Engineering Support Services help build the pyramid of business strength by providing new central services for Plessey businesses.
WHERE ENGINEERING SUPPORT SERVICES IS PLACED IN THE PLESSEY COMPANY LTD
The formation of Engineering Support Services in the Directorate of Technical Services represents a departure from Company practices and staff line relationships as they existed in the Engineering and Manufacturing areas.

The significant aspect of the change is that the services of all specialists within this organisation are paid for directly by those Businesses using the Services. Engineering Support Services will operate as an independent internal consulting organisation selling their services to Businesses. Training courses will be charged on a man-day of attendance basis. Part of the service will be of a project nature (one day or more) and charged on a man-day (including expenses) basis. Other general services of a shorter term consultative basis, information (written and oral) of a communication nature, will be paid for on a subscription basis. More detailed information on these services will follow.

The philosophy behind the change is to provide a more meaningful, economical, useful, practical and integrated consulting service with the emphasis on strengthening the internal skills and capabilities of all Business engineering personnel.

The Engineering Support Services will be developed to meet the demands and needs of each Business, but initially is prepared to offer assistance in the following areas:


The benefits of using this service will be financially obvious to Business by significant returns on investment and improvements in operating and production efficiencies. Reasons for and benefits of using Engineering Support Services are summarized at the end of the Brochure.
An Integrated Technical Management consulting service through a team of Design and Manufacturing specialists.

Manpower Development to train your design and manufacturing engineering personnel to become more proficient and cost effective.

Competent technical support for your design, manufacturing and industrial engineering.

Profit Improvement by guiding your Business in the use of modern techniques and equipment, and programme administration and management.


An Information Service to provide your Business with regular publications giving information on:

* New products, processes, materials, specialised knowledge skills and techniques within the Company and outside.
* New sources of supply for outside procurement of speciality products, materials or services.
* Standards, specifications and numbering systems.
* The latest information from Technical and Manufacturing Exhibitions and Conferences.
* Improved communication with Company Centre and other Businesses by means of Functional Councils and Company-wide knowledge of specialists.

Business profit improvement analysis by a team of qualified specialists who can make a detailed analysis of all Design, Development, Manufacturing and Equipment areas providing a comprehensive picture of the problems, and an action programme for improvement.

A detailed description of all services offered is provided on the following pages for management guidance.
The efficiency with which the Engineers and Designers can translate their ideas and new design concepts into workable production drawings and specifications is a significant factor in any Business profit plan. Timeliness, accuracy and completeness of drawings and specifications can be key criteria in market capture and customer satisfaction.

The Design Support and Standards section of Engineering Support Services is prepared to offer Businesses guidance and training in all the areas related to achieving objectives in the area of Design Office improvement in effectiveness of organisation and procedures. Furthermore, specific services can be provided in the maintenance, publication and distribution of engineering standard practices, specifications and numbering systems which have both Business and Company-wide benefits.

With new design equipment and methods being developed at an increasing rate Engineering Support Services is prepared to assist Businesses in selecting and applying the most advanced and applicable of design automation approaches. The obvious benefits of reduced design office costs with improvement in drawing accuracy and quality are the results of using this service.
PROJECT SERVICES

DESIGN OFFICE IMPROVEMENT - CONSULTANCY

* Survey of design office organisation and procedures.
* Training of design office staff to improve efficiency (guidance in management, IR, financial control and budgets).
* Guidance in operation of Business standards organisation.

DESIGN AUTOMATION (COMPUTER AIDED DESIGN)

* Training middle management and drawing office supervisory staff in appreciation of D.A. techniques.
* Selection and training of drawing office staff on D.A. equipment.
* Recommend equipments procedures for automatic generation of production drawings and support information (including printed wiring artwork and detail drawings).
* Guidance in establishing information retrieval systems.
* Management of parts classification systems.
* Recommendation for equipment for D.A. and C.A.D. etc.

GENERAL SERVICES

LIAISON INFORMATION SERVICES

* Liaison with Design, Management Services and Design Support areas such as Value Engineering, Industrial Engineering, Standards, Production specialists.
* Liaison, co-ordination and participation with outside professional, Governmental and industrial activities.

STANDARDS - INFORMATION SERVICES

* Publication of standards - maintenance of standards.
* Information Service - profiles, reports, abstracts.
* Standard part numbering system information.

Auditing compliance with Company policies for Business Managers - and co-ordinating Company-wide and intra Business standards practices and control.
Value Engineering

Value Engineering is a discipline which improves the value of the products of a Business by ensuring the achievement of the required functions at minimum cost.

It is often thought to be just another Cost Reduction technique, but during the past few years our experience of its application within the Company has shown it to have a far more fundamental impact on the success of a Business. It frequently results in many other benefits such as reduced number of parts, shorter lead time into production, improved quality and reliability, easier production and reduced weight.

It is a discipline which should be applied by all concerned with a product from the initiation of design (using Cost Targeting) until late in the production run. It should become a way of life with the designer, and all concerned with production.

The return on investment in formal Value Engineering studies will depend on the type of product and the stage at which it is applied. It will almost certainly yield between two and ten times the investment from the first year's cost savings in any project in addition to reducing production delays and consequent losses on production.

Engineering Support Services can offer the following services to assist in the successful application of Value Engineering to your Business.
PROJECT SERVICES

TRAINING - BUSINESS PERSONNEL
* 45 hour Workshop Seminars
  - Line Personnel
* 1 Day V.E. Indoctrination
  - Management
* Task Team Studies and Training
  - Line Personnel
* Advanced or Special Training for V.E. Managers and specialists.

PRODUCTS & PROCEDURES EVALUATION STUDIES
* Conducting Independent Studies - Product and Procedure Value Audits.
  1) Recommending Areas, Products or Procedures for V.E.
  2) Recommending specific improvements
* Leading Task Team V.E. Studies
  1) Instructing Task Teams
* Assisting in Design Reviews
* Conducting Creative Sessions

V.E. & C.T. ORGANISATION & OPERATION - CONSULTING
* Business and Product Analysis to recommend V.E. Programme. (V.E. Organisations, Activities, Relationships)
* Selection and Staffing of V.E. Organisation.
* Cost Reduction and Cost Targeting Programme Consultation (How to establish and operate programmes).
* Guidance in compliance and achievements related to Customer V.E. Requirements.

GENERAL SERVICES

Auditing Performance of V.E. Programmes and compliance with Company Policy, for Business Managers.
* Product and Programme Value Audits.
Training and Guidance in V.E. and C.T. with Suppliers and Customers.
Liaison Service between Businesses and Functions.

V.E. INFORMATION SERVICES
* Information on new products, processes, materials, sources and methods.
* Information on sources of specialised knowledge (in and outside Company)
* New Design practices, techniques, approaches and case histories or examples with potential application.
* Value Engineering, Cost Reduction, Cost Targeting Literature and Training Aids.
Industrial Engineering is concerned with the design, improvement and installation of integrated systems of men, materials and equipment aimed at the economic production of goods and services. It is a fact finding, analysing, measuring, controlling and simplifying function essential to modern business. Industrial Engineers draw upon specialised knowledge and skill in the mathematical, physical and social sciences, together with the principles and methods of Engineering analysis and design, to specify, predict and evaluate the results of their actions.

Business management should look to their Industrial Engineering function to be engaged in the following activities to effect ever increasing economies in the manufacturing areas:

1. The selection of processes, methods, tools and equipment, including mechanisation, automation and special-purpose machinery.
2. The design of facilities, including building layout, machines, equipment, material handling equipment, and storage facilities.
3. Design and/or improvement of planning, control and maintenance systems.
4. Development of cost estimating, control and reduction systems.
5. Product development, improvement and design for manufacturing feasibility.
6. Development of performance measures and standards (work study, measurement, simplification, motion study).
7. Job evaluation and development, installation of wage incentive and productivity improvement systems.
8. Design and installation of data processing systems to service manufacturing and production.
9. Organisational planning and the development of systems, procedures and policies for the industrial areas.

Engineering Support Services consultants are well qualified to give guidance and instruction to Businesses in all the above areas of Industrial Engineering.
PROJECT SERVICES

TRAINING

* Orientation for Business Management (General and Functional) in:
  (1) I.E. Organisation, techniques and concepts.

* Depth or Advanced Training for Industrial Engineers in all the above areas including:
  (1) One week special technique training for I.E.’s
  (2) One week training in Capital Equipment Project Evaluation.
  (3) One week training in Cost Control and Cost Estimating.
  (4) Seminars on new materials, products, process, methods etc.
  (5) Other specialised courses.

ORGANISATION & OPERATION CONSULTANCY

* Business and Product Analysis to recommend appropriate organisation, staffing, activities and relationships including manpower selection and development.

* Provide in depth consultancy service to General and Functional line management in the following I.E. areas.
  (1) Productivity Management (Bargaining, evaluation, negotiations)
  (2) Job Evaluation
  (3) Work Study, measurement (MTM 1, 2, 3, UMS)
  (4) Works Engineering (Preventive Maintenance)
  (5) Plant Layout and Facilities Planning

  (6) Materials Handling, Packaging, Storage, Movement
  (7) Manufacturing methods, mechanisation
  (8) Capital Expenditure, Application, Preparation and Evaluation
  (9) Product Manufacturing Feasibility
  (10) Cost Reduction, Profit Improvement, V.A.
  (11) Cost Estimating and Control, Standard Costs
  (12) E.D.P. Application, I.E., Design
  (13) Production Engineering, Tool Design

GENERAL SERVICES

Monitoring or Auditing Performance in all the above I.E. areas for Business General and Functional Management relative to Company or Business Policies and Preferred Procedures or Practices.

Liaison among Functions, Businesses, Outside bodies, and Corporate Staff in all I.E. related areas.

Provide all Businesses with an Information Service including:

* Bulletins and Publications
* New Concepts, techniques and technical information
* Manpower availability, procurement, development
* Sponsoring and administering Councils, Working Parties, Conferences, Meetings, Idea exchange sessions etc.
* National and International Industrial, Professional and Governmental Organisation, Conferences, Exposition etc.
* Developing, Preparing, Writing and Distribution of Policies and Procedures.
* Supply Text Book Material in specialised Industrial Engineering fields.
Quality Control

Organisations, activities and management disciplines or techniques aimed at achieving Total Quality Control/Assurance are an essential part of modern business. Product and operational complexities necessitate a systematic approach employing numerous advanced techniques to assure product quality achievement at minimum cost. Engineering Support Services can assist Business management to establish and develop a Total Quality Control programme to best suit your particular needs with optimum cost effectiveness.

Your Business can use some assistance in the Quality and Reliability areas if:

1. Total Quality Costs are over 4% of Sales.
2. 90% or more of Quality, Inspection and Test personnel are doing acceptance (appraisal) work.
3. Inspector/Operator ratios are higher than 1/12.
4. Rejection rates are higher than 1% to 4% for various shops,

and numerous other criteria for evaluating the cost effectiveness of a Quality programme are in excess of desirable levels for efficient Business operation.

Significant profit improvement can be achieved while assuring that customers will receive Quality Products. Engineering Support Services is prepared to offer this assistance as detailed by the following outline.
PROJECT SERVICES

TRAINING

* 20 day comprehensive training for Quality Managers and Engineers.
* Quality Control Orientation/Indoctrination for General Managers and Functional Managers.
* Specific training in certain selected areas of Quality Control, - Statistics, Q. Planning, Q. Costs etc.

ORGANISATION & OPERATION - CONSULTATION

* Business and Product Analysis to recommend Q.C. Organisation and activities to meet needs of Business and comply with Company Q. Policy
* Selection and staffing of Q.C. Organisation
* Quality Cost Reduction Programme guidance
* Quality Audit of System and Organisation
* Assistance in establishing Q. Audits of systems and Organisation
* Guidance in establishing Defect Prevention Programmes and activities.

PRODUCT RELATED QUALITY CONTROL - CONSULTATION

* Audits of Product from Quality and Reliability Aspects.
* Quality guidance during Design and Development (Design Review participation)
* Assistance in Supplier Evaluation and Rating schemes.
* Special investigations - Defect analysis and Product Studies to recommend methods for improving Quality and Reliability - reducing defects and Q. Costs.

GENERAL SERVICES

* Auditing Performance of Q.C. Programmes and compliance with Company Policy for Business Managers.
* Product and Programme Quality Audits.
* Liaison service between Business, Corporate Staffs and outside bodies (Governments, Professional and Industrial).
* Administering activities of the Quality Council aimed at improving communication among Businesses, professional development and Business Quality Systems.

QUALITY INFORMATION SERVICES

* Publications of new Quality Control procedures, techniques, equipment etc.
* Membership in the Quality Council.
THE EXPERIENCE AND MANPOWER WITHIN ENGINEERING SUPPORT SERVICES

F.S. (Fred) Sherwin, Engineering Support Services Manager has 31 years of diversified Industrial experience in Product Design, Development and Manufacture. A graduate Mechanical Engineer (BSME Registered Professional (Chartered) Engineer). He spent 14 years in the Aircraft Engine field, 3 years in Plant Equipment Sales Engineering, and 14 years in the Electrical, Electronic Systems and Components Businesses. Business affiliations were Wright Aero Corp., Steam Specialty Co., GE (US), Raytheon. His experience was in Test Engineering, Manufacturing Engineering, Design Engineering, Production Liaison Engineering, Quality Control and Value Engineering. He was a founder and past president of the Society of American Value Engineers, a fellow and life member. He has been a consultant to the Plessey Company since 1968.

B.S. (Bert) Cheek, Design Support and Standards Executive, attended S.E. Essex Technical College and Borough Polytechnic. With an H.N.C. in Electronics he has over 25 years experience first in Ministry of Supply and then with Marconi W.T. Co.; Hilger and Watts Ltd., H.W. Sullivan Ltd. and Plessey (1951). With numerous Design Office appointments and Engineering Service Management Assignments he is well qualified by training and experience in the Design Support areas. Most recently Technical Computing Manager and Company Engineering Standards Co-ordinator, he has a wide detailed knowledge of the Company. For the past 5 years he has developed extensive knowledge of Computer Aided Design (CAD), Design Automation and Automated Drafting Aids. A member of The British Institute of Management.
M.B. (Mike) Cotton, Value Engineering Executive, has 30 years of industrial experience in product design, development and manufacture. A graduate Electrical Engineer (B.Sc.Hon), F.I.E.E., M.I. Mech. E. and M.I. Prod. E. His industrial experience includes management in aluminium production, development of T.V. controlled guided missiles, managing development of aircraft controls and instrumentation, Nuclear Power Station controls and safety devices, managing a business in electronic systems and components and an industrial consultant. He has eleven years with the Plessey Company as Technical Manager, Divisional Manager, planning and developing new products in Australia and Value Engineering Executive at Ilford.

W.D. (Don) Weston, Assistant Value Engineering Executive, has spent 22 years with Plessey in a variety of technical and management positions. After graduating in pure science at the University of Wales, he spent a period as an education officer in the R.A.F. at No. 4 School of Technical Training. Within Plessey he has spent a total of 16 years on R & D work including 10 years at the Allen Clark Research Centre. Following a series of engineering appointments at Worcester concerned mainly with products from new technologies, he was, for nearly four years, Divisional Manager of the Chemical and Metallurgical Division. His experience has covered all aspects of engineering and general management in the areas of electronic components, materials and processes.

J.G. (John) Gill, Production Engineering Executive, is a chartered engineer and member of the Institutes of Mechanical & Production Engineers (M.I.Mech.E and M.I. Prod. E). His experience includes 17 years of diversified work in product design, development and manufacture. He joined the Plessey Co. in 1960 as a Mechanical Engineer responsible for the design and packaging of Airborne and Military Communications equipments. Following a period of 3 years spent in various Value Engineering appointments throughout the Dynamics Group he was appointed Industrial Engineering Manager in Aerospace Electrical Systems Business. In this appointment he has been involved with the introduction of a diversified range of industrial products, being responsible for all the production aspects of product development, capital investment, factory layout and facilities planning.

A.B. (Alistair) Morrin, Industrial Engineering Training Executive, is a Mechanical Engineer who has spent most of his industrial career in productivity improvement. He was General Manager of a Division of H.B. Maynard and Company, the I.E. Management Consultants. Previously with Honeywell responsible for Work Study, Plant Engineering and Facilities Planning. Experience includes work standards, MTM, especially in skilled areas, plant layout, factory removals, materials handling, design of wage structures, job evaluation, productivity bargaining, management control systems, and operator training. Has worked in Germany, France and Switzerland on Industrial Engineering, was an initiator of MTM in Britain and is Chairman of the Association. Plessey activities have included Industrial Engineering Training, guiding and consulting on productivity improvement programmes in skilled areas.
J. (Jeff) Higham, Material Handling and Packaging Executive, read Honours Mathematics at Edinburgh University. Trained in Industrial Engineering and Operational Research with the Philips Group, has spent over fifteen years in those fields and management services, mainly in the electronics and distributive industries. He has four years in Management Consultancy covering assignments in production and material control, industrial engineering and materials handling. He worked for some time in City financial firms making a specialisation of warehousing and distribution problems and was responsible for design and completion of a £2 million automated warehouse. He is a member of the Institute of Materials Handling. He joined Plessey in 1970 in the Materials Business as a Chief Industrial Engineer and Management Services Manager, before moving to Corporate Staff.

S.J. (Jim) Howard, Cost Estimating and Work Study Executive, is involved in Productivity Improvement Programmes, Estimating, Work Study, Production, Engineering and Cost Reduction activities. Previously he was employed by the Aerospace Electrical Systems Business as Estimating Manager and Cost Manager. Over a period of 14 years he worked for C.A.V. Acton, Redifon and Aeronautical and General Instruments in the shops (A.G.I. only), Time Study and Cost Reduction embracing machining, Instrument Shop, Electrical and Mechanical Assembly and Sheet Metal Shop activities. He also spent 4 years in the R.A.F. on aircrew duties. He is a member of the MTM Association and Society of Engineers and holds Higher National Certificates for Production and Mechanical Engineering.

C. (Cliff) Marland, Cost Control Executive has thirty years experience in the electro-mechanical production field, combining an apprenticeship with Work Study, Method Planning, Estimating, Cost Reduction and Cost Control activity with line, group and Company management experience. He spent four years in the production of large non-standard transformers with Messrs. Ferranti Limited; six months in the mass production of domestic appliance components with Ormond Engineering and four years in the small/medium batch production of electronic equipment with Murphy Radio (Electronics Division). An Associate Chartered Production Engineer.

D.W. (Doug) Powell, - Production Equipment Manager is a chartered mechanical engineer (M.I. MECH.E) with mechanical engineering experience of 28 years, a considerable amount of which has been in the design and development of special purpose machines for a wide variety of products and Companies. (Electric lamps, glass working, coil winding, resistors, capacitors, transistors, telephone exchange equipment). With extensive knowledge of organising for mechanisation, design for mechanised means of production and the technical and financial analysis of production equipment projects he has served on Corporate staff since 1966.
The Engineering Support Services Organisation pledges to uphold the highest standards of Professional Practices and Codes of Ethics. These principles are as follows:—

Engineering Support Services will:—

(1) Only undertake work for clients after a careful analysis of the problem and assurance that they have the competence to solve the problem or are capable of making recommendations which will give desirable results. Objectivity and Integrity are the chief professional characteristics of all work.

(2) Treat any knowledge or information acquired in their work with utmost confidence and of a Business proprietary nature. Reports on findings and recommendations will only be made to clients and will only be charged with their prior concurrence.

(3) Make honest cost and time estimates of work involved and will make every effort to complete the project within estimated time. Extensions will only be acceptable in unusual circumstances, or in the case of mutually agreed expanded scope.

(4) Charge fixed fees for services which are reasonable and appropriate to the work and responsibility assumed, and if possible are agreed in advance. The fees will not be related in any way to the benefits accrued to clients, nor are there any guarantees related to amounts of cost reductions or profit improvement. Charges will not be made for diagnosis or problem definition work. Standard fees will apply to Preliminary Surveys and Studies.
(5) Endeavour to provide lasting and permanent benefits, supplying complete information so that all improvements can be self-implemented.

(6) Not enter into any discussion with clients' personnel regarding changes in employment by any member of either group, without prior management approvals.

(7) Not undertake engagements or negotiate for work where freedom of independent analysis, and recommendations is in any way influenced or restricted, or in competition with other consulting organisations.

(8) Not accept fees, commissions or any other valuable consideration from any organisation whose equipment, supplies or services may be recommended to clients.

(9) Recommend other Company or outside Consultants or organisations for work where early diagnosis, problem identification or preliminary surveys indicate the type or scope of work is outside their capabilities.

(10) Operate at all times to make maximum use of clients' personnel to keep them appraised of and involved in the work, to make them a part of the development of the recommendations, to assist in their personal training and development and ability to implement and maintain proposed new procedures and to ensure that clients' staff so involved receive due recognition for achievements.

(11) Offer or reveal to clients all opportunities for improvements uncovered or developed during any work whether related or not to the work contracted.

(12) Strive for complete customer satisfaction.
Fees for Engineering Support Services project consulting work will be on a per diem which is based on recovery of the units annual expenses and considering 70% compensated utilisation of the consultants time. It is anticipated that fees will be more economical than outside consultants. Only agreed on contracted work will be billed to Businesses.

Fees for project work will probably be in the range of £60 - £100 per man day depending on utilisation, length of assignment, type of work, departmental costs and other factors which will be taken into consideration in contract pricing. Fees will be all inclusive including job related travel, clerical, publications, departmental overhead, etc. If the project entails any special extra expenses they will be separately identified and agreed with the client.

Charges for other services such as information, communication, co-ordination and maintaining Companywide programmes will be apportioned out on a subscription basis to the participating or benefiting Businesses based on Engineering Support Services costs.

Other short time work done by consultants for Businesses will be charged on an hourly rate, time accumulated, and included in monthly bills.

Requests for further information or project estimates should be made to:

Engineering Support Services
The Plessey Co.Ltd.,
Vicarage Lane,
Ilford, Essex.

F.S. SHERWIN -
Telephone Number 01-478 3040
Extension 2155
Telex 23166

How Project work is contracted

When a Business Manager makes an inquiry Engineering Support Services Manager or a consultant will meet with him to discuss the project. If the work appears to come within our capability spectrum an initial free analysis (one to three days on an average) will be made. From this analysis a draft proposal will be prepared and discussed with the potential client. When the work description and terms are agreed a formal proposal (letter contract) will be submitted. The clients signature on a copy will authorise the work to proceed. Interim and final reports will be issued to the client.

It is our policy to divide project work into incremental phases to give clients greater flexibility in dealing with us and to permit progress and results appraisal at suitable intervals without long term commitments. These phases will be identified in the proposal and may be preceded by a Preliminary Study Phase, during which the Project Work Phases content and scope will be identified and defined in detail. Often the Preliminary Study Phase will develop enough conclusions and recommendations so that further assistance from Engineering Support Services consultants is not required.
BENEFITS FROM ENGINEERING SUPPORT SERVICES

Why you should engage Engineering Support Services.
One of the advantages of being a part of a large diversified corporate structure is the internal cross fertilisation of ideas and information which results from communication among the various units (Businesses) of the organisation. In addition to their individual expertise resulting from years of service Engineering Support Services Consultants link up the various Businesses of the Company as the channel of communication. Wide Utilisation of Engineering Support Services by the Businesses will ensure continuation of the technical integration of the Company.

Many of today's large corporations are establishing or strengthening their internal corporate consultancies because they have determined that this is far more cost effective than using outside consultants, particularly in the technical areas. Why is this? . . . because internal consultants offer the following advantages:

* Greater knowledge of Company practices, policies, procedures, people, products, organisations, relationships, facilities, etc.

* Faster start up times on projects and possibly quicker completion.

* Project follow through by same consultant, who is more readily available for follow up and implementation.

* Companywide use of the information or methods.

* Information is Company Confidential, not made available to competitors.

* As Company employees they have more incentive to perform well.

* Do not have functional or departmental allegiance and can operate more objectively.

* Money for Engineering Support Services spent in the Company not for profit of outside consultants.

* A better, more integrated team approach is used because of multidisciplined experience available in Engineering Support Services.

* A minimum disruption of day to day operations compared to outside consultants.

* A basic philosophy of training or educating responsible personnel thus better internal manpower development.

* The development of a central pool of skilled management and technical manpower for filling key line positions.

* A Company centre for short term assignments for senior Company personnel to make wider use of their specialised skills and to help broaden and train future managers.

* More effective utilisation of highly specialised and skilled consultants which individual Businesses would not be able to employ on a full time basis.

* A central pool for staffing peak load or short term requirements in Businesses.

* Engineering Support Services will bring a wider spectrum of industry, government and professional knowledge to bear on creative problem solving.
Brochures to this standard can be printed for any Business at 10% less than the best competitive outside printing price.