ミニッツ」にもとづき，カリキュラムの見直しを行う。 |

科別問題点及び措置一覧

科名：日本語科

| 問　題　点 | 現　行　措　置 | 備　考（今後の対応等） |
|---|---|---|
| 1) 科長の不在 | ＳＴＯの一名が科長の仕事を代行。<br>不充分と考えられる面を日本人専門家が補佐している。 | 科長の育成 |
| 2) 教材の置場所，不揃い，試験題作成の非効率等の非合理性 | 逐次改めている | ＣＰらが問題を提起するようにしたい。 |
| 3) ＪＳＴＩからＦＳＩ，ＧＳＩへの国内留学者が主対象になっている中級コースで，将来受講者がなくなること。 | 従来の一般テキスト（「新しい日本語」）だけでなく，工業製品のカタログ，パンフレットを読むようにしている。 | 将来，技術日本語コースへ転換することも一法である。 |
| 4) ＥＤＢ職員対象の夜間初級コース | 60年8月～61年2月（終了予定）で行われている。 | 今回はC／Pの日本研修その他の事情を考慮せずにコースを始めざるを得ず，準備不足要員不足等の問題があったが，今後そのようなことのないようＥＤＢに開始時期等をアドバイスしていきたい。 |
| 5) 欠員１名 | 現在１名の面接手続を進めている。 | 日本語ネイティブを１名採用したい。 |

# NOTE ON THE AMENDMENT OF THE RECORD OF DISCUSSIONS ON THE JAPAN-SINGAPORE TECHNICAL INSTITUTE PROJECT

Mr Hiroshi Tanaka, Resident Representative of the Japan International Cooperation Agency in the Republic of Singapore and the authorities concerned of the Government of the Republic of Singapore had a series of discussions on the amendment of the Record of Discussions of the Japan-Singapore Technical Institute Project signed on June 16th, 1983 between the Japanese Implementation survey Team and the authorities concerned of the Republic of Singapore.

As a result, both sides have agreed to recommend to their respective Governments to amend the Record of Discussions and its Annex as follows:-

1. The term "Process Control Engineering" appearing in the Record of Discussions and its Annex will be amended to "Instrumentation and Control engineering." In addition, the term "Process Control" appearing in Annex V-(2) (B) (a) will be amended to "Instrumentation and Control."

2. The table appearing in the Master Plan 2-(1) will be amended as follows.

| | COURSE | ENROLMENT | INTAKE PER 6 MONTHS | |
|---|---|---|---|---|
| | | | Former Term | Latter Term |
| (A) | Instrumentation and Control Engineering | 60 | 15 | 15 |
| (B) | Mechatronics Engineering (Electronics-Oriented Mechanical Engineering) | 160 | 65 | 15 |
| (C) | Industrial Electronics | 280 | 95 | 45 |
| | TOTAL: | 500 | 175 | 75 |

The amendment will become effective as from recruitment of the 4th group of trainees in June 1985.

Singapore, 3 July 1985

| | |
|---|---|
| Hiroshi Tanaka<br>Resident Representative<br>Japan International<br>Cooperation Agency<br>Singapore Office | Lin Cheng Ton<br>Divisional Director<br>(Manpower)<br>Economic Development Board<br>Republic of Singapore |

REQUEST FROM THE SINGAPORE ECONOMIC DEVELOPMENT BOARD (EDB) FOR TECHNICAL ASSISTANCE AND CO-OPERAITON FROM THE GOVERNMENT OF JAPAN FOR THE ESTABLISHMENT OF A FLEXIBLE MANUFACTURING SYSTEM (FMS) LABORATORY TO BE HOUSED WITHIN THE JAPAN-SINGAPORE TECHNICAL INSTITUTE (JSTI)

Under the EDB Joint Training Scheme (JITS), the EDB has currently established 12 training institutions. The role of the EDB training institutions is to develop manpower for highly skilled operations in high technology industries. In addition, it aims to train technical personnel from industries to support the increasing number of industries which are mechanising or automating their operations.

In view of the abovementioned and the restructuring of the Singapore economy with emphasis on high productivity through automation and computerisation, the EDB also attached considerable importance to the role of EDB institutions would play in consolidating the Japan-Singapore economic relations and were happy that the Government of Japan shares the strong interest in it that the Government of Singapore had.

In order to fulfill the abovementioned objective and to enhance the role and activities of the EDB institutions, updated facilities in the high technology areas should be provided within the EDB institutions. The EDB therefore seeks technical assistance and cooperation from the Government of Japan for the following:

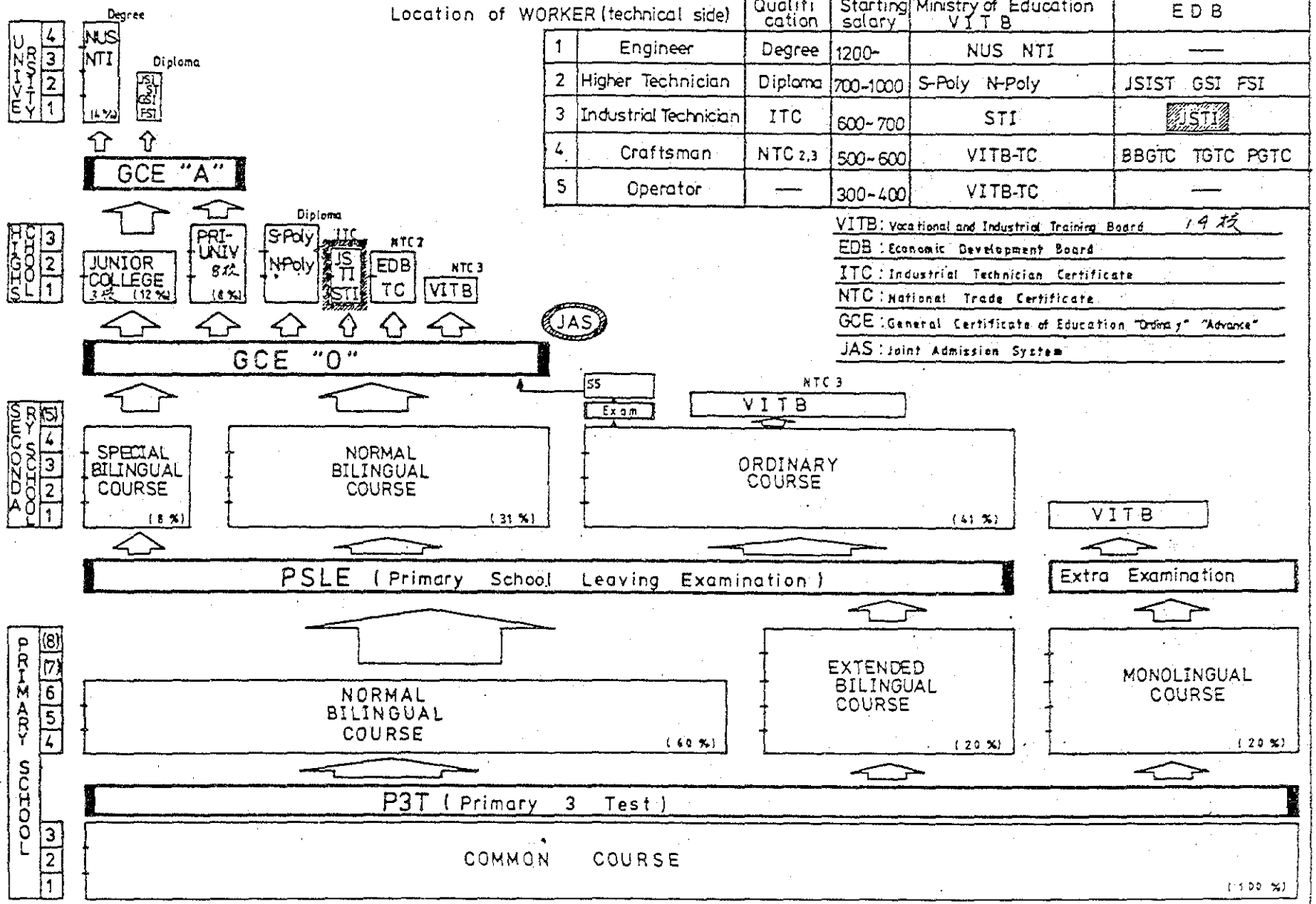
- o establishment of a FMS laboratory to be housed within the existing JSTI. This is also in line with the JSTI's objective of training manpower in automation area such as machatronics, industrial electronics and process control. The laboratory will be equipped with 2 FMS systems catering the need for CNC machining and assembly applications. The facilities to be provided will comprise of CNC machines, robots, vision systems, automated guided vehicles, computers and necessary softwares.

- o Secondment of experts in the area of FMS for a duration of 3 years.

The provision of these facilities and the experts will enable the Board to provide the much needed training for the students of EDB training institutions and technical personnel from industries. This upgrading training, which is practice and application oriented, will be crucial in the promotion of high technology industries and the rapid implementation of automation in existing companies in Singapore.

付属資料(5)

# The Educational & Vocational Training System in Singapore




Location of WORKER (technical side)

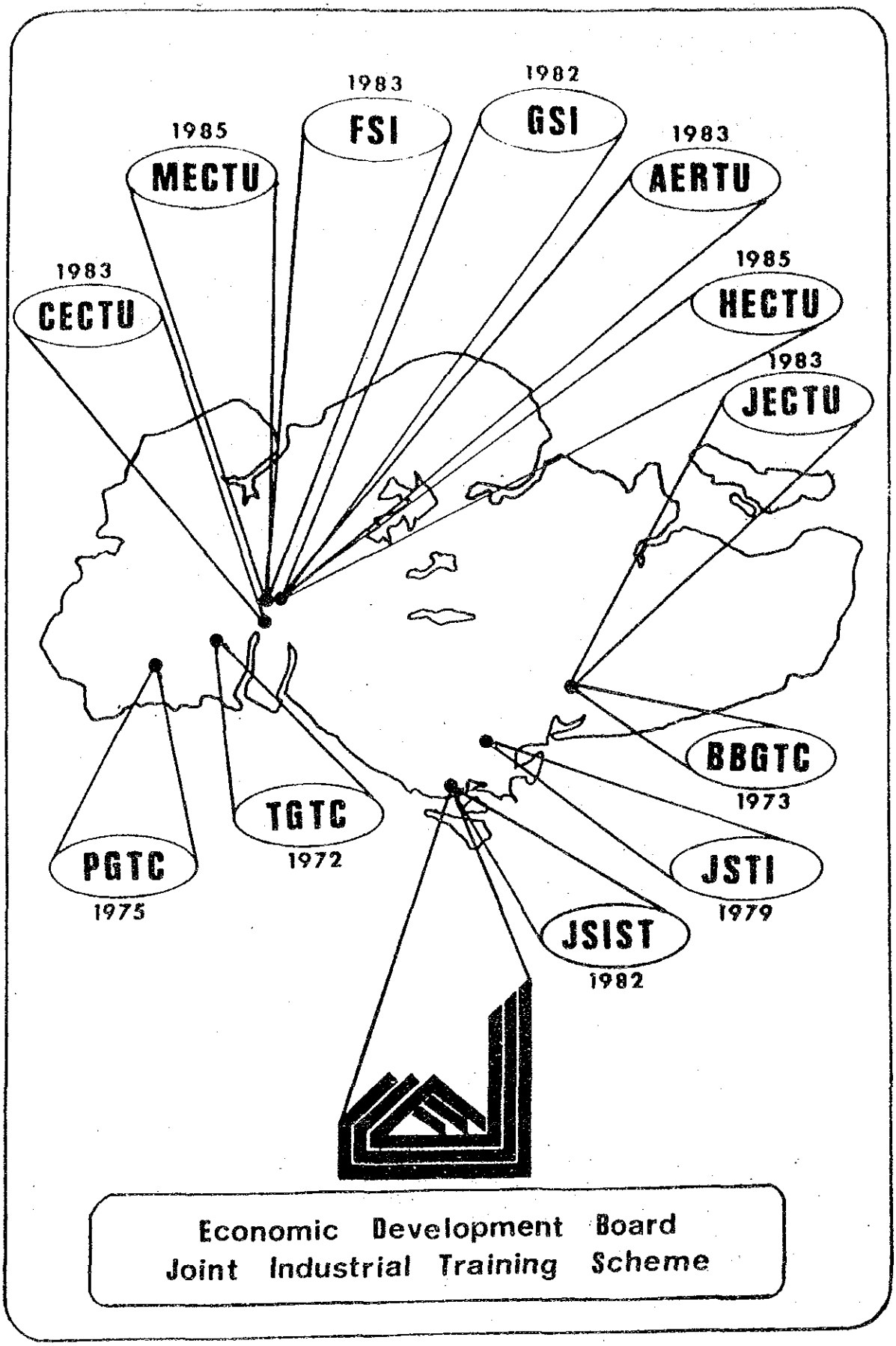
| | | Qualification | Starting salary | Ministry of Education VITB | EDB |
|---|---|---|---|---|---|
| 1 | Engineer | Degree | 1200- | NUS NTI | — |
| 2 | Higher Technician | Diploma | 700-1000 | S-Poly N-Poly | JSIST GSI FSI |
| 3 | Industrial Technician | ITC | 600-700 | STI | JSTI |
| 4 | Craftsman | NTC 2,3 | 500-600 | VITB-TC | BBGTC TGTC PGTC |
| 5 | Operator | — | 300-400 | VITB-TC | — |

VITB: Vocational and Industrial Training Board 14校
EDB: Economic Development Board
ITC: Industrial Technician Certificate
NTC: National Trade Certificate
GCE: General Certificate of Education "Ordinary" "Advance"
JAS: Joint Admission System

NOTICE: This chart shows only rough stream JUL 1st 1984

⑯ ＥＤＢ傘下の訓練施設概要

⑯－① EDB Joint Industrial Training Scheme



## TECHNICAL MANPOWER TRAINING AT EDB'S TRAINING CENTRES AND INSTITUTES

### I. OBJECTIVES

The Singapore Government places considerable emphasis on the development of human resources through its various training programmes. The aim is to establish a sizeable pool of highly trained and experienced craftsmen, technicians and engineers who will serve as the base for the continuing development of Singapore into an international source for machinery, tools, instruments, precision plastic and metal components and for technical services in product design, development, testing and maintenance.

In line with this objective, the Manpower Division of the Economic Development Board establishes and operates training centres and institutes geared towards the training of the appropriate skills. These centres and institutes therefore complement the efforts of other training institutions like the Vocational and Industrial Training Board (VITB) and the Polytechnics, in meeting the demands of the economy for manpower in manufacturing and production, electronic data processing and engineering services.

### II. IMPLEMENTATION

The Economic Development Board enjoys the unique advantage of having close working relationships with industry. It is therefore able to identify the required areas of technical training. In its establishment and operation of training centres and institutes, the Board forms joint partnerships in training with multinationals, foreign governments and specialised manufacturers in high technology application areas.

The aim of such partnerships in training is to combine the expertise, established training systems and software of our partners with the resources of the Singapore Government. The results are training centres and institutes running programmes distilled and adapted from the vast experience and knowhow of our partners. Such partnerships have todate, resulted in 3 training centres for craftsmen, 4 training institutes for technicians, technical middle management personnel and EDP professionals and 5 training units for training in the specialised components of industrial automation, computer-aided design and manufacturing (CAD/CAM), industrial robotics, computer numerical controlled (CNC) machining and computer-aided engineering in custom IC design.

## III. TRAINING CENTRES FOR CRAFTSMEN

The 3 training centres established for craftsman training are:

- Tata-Government Training Centre with Tata/Telco of India.
- Philips-Government Training Centre with Philips of Holland
- Brown Boveri-Government Training Centre with BBC Brown-Boveri of FRG

These centres take in 'O' level graduates* (ie after 10 years of basic education) as apprentices and put them through 2 years of intensive in-centre training. Such in-centre training has about 70% of its 4,200 hours dedicated to practical work in workshops simulated to resemble factory and production environment. Following the 2 years of in-centre training, the apprentices are deployed into selected companies for a further 2 years of on-the-job attachment to consolidate their skills and increase their productivity before they are awarded Craftsman Certificates.

*WITH EFFECT FROM 1985, GCE 'N' LEVEL CERTIFICATE HOLDERS ARE ALSO BE ELIGIBLE FOR THE CRAFTSMAN TRAINING COURSE, AT THE 3 TRAINING CENTRES

The total annual intake capacity of the 3 training centres is about 600. Todate, 4,256 craftsmen have successfully completed their training.

Trades offered at the 3 centres include:

- Precision Machining/CNC Machining
- Toolroom Machining
- Tool & Die Making (Plastic Mould and/or Press Tools)
- Precision Mechanics

## IV. TRAINING INSTITUTES FOR TECHNICIANS, TECHNICAL MIDDLE MANAGEMENT PERSONNEL AND EDP PROFESSIONALS

Four such institutes have been established, namely

- German-Singapore Institute (GSI)
- French-Singapore Institute (FSI)
- Japan-Singapore Institute of Software Technology (JSIST)
- Japan-Singapore Technical Institute (JSTI)

1. German-Singapore Institute (GSI)

The GSI takes in 'A' level graduates (12 years of basic education equivalent to Senior High School) and experienced craftsmen and puts them through a 2-year programme consisting of general technician training in the first year and specialised elective training in the second year. The electives are:

- Cutting Processes and CNC Techniques
- Design (Tool and Die, Jigs and Fixtures)
- Industrial Automation

The first 2 batches of 50 students from this Institute graduated in February and August 1984. This will stabilize to an output to industry of 200 per year by 1986.

2. French-Singapore Institute (FSI)

Modelled after the Ecole Superieure d'Ingenieurs en Electrotechnique et Electronique (ESIEE) in Paris, France, the FSI aims to achieve the same close links with industry. In operation since August 1983, the FSI specialises in training technicians for the electrical and electronic manufacturing and servicing industries. Its emphasis is in control engineering, instrumentation, computer and microprocessor applications, robotics and CAD/CAM (computer-aided design/computer-aided manufacturing).

As in the case of the GSI, FSI takes in 'A' level graduates and puts them through a 2-year programme. Output to the industry will stabilize at 200 per year in 1987.

3. Japan-Singapore Institute of Software Technology (JSIST)

The objective of the JSIST is to train a core of computer professionals both for the computer software industry in Singapore as well as to support the computerization and automation efforts of companies and industries in Singapore.

Operational since February 1982, JSIST will attain its objectives via the training of 'A' level graduates into Analyst/Programmers and the provision of training in systems analysis, latest EDP techniques and high level software technology to professionals and engineers in industry.

The Analyst/Programmer Course is a 2-year full-time course with more than 50% of the core subject time dedicated to hands-on training at the terminals. The output will stabilized at 100 a year from 1985.

The Systems Analyst Course is conducted for holders of degrees or tertiary qualifications and consists of 2 modules of 3 and 6 months' duration. The planned output of systems analysts is between 100 and 150 per year.

4. Japan-Singapore Technical Institute (JSTI)

The JSTI trains at junior technician or Industrial Technician Certificate (ITC) level. The minimum qualifications for entry to the 2-year training programme are 'O' level passes in relevant subjects. The Institute specialises in 3 main areas of training:

- industrial electronics engineering
- instrumentation and control engineering
- 'mechatronics' or electronics-oriented mechanical engineering

The JSTI would thus fulfil a part of the predicted need in industry for personnel familiar with the maintenance of electronic/mechanical machinery like computers, robots, CNC controllers etc.

5. Training Units for Specialised Applications

As the drive towards higher productivity gathers momentum, the application area of Industrial Automation assumes increasing importance. Four important components of full industrial automation are the fields of computer-aided design and manufacturing (CAD/CAM), robotics, computer numerical controlled (CNC) machining and custom IC design techniques. In order to train the necessary skills for implementation and operations in these four fields and also to propagate and encourage their implementation, five specialised training units were formed from 1983 onwards. They are:

- Computervision-EDB CAD/CAM Training Unit (CECTU) in partnership with Computervision Corp of USA (Feb 83)
- ASEA-EDB Robotics Training Unit (AERTU) with ASEA AB, Sweden (June 83)
- Japax Group-EDB CNC Training Unit (JECTU) under the Japax Group of Japan (Oct 83)

- Mentor Graphics-EDB CAE (IC Design) Training Unit (MECTU) with Mentor Graphics Corp of USA (June 85)

- Hewlett Packard-EDB CAD/CAM/CAE Training Unit (HECTU) with Hewlett Packard of USA (July 85)

These units will serve as the hub of training and propagation in their respective fields. Such training and exposure are not only limited to the EDB training centres and institutes but are also fully extended to industry in Singapore.

(i) Computervision-EDB CAD/CAM Training Unit (CECTU)

Operational since February 1983, the CAD/CAM Training Unit runs application-oriented courses in Mechanical Drafting and Design, NC Applications and Printed Circuit Board Design. The full enrolment capacity of the Unit is 64 trainees at any one time.

(ii) ASEA-EDB Robotics Training Unit (AERTU)

The Robotics Training Unit was operational since May 1983 and has facilities for the training of 60 trainees at any one time.

(iii) Japax-EDB CNC Training Unit (JECTU)

The CNC Training Unit started operations in November 1983 and has 12 CNC machines for courses in computer-aided programming as well as milling, turning, EDM and wire-cut operations.

(iv) Mentor Graphics-EDB CAE (IC Design) Training Unit (MECTU)

This Unit, set up for training & project work in the design of semi-custom and custom integrated circuits (IC), began operation in Jun '85. Equipped with 12 computer-aided engineering (CAE) workstations, MECTU will have the capacity to train up to 48 engineers at any one time.

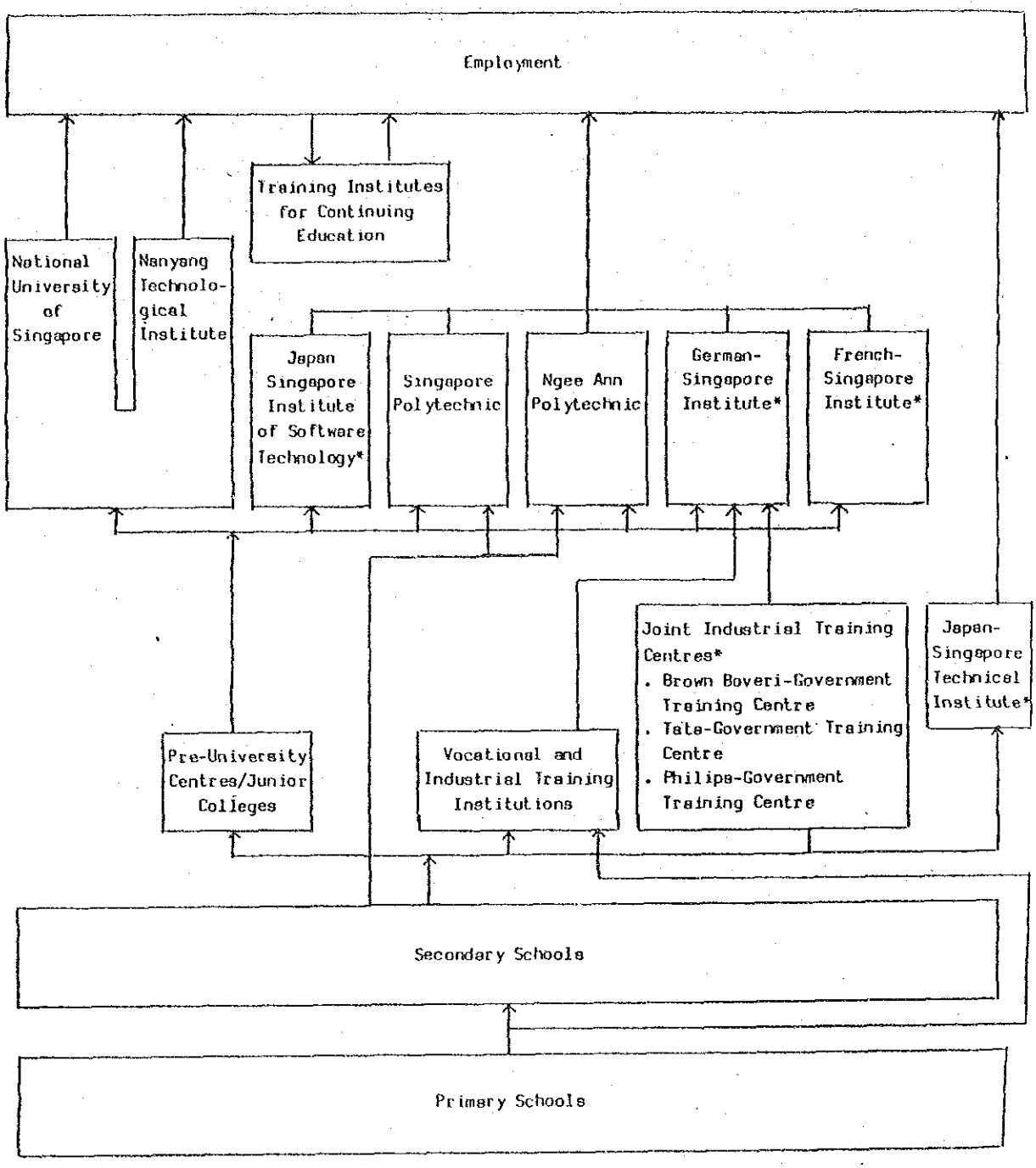
(v) Hewlett Packard-EDB CAD/CAM/CAE Training Unit (HECTU)

The HECTU fully operational since July 1985, and will concentrate on the use of independent computer-aided workstations for design, drafting and analysis work in mechanical and electronic applications. Its 24 workstations will give it a maximum capacity of 96 students for course and project work.

As of end 1984, all students of the EDB training centres/ institutes will have at least a minimum level of appreciation/ exposure in all 3 areas of CAD/CAM, robotics and CNC machining with selected students undertaking detailed courses and extended industrial project work in one of the 3 areas.

Sep 85

## THE EDUCATION AND TRAINING SYSTEM IN SINGAPORE

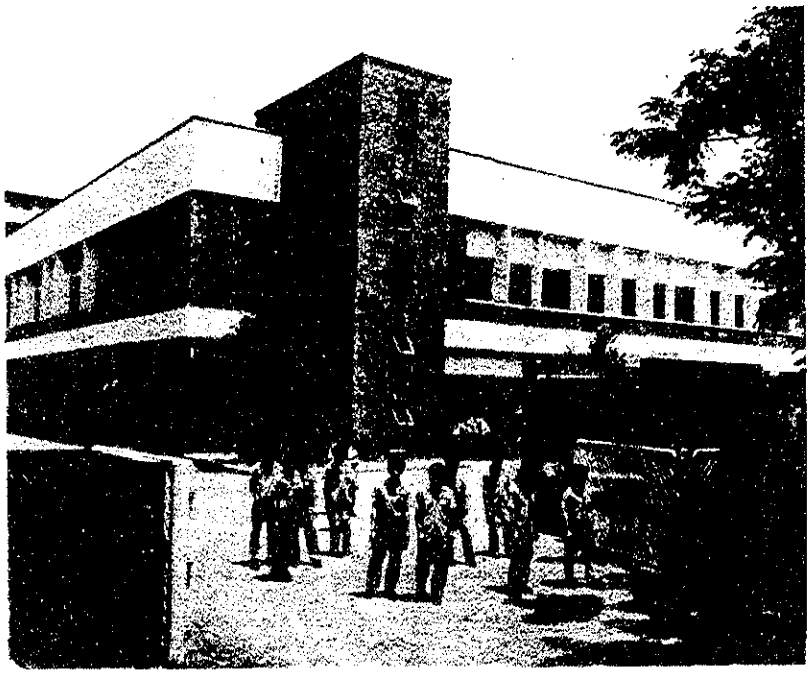



* These are the Training Centres and Institutes under the Economic Development Board

sgk-educate/mc
disk no. 107

# BROWN BOVERI GOVERNMENT TRAINING CENTRE

(A UNIT OF THE ECONOMIC DEVELOPMENT BOARD)
SINGAPORE



*Incorporated under the*
*JOINT INDUSTRIAL TRAINING SCHEME*

**Singapore, May 1985**



THE BROWN BOVERI GOVERNMENT TRAINING CENTRE (BBGTC)

The BBGTC formerly known as Rollei Government Training Centre (RGTC), was established in 1973 under the Economic Development Board's Joint Industry - Government Training Scheme. Its objective is to train a pool of highly skilled manpower to meet the demand of industries operating in Singapore. The Centre adopted and adapted the technical knowhow and training software of the German Apprenticeship Scheme to Singapore under the guidance of qualified and experienced German expatriates who head various departments in the Centre.

Since its inception, the Centre has trained nearly 2,000 apprentices in the various engineering vocations. Apprentices, upon their graduation from the in-centre training have been immediately placed in over 180 different companies.

The success of Singapore's economic strategy, which gears towards higher value added and technology intensive industries, is dependent on a ready source of highly trained craftsmen. To cater for this need, the Centre together with the assistance of Economic Development Board has expanded its existing enrolment from 340 to 560 apprentices at its new premises at Kallang Industrial Estate.

The two-storey building has a built-in space of 6,357 square metres. It comprises of two workshop floors equiped with modern machinery including CNC, equipment in control engineering and robotics metrology laboratory, welding equipment and heat treatment facilities, a design office, lecture rooms, library, offices and recreational facilities which enable high quality training in a condusive environment. The overall project cost for building, land and purchase of new machinery reached S$9.5 million. (1981 value)

In March 1981, the Association of German Chambers of Industry and Commerce, Bonn (DIHT), certified that the Apprenticeship training programmes at the Centre is in accordance with the vocational training regulations in the Federal Republic of Germany.

Part-time courses in various engineering fields are being conducted for personnel from the industry on a regular basis. With the assistance of our new joint partner, Brown Boveri (S), the Centre will further upgrade its present facilities and introduce new advanced training courses. This training will be an integral part of the restructuring of Singapore's economy towards higher productivity and technology.

## JOINT PARTNER, BROWN BOVERI & CIE AKTIENGESELLSHAFT (BBC)

The Brown Boveri & Cie Aktiengesellshaft Mannheim (BBC AG), one of the leading companies in the electrical industry of the Federal Republic of Germany has been engaged for many years in all aspects of electrical power engineering. The Company was founded in Mannheim in 1900 and forms part of the international Brown Boveri group with its headquarters in Switzerland. Currently, BBC AG employ about 100,000 people world wide. It has 42 production and service centres in more than 20 countries with 23 product divisions and affiliated companies to serve its market in over 120 countries in all five continents.

Their range of products extends from simple switches to complete turn-key power stations, from insulated copper wire to totally enclosed switch-gear, from semi-conductor devices to advanced process control computers.

Electrical engineering of this scope invariably extends into all other fields of technology. In its research laboratories, researchers, scientists and engineers have made some remarkable inventions which have had major influences in the development of power generating world wide.

Brown Boveri itself, started to provide craft training over 80 years ago. It currently trains 1,700 young people per annum for a wide range of technical jobs. In addition, an approximate 2,500 employees take part in the advance training programmes yearly. Thus, the Company has, more than ever, become a school for its employees. It matches the experiences gained in this respect to the specific requirements of its customers at the training centre in and outside the Federal Republic of Germany.

BBC
BROWN BOVERI



## GENERAL INFORMATION

### MANAGEMENT SYSTEM

The Centre is managed by a Management Committee comprising repsentatives from the Economic Development Board (EDB), Brown Boveri (Singapore) and the Vocational & Industrial Training Board (VITB).

### TRAINING OBJECTIVE

The main aspect in vocational education is to achieve a balance blend of practical, theoretical and social education. The objective is to train a core of highly skilled craftsmen to prepare them for employment in the precision engineering and manufacturing industries. Our training is therefore based on the following two factors:

IMPARTING OF KNOWLEDGE AND TEACHING OF SKILLS THROUGH THE TRAINING PROCESS.

DEVELOPMENT OF CORRECT ATTITUDES TOWARD WORK.

### TRAINING PROGRAMME

The Centre offers an apprenticeship programme which consists of 2 years in-centre training followed by 2 years on-the-job training.

BBGTC has successfully adapted the German Apprenticeship programme which was established in Germany many years ago. All apprentices have to undergo the same basic training in metal fitting and machining, lasting 6 months. It is only when they have successfully completed the various initial exercises and lessons, that they are entitled to continue their training.

During the second half of their 1st year training, the apprentices are streamed into their respective trades and introduced to their basic trade task.

In the 2nd year of training, they will undergo further specialisation with respect to their chosen trades. This 2 years in-centre training is designed to equip apprentices with the full range of necessary practical skills and theoretical knowledge.

The latest training in computer-numerical controlled machining, computer application and programming , computer assisted drafting, 3D coordinate measuring and industrial automation including robotics, form part of this comprehensive training programme.

Apart from standard exercises and group project work, all apprentices will be exposed to actual production jobs received from the Industry. This will stimulate work enthusiasm and create a high sense of responsibility.

At the end of this specialised and intensive industrialised in-centre training, apprentices must sit for their practical and theoretical examinations which are equivalent to the German "Facharbeiter Pruefung".

The examination papers, equivalent to the German "FACHARBEITER PRUEFUNG", are being sent from the INDUSTRIE UND HANDELSKAMMER (Chamber of Commerce and Industry in Germany).

The 2-year on-the-job training in selected companies is designed for apprentices to reinforce their skills, increase work efficiency and expose them to industrial environment. (Please see Table 1, Training Schedule for Craft Courses in BBGTC)

During the whole 4 years training, all apprentices must maintain a LOG BOOK. These weekly reports of their daily duties must be recorded and have to be submitted to the immediate supervisor for inspection.

INPUT/TRAINING HOURS

The scheme takes in as its training input, twice a year, apprentices who have completed 10 years of formal education i.e. up to 'O' level. The apprentices are then put through 2 years full-time in-centre training (4400 hours) with about 70% of training time spent on practical hands-on training. The working week consists of 44 hours, with 35 hours on the shopfloor and 9 hours on theory in subjects such as job-related instruction, engineering science, workshop calculation, engineering drawing and productivity educational study.

CERTIFICATION

On passing the in-centre examination, an apprentice is awarded a TESTIMONIAL and a PERFORMANCE STATEMENT. They will also receive the National trade Certificate Grade 3 and 2 from VITB at the end of the 1st and 2nd year of in-centre training respectively.

A Craftsman Certificate in teh relevant trade will be awarded to apprentices who have successfully fulfilled the requirements of the 4-year apprenticeship programme.

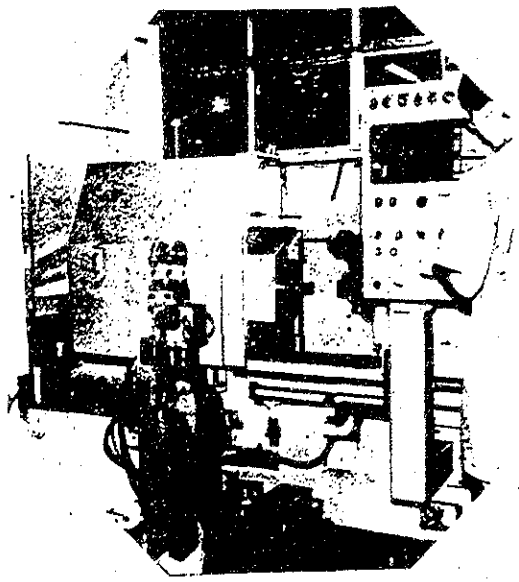
This places the 4-year craftsman training on par with the German "FACHARBEITER BRIEF".



TRAINING FACILITIES

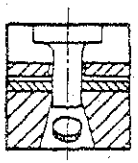
Apart from basic machine tools, such as centre lathes, universal milling machines and cylindrical and surface grinders, which are used in the 1st and 2nd year of training, specialised machinery and equipment are made available for apprentices in the different trades. They include:-

- CNC lathes and turning centres,
- 3D CNC milling machines including machining centres,
- CNC EDM's and wire cut machines,
- Turret lathes and cam-operated automatic lathes,
- Pantographs, jig-boring and grinding machine, dia-form grinders together with high speed presses and several injection moulding machines with part handling devices for the Tool & Mould Making trades,
- Teaching facilities on Pneumatic, Electro Pneumatic, Hydraulic, Robotic, CNC Part Programming and Assembly Techniques and
- A full range of Metrology equipment including 3D CMM.



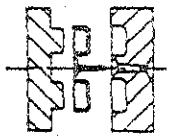
CNC MACHINING

## THE FIELD OF ACTIVITIES



### PRESS TOOL-MAKER (TM)

The efficient mass production of metallic components involves complicated tooling, e.g. for punching, bending and gauging. Modern machine tools and special processes, e.g. wire-cut, are at the Tool-makers disposal to produce individual parts which are assembled into precision punching tools and other appliances and then functionally checked. He is also engaged in the repair of cutting, bending and punching tools, appliances and testing instruments. He also sets up tools and appliances in production machines.



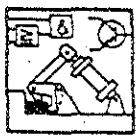
### INJECTION MOULD MAKER (MM)

The economic mass production of plastic components calls for complicated moulds, e.g. for injection, pressing or drawing facilities. Modern machine tools and special processes, e.g. spark erosion, are available to the Mould Makers to produce individual parts. These, he assembles into precision moulds which will be functionally checked. He sets up the moulds and appliances on plastic injection moulding machines. He is also engaged in the repair of moulds and appliances.

### TOOL-ROOM MACHINISTS (TRM)

The need for precisely machined single components for tools and moulds, requires a qualified machinist. For this purpose, the Tool-room Machinist makes individual parts with highly accurate modern machine tools, e.g. dia-form grinding, jig-grinding, EDM and wire-cut. He sets up the machines and maintains them.

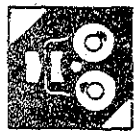
### PRECISION MECHANICS (PM)



There is a great demand for many precision-mechanical and electro-mechanical appliances and installations, such as, measuring instruments, teleprinters and part -handling devices. These often contain mechanical and electro-mechanical components which must be produced and assembled with high precision. Modern machine tools and devices help the Precision Mechanic to produce small and complicated individual parts with high precision and to assemble them into high quality appliances, fixtures and testing devices. He checks their function, maintains them and repairs and service them when the need arise. He also makes the prototype models and samples for the develop- ment of new appliances. The maintenance and repair of automatic control is likewise part of his field of activity.

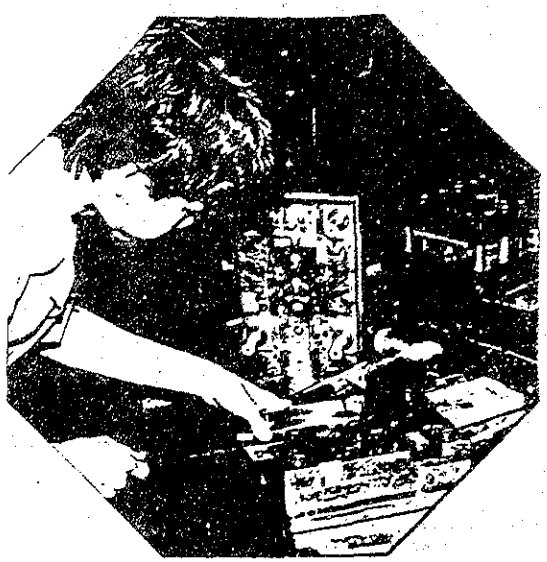
### PRODUCTION MACHINIST (PRM)

The economic mass production do not only need moulded or stamped components, but also a wide range of different machined parts with high precision and high quality. With the aid of modern tools and manufacturing facilities, the Production Machinist sets up machines and appliances in mass production and maintains them. Modern machine tools, such as CNC Milling and CNC Turning are at his disposal. He also makes jigs and fixtures to improve the productivity of the machines.



### COMPUTER-NUMERICAL CONTROLLED MACHINE SETTER (CNC-M)

In our modern society, there is a great demand for new products, such as machinery, planes or appliances. To reduce the manufacturing time to produce these items, more sophisticated modern machining facilities were developed. Today, CNC machines are widely used to manufacture complicated machine parts in a relatively short machining time. The CNC Machine Setter is responsible for pre-setting tools, setting up, maintaining and operating CNC machine for single and batch production. He is also responsible for making punched tapes for the CNC machines as well as checking and optimising them.



TOOL & DIE

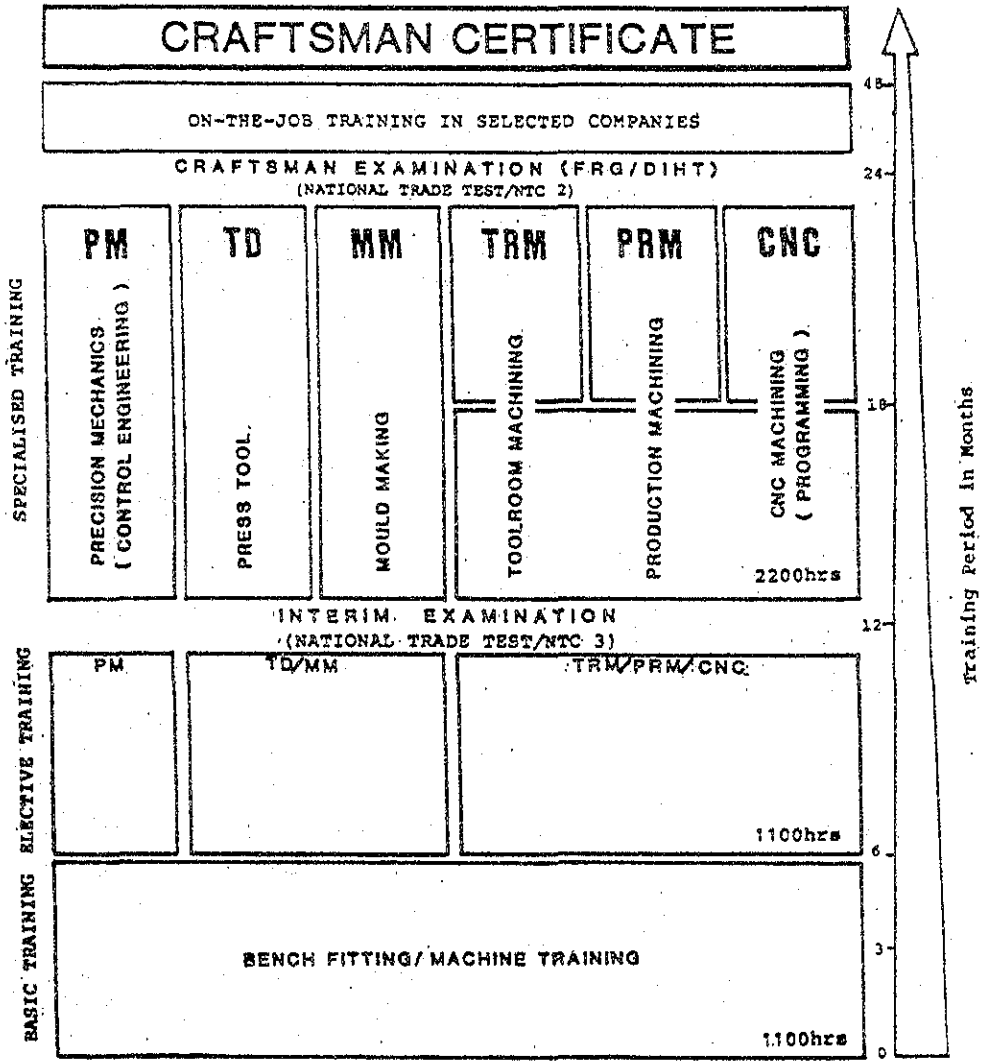



TABLE I - Training Schedule in Crafts Courses in BBGTC



**1 CRAFTSMAN TRAINING (NTC 3 & 2)**

in selected TRADES ( reg. by DIHT/FRG since 1981 )

training include : -Control Technology ( Pneumatic, Hydraulic )
Robotic
CAD
Computer Course ( Basic )
CNC Machining/Programming
CMM

**2 ADVANCED CRAFTSMAN TRAINING (NTC 1)**

in selected TRADES ( to be implemented at later stage )

**3 PART/SHORT-TIME TRAINING**

in selected Technologies

**4 SPECIALISED TRAINING**

-Industrial Automation/Robotic
-Tool & Die/Design
-CNC Programming & Machining

**5 UPGRADING OF TRAINING CURRICULARS**

for all Trades and Courses

TABLE II - BBGTC Training Objective

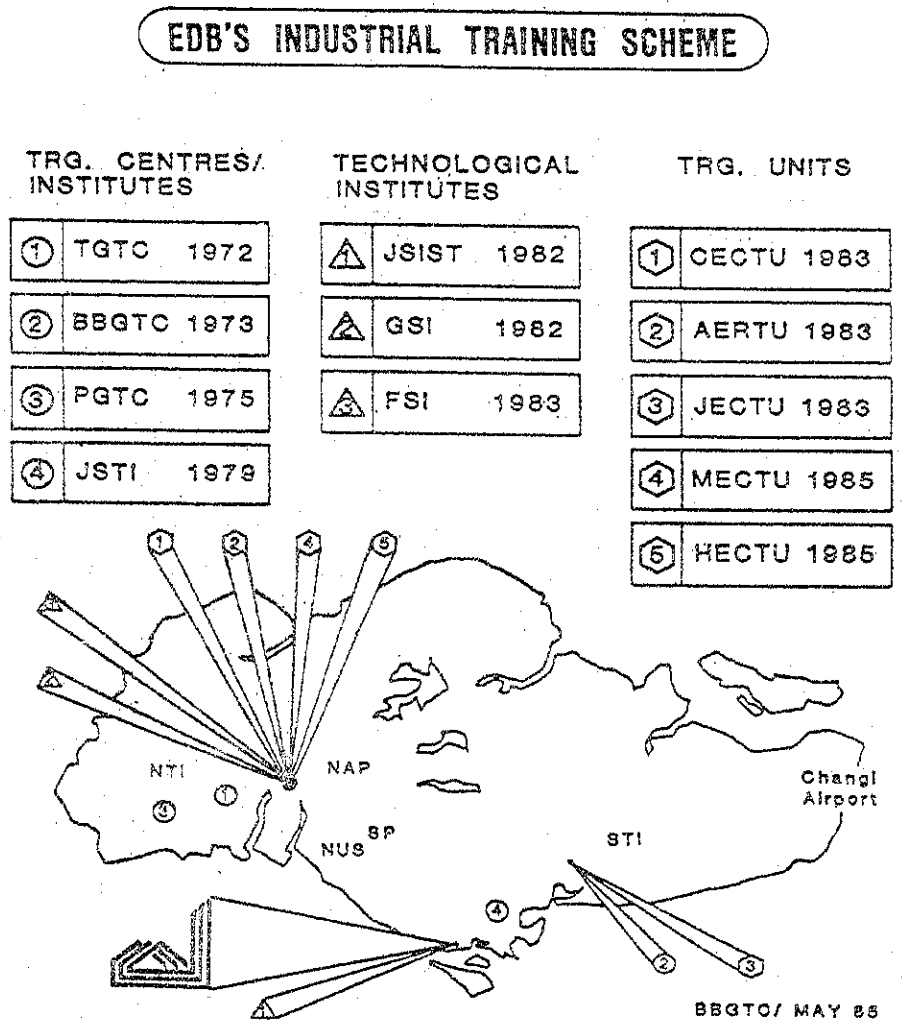



TABLE III - EDB's Industrial Training Scheme



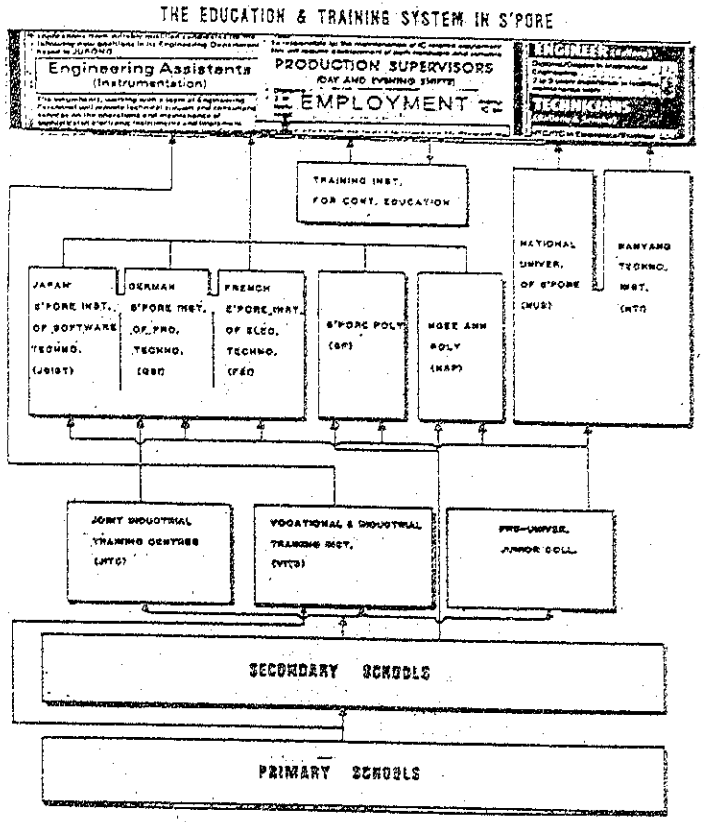
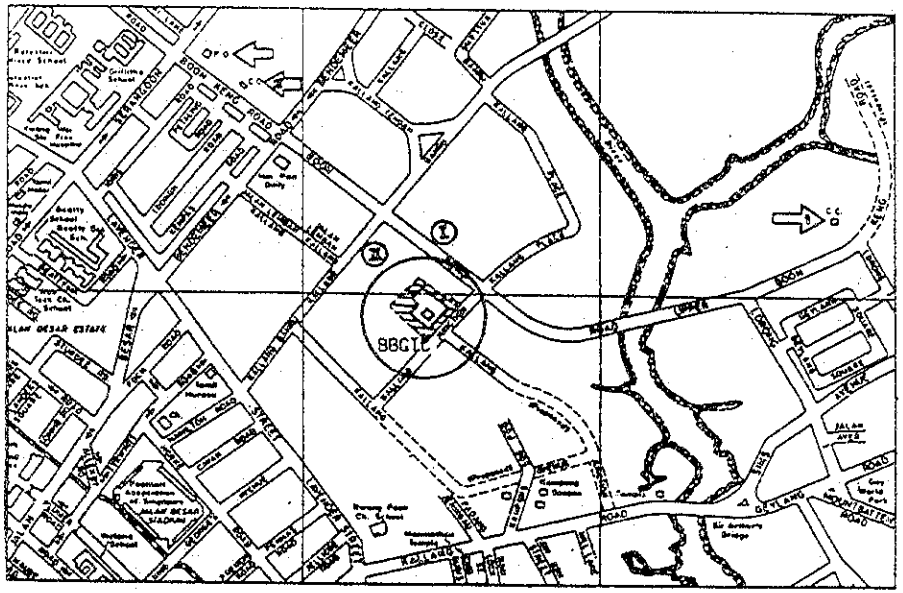



TABLE IV - Education & Training System in Singapore

LOCATION OF BROWN BOVERI GOVERNMENT TRAINING CENTRE




P.O. Post Office

C.C. Community Centre

1. Geylang West Community Centre
2. Kallang Community Centre

Bus Stop I (Boon Keng Road)

SBS Service Nos: 4, 5, 85, 148, & 162

Bus Stop II (Kallang Bahru)

SBS Service Nos: 5, 61, 94

ADDRESS :

BROWN BOVERI GOVERNMENT TRAINING CENTRE
15 Kallang Junction
Singapore 1233
Tel : 2967833

# JAPAX GROUP–EDB

# CNC Training Unit

(A Unit Of The Economic Development Board)

## INTRODUCTION

Industries in Singapore are increasingly turning to the lastest technologies in pursuit of higher productivity and automation, with CNC machines featuring prominently. The number of machines in use in Singapore leapt exponentially from about 53 in 20 companies in 1979 to more than 500 in 130 companies when last surveyed by the EDB. In line with this, training in CNC machining and programming need to be strongly emphasized. This had led to the establishment of the JECTU.

## THE UNIT

JECTU is the third Training Unit to be set up by the EDB, coming into operations in October 1983. It was established in co-operation with 3 Japanese companies (Japax Incorporated, Hamai Co Ltd and Ikegai Corporation) and Taisei Machinery Services, their local representative.

The main objective of the Unit is to provide training in CNC machining and programming to assist craftsmen in industries to operate CNC machines effectively and optimise results in their own areas of application.

The Unit, located in the premises of the Brown Boveri Government Training Centre, is manned by experienced staff. There are also Japanese experts assisting in the initial period.

## TRAINING PROGRAMME

The facilities and equipment in the Unit will be used to provide CNC training to 3 main groups, viz :

- Staff and students from the EDB Training Centres/Institutes.
- Trainees in the Advanced Craftsman Training Course (to be conducted in the Brown Boveri Government Training Centre in mid 1984).
- Personnel from relevant industries for part-time/specialised courses.

Courses are organised into a modular structure to afford flexibility in tailoring the training provided to the specific needs of the groups concerned. Training conducted by the Unit includes:

- CNC EDM PROCESSES
- CNC MILLING
- CNC MACHINING CENTRE APPLICATION
- CNC TURNING
- COMPUTER ASSISTED PROGRAMMING
- COMPUTERISED DESIGN AND MANUFACTURING SYSTEM (For Tool and Die)

## MACHINES & EQUIPMENT INSTALLED IN JECTU

The machines and equipment listed below are provided as part of the first phase of the cooperation between the EDB and the Companies. In late 1984, additional equipment on Computerised Design and Manufacturing (CDM) System will also be installed by JAPAX INC.

From JAPAX INC

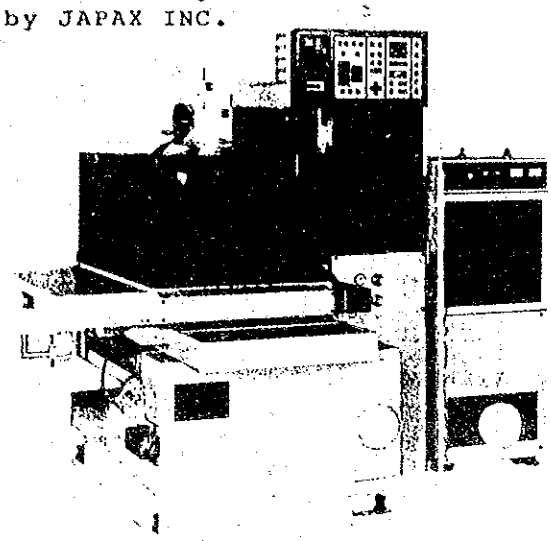
2 units NC Die Sinking EDM model DP25NC and DP35BNC equipped with electrode changer.

2 units Wirecut EDM model LS350X and LS500X with super drill.

2 units Automatic programming systems (JAPT-2F) with plotters, paper tape punchers and software.

2 units Automatic programming units (E-JAPT) with plotters, paper tape punchers and software.

2 units Automatic programming systems (JAPT -2J) with plotters, printers and software.



WIRE CUT EDM

From HAMAI CO LTD

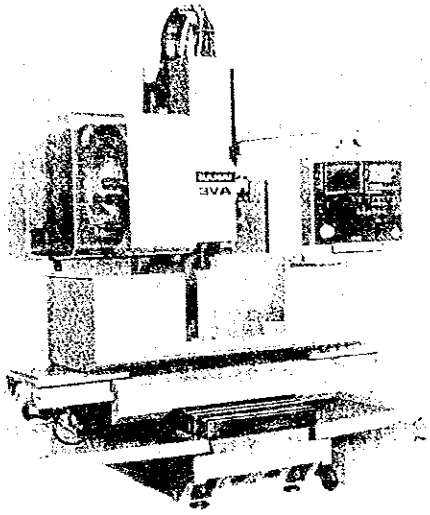
2 units CNC ram type vertical precision milling machine MAC-85N.

1 unit CNC vertical machining centre MC-3VA with automatic tool changer (ATC 24).

1 unit CNC horizontal machining centre MC-3HA with two shuttle-type pallet changers and automatic tool changer (ATC 40).

1 unit Machine control simulator.

1 unit Tool pre-setter.



VERTICAL MACHINING CENTRE

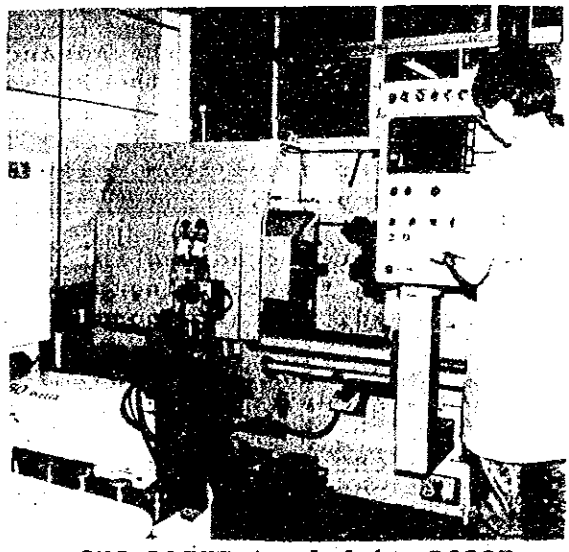
From IKEGAI CO

3 units CNC Lathes. One of each of the model FX25II, FX20II and AX25II including tool setting gauge and feedback gauging system.

1 unit CNC mill-turning centre (FT25U).

1 unit Self-standing robot.

1 unit Workpiece conveyor with automatic indexing pallet.



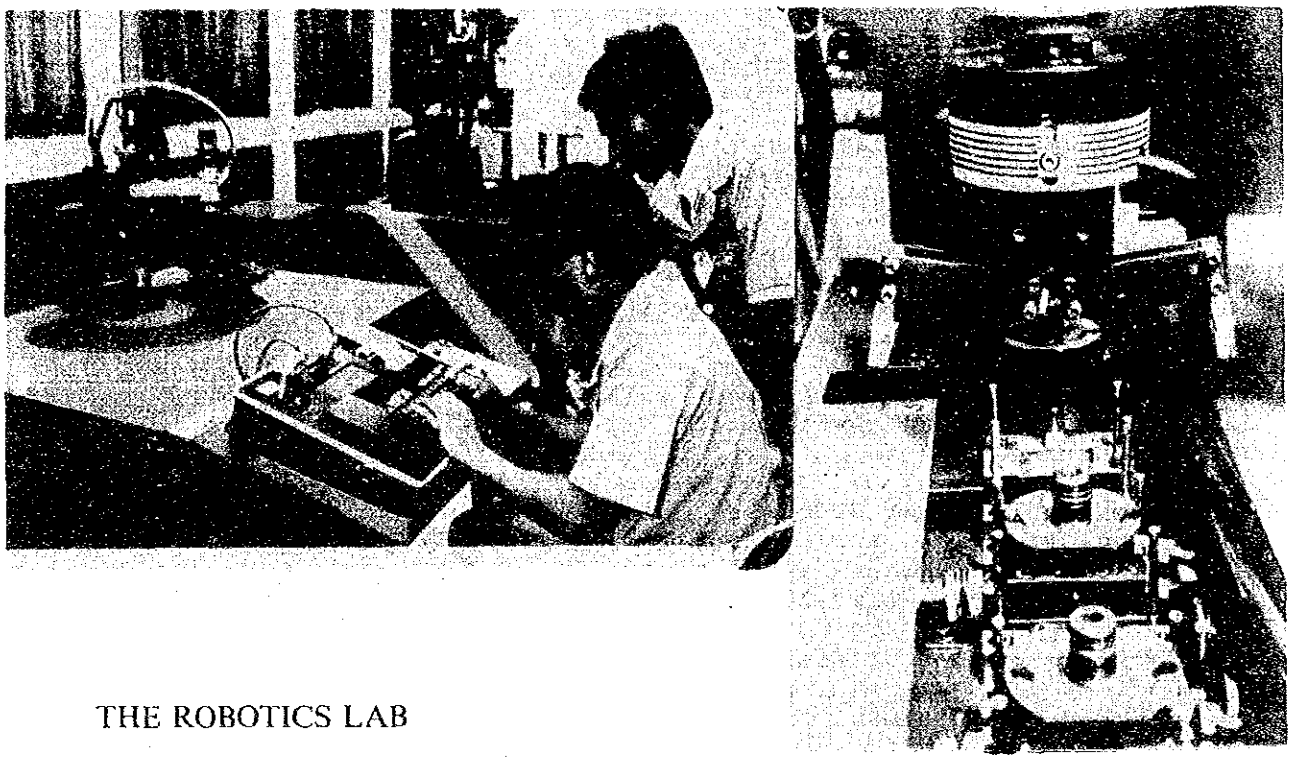
CNC LATHE tended by ROBOT

# THE SANKYO SEIKI—EDB ROBOTICS LAB

15 Kallang Junction
Singapore 1233
Tel: 2967833

## INTRODUCTION

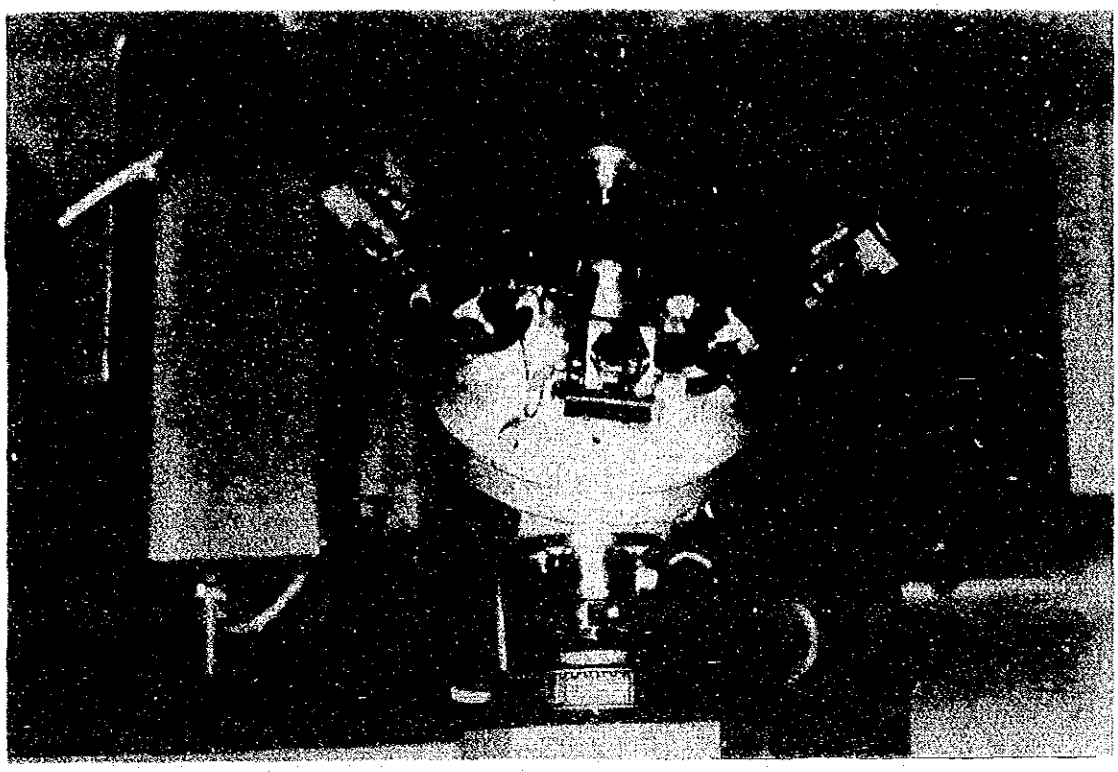
Industries in Singapore are increasingly turning to new technological applications in production and manufacturing in pursuit of higher productivity and quality. The use of industrial robotics has been and will continue to be one of the major applications. The SANKYO SEIKI-EDB Robotics Lab was therefore established as a joint project in training between the Singapore Economic Development Board (SEDB) and Sankyo Seiki of Japan. The objective of this Lab is to provide training in industrial robotics and its applications to the staff and students of the SEDB's Institutions and technical personnel from industries.



## THE ROBOTICS LAB

The Robotics Lab is located within the premises of the Brown Boveri Government Training Centre (BBGTC), one of the training institutions of the SEDB. It is staffed by engineering and technical personnel who have undergone training at Sankyo Seiki's facilities in Japan. The Lab also benefits from expertise from Sankyo Seiki via the secondment of personnel from the company to the Lab. The robots and facilities consist of.

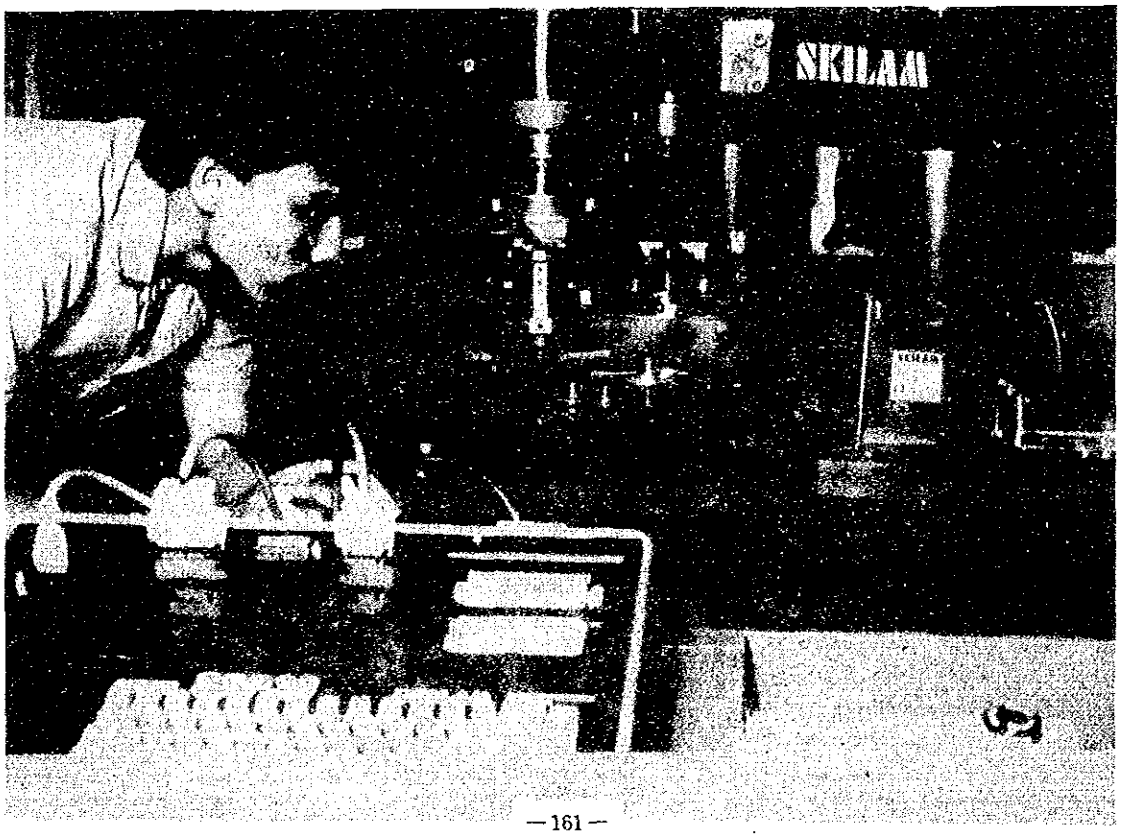
- 2 x SR5320 SCARA type robots
- 1 x SR5011 Co-ordinate type robot
- 1 x SR4N SCARA type robot
- 1 x SR3 SCARA type robot
- 1 x SR3000 SCARA type robot



## TRAINING PROGRAMMES & COURSES

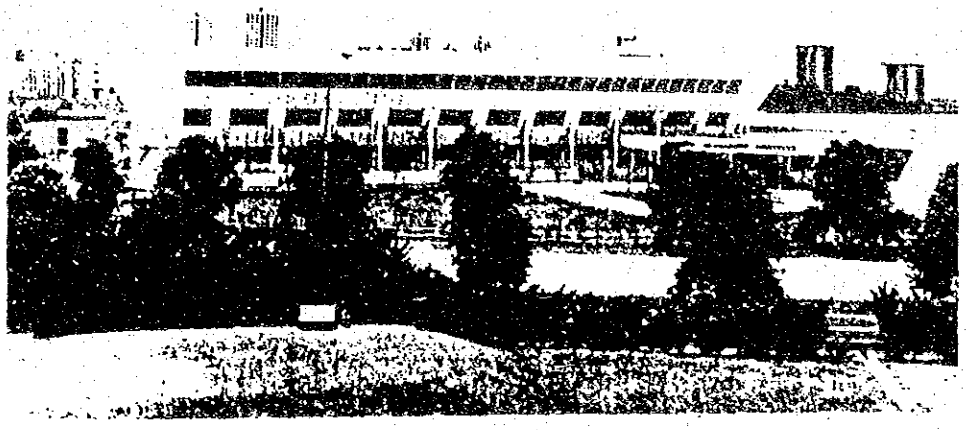
The Lab provides for hands-on practice in the programming operations and design of robotic workcells for the various applications. Additionally, project work in the lab provides experience and further practice in techniques of system integration and interfacing. Topics covered include:

- Programming & operation of industrial robots
- Applications of industrial robots
- Project engineering for robotisation



# GERMAN-SINGAPORE INSTITUTE

10 Science Centre Road, Singapore 2260. Tel: 5613866



## PROFILE OF GSI

The German-Singapore Institute (GSI) is a technical cooperation project between the Governments of the Federal Republic of Germany and the Republic of Singapore.

The Government of the Federal Republic of Germany provides technical assistance to Singapore in the planning, establishment and operation of the Institute and financial contribution for the purchase of machinery and equipment, the secondment of thirteen experts and scholarships for the training of local staff in the Federal Republic of Germany. The Government of Singapore is responsible for the construction of the building and the operational costs.

## The Courses

GSI currently conducts a 2-year full-time Diploma Course in Production Technology.

The Diploma course, run on 44-hour week basis, consists of three stages, i.e. Basic (6 months), Common Core (6 months) and Advanced Training (12 months). Students' recruitments are conducted twice a year, in February and August.

All students are required to carry out projects (each of 3 months full-time duration) before the end of the course.

## The Facilities

To create an industrial environment for the training, GSI has been equipped with high quality industrial machinery and equipment for such areas as conventional and CNC machining, toolroom machining, heat treatment, plastic technology, surface treatment, metrology, material testing, control techniques, computer programming, industrial engineering, welding, design, etc.

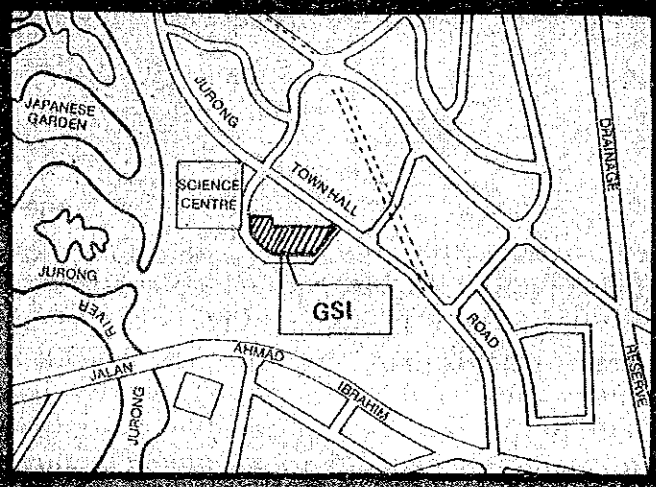
In addition to the above, facilities for CAD-CAM and Industrial Robotics are available for the training of GSI students in modern technology.

## The Students

GSI takes in both 'A' – level holders as well as EDB Craftsmen or equivalent. The students may be:

(a) Company-sponsored (sponsoring companies may apply for SDF support), or
(b) On EDB study loan (for Craftsmen only), or
(c) On EDB bursary (for 'A'.– level only), or
(d) self supporting

At the end of the training, students doing the Diploma courses will be practice-oriented enough to undertake jobs in areas like Production Planning and Control, Design, Process Planning, Shopfloor Supervision, Quality Control, Industrial Engineering, Low Cost Automation, etc.




The German-Singapore Institute of Production Technology

## Begin now with GSI

### *GSI ?*

Yes, it stands for the **German-Singapore Institute,** an institute of production technology set up by the Governments of the Federal Republic of Germany and the Republic of Singapore. The Institute offers a 2-year full-time **diploma course in production technology.**

At GSI, we train you, both in theory and in practice, in all the following areas:-

Computer programming

Computer-controlled Machine Tools

Computer-Aided-Design/
Computer Aided-Manufacturing

Industrial Automation

Precision Measurement

Production Processes

Quality Control

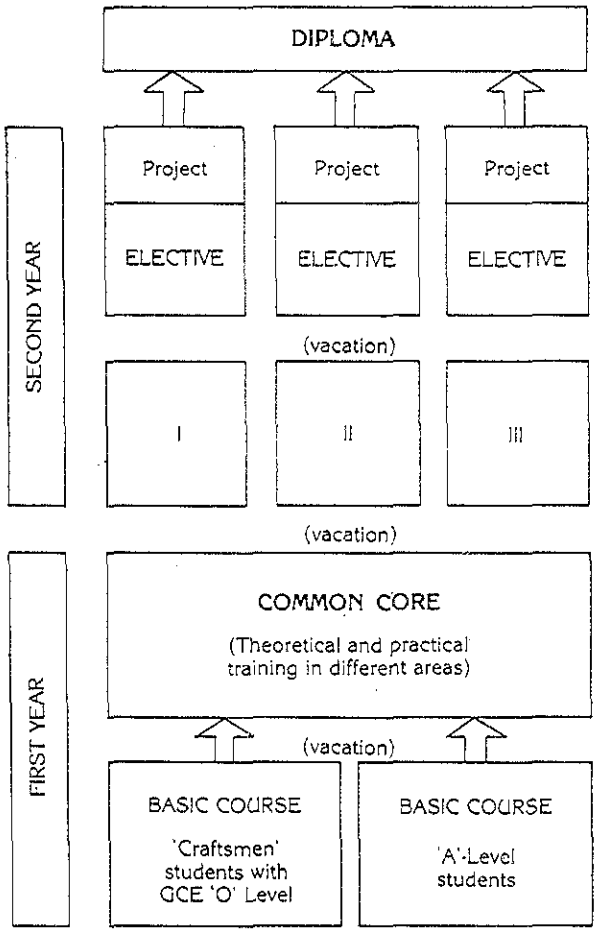
Plastics Technology

Robotics

Surface Treatment Processes

Tool & Die . . . . . etc, etc.

## The Course




Elective I = Cutting Technology & CNC Techniques
Elective II = Design (Tool & Die/Jigs & Fixtures)
Elective III= Industrial Automation

## The Future ?

Read the following:-

# Future's most wanted man

OVER the next seven years, it is the man with engineering and technical education who will be much sought after.

This apparently is the conclusion of the Council on Professional and Technical Education (CPTE) which made a set of projections on the professional, technical and skilled manpower requirements of Singapore up to 1990.

The projections were based on the targetted rates of economic growth laid out in the ten-year Economic Development Plan.

The CPTE had recommended that enrolment of the country's tertiary and training institutions be increased substantially, particularly in engineering and technical courses, the Minister for Trade and Industry, Dr. Tony Tan, said yesterday in reply to mr Mansor Sukalmi (Kampung Kembangan).

*The training at GSI provides you the foundation for a promising career in the future.*

*You can be the MOST WANTED MAN !*