

SPECIAL EXPERTISE IN COTTON GINNING

AND RELATED ACTIVITIES

The Manderstam Group is in a position to offer comprehensive services and expertise for cotton ginning projects from its own permanent staff and its close working associates. It is doubtful if any other independent consulting organisation can offer a similar service.

(a) Multi-Disciplined Expertise

All expertise necessary for this project can be offered by the Manderstam Group, i.e. to cover the field work, the breeding, the extension services, the pesticide work, the ginning industry and all other associated activities with cotton processing such as seed multiplication, vegetable oil extraction, socio-economic appraisals, delinting, correct varietal selection, cultural practices and even the linkage into the textile industry and the marketing of all end products.

(b) Expertise in Developing Countries

The Manderstam staff are experienced in operating in a variety of developing countries and particularly those in Asia and the Indian sub-continent. We appreciate the problems, constraints and also the necessity for realistic time schedules in connection with the performance of various tasks.

The group has been working on a series of projects in Indonesia, has operated from 1972 in Egypt (IBRD) on cotton ginnery rehabilitation projects until the end of 1983, in Ethiopia (Government), Sudan (private), Mali (UNIDO), Bangladesh (Government), India (UK), and in Bangladesh (UK and UNIDO), Cyprus (UNIDO). Uganda (UNIDO), Pakistan (ADB) and Indonesia (ADB), Oman (Government), Nigeria (State), the Yemen (Government), Fiji (UK Government), Portugal (IBRD/Government), Algeria (Government), Iran (Government).

Members of the permanent staff have visited the following Asian countries at least once and in some cases several times, for marketing, distribution and/or export potential assessments - Burma, India, Bangladesh, Pakistan, Sri Lanka, Malaysia, Singapore, Indonesia, Brunei, Sabah, and the Philippines.

Assignments have also been undertaken in Vietnam and Thailand.

This accumulation of experience and expertise is very important to any project but it would seem to warrant special emphasis in the context of cotton development.

(c) Current and Recent Involvement in Similar Projects

Egypt

The Manderstam Group has been involved in the cotton ginning modernisation projects in Egypt funded by IDA and Saudi Fund since 1972. The Group prepared the feasibility study and the case for investment in conjunction with the Egyptian Cotton General Organisation. They were involved in the IBRD loan negotiations as part of the Egyptian mission, were responsible for the pre-engineering and design of the project, prepared all specifications for international tender, evaluated responses to invitation to bid documents and recommended where contracts should be placed.

The ensuing project covered site surveys, detailed design and layout of operating buildings and equipment, co-ordination of all civil, electrical, mechanical work leading up to commissioning and operating of four large new modern ginning complexes and ten rehabilitated ginneries. Advising on seed multiplication farms, storage centres and grading and reviewing cultural methods was also included.

Afghanistan

The Manderstam Group prepared the feasibility report for the cotton, vegetable oil and storage requirements for the Asian Development Bank on a national scale in 1977/78 for Afghanistan. Special attention was given to Spinzar area in the north east region. All ginneries and the majority of the collecting centres in the country were visited and appraised during nine weeks of field work by a team of experts. The existing situation and modernisation requirements for each ginnery, oil mill and soap unit were assessed and recorded in a separate section of the final report.

The proposed project was thus conceived in conjunction with Spinzar from the original information and views of the Manderstam Group. In addition, members of the original team participated in the two appraisal missions which re-visited the project area to assist in defining the precise financial and technical parameters which were then discussed and agreed by Government and the ADB.

Members of the Manderstam Group have also acted on specific occasions as advisors to the World Bank (IDA) on the Bahghis cotton project. It is anticipated that they will continue in this capacity when local conditions permit.

Many visits have been made by Manderstam technical personnel to Afghanistan particularly in relation to the cotton crop, cotton ginning, cultural methods, oil milling, soap manufacture and storage. Understanding of the required position, conditions and facilities and constraints in these sectors is fully appreciated. Moreover, the differing and special situations which exist at each of the proposed project centres is fully appreciated following a series of on-site discussions with local management, Spinzar headquarters' personnel, IDBA members and senior members of the Ministry of Mines and Industries.

No other outside organisation is in a position to compete with the Manderstam Group in understanding, and being aware of the purpose, nature, conditions and intentions and policy of Government in the context of this project. Over the years, good relations have been established with personnel at all levels in Spinzar, IDBA,

and MMI. The present situation in Afghanistan has delayed implementation.

Pakistan and Bangladesh

The Manderstam Group has completed (March 1979) an eight week fact finding mission for ADB on the vegetable oil industry in Pakistan. The main basic raw material for this industry is cotton seed. The cotton crop, the ginning industry, storage and the existing condition of expeller and solvent extraction and soap manufacturing equipment were examined in absolute detail and firm recommendations made to increase production and preserve the quality of the seed and lint. In Bangladesh cotton seed could become the base on which a viable vegetable oil industry (import substitution) could be developed.

At&a

The Manderstam Group prepared the initial feasibility study, engineering specifications and tender documents on a national basis for the expansion of the vegetable oil industry in Algeria based on cotton, saffa-flower and sunflower crops. Bid evaluations were completed for a complex to include multi-oil seed processing units, an oil refinery, a large soap factory, units for fat splitting and distillation and glycerine recovery. The project also included the provision of all port storage facilities, services and utilities and the introduction of efficient effluent treatment systems. The client was the Government.

Indonesia

The Manderstam Group have completed a study for the development of the cotton sector in Sulawesi. A team of six experts examined the feasibility of expanding cotton production in this area of Indonesia. Such things as soils, probable varieties, essential infra-structure, research, development and extension requirements in addition to processing and storage were assessed. This in fact could be regarded as an almost identical project to that envisaged for the development of the cotton development in Bangladesh.

Equatorial Guinea

The Manderstam Group acted as consultants to UNIDO for the rehabilitation of the palm oil industry in Equatorial Guinea. The installations are small and scattered and the whole industry had to be restructured.

Mali

The Manderstam Group acted as consultants to the state-owned company in Mali responsible for the rehabilitation and expansion of vegetable oil extraction, refining and soap manufacture and the expansion of the cotton crop. The main raw materials for the vegetable oil industry are cotton seeds and groundnuts. The Kuwait Fund sponsored this project.

United Nations Publication on Vegetable Oils

Under assignment from UNIDO the Manderstam Group prepared the manual "Guidelines for the Establishment and Operation of Vegetable Oil Factories". This has been distributed throughout the world in a series of different languages - UN publication No. ID 196. The manual covers the major oil bearing materials, production, organisation and management and incorporates case studies, including cotton and cotton seed as the base on which many multi-purpose processing equipment items can be based.

Existing Operational Teams

In the case of cotton the Manderstam Group had a resident team of seven experts in Egypt. They were supported by a permanent team of four in the UK plus any other expertise which were required on an ad hoc basis i.e. within the Manderstam Group there is an existing multi-disciplined operational team of more than fifteen people ranging from ginning specialists through civil, electrical and mechanical engineers to agronomists, economists, financial analysts, conveyance experience and involvement in the various specialised sectors of what is often loosely termed the

Equatorial Guinea

cotton industry. These sectors include seed cotton production, movement, collection, grading, breeding, certification, storage, handling, ginning and the design and layout of the various buildings and equipment within these modern complexes and stores and establishing economic modernisation programmes for existing buildings.

In the case of vegetable oils, the Manderstam Group's experience has been continuous over many years. Current involvement indicated above allows attention to be drawn to the internationally recognised expertise of the organisation and also, as is the case in cotton, that the Manderstam organisation can offer an unmatched combination of specialist experience in the growing of the crop and the oil extraction industry with professional skill and up-to-date field experience in the overall aspects of project design, implementation supervision and co-ordination, management and training. Teams of specialists are able to operate in the field or in supporting field operations as members of the UK support teams or at the processing centre.

Certain experts in the civil, electrical, mechanical and services and utility fields have considerable experience in cotton and other agricultural sectors.

Equipment Suppliers

In addition to continuous programmes on design of buildings and equipment layout, the Manderstam Group has also had the unique advantage of continuous contact with all major suppliers of ginning and processing equipment and their associated electrical, mechanical and special conveyance and storage equipment, over a long period of time. The relative merits and associations of each of these major suppliers has been established on the basis of cost/efficiency/reliability/adaptability/ availability criteria.

The Manderstam Group is absolutely independent and has no associations whatsoever with suppliers; the best advice is given to Clients irrespective of source. Information from manufacturers is restricted to the performance of the equipment

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which they themselves will be supplying and this usually requires interpretation and sometimes modification before being incorporated in an overall scheme.

International Experts

Leading ginning experts in the world, recognised internationally and by IBRD are on the staff of the Manderstam Group and work exclusively for the Group.

In the cotton sector there are the important consideration of breeding, soil types, seed purity, storage, seed processing and residues for animal feedstuffs. The Manderstam Group has been involved in cotton processing projects for at least thirty years. There are not many cotton areas in the world which have not been studied by our specialists. Storage expertise and understanding is important, especially bearing in mind the conditions which must be faced in such diverse physical conditions as Egypt and Indonesia.

Growing, Collecting, Storage, Economics

Specialists are also available within the Manderstam Group with wide experience in many cotton growing countries of the world. They are able to cover such aspects as:

- i) The growing and movement of the crops through collecting centres or distribution points to the processing plants.
- ii) Storage and other factors which adversely affect the quality of raw materials, intermediates and wherever appropriate the packaging of end products.
- iii) Assessment and breakdown of selected operating costs into more detailed components within the processing complexes and within individual units.

Spare parts and Ability to Organise Supply

Many new installations and old are handicapped in meeting their production schedules by lack of adequate numbers and correct type of spares. Clients often pay little attention to this aspect of equipment purchase and rely too much on suppliers'

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recommendations, which can in many cases end up with a financial burden many times greater than is necessary, and stocks of spares whose turnover is low, ultimately resulting in redundant stock.

Our specialists give a unique service to a Client by vetting suppliers' spares lists and establishing:

- a) Daily, weekly or monthly usage.
- b) Possibility of Client manufacture.
- c) Minimum and maximum levels for re-ordering purposes.
- d) Reducing Client's financial outlay.

Preparation of detailed manuals for preventative maintenance instructions have proved invaluable in assisting the ginner to keep his plant in operation.

We provide facilities and specialists for the training of the Client's personnel in stores procedures and purchasing techniques and where the Client requests it, purchasing and progressing of spare parts can be arranged from our United Kingdom offices.

Equatorial Guinea

List of Projects by Country, Company and Location

EGYPT

Client: NILE GINNING COMPANY
Location: ITAY EL BARUD
No of Gins: 144

Prepared site surveys, design data for civil construction on accommodation, administration, operational buildings; mechanical and electrical layouts for cotton process plant, weighing equipment, steam generation and seed sorting and fumigating equipment. Responsibility for site supervision and commissioning of civil and mechanical equipment.

Client: NILE GINNING COMPANY
Location: ZIFTA
No of Gins: 60

Responsible for proposals for maintaining existing production and preparing designs for new steel structural operational building designs and civil foundations. Preparation of machinery layouts and tender and evaluation. Site supervision of all civil, mechanical and electrical erection and commissioning.

Client: NILE GINNING COMPANY
Location: KAFR EL ZAYAT
No of Gins: 60

Responsible for proposals for maintaining existing production and preparing designs for new steel structural operation building designs and civil foundations, tender documents and evaluation and award of contracts. Preparation of machinery and electrical layouts, tender documents and evaluation. Site supervision of all construction and machinery commissioning.

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Client:

Location:

No of Gins:

MISR GINNING COMPANY

ZAGAZIG

144

Responsible for all designs surveys for non-operational and operational buildings for new ginnery. Preparation of all tenders, specifications and evaluation for civil, mechanical and electrical equipment. Site supervision for civil and equipment erection and commissioning.

Client: MISR GINNING COMPANY

Location: ABOUTIG

No of Gins: 60

Responsible for proposals for maintaining existing production and designing, building and supervising installation of new steel structural operational buildings on same site.

Client: MISR GINNING COMPANY

Location: DAIRUT

No of Gins: 68

Responsible for preparation of site surveys and designs for the rehabilitation of existing operational buildings for the accommodation of new cotton process plant. Preparation of all specifications, tender and evaluation documents for civil, mechanical and electrical equipment. Site supervision of all construction and equipment installation.

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Client: ARAB GINNING COMPANY
Location: BENI SUEF
No of Gins: 72

Responsible for all designs surveys for accommodation, administration and operational buildings for new 72 ginstand complex. Preparation of all tenders, specifications and evaluation for civil, mechanical and electrical installation and commissioning.

Client: ARAB GINNING COMPANY
Location: ZIFTA
No of Gins: 60

Responsible for proposals for maintaining existing production and preparing designs for new structural operational building designs and civil foundations. Preparation of machinery layouts, tenders and evaluation. Site supervision of all civil, mechanical and electrical erection and commissioning.

Client: ARAB GINNING COMPANY
Location: DIYARB NIGM
No of Gins: 60

Responsible for structural steel building designs for blending hall and ginning halls. Preparation of machinery layouts, tenders and evaluation. Site supervision of all civil, mechanical and electrical erection and commissioning.

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Client: WADI GINNING COMPANY
Location: KAHR EL ZAYAT
No of Gins: 72

Responsible for all civil building designs for bulk stores blending and ginning halls. Preparation of machinery layouts, tenders, specifications and evaluation for civil, mechanical and electrical equipment. Site supervision for civil and equipment erection and commissioning.

Client: WADI GINNING COMPANY
Location: MINIA
No of Gins: 72

Responsible for preparation of site surveys and designs for the rehabilitation of existing operational buildings for the accommodation of new cotton process plant. Preparation of all specification, tender and evaluation documents for civil, mechanical and electrical equipment. Site supervision for civil, mechanical and electrical erection and commissioning.

Client: DELTA GINNING COMPANY
Location: KAHR EL DAWAR
No of Gins: 68

Responsible for preparation of site surveys and designs for the rehabilitation of existing operational buildings for the accommodation of new cotton process plant. Preparation of all specifications, tender and evaluation documents for civil, mechanical and electrical erection and commissioning.

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Client: DELTA GINNING COMPANY
Location: MITYAZID
No of Gins: 60

Responsible for proposals for maintaining existing production and preparing designs for new structural operational building designs and civil foundations. Preparation of specifications, tenders and evaluation documents for civil, mechanical and electrical erection and commissioning.

Client: DELTA GINNING COMPANY
Location: SHIRBIN
No of Gins: 72

Responsible for all designs surveys for non-operational and operational buildings for new ginnery. Preparation of all tenders, specifications and evaluation for civil, mechanical and electrical equipment. Site supervision of all civil, mechanical and electrical erection and commissioning.

Client: WADI GINNING COMPANY
Location: TALA
No of Gins: 72

Responsible for extensive testing and evaluation over period of eighteen days on the basis of two shifts per day of six manufacturers ginning machines. Reports and recommendations produced for client and World Bank.

All the above sites have extensive fire fighting arrangements desi

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UGANDA

Client: SOUTH BUKEDI COOPERATIVE UNION
Location: BUSOLWE No of Gins: 20 DR
DABANI No of Gins: 20 DR

Responsible for detailed engineering survey of existing equipment and buildings at both sites. Preparation of engineering and financial proposals and design for the rehabilitation of the existing ginnery complexes covering both operational and non-operational buildings and services. Preparation of all specifications and tender documents. Site supervision of all construction, equipment installation and plant commissioning also formed part of Manderstam's responsibility.

A critical aspect of this project was the necessity of keeping the ginneries operational whilst rehabilitation works were in progress. The detailed planning and coordination of the various activities to make optimum use of the 'close season' was of paramount importance.

Client: MASABA COOPERATIVE UNION
Location: LUKONGE
No of Gins: 20 DR

A full engineering and financial survey of the ginnery was carried out and proposals and designs for rehabilitation were presented. The current low cotton crop in the area served by the ginnery combined with some uncertainty concerning the recovery of cotton production to former levels, required the rehabilitation proposals to be carefully balanced to ensure that the Client would not be financially stretched.

The project included preparation of all specifications and tender documents together with site supervision of construction, equipment installation and plant commissioning.

All the above sites have extensive fire fighting arrangements designed by us.

Equatorial Guinea

Client: NORTH BUKEDI COOPERATIVE UNION
Location: IKI IKI No of Gins: 20 DR
KABOLE No of Gins: 20 DR

Responsible for full engineering survey of equipment and buildings at both ginneries. Preparation of proposals for the rehabilitation of the operational and non-operational buildings and services together with preparation of all specifications and tender documents followed by site supervision of construction, equipment installation and plant commissioning.

Client: TESO COOPERATIVE UNION
Location: BUGONDO
No of Gins: 14DR

The engineering and financial survey carried out by Manderstam at this ginnery revealed that full rehabilitation was not viable in relation to the existing cotton production in the area. The ginnery however, plays a vital role in the seed multiplication system making it essential that it remain not only operational but also highly efficient, thereby ensuring early availability of planting seed. These special factors required us to recommend Ministry of Agriculture support for the ginnery and its rehabilitation until such time as production levels increase and enable the ginnery to become a profitable unit. Upon conclusion of the co-financing arrangements Manderstam will proceed with tender preparation followed by site supervision of construction, installation and commissioning.

Client: LANGO COOPERATIVE UNION
Location: NAMASALE
No of Gins: 1ODR

A detailed survey of this extremely remote ginnery was carried out by Manderstam. Like Lukonge ginnery the current low throughput levels required the rehabilitation

All the above sites have extensive fire fighting arrangements designed by us.

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proposals to be carefully designed and balanced to ensure that they would not financially stretch or overburden the client.

Preparation of all specifications and tender documents together with site supervision of construction, equipment installation and plant commissioning also form part of our responsibility.

Client: LANGO COOPERATIVE UNION
Location: PALANGO
No of Gins: 2ODR

The engineering and financial survey carried out by Manderstam at this ginnery revealed that rehabilitation was not financially viable. The low cotton production in the area, both current and projected, simply could not support the large investment needed to restore the ginnery to an operational condition, and after taking into account the capacity of the other ginning facilities owned by the client in the area we recommended that Palango ginnery remain silent.

Client: EAST ACHOLI COOPERATIVE UNION
Location: PARANGA
No of Gins: 2ODR

Responsible for a detailed survey of existing equipment and buildings.

It was recommended to shelve rehabilitation of this factory until the client's only other ginning facility becomes operational.

Client: SOUTH WEST NILE COOPERATIVE UNION
Location: PAKWACH
No of Gins: 3ODR

All the above sites have extensive fire fighting arrangements designed by us.

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All the above sites have extensive fire fighting arrangements designed by us.

Responsible for a detailed engineering survey of existing equipment and buildings. Preparation of engineering and financial proposals and design for the rehabilitation of the existing ginnery complex covering both operational and non-operational buildings and services. Preparation of all specifications and tender documents followed by site supervision of construction, equipment installation and plant commissioning.

AEGILANISIAN

The feasibility study and its recommendations with respect to the Afghan ginning industry were accepted by the Afghan Government and the Asian Development Bank.

The sites which were visited and for which recommendations for updating were made with respect to collection, storage and ginning were as follows:

NORTH EAST REGION

Location: KUNDUZ

Pneumatic seed cotton handling from reception to stores to ginneries. 3 Gin unit with drying, pre-gin cleaning and single stage lint cleaning. Pneumatic cotton seed handling from gins to stores and to oil mill.

Cotton seed aeration systems.

Electric power generation equipment.

Transport for internal and external use.

Mobile fire fighting equipment.

All the above sites have extensive fire fighting arrangements designed by us.

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250 tonnes/day oil mill unit with refinery, ghee and soap unit and stores.

Necessary buildings and civil works.

All the above sites have extensive fire fighting arrangements designed by us.

Location:

BAGHLAN

Pneumatic seed cotton handling from reception to stores to ginneries.

3 Gin unit with drying, pre-gin cleaning and single stage lint cleaning.

Pneumatic cotton seed handling from gins to stores and to bulk transport trucks.

Cotton seed aeration systems.

Electric power generation equipment.

Internal transport.

Mobile fire fighting equipment.

Necessary buildings and civil works.

TALOQUAN

Pneumatic seed cotton handling from reception to stores to ginnery.

2 Gin unit with drying, pre-gin cleaning and single stage lint cleaning.

Pneumatic cotton seed handling from gins to stores and to bulk transport trucks.

Cotton seed aeration systems.

Electric power generation equipment.

Internal transport.

Mobile fire fighting equipment.

Necessary buildings and civil works.

Location: KHAWJAGHAR

Pneumatic seed cotton handling from reception to stores to ginneries.

3 Gin unit with drying, pre-gin cleaning and single stage lint cleaning.

Pneumatic cotton seed handling from gins to stores and to oil mill.

All the above sites have extensive fire fighting arrangements designed by us.

Location:

BAGHLAN

Cotton seed aeration systems.

Electric power generation equipment.

Internal transport.

Mobile fire fighting equipment

Necessary buildings and civil works.

All the above sites have extensive fire fighting arrangements designed by us.

Location:

DASHTI ARCI

Pneumatic seed cotton handling from reception to stores to ginneries.

2 Gin unit with drying, pre-gin cleaning and single stage lint cleaning.

Pneumatic cotton seed handling from gins to stores and to oil mill.

Cotton seed aeration systems.

Electric power generation equipment.

Internal transport.

Mobile fire fighting equipment.

75 tonnes/day oil mill unit.

Necessary buildings and civil works.

Location: IMAM SAHIB

Pneumatic seed cotton handling from reception to stores to ginnery.

Cotton seed aeration systems.

Electric power generation equipment.

Internal transport.

Mobile fire fighting equipment.

Necessary buildings and civil works.

Location: QUALAIZAL

Pneumatic seed cotton handling from reception to stores to ginneries.

2 Gin unit with drying, pre-gin cleaning and single stage lint cleaning.

Pneumatic cotton seed handling from gins to stores and to bulk transport trucks.

Cotton seed aeration systems.

Electric power generation equipment.

Internal transport.

All the above sites have extensive fire fighting arrangements designed by us.

Location:

DASHTI ARCI

Mobile fire fighting equipment.

Necessary buildings and civil works.

All the above sites have extensive fire fighting arrangements designed by us.

SOUTH WEST REGION

Location: LASHKARGAH

Pneumatic seed cotton handling from reception to stores to ginneries.

Pneumatic cotton seed handling from gins to stores.

Cotton seed aeration systems.

Internal transport.

Mobile fire fighting equipment.

75 tonnes/day oil mill unit with refinery, ghee and soap unit and stores.

Necessary buildings and civil works.

Location: GIRISHK

Pneumatic seed cotton handling from reception to stores to ginnery.

Pneumatic cotton seed handling from gins to stores and to oil mill.

Cotton seed aeration systems.

Electric power generation equipment.

Transport for internal and external use.

Mobile fire fighting equipment.

150 tonnes/day oil mill unit with refinery, ghee and soap unit and stores.

Necessary buildings and civil works.

WESTERN REGION

Location: HERAT

Pneumatic seed cotton handling from reception to stores to ginneries.

2 Gin unit with drying, pre-gin cleaning and single stage lint cleaning.

All the above sites have extensive fire fighting arrangements designed by us.

SOUTH WEST REGION

Pneumatic cotton seed handling from gins to stores and to oil mills.

Cotton seed aeration systems.

All the above sites have extensive fire fighting arrangements designed by us.

SOUTH WEST REGION

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Electric power generation equipment.

Internal transport.

Mobile fire fighting equipment.

75 tonnes/day oil mill unit with refinery, ghee and soap unit and stores.

Necessary buildings and civil works.

NORTHERN REGION

Location: MAZAR-L-SHARIF

Pneumatic seed cotton handling equipment from reception to stores to ginnery.

2 Gin unit with drying, pre-gin cleaning and single stage lint cleaning.

Pneumatic cotton seed handling from gins to stores and to oil mill.

Cotton seed aeration systems.

Electric power generation equipment.

Internal transport.

Mobile fire fighting equipment.

200 tonnes/day oil mill unit with refinery, ghee and soap unit and stores.

Necessary buildings and civil works.

Location: BALKH

Pneumatic seed cotton handling from reception to stores to ginnery.

3 Gin unit with drying, pre-gin cleaning and single stage lint cleaning.

Pneumatic cotton seed handling from gins to bulk transport trucks.

All the above sites have extensive fire fighting arrangements designed by us.

SOUTH WEST REGION

Cotton seed aeration systems.

Electric power generation equipment.

Internal transport.

Mobile fire fighting equipment.

Necessary buildings and civil works.

All the above sites have extensive fire fighting arrangements designed by us.

PEOPLES REPUBLIC OF CHINA

Client: EEC
Location: SHANGDOW - INNER MONGOLIA

Provision of on site diagnostic services and identification and costing of current technology required for building a new flax factory at Shangdow to produce 400 tons of combed silver and 800 tons of cotton style flax per year. Comprehensive study of retting, scutching, hackling, carding, doubling, roving, combing, spinning, degumming and bleaching. Proposals were also made for utilities for effluent treatment and dust extraction.

Client: EEC

Location: LANXI FLAX SPINNING AND KNITTING COMPANY

Provision of site survey services for the design of a new flax mill and specifically the requirements and technical know how for operation of a 5,000 spindle machine. Also identification and costing of all equipment and utilities required.

SAUDI ARABIA

Client: ROYAL COMMISSION FOR JUBAIL AND YANBU

Location: JUBAIL, SAUDI ARABIA

Work on the secondary industries in Jubail, Saudi Arabia involved the production of synthetic textile fibres.

All the above sites have extensive fire fighting arrangements designed by us.

PEOPLES REPUBLIC OF CHINA

ANIQLA

Client: COMMISSAO PERMANENTE PARA O
DESENVOLVIMENTO INDUSTRIAL PAR
Location: HUAMBO

For an inception study of an Industrial Park in the District of Huambo, Angola, the establishment was recommended of 17 textile units to produce towels, fancy weavings, Jacquard, high quality woven material, canvas, denim and drill (twill), trousers and jeans, shirts and blouses, work clothes, socks and hosiery, knitted underwear, Jersey knitwear, tricot lingerie and embroidery, using cotton and/or synthetics. The recommendations were substantiated with market studies, plant economics and anticipated profitability. It was also recommended that they set up a 20,000 spindles spinning mill at a later stage of development of the industrial park. The study was carried out for the local government.

CYPRUS

Client: •GOVERNMENT OF CYPRUS
Location: CYPRUS

On behalf of UNIDO, and Industrial Opportunity Survey in the Cyprus non-Turkish occupied area was conducted. This covered and examination of the status of the textile industry, an assessment of its efficiency and of expansion/diversification/ export prospects, with recommendations for immediate and medium term actions.

All the above sites have extensive fire fighting arrangements designed by us.

UGANDA

Client: GOVERNMENT OF UGANDA
Location: UGANDA

On behalf of UNIDO, an Industry and Development Study was prepared for the government of Uganda. This covered, inter-alia, an assessment of the whole textile sector (efficiency, scope for improvement with capital cost estimates and projected turnover, rehabilitation programme).

INDONESIA

Client: PERTAMINA
Location: INDONESIA

In connection with the development of polypropylene manufacturing facilities the textile industry in Indonesia was surveyed for PERTAMINA, a government agency. All aspects were examined and critically analysed, from cotton/synthetic staple fibre blending, spinning, weaving, dyeing and finishing, garment, carpet and sacks manufacture. Raw material substitution was examined in depth for the production of apparel, upholstery, carpets, ropes, filter fabrics and sacks, via the manufacture of polypropylene tape for weaving or twine making, of fibrillated tape, monofilament and staple fibre. A spinning plant capable of producing monofilament and staple was specified and constructed.

ThAILAND

Client: MINISTRY OF OVERSEAS DEVELOPMENT
Location: THAILAND

A comprehensive study of the Development of Export Industries in Thailand was

carried out on behalf of the Ministry of Overseas Development. Sectors relevant to textiles which were covered in detail were Thai silk, cotton, kenaf and kapok.

ETHIOPIA

Client: NATIONAL TEXTILE CORPORATION

Location: BAHR DAR, ETHIOPIA

Acting as consultants to the National Textile Corporation of Ethiopia for the rehabilitation of their integrated textile mill at Bahr Dar, a detailed assessment of the state of the existing plant and machinery has been carried out, together with a review of operating and maintenance procedures.

The project was divided into two phases: the first designed to bring the mill up to a reasonable level of efficiency and to improve the quality of finished fabrics, and the second to increase output by approximately 50%. Detailed cost estimates were prepared and tender documents issued.

BANGLADESH

Client: UNIDO

Location: ALL PARTS

A pre-investment study for the production of synthetic fibres was undertaken, covering cellulosic fibres, polyesters, polyamide, polyacrylics and polyolefines. The study included the current usage of man made fibres in Bangladesh and made forecasts of future demand. The impact of introducing more man made fibres on existing spinning/weaving facilities, (including the handloom sector), was considered and the mill modifications necessary to spin synthetic/cotton blends were specified.

A comprehensive study of the Development of Export Industries in Thailand was

NIGERIA

Client:

Location:

AFRICA PROJECT DEVELOPMENT FACILITY

LAGOS

A techno-feasibility study was carried out for the restructuring of jute bags and carpet backing production on the premises of Abbstal Limited, Lagos.

BURKINO FASO

Client:

Location:

A. MOUSSALI COTANOU

A techno-economic study on the manufacture of sanitary towels and related hygiene good from cotton linters was carried out.

A comprehensive study of the Development of Export Industries in Thailand was