SECTION - 4

LIST OF ELIGIBLE MACHINERY UNDER THE SCHEME

(01-04-1999 to 31-03-2007)
As amended upto 30-04-2005

ANNEX - A

LIST OF THE GINNING & PRESSING MACHINERY ELIGIBLE UNDER TUF SCHEME

Sr. No.	Item	Minimum requirement	
		Large Unit	**Small Unit**
1.	Ginning machines	24 DRs of normal size/22 extra-long DRs /18 jumbo DRs with Autofeeder/3 saw gins (90 saws) or equivalents with a processing capacity of 6-8 bales per hour.	12 DRs of normal size / 11 extra-long DRs /9 jumbo DRs with Autofeeder/ 1 or 2 saw gins with equivalents processing capacity of 3-4 bales per hour.
2	Precleaner	Cleaner with 4 or more beater cylinders/rolls with capacity to suit the processing speed of the ginning machines.	Cleaner with 4 or more beater cylinders /rolls with capacity to suit the processing speed of the ginning machines.
3	Lint Cleaner	Cleaner with 3 or more beater cylinders/rolls with capacity to suit the processing sped of ginning machines	Cleaner with 3 or more beater cylinders/rolls with capacity to suit the processing speed of ginning machines.
4	Kapas Conveyor System	(i) Pneumatic conveyor with Stone Catcher for the first stage from heaps to Ptrecleaner; (ii) Mechanical/Pneumatic conveyor from Precleaner to individual gins. Central Platform system not permitted unless it exists already.	(i) Pneumatic conveyor with Stone Catcher for the first stage from heaps to Precleaner; (ii) Mechanical/Pneumatic conveyor from Precleaner to individual gins. Central Platform system not permitted unless it exists already.
5	Lint Conveyor System	Mechanical / Pneumatic Conveyor (i) from Gins to Lint cleaner; (ii) from Lint cleaner to each Pala Hall and (iii) from each Pala Hall to a) Bale Press Hall in case of existing conventional Bale Press b) Bale Press box through Line slide and Pusher Mechanism in case of modern Bale Press (direct feeding of cotton from Lint Cleaner to Press box permitted)	Mechanical / Pneumatic Conveyor (i) from Gins to Lint cleaner; (ii) from Lint cleaner to each Pala Hall and (iii) from each Pala Hall to a) Bale Press Hall in case of existing conventional Bale Press b) Bale Press box through Line slide and Pusher Mechanisms in case of modern Bale Press (direct feeding of cotton from Lint Cleaner to Press box permitted)

Sr. No.	Item	Minimum requirement	
		Large Unit	**Small Unit**
6	Bale Press	Single stage of hydraulic, autotramping Bale Press with Lint slide and Pusher mechanism for direct feeding of lint into the press box,. Conventional water hydraulic, two-stage presses without auto tramping facility will, however, be permitted if they already exist.	Single stage of hydraulic, autotramping Bale Press with Lint slide and Pusher mechanism for direct feeding of lint into the press box,. Conventional water hydraulic, two-stage presses without auto tramping facility will, however, be permitted if they already exist.
7	Conveyor for Seed	Automatic Conveyor from gins to Seed Platform	Automatic Conveyor from gins to Seed Platform
8	Humidifier/ Moisturizer	***In Gin Hall*** In case of Central Platform, 2 Benson fans or adequate number of nozzles. ***In Pala Halls*** 2 Benson fans in each Hall or adequate number of nozzles.	***In Gin Hall*** In case of Central Platform, 2 Benson fans or adequate number of nozzles. ***In Pala Halls*** 2 Benson fans in each Hall or adequate number of nozzles.
9.	Fire Fighting System	Overhead tank/sumo (capacity 1.25 lakh litres) with a minimum of 10 hydrants strategically located, hose pipes with nozzles and a standby diesel pump besides an electric pump.	Overhead tank/sumo (capacity 1.25 lakh litres) with a minimum of 10 hydrants strategically located, hose pipes with nozzles and a standby diesel pump besides an electric pump.
10	Underground Wiring	All high tension and low tension wires/cables to be under-ground	All high tension and low tension wires/cables to be under-ground
11	Weigh Bridge	Capacity; 20 tons/5 tons depending on local need (Not required if the facility is available nearby)	Capacity; 20 tons/5 tons depending on local need (Not required if the facility is available nearby)
12	Pucca Platform for kapas	Raised platform (3" CC cover) with a minimum of 10,000 sq.ft. area preferably with 10 ft. wide cemented pavement all around/1 ft. wall around.	Raised platform (3" CC cover) with a minimum of 5,000 sq.ft. area preferably with 10 ft. wide cemented pavement all around/1 ft. wall around.
13	Covered Stroage space for Lint (Pala Halls)	Hall(s) with a minimum area of 4000 sq. ft. , pucca floor and preferably plastered walls.	Hall(s) with a minimum area of 2000 sq. ft. , pucca floor and preferably plastered walls.

Sr. No.	Item	Minimum requirement	
		Large Unit	**Small Unit**
14	Seed Platform	Raised, cemented (3" CC cover) platform of minimum 2000 sq.ft. area, with 2 ft. high outer wall	Raised, cemented (3" CC cover) platform of minimum 1000 sq.ft. area, with 2 ft. high outer wall
15	Bale Storage Space	Platform with cernented floor adjoining Press Hall and admeasuring a minimum area of 600 sq.ft. preferably with roof	Platform with cemented floor adjoining Press Hall and admeasuring a minimum area of 600 sq.ft. preferably with roof
16	Road	CC Road (4.5" CC cover) with at least 10 ft. width preferably elevated	CC Road (4.5" CC cover) with at least 10 ft. width preferably elevated
17	Boundry Wall/Fence	Wire mesh fence or barbed wire fence with less than 1 ft. gap between wires, or masonry wall, all of a minimum height of 6 ft.	Wire mesh fence or barbed wire fence with less than 1 ft. gap between wires, or masonry wall, all of a minimum height of 6 ft.

18. **Optional machinery**

All foreign fibre detectors / removers.

19. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - B

LIST OF MACHINERY ELIGIBLE UNDER TUF SCHEME FOR SPINNING / SILK REELING AND TWISTING / WOOL SCOURING AND COMBING/SYNTHETIC FILAMENT YARN TEXTURISING CRIMPING AND TWISTING.

a. SPINNING MACHINERY FOR COTTON SYSTEM OF SPINNING.

1. Fully automatic bale handling, plucking, peeling and blending grab machine with micro processors.
2. (i) Sophisticated blow room machinery for cotton fibre and its blends consisting of pre-cleaners, opening and cleaning machines with chute feeding system or lap making system, metal detector, microdust remover and dedusting condensors (for open end rotor spinning) with or without foreign fibre detector / remover.

   (ii) Sophisticated blow room machinery for synthetic / regenerated fibres and their blends consisting of opening and cleaning machines with chute feed system or lap making system, metal detector with or without foreign fibre detector / remover.

   (iii) Foreign fibre detector with CCD camera , Automatic bale plucking machines & sophisticated cleaning machine equipment in the existing blowroom line.
3. Automatic waste extraction system for card, gill box, comber and ring frame with or without waste recovery / recyling machinery.
4. (i) High production card capable of producing sliver above 50 kgs/hr with autoleveller.

   (ii) High production card for lap feed system capable of producing sliver above 50 kg/hr with or without autoleveller.
5. High production draw-frame with delivery speed of 500 meters and above /minute with / without autoleveller.
6. Sliverlap/Ribbonlap, Lapformer.
7. High speed combers of 240 nips/minute and above.
8. Speed-frame with 1200 r.p.m. and above.
9. High speed ring frames having spindle speed of 16,000 r.p.m. and above.
10. Open end rotor of 75,000 r.pm. and above and other modern spinning systems, such as DREF, PARAFIL, SELFIL AND AIRJET.
11. Automatic cone winding machine (auto coner) operating at the speed of 1500 metres per minute and above and /or cheese winding machine with Siro cleaner.
12. Electronic yarn clearers and splicers for upgradation of existing automatic winding machines.
13. Two-for-one/Three-for-one twisters operating at the speed of minimum 8000 rpm & 5000 rpm respectively.
14. Yarn conditioning machine.
15. Industrial Humidification system with air washer plant and air filters to maintain RH and temperature with / without de-humidifiers (Chillers).
16. Dust/particulate material seperators/collector (Air Pollution Control).
17. Overhead cleaner for spinning & winding.
18. Device for manufacturing core spun yarn.

19. Parallel winding machine with individual control management and length measuring device.
20. Process control equipments :
    (a) Electronic yarn clearers for upgradation of existing automatic winding machines.
    (b) "Sauter Automatic Plant Controls" for the Humidification Plant for controlling and maintaining R.H.
    (c) "Opti speed" for Ringframes for changing the spindle speed throughout the doff according to a set pattern, so that yarn breakages are minimized etc.
    (d) "Premier Ring Eye" under Information Technology, since the equipment monitors the yarn breaks in a Ringframe, identifies rogue spindles which give more number of breaks, indicates the production of the Ringframe through computer.
21. Air Compressor 15 H.P. and above.
22. Direct double yarn twisting attachment at Ring Frame (e.g. Elitwist attachment for spinning machine).

b. <u>WOOL SCOURING, COMBING AND SPINNING MACHINERY FOR WORSTED SYSTEM OF SPINNING.</u>

1. Sophisticated wool scouring machine.
2. Fibre opening/blending/cleaning/dusting machine.
3. High production worsted cards capable to give above 50 kg. production per hour.
4. High speed intersecting Gill box/Chain Gills/Rotory Gills/vertical Gill box of delivery speed of minimum 400 mtrs. per minute.
5. Drawing set /Roving frame /Rubbing frame of delivery speed of 200 mtrs. per minute.
6. High speed worsted ring frames of 12000 rpm & above with or without siro spinning attachment /or auto doffers.
7. High speed rectilinear comber of 210 nips per minute and above.
8. Two-for-one/Three-for-one twisters operating at speeds of minimum 8000 rpm & 5000 rpm respectively.
9. Yarn conditioning machine.
10. Assembly winding machine with micro process control.
11. Precision cone winding machine.
12. Automatic waste extraction system for card, gill box, comber and ring frame with or without waste recovery/recyling machinery.
13. Baling press for wool combing.

bb. <u>MACHINERY FOR FLAX SPINNING</u>

1. Flax hackling machine
2. Drawing Machine for Flax
3. Roving machine for Flax
4. Wet ring frame for Flax
5. Auto Winding machine for Flax

c. MACHINERY FOR WOOLLEN SPINNING SYSTEM.

1. Wool scouring machine.
2. High production carding machine.
3. Gill Box for semi-worsted yarn.
4. Speed frame.
5. Ring frame.
6. Modern spinning system (DREF).
7. Winding machine.
8. Automatic waste extraction system for card with or without waste recovery / recyling machinery.

d. MACHINERY FOR SHODDY SPINNING SYSTEM.

1. Continuous garneting, rag tearing & pulling and carding machine.
2. Ring frame.
3. Winder.

e. MACHINERY FOR SILK REELING AND TWISTING.

1. Multiend silk reeling machine (Automatic or Semi Automatic).
2. Silk twisting machine (Two for One or Three for One or up twisters).
3. Winding machine.
4. Conveyer cooking machine.

f. MACHINERY FOR SILK WASTE PROCESSING / SPINNING

1. Silk Waste processing .
   i) Cocoon opener.
   ii) Computerised silk waste cutting machine.
   iii) Degumming machine.
   iv) Drying chamber.
   v) Carding machine.
   vi) Preparatory machine.
2. Silk opener.
3. Automatic hopper feeder / Blending hopper feeder/ Feeder with automatic quality contorl (either with automatic quality weight or volume control / combined automatic weight) and volume control for silk card.
4. Carding Set.
5. Rectilinear-comber.
6. Vogoroux top / Silver printing machine.
7. Top to fibre / Top converting machine
8. Top bump press.
9. Draw frame / Roving frame/ Automatic rubbing frame / bobbiners / Finisher.
10. Self twist spinning machine / Sirospinning (2 ply spinning) machine / Core Spinning Machine.
11. Fancy Yarn twisting and pattern machine.

12. Jumbo hank reeling machine.
13. Yarn brushing machine.
14. High speed inter-setting rotary / Chain pin drawing sets / Gill boxes.
15. Fibre opening and blending machine.
16. Raising / Brushing Machine.
17. Automatic and semi-automatic reeling machinery for mulberry and tassar.
18. Machines for twisting, Reeling, Brushing of yarn samples and small quantities of plain and fancy yarn.
19. **Two Chamber stenter for processing of silk fabrics**.

g. MACHINERY FOR SYNTHETIC FILAMENT YARN CRIMPING/TEXTURISING AND TWISTING.

1. Crimping machine.
2. Texturising machine.
3. Twisting machines.
4. Jumbo hank winder.
5. Rewinder/precision cone winder.
6. Micro slitting machine / Roll cutting machine.
7. Fancy Yarn Twisters and doubling machine.
8. Twisted & covered cord manufacturing machine.
9. Glittering Machine / Zic making Machine.
10. Air covering machine,
11. Universal double covering machine,
12. Spandex attachment on circular knitting /texturising machine.
13. Draw Twisting / Draw winding machine.

gg. MACHNERY FOR COTTON WASTE RECYCLING PLANT

1. Automatic soft cotton waste recycling machine
2. Automatic hard cotton waste recycling machine
3. Automatic bale press system (Packing)
4. Automatic cotton dust & seed collection & filtration system
5. Fire protection system
6. Service facilities, viz., transport, weigh bridge system, automated bale weighing system, etc.

h. FIBRE/YARN TESTING EQUIPMENTS.

1. Modern fibre testing instruments viz., high/medium / low volume instrument for checking length, strength, micronnaire, maturity, trash, color etc.
2. Eveness tester.
3. Yarn fault classification equipment, viz, classimat, classidata etc.
4. Equipments for testing neps, length, diameter, maturity, trash, viz., AFIS / FILE, advance fibre information system, rapid tester, etc.

5. Single yarn tenacity tester, viz. tensorapid, statimat, tensomax, etc.
6. Tenacity / fibre crimp measurement instrument, viz,. fevimat, etc.
7. Modern yarn testing equipment, viz., twist tester, hairiness tester, tension tester, co-efficient of friction tester, etc.
8. Moisture tester.
9. Packing density tester.
10. High precision weighing balance.
11. Computerised lea strength testing machine for CSP, count and CV% for CSP & count.

i. Modern material handling equipment, viz., fork lifter, bale stackers etc.

j. **MACHINERY FOR SEWING THREAD (COTTON POLYESTER / CONTINUOUS POLYESTER FILAMENT / CORE YARN SEWING THREADS) MANUFACTURE**.

1. Assembly winding / Cheese winding machine with individual control arrangement & length measuring device.
2. Heavy ring doubler with or without wet arrangement.
3. Polishing cum lubrication machine.
4. Heat setting & stabilizing machine.
5. Pre-application winder/ composite lubrication winder / cone winder.
6. Precision winder & finishing machine / Twin cone winding and cop banding machine.
7. Tube winding machine.
8. Auto labeling and packing machine.
9. Box stitching / Carton strapping machine.
10. Bonding machine.
11. Spool winder.
12. Braiding machine.
13. Braid dye package winder.
14. Braid waxing machine.
15. Braid cop winder.
16. Pre-twister / Assembly winding machine.
17. Uptwister.
18. Dye packing winder.

k. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - C

a. LIST OF MACHINERY ELIGIBLE UNDER TUF SCHEME FOR VISCOSE FILAMENT YARN MANUFACTURING .

1. Continuous spinning machines for viscose filament yarn.
2. Digital electronic frequency inverters for spinning machines including control boards.
3. Finishing oil metering pumps with relevant feed system.
4. Metering gear pumps for viscose.
5. Portable systems for injection of pigments for viscose dope complete with stirred vessel, metering pumps, instruments and control panel.
6. Precious metal spinnerettes including distribution plates (pre-spinnerette)
7. Spin bath degassing plant by flash evaporation.
8. Spin bath backwash filtration system with candle filters.
9. Continuous dissolving and homogenising system for viscose preparation.
10. Contidisk filters for viscose.
11. Spinbath heat exchanger in graphite.
12. Distributed Central System (DCS) for automatic control parameters of viscose.
13. Automatic cake handling system during spinning and after treatment.
14. Processor controlled precision cone winding machine.
15. Automatic cone packing and palletising system.
16. Splicers for knotting viscose filament yarn breaks.
17. Viscose filament yarn strength tester, INSTRON or STATIMAT-4 or VIBRODYN 400 Model.
18. Testing equipment for process control and environment monitoring :
    - (i) Air sentry for atmosphere monitoring.
    - (ii) Stereo microscope for cross section studies.
    - (iii) Particle size analyser for viscose, pigments and tioz dispersion studies.
    - (iv) **Spinnerettes Inspection microscope**.
    - (v) **Magnetic flow meter in VRR**.
    - (vi) **Online monitoring of soft water hardness**.
    - (vii) **Portable colour matching system**.
    - (viii) **Winder machine for uniform shade strips**.

(ix) **Auto Titrator for precise volumetric analysis**.

(x) **Portable density meter**.

19. Eco Label Certification - Testing equipment for eco parameters :

(i) High performance liquid chromatography & high performance thin layer chromatography.

(ii) Perspirometer.

(iii) Wash wheel machine.

(iv) Atomic absorption spectrometer with accessories.

(v) UV - Visual spectrometer.

(vi) Gas chromatography with mass spectrometer.

(vii) Fourier transforming infra red spectrometer.

(viii) B.O.D. & C.O.D. monitors.

b. (i) <u>MACHINERY FOR VISCOSE STAPLE FIBRE</u>

1. Pulp pre-treatment – electron
2. Automatic pulp feeding system
3. Pulp slurry mixer with automatic slurry consistency control system
4. Twin Roll Slurry Press with Shredder
5. Ageing Drum
6. Automatic Alkali cellulose conveying / feeding system
7. Alkali Cellulose Cooler – Fluidized bed type with automatic temperature control
8. Lye filter (Candle filters)
9. Automatic Charge lye and Charge water mixing and cooling system
10. Xanthator with automation
11. Continuous Dissolving System with homogenisers
12. Ripening room with automatic process control, Continuous Filters with auto back flush features , Hydraulic Filter press, Centrifuge for reject viscose recovery, Screw / gear type viscose pump, viscose heating system, basket type viscose deaerators, continuous spinning tanks.
13. Distributed control system for the viscose section.
14. Automatic spinbath preparation, Circulation, Filtration, Heating & Evaporation system
15. Hastealloy-C Hexa Rollers Stretch Unit
16. High-speed automatic rotary cutters.

17. Hastelloy - C for Carbon Di -Sulphide recovery Trough
18. Carbon Di -Sulphide recovery system with scrubbers and condensers
19. Sump Zone cooling and filtration system
20. After-treatment line for washing fibre, conveying of fibre and chemical treatment
21. After-treatment chemicals Filtration system
22. Pneumatic fibre squeezing system, wet fibre opener, fibre dryer and dry fibre opener with automatic conveying system
23. Fully Automatic baling press with process controls of bale weight, moistures etc.
24. Automatic bale handling system
25. Distributed control system for spinning to Baling press

(ii) MACHINERY FOR DYED FIBRE

1. Distributed control system for colour slurry preparation and injections
2. Spectrophotometer based computerised colour matching system
3. Colour slurry injection pumps
4. On line fibre quality monitoring equipments
5. On line fibre Contamination, Checking and removal systems
6. Automatic fibre sampling system (Robotics type)

(iii) UTILITY

1. Both for viscose filament and viscose staple fibre - refrigeration system for process cooling & ripening room air conditioning energy efficient cooling towers.
2. Air Compressor 15 H.P. and above.

(iv) LYOCELL FIBRE PLANT

1. Pulpers
2. High viscose reactors operating vacuum
3. Thin flim evaporators
4. Polymer Pumps
5. Polymer Filters
6. Spinning Module
7. Fibre washing and treatment machines
8. Fibre / yarn dryer
9. Fibre openers

10. Bailing press
11. Agitated reactors
12. Distillation tower with accessories
13. Multi stage evaporators
14. ION exchange purification plants

(v) HIGH WET MODULUS VISCOSE FIBRE

1. Modal (HWM) machine line
2. Pumps for soda station
3. Brine PHE
4. Heat exchanger for dissolver
5. 3% Caustic PHE
6. Rotary air lock for maturing drum
7. Charge water tank with level control system
8. Dope tank with stirrer
9. Viscose circulation pumps
10. Heat exchanger before flash tank
11. Spinning pump
12. Heat exchanger after spinning pump
13. Complete system from spinning to bailing
14. Spin bath tanks & pumps
15. Zinc dissolving system
16. Spin bath filters and exhaust fans
17. Heat exchanger for spin bath cooling
18. Rotary vacuum filter & Pumps

c. Any other machine considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - D-1

LIST OF MACHINES ELIGIBLE FOR WEAVING/KNITTING UNITS UNDER TUF SCHEME

a. FOR WEAVING PREPARATORY :

1. Single yarn sizing machine.
2. High speed multi cylinder sizing machine/zero twist sizing machine.
3. Super high speed direct beam warper with creel (for shuttleless looms).
4. High speed direct beam warper with creel (for shuttleless looms in the case of woollen units).
5. High speed direct beam warper with creel (for automatic looms).
6. Warp tying machine.
7. Automatic drawing-in-machine/Reaching-in-machine.
8. Fully automatic pirn winding machine (for automatic looms).
9. Hydraulic beam lifting trolly (for shuttleless looms).
10. Computer aided design system for weaving (optional).
11. Two-for-one twister / Three-for-one twister operating at the speed of minimum 8000 rpm & 5000 rpm, respectively.
12. Draw warping and sizing machine.
13. False twist - texturising machine having 800 meters / min speed.
14. Fancy yarn twisters and doublers with micro processors / Cut Chennile Yarn machine / power driven flat bed knitting machine for manufacture of fancy yarn.
15. Yarn singeing machine
16. Sectional warping machine with autostop & tension control.
17. Cone dyeing machine.
18. Pirn winding machine.
19. High speed multi-cylinder vertical exit warping machine.
20. **Auto reeling stitch machine**.
21. **Beam Gatiting Trolley**.
22. **Warp Leasing machine**.

b. FOR LOOM SHED (WEAVING):

1. Shuttleless loom. For Projectile and Rapier looms (including high speed rapier weaving looms with 1152 hooks jacquard machine and intermittent cutting knife fitted for making the tapes and attachment required for manufacturing of labels of different widths) for Airjet and Waterjet looms with weft insertion rate of

i) 800 mtrs. per minute and above for Projectile looms. Marginal deficit of upto 5% in the weft insertion rate of old sulzer projectile weaving machine is permitted.

ii) 450 mtrs. per minute and above for other shuttleless looms. For SSI units, the weft insertion rate of Rapier shuttleless looms may be 250 mtrs. per minute and above.

2. Shuttleless loom (for woollen units)

i) 800 mtrs. per minute and above for Projectile looms and

ii) 450 mtrs. per minute and above for other shuttleless looms. For SSI units, the weft insertion rate of Rapier shuttleless looms may be 250 mtrs. per minute and above.

3. Automatic shuttle loom.

3A. Semi-automatic shuttle loom by way of upgradation of existing plain looms, with additional features like weft stop motion, warp stop motion, positive/semi-positive let off motion with or without dobby/jacquard, applicable only to the decentralised powerloom sector

3B. Replacement of an ordinary loom by a new semi-automatic shuttle loom with benchmarked technology features, i.e, weft exhaust/ stop motion, warp stop motion, warp protector attachment, let off motion (positive/semi-positive), under-picking motion, take-up motion together with anti-crack motion, efficient braking device to stop the loom within a pick, individual motor drive with clutch system, preferably, with the following additional features:

(i) lubricating nylon parts/accessories, auxiliary buffer for picking stick;

(ii) all metallic parts of casting and mild steel should conform to relevant BIS standards, and

(iii) in case of velvet looms, the ordinary cam motion should be replaced by modern cam motion which reduces the multiple lever or by positive dobby.

(iv) **Circular looms** .

Applicable only to the decentralised powerloom sector.

3C. New units in the decentralized powerloom sector are permitted to install semi-automatic looms with benchmarked technology features under TUFS.

4. Terry towel loom (fully automatic or shuttleless).

5. Corduroy and/or velvet loom and/or automatic loom for cut-pile fabrics.

6. Canvas loom.

7. Power driven chenille loom.

8. High speed needle loom for tape/belt weaving.

9. Auto control type of humidification plant (for shuttleless loom shed).

10. Modern industrial humidification system for controlling relative humidity & temperature (for automatic loom shed).

11. Over head cleaner for airjet looms.

12. Dust separator.

13. Computerised label making machine.
14. Fabric embroidery machine.
15. Jacquard and Dobby on stand-alone basis.
16. Power driven cloth cutting machine/laser fabric or label cutting machine.
17. Air Compressor 15 H.P. and above.
18. Tufting machine with electronic process controls.

c. <u>FOR KNITTING :</u>

1. High speed circular knitting machine. For permissible second hand reconditioned circular knitting machine, minimum speed should be of 20 revolutions per minute. The effective date of modification is 21st Jan., 2003.
2. High speed socks knitting and gloves knitting machines with or without electronic jacquard.
3. Computerised flat bed knitting machine with minimum speed of 11 revolutions per minute for new machines and 10 revolutions per minute for permissible second hand reconditioned machines.

4(a). Warp/Raschel knitting machine.

4(b). High speed computerised warping machine for knitting.

5. Computerised label making machine.
6. Modern industrial humidification system for controlling relative humidity & temperature.
7. Air Compressor 15 H.P. and above.
8. Computerized Strap (Collar/Cuff) Flat Bed Knitting Machine.
9. **Net making machine by warp knotting system.**

CC(a). <u>HANDLOOM</u>:

1. Semi-automatic /ordinary frame handloom with minimum width of 52", with or without dobby / jacquard and benchmarked technology features, viz., take-up motion, smooth sley movement, bigger shuttle and bobbin (minimum 4"), negative let-off motion. It may include attachments such as multiple weft butta mechanism, pick & pick sliding shuttlebox, solid border weaving catchcord attachment. The frame loom should be made out of ½" x 1 ½" x 3" steel U channel or steel pipe 2 ½" diameter and 8 gauge or sturdy wood with minimum 4" widthx4" thickx6' height. The looms may have additional warp and cloth rollers made of wood or steel to ensure weaving of long length fabric.

CC(b) Handlooms of fly shuttle frame loom fitted with Dobby like lattice /barrel/tappet/draw bar/iron frame vertical/centre closed shed/wooden frame vertical/double cylinder iron border, Jacquard like single lift single cylinder

wooden frame/single lift single cylinder iron frame bar/double lift single cylinder iron frame/double lift double cylinder iron frame/janata/lino; Combination of jala and dobby or jacquard; Fly shuttle sley fitted with drop box on one side/drop box on both sides /circular shuttle box/pick & pick sley;

CC(c) Fly shuttle frame loom fitted with let off motions like lever and weight let off motion/special spring motion/rope let off motion/weight system/spring system.

CC(d) Fly shuttle frame loom fitted with take up motion like ratchet & pawl motion/3 wheel Ichalkaranji type motion/5 wheel take up motion without emery roller/7 wheel take up motion.

CC(e) Handlooms fitted with special attachments like catch card system/swivel loom/lappet motion/terry motion/lino mechanism/chennaile weaving (automatic cutting of chennaile while weaving), metal frame handloom/wider width wooden frame handloom/long length cloth weaving mechanism etc.

Note: In addition, handloom units may also be provided with piano card punching machine/electronic card punching machine.

CC(1) Winding machine with multi spindle for preparation of pirns/bobbins/drums operated by hand/peddle/power.

CC(2) High Speed Doubling machine having spindle fitted on bolster with ball bearing.

CC (3) The mobile textile quality testing equipment only for handloom sector and capable of testing all of the following :

- Colour fastness to washing at about 40 degree celsius.
- Colour fastness to crocking/rubbing
- Shrinkage
- Ends-Picks per inch
- Count of yarn
- Percentage crimp of yarn
- Fabric width, and
- Grams per Square meter etc.

The effective date of eligibility will be the date of the meeting, i.e, 1-8-2002.

d. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX -D-2

[A] LIST OF MACHINERY / EQUIPMENT ELIGIBLE UNDER TUF SCHEME FOR NONWOVENS / TECHNICAL TEXTILES

a. PREPARATORY
1) Single thread filament sizing machine.
2) Filament winding machine for textile posite.
3) Spooling machine

b. WEAVING
1) Multi-axial weaving machinery.
2) Multi-phase weaving machine.
3) 3-D and Block weaving machine.
4) Servo drive with control unit.

c. KNITTING
1) Weft Inserted Warp Knitting machine with bias insertion (WIWK).
2) Mechanical foamer with Crush calender.
3) Pultrusion machine and equipment.
4) Spattering machine and equipment.
5) FRP processing machine & equipment.
6) RTM (Reinforced Textile Material) machine and equipment.
7) Lab scale production /processingequipment for technical textile product development.

d. MADE UP TECHNICAL TEXTILE (TT) STORE
Fabrication equipment for producing T.T. products such as:-
1. Computerised cutting equipment.
2. Hot air welding equipment.
3. RF (Radio Frequency) welding equipment
4. Ultrasonic cutting equipment.
5. Laser cutting equipment .
6. Tools & rigs for fabrication of T.T. products.
7. Printing equipment for Signage.
8. Heat setting machine and stretching (for heat setting table).
9. Back Coating Lines.
10. Automatic blank mask making machine with ultrasonic system.
11. Automatic mask tie tape sealing machine with ultrasonic system.

12. Automatic bouffant / nurse cap making machine with ultrasonic system.
13. Automatic surgeon cap making machine with ultrasonic system.
14. Automatic shoe cover making machine with ultrasonic system.
15. Automatic C-type / cup mask machine with ultrasonic system.
16. Automatic elastic loop sealing machine for mask with ultrasonic system.

e. (i) **Non-woven textile manufacturing machines**:

1. Bale openers
2. Fibre openers
3. Porcupine beater/opener with double beater or other similar opener.
4. Fibre blending/mixing
5. Feeder hoppers/chute /card feeding unit
6. Cards
7. Cross-lappers,
8. Saturator
9. Air laying / web laying/web forming machines
10. Web drafters
11. Web expanders
12. Print bonder
13. Web conveyors
14. Web control systems - weight/uniformity/alignment
15. Batt feeders
16. Pre-needler/tackers
17. Web edge trimming and re-cycling system
18. Edge openers
19. Accumulator
20. Stackers
21. Unwinders/winders/slitters/slitter-cum-winder/stackers
22. Compression rolls
23. Heated calender
24. Chilled calender
25. Chiller
26. Stenter
27. Blow room equipment
28. Winding and cutting machine

29. All types of needle looms
30. Stich bonding machine with necessary attachments
31. Chemically bonded non-wovens.
32. Auto foam generator
33. Binder mixing tanks
34. Binder applicators of all types print dip knife etc
35. Drying and curing machines – steam/electric/oil/gas heated
36. 30" stainless steel drying cylinders range with first 5 to 6 cylinders teflon coated.
37. Spray booths with spray guns
38. Powder applicator
39. Curing oven-steam/electric/oil/gas heated
40. Thermal bond calender
41. Thermopack for heating of calender
42. Hot air oven
43. Thermopack for heating oil

(ii) **Spunlace non-woven plant includes**:

1. Hydro entanglement unit
2. Suction unit
3. Engraving unit
4. Dryer, on line printing unit.
5. Heating system
6. Water filter system
7. Boiler for thermic fluid/oil
8. High pressure pumps
9. Jet stripe cleaning equipment
10. Jet beams
11. Finishing seive belt with vacuum – beam
12. Winder with slitter

(iii) **Spunbond non-woven machines includes**:

1. Chip feeder
2. Dryer
3. Extruder
4. Spinerettes
5. Cooling champer
6. Filament laying
7. Compressor rolls

(iv) **Complete melt blown line includes**:

1. Pellet handling system
2. Screenchanger
3. Meltblown die
4. Lamination stand

f. Finishing machines:

1. Hot melt cold glue applicators for coating
2. Ultrasonic slitting machines/edge sealer
3. Brazing machine with torch(for hot air)
4. PLC operated system with servo drives for measurement/control of tension and temperature
5. Stitching machines of all types
6. Film calendering machine
7. Automatic packing and inspection machines
8. Heatset oven with stenter facility
9. Clicking press
10. Pilot/lab coating line
11. High pressure pump for water jet cutting system
12. Robotic waterjet cutting system
13. Robot for water jet cutting system
14. Water softening/purification system for water jet cutting
15. Machines for powder scattering/paste dot/powder dot
16. Coating for fusible interlinings
17. Padding mangle (fulard)]
18. Extruder lamination machine
19. Sheet extruders and lamination machine
20. Singeing machine
21. Clip/pin stenter for heat setting
22. Flame lamination machine
23. Humidifier
24. Air conditioning units
25. Dust collectors
26. Jacquard machines for joining two edges by inter weaving.
27. Turret winder and unwinder
28. High speed precision mixers for plastisols/ organosols.
29. Coagulated PU dip coating machine/PU coating line or coating dipping/knife machine with infra red dryer (eligibility is restricted to technical textile only).
30. Gunning and cutting machine.
31. Grommet fixing machine.

32. Back coating lines.
33. PU tumbling machine and drying machine.
34. DMF recovery plant and distillation plant.
35. Printing machine for coated textiles.

g. Conversion machinery:

1. Complete thermomoulding lines
2. Complete thermosetting lines
3. Machinery of carpet/NVH moulding lines oven/press
4. Conveyor/thermopack for heating/chiller for cooling
5. Machinery for moulded roofliners
6. Die cutting presses
7. Machinery for conversion of nonwovens into masks/caps
8. Machinery for conversion of nonwovens into sanitary
9. Napkins/baby diapers/masks/adult diapers
10. Machinery for conversion of nonwovens \into dry and wet wipes
11. Automatic packing machines

Note : The above machinery is only eligible for non-wovens and convertors of non-wovens into finished products.

h. Testing and Evaluation machinery:

1. Speciality testing equipments and rigs for T.T. (Technical Textiles) and T.T.P. (Technical Textile Products)
2. Universal texsile testing machine 10 tonnes/20 tonnes
3. Index puncture resistance tester
4. Co-efficient of friction apparatus
5. Particle size determination apparatus
6. Gradient ratio test apparatus
7. Long time flow apparatus
8. Feltperm
9. Ppont paper design system with ewe
10. Weatherometer
11. Yarn shrinkage and shrinkage force testing machine
12. Viscometers
13. Data loggers for machine monitoring and flex resistance tester
14. Tear testing machine
15. Cold crack resistance testing
16. Thickness gauge
17. Water repellency testing machine
18. Waterproofing testing machine
19. Fire resistance testing equipments
20. Accelerated ageing testing oven

21. Rainwater tests equipment continuous water spray test and i.r. spectrometer etc.
22. All types of weighing balances/scales
23. Abrasion testers
24. Colour matching cabinets
25. Colour fastness testers

i. Other ancillary equipments:

1. Air compressor
2. Boiler
3. Platform scale
4. Stirrer
5. Humidifier
6. Air conditioning units for control panels etc

j. Any other machine considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - E

LIST OF MACHINERY ELIGIBLE UNDER TUF SCHEME FOR RMG/MADE-UPS UNITS

a. ELIGIBLE MACHINES FOR GARMENT / MADE UPS MANUFACTURING :

(1) Single/multi needle power operated industrial lockstitch sewing machine with or without trimmer overedging/seaming and banding operation.

(2) Blind stitch machine/Chain stitching machine.

(3) Power operated linking/loop making sewing machine.

(4) Power operated flat lock/overlock machine.

(5) Zigzag flat bed sewing machine.

(6) Button stitch sewing machine.

(7) Label/elastic inserting machine.

(8) Button hole sewing machine.

(9) Belt attaching machine.

(10) Zip attaching machine.

(11) Bar tacking machine.

(12) Hemstitch machine.

(13) Smocking machine / Automatic multi needle sirring machine.

(14) Pattern maker/grader/marker machine/laser marker.

(15) Power driven cloth cutting machine / laser fabric or label cutting machine / **laser engraving machine**.

(16) Band knife-cutting machine.

(17) Collar and cuff turning and blocking machine and pressing machine.

(18) Button and revet/snap fastners fixing machine.

(19) Pocket creasing and welding machine/Auto pocket making machine.

(20) Industrial steam iron with vacuum table and / or buck press.

(21) Boiler for steam press/vacuum press, Steam cabinet/Vaccum table.

(22) Fusing press.

(23) Collar contour trimmer.

(24) Automatic spreading & cutting table with vacuum and / or air blowing device.

(25) Shoulder pad-attaching machine.

(26) Pocket cutting machine.

(27) Computerised CAD/CAM/cutting machine.

(28) Round knife cutting machine.

(29) End cutter with clothpress track.

(30) Cloth drilling machine.

(31) Collar point trimmer/Gear knotcher machine.

(32) High speed fully fashioned knitting machine.

(33) Whole garment making machine for knitted garments or power operated garment panel forming knitting machine with linking machine.

(34) Power driven socks and gloves knitting machine.

(35) Automatic thread trimming / sucking machine.

(36) Shirt folding machine.

(37) Stain/spot removing machine.

(38) Pearl/Beads/Stones/Glassete/Hook and Bar attaching machine.

(39) Quilting machine.

(40) Fabric inspection/checking machine.

(41) Needle/metal detector machine.

(42) Multi head computerised embroidery machine.

(43) CAD/CAM pattern maker with ploter and software including software equipment for embroidery machine.

(44) Computerised label making machine / computerised label printing machine.

(45) Button wrapping / shanking machine.

(46) Feed-off-the-arm industrial sewing machine.

(47) Automatic dart/pleat making machine.

(48) Automatic label / ply picking machine.

(49) Pin tucking machine.

(50) Mechanised fabric pinning table.

(51) Single needle basting machine.

(52) Single needle post bed sleeve setting machine.

(53) Hanging production conveyor system.

(54) Crochet machine for laces and bands with electronic bar operation.

(55) String thrusting machine.

(56) Plastic Staple attacher.

(57) Sand Blasting/Brushing machine.

(58) Colour matching machine.

(59) Automatic machine for making knit shirt center plaits.

(60) Belt Loop attaching machine

(61) Button packer

(62) Collar Heat Notcher

(63) Spot Welding machine

(64) Laser Colour Fading / Marking / Drawing Machine.

(65) Laser operated Colour Spraying Machine.

(66) RMG Curing /heat setting oven.

(67) Air Compressor 15 H.P. and above.

(68) Computerized Strap (Collar/Cuff) Flat Bed Knitting Machine.

(69) Cup Seamer.

(70) Automatic strap cutter machine with electronic feed & cutting device.

(71) Cup moulding machine.

(72) **Auto reeling stitch machine**.

(73) **Automatic combines panel-joining / tape attaching machine for curtains**.

(74) **Electronic, pre-programmed, straight line lockstitch curtainpleat tacker with fully automatic curtainhook feeding device**.

(75) **Automatic Combined Panel-joining & Hemming Machine**.

(76) **Automatic Lockstitch Curtain Hemming Machine**.

(77) **Fully Automatic Combined Thread Chainstitch Ring attach/pinch pleat tacking M/c**.

(78) **Hydraulic combined cutting/pressing machine for processing metal curtain rings**.

(79) **Pneumatic single**.

(80) **Fully automatic fabric inspect, measure and length cutting machine**.

(81) **Fully Automatic, Programmable, Electronic vertical curtain cutting machine**.

(82) **Electronic, pre-programmed, straight line lockstitch curtainpleat tacker with fully automatic curtainhook feeding device**.

(83) **Fully Automatic drapery pinch pleater with integrated Microflex (r) adjustable curtain hook feeder**.

(84) **Curtain feeding device for fully automatic pinch pleater**.

(85) **High performance motor driven curtain ironing table**.

b. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - F-1

LIST OF PROCESSING MACHINERY ELIGIBLE UNDER TUF SCHEME FOR PROCESS HOUSE FOR YARN/FABRIC/GARMENTS/MADE-UPS (OTHER THAN WOOL & POLYESTER/WOOL BLENDS & KNITS)

a. ESSENTIAL

I. EFFLUENT TREATMENT PLANT

Effluent treatment plant with primary, secondary and / or tertiary treatment facilities. (for units linked to common effluent treatment plant, effluent treatment plant with primary treatment system)

II. QUALITY CONTROL EQUIPMENTS

1). PH meter
2). Wash fastness tester
3). Perspiration fastness tester
4). Rubbing fastness tester
5). Computer colour matching
6). Electronic balance
7). Hot air oven
8). Grey scales
9). Crease recovery tester
10). Wrinkle recovery tester

b. PROCESSING MACHINES

I. WET PROCESSING MACHINES

1). Yarn mercerising machine with caustic recovery/reuse system
2). Cabinet type hank yarn dyeing machine
3). Package dyeing machine (for yarn)
4). Indigo dyeing range (sheet or rope form) with or without sizing plant (only for denim manufacturing units).
5). Fabric singeing cum desizing machine
6). Pressure Kier with automatic liquor circulation with or without auto piler.
7). J. Box
8). Automatic open-width continuous scouring and bleaching range with microprocessor attachments and automatic chemical dosing.
9). Vaporloc machine
10). Rotary drum washer(HT/HP or ordinary type)
11). Automatic open-width continuous dyeing range with microprocessor attachments and automatic colour/ chemical dosing.
12). Soft flow dyeing machine
13). Jet dyeing machine (Low liquor ratio of 1:3.5 to 7)
14). Fully automatic jigger/ Jumbo jigger (JT-10 or JT-15 type) with or without microprocessor controls.
15). Float dryer with padding mangle
16). Hydro extractor based on centrifugal or vacuum system
17). Ink jet printing machine
18). Automatic flat-bed screen printing machine
19). Rotary printing machine with or without automatic colour feeding system
20). Roller steamer
21). Loop ager/steam ager/ flash ager / star ager / pressure ager

22). Multi chamber washing range with arrangement for reduced water consumption/water re-use system.

23). Industrial garment washing/drying machine

24). Tumble dryer

25). Fabric Mercerising machine with caustic recovery/re-use system

26). Pad steam range

27). Continuous print washer.

28). High speed micro-inkjet Engraver with UV exposing unit.

29). **Compact continuous dyeing & finishing machine for tapes / narrow woven fabric**.

II. WET FINISHING MACHINES

1) Multi chamber stenter (minimum 3 chambers with arrangement of oil / gas heating system) or multi-cylinder drying range

2) Radio frequency/infra red radiant gas fired/micro wave / loop/relax dryers.

3) Sueding / Peach finishing machine

4) Continuous weight reduction machine through micro wave technique (for Polyester goods only)

5) Combisoft machine for softening drying and stone wash effect

6) Form finisher

7) Precision flock cutting machine

8) Sieving machine

III. DRY PROCESSSING / FINISHING MACHINES

1) Yarn singeing machine / Gassing machine

2) Fabric singeing machine with LPG system with arrangement for singeing face and back in one pass.

3) Shearing / Cropping machine

4) Thermosoling range (for synthetics)

5) Transfer printing machine (for synthetics)

6) Curing machine / Polymerising machine

7) Raising machine

8) Coating / Laminating / Embossing machine

9) Compressive shrinking range (Zero-Zero type)

10) Dry-to-dry cleaning machine

11) Airo machine (for durable mechanical finishes)
12) Decatising machine.
13) Calendering machine (5 or 7 bowls)
14) 3 bowl shaped configuration calender (for different types of surface effects).
15) Pleating / Creasing / Folding machine for fabrics.
16) Pinching and Flat embossed machine for fabrics.
17) Crush machine for uneven pleat for grey / dyed fabrics.
18) Dipping Unit.
19) Weft Straightener with electronic controls.

IV. UTILITIES AND OTHERS

1) (a) Oil/gas fired boiler or fluidized coal fired boiler with pneumatically controlled filter mechanism, electrostatic precipitator and micro dust collector. However, oil, gas or coal fired boiler up to 8 tonnes per hour (TPM) capacity with multiple cyclone separators for collection of dust from chimney and mechanically flash separator attachment would also be eligible. Such low capacity boiler not more than one would be eligible to a particular unit. It would be subject to clearance from concerned Pollution Control Board.

   (b) Husk fired / Jute waste (caddies) boiler having additional features, viz., pneumatically controlled filter mechanism, electrostatic precipitator and micro dust collector below 15 Tonnes Per Hour (TPH) having cyclone / multi cyclone device. However, for such boilers the above three features are not required subject to the condition that specific approval or no objection of respective State Pollution Control Board.

2) **Thermo Pac with all type of fuels / other high temperature heating system subject to pollution control measures by the concerned State Authorities**.
3) Automatic colour weighing and dispensing system
4) Computer controlled fabric inspection machine / fault analyser and report generator
5) Rotary screen making equipments
6) Light fastness tester
7) Fabric strength tester
8) BOD incubator
9) COD digestion meter
10) Soft package winders for yarn dyeing
11) Cone to hank winding machine

12) Thin hydro carbon vapour recovery plant for textile printing.
13) Air Compressor 15 H.P. and above.
14) **Multiple evaporator**.
15) **Bio-mass based gassifier**.

c. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - F-2

LIST OF PROCESSING MACHINERY ELIGIBLE UNDER TUF SCHEME FOR A KNIT PROCESS HOUSE (FABRIC /GARMENTS/MADE UPS)

a. ESSENTIAL **b. PROCESSING MACHINES**

I. EFFLUENT TREATMENT PLANT

Effluent treatment plant with primary, secondary and / or tertiary treatment facility. (For units linked to common effluent treatment plant, effluent treatment plant with primary treatment system)

II. QUALITY CONTROL EQUIPMENTS

1). PH meter
2). Wash fastness tester
3). Perspiration fastness tester
4). Rubbing fastness tester
5). Grey scales
6). Electronic balance

I. WET PROCESSING MACHINES

1) Wet fabric spreading and squeezing machine
2) Knit tubular mercerising or bleaching cum mercerising machine.
3) Knit fabric continuous bleaching plant
4) Soft flow dyeing machine.
5) Jet dyeing machine.
6) Printing/curing machine (for garments).
7) Automatic flat bed screen printing machine/Rotary screen printing machine.
8) Ink jet printing machine.
9) Star ager/pressure ager/loop ager / steam ager.
10) Roller steamer/Polymeriser
11) Washing range with arrangement of tension free fabric drying and reduced water consumption/water reuse system.
12) Hydro extractor.
13) Industrial garment washing/drying machine.
14) Tumble dryer
15) Rope opening line with open width squeeze mangle for knitted fabrics.
16) High speed micro-inkjet Engraver with UV exposing unit.

II. WET FINISHING MACHINES

1) Multi chamber stenter (minimum 4 chambers) with arrangement of oil/gas heating and with knit fabric attachment.
2) Radio frequency / infrared radiant gas fired / micro wave / loop/relax dryer
3) Form Finisher
4) Sueding machine
5) Precision flock cutting machine
6) Sieving machine

III. DRY PROCESSING / FINISHING MACHINES

1) Fabric reversing machine
2) Slit opening machine
3) Pile cutting machine
4) Singeing machine for tubular fabric
5) Dry-to-dry cleaning machine
6) Compacting machine
7) Curing / Polymerising machine
8) Raising / Brushing machine
9) Coating / Laminating / Embossing machine
10) Computer controlled fabric inspection machine / Fault analyser / Report generator
11) Dipping Unit.

IV. UTILITIES AND OTHERS

1) (a) Oil/gas fired boiler or fluidized coal fired boiler with pneumatically controlled filter mechanism, electrostatic precipitator and micro dust collector. However, oil, gas or coal fired boiler up to 8 tonnes per hour (TPM) capacity with multiple cyclone separators for collection of dust from chimney and mechanically flash separator attachment would also be eligible. Such low capacity boiler not more than one would be eligible to a particular unit. It would be subject to clearance from concerned Pollution Control Board.

   (b) Husk fired / Jute waste (caddies) boiler having additional features, viz., pneumatically controlled filter mechanism, electrostatic precipitator and micro dust collector below 15 Tonnes Per Hour (TPH) having cyclone / multi cyclone device. However, for such boilers the above three features are not required subject to the condition that specific approval or no objection of respective State Pollution Control Board.

2) **Thermo Pac with all type of fuels / other high temperature heating system subject to pollution control measures by the concerned State Authorities**.
3) Automatic packing machine
4) Automatic dye weighing and dispensing system
5) Computer Colour matching
6) Light fastness tester
7) Thin hydro carbon vapour recovery plant for textile printing.
8) Air Compressor 15 H.P. and above.
9) **Multiple evaporator**.

10) **Bio-mass based gassifier**.

c. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - F-3

LIST OF PROCESSING MACHINERY ELIGIBLE UNDER TUF SCHEME FOR A PROCESS HOUSE FOR WOOL & WOOL POLYESTER BLENDED FIBRES/YARN/FABRIC/GARMENT

a. ESSENTIAL

I. EFFLUENT TREATMENT PLANT

Effluent treatment plant with Primary , secondary and / or tertiary Treatment facility

II. QUALITY CONTROL EQUIPMENTS

1). Wash fastness tester

2). Perspiration fastness tester

3) Rubbing fastness tester

4). Computer colour matching

5). Electronic balance

6). Hot air oven

b. PROCESSING MACHINES

I. WET PROCESSING MACHINES

1). Top dyeing/loose fibre dyeing machine
2). Cone/cheese dyeing machine
3). Jet dyeing machine
4). Soft flow dyeing machine
5). Open width/rope washing machine
6). Hydro extractor
7). Industrial garment washing/ drying machine
8). Tumble dryer

II. WET FINISHING MACHINES

1) Multi chamber stenter (minimum 4 chambers with oil/gas heating system).
2) Hot air / Radio frequency / Infrared / Radiant gas fired / Micro wave / Loop dryers
3) Combined contipress / Decatising machine
4) Milling machine
5) Kier decatising / Continuous decatising machine
6) Crabbing machine
7) Form finisher

III. DRY PROCESSING/FINISHING MACHINES

1) Singeing and / or shearing and cropping machine
2) Dry-to-dry cleaning machine
3) Raising / Sueding machine
4) Shearing / Polishing machine
5) Paper or Rotary press
6) Relaxing machine

IV. UTILITIES AND OTHERS

1) (a) Oil/gas fired boiler or fluidized coal fired boiler with pneumatically controlled filter mechanism, electrostatic precipitator and micro dust collector. However, oil, gas or coal fired boiler up to 8 tonnes per hour (TPM) capacity with multiple cyclone separators for collection of dust from chimney and mechanically flash separator attachment would also be eligible. Such low capacity boiler not more than one would be eligible to a particular unit. It would be subject to clearance from concerned Pollution Control Board.

   (b) Husk fired / Jute waste (caddies) boiler having additional features, viz., pneumatically controlled filter mechanism, electrostatic precipitator and micro dust collector below 15 Tonnes Per Hour (TPH) having cyclone / multi cyclone device. However, for such boilers the above three features are not required subject to the condition that specific approval or no objection of respective State Pollution Control Board.

2) **Thermo Pac with all type of fuels / other high temperature heating system subject to pollution control measures by the concerned State Authorities**.

3) Automatic colour weighing and dispensing system.

4) Air Compressor 15 H.P. and above.

5) **Multiple evaporator**.

6) **Bio-mass based gassifier**.

c. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - F-4

LIST OF MACHINERY ELIGIBLE UNDER TUF SCHEME FOR INDEPENDENT FIBRE/YARN DYEING UNIT OR FIBRE/YARN DYEING FACILITY ATTACHED TO SPINNING UNITS

a. ESSENTIAL **b. PROCESSING MACHINES**

I. EFFLUENT TREATMENT PLANT

Effluent treatment plant with primary, secondary and/or tertiary treatment facility (For unit linked with common effluent treatment plant , effluent treatment plant upto primary treatment system)

IIQUALITY CONTROL EQUIPMENTS

1). PH meter
2). Wash fastness tester
3). Perspiration fastness tester
4). Rubbing fastness tester
5). Electronic balance
6). Hot air oven
7). Grey scales

I. WET PROCESSING MACHINES

1). Yarn singeing machine
2). Pressure kier
3). Yarn mercerising machine with caustic recovery/reuse system
4). Cabinet dyeing machine for hank yarn
5). High temperature high pressure package dyeing machine
6). Hydro extractor
7) Hank to cone winding machines (High speed machine winding minimum 350 meters/ minute with clutch and brake system).

II. WET FINISHING MACHINES

1) Hot air / Radio frequancy / Micro wave / Infrared gas fired radiant dryers

III. UTILITIES AND OTHERS

1) (a) Oil/gas fired boiler or fluidized coal fired boiler with pneumatically controlled filter mechanism, electrostatic precipitator and micro dust collector. However, oil, gas or coal fired boiler up to 8 tonnes per hour (TPM) capacity with multiple cyclone separators for collection of dust from chimney and mechanically flash separator attachment would also be eligible. Such low capacity boiler not more than one would be eligible to a particular unit. It would be subject to clearance from concerned Pollution Control Board.

(b) Husk fired / Jute waste (caddies) boiler having additional features, viz., pneumatically controlled filter mechanism, electrostatic precipitator and micro dust collector below 15 Tonnes Per Hour (TPH) having cyclone / multi cyclone device. However, for such boilers the above three features are not required subject to the condition that specific

approval or no objection of respective State Pollution Control Board.

2) Cone to hank winding machine
3) Soft package winder.
4) Air Compressor 15 H.P. and above.
5) **Multiple evaporator**.

c. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - G

LIST OF MACHINERY ELIGIBLE UNDER TUF SCHEME FOR JUTE RAMIE AND HEMP UNITS

a. FOR SOFTENING AND CARDING

1. Jute spreader machine
2. Modified, conventional, softeners
3. Breaker cards
4. Inter cards
5. Finisher cards
6. Drawhead
7. Split can delivery
8. Auto leveller
9. Hopper feeder
10. Teaser cards
11. Enzyme plant
12. Emulsion plant with electronically controlled stirrer
13. Dust shaker
14. **Semi Automatic Root Cutting M/c**.
15. **Hard Waste Card**
16. **Breaker-Cum-Finisher Card with or without drawheads, auto-levellers & can changing devices**

b. FOR DRAWING

1. All screw gills
2. All jute drawings
3. **Comber**

c. FOR SPINNING & TWISTING

1. 4 1/4 slip draft
2. 5 1/2 slip draft
3. Ring spinning frame
4. Friction spinning
5. Open end spinning
6. Wrap spinning
7. Braiding machine
8. Ring twisting frame
9. Apron draft spinning machine
10. **Flyer twisting**
11. **Wet / Semi-wet Spinning Frame**
12. **4 ¾" S.D / A.D Spinning Frame.**

13. Two for one twister

d. FOR WEAVING PREPARATORY

1. Pre-beaming machine
2. Dressing machine
3. Warp and weft winding machine
4. Precision winders
5. **Auto Coner**
6. **Assembly Winder**
7. **Beaming / pre-beaming machine**

e. FOR WEAVING ETC.

1. High speed conventional jute looms with or without dobby/jacquards
2. **High Speed Automatic Shuttleless Looms**
3. Circular looms
4. Carpet plant
5. **Non-woven/Felting Plant**
6. Jacquard card punching machine
7. **Needle/Webbing / Tape Looms**

f. FOR FINISHING

1. Cutting machine
2. Lapping & Measuring machine
3. Sewing machine
4. Branding/Printing machine
5. Baling press
6. **High Pressure Roll Up Machine**
7. **Calender M/c**
8. **Crisping M/c.**
9. **Automatic bag making M/c**

g. FOR MATERIAL HANDLING & OTHER MACHINES (ESSENTIAL) :

1. Feed lattice
2. Conveyor system
3. Turn table.
4. Fork lifter.
5. Tractor.
6. **Jib Crane**

7. **EOT (Electrically Operated Track) Crane**
8. **Beam lifter**

h. <u>POLLUTION CONTROL MACHINES/INSTRUMENTS</u> :

ESSENTIAL EFFLUENT TREATMENT PLANT	**OTHERS**
Effluent treatment plant with primary, secondary and/or tertiary treatment facility (for unit linked to common effluent treatment plant, effluent treatment plant upto primary treatment system)	1. Dry type electrostatic, Precipitators. 2. Dry type bag filter . 3. Dry type cleaners and multi cloves. 4. Wet type scrubbers 5. Wet type ventury scrubbers 6. Ventilation system comprising of air centrifugal / axial flow fans. 7. **Dust extractor & blower**

i. <u>PROCESSING MACHINES</u>

1. Singeing machine	2. Shearing/croping
3. Pressure Kier/Jumbo jigger	4. Cloth/yarn mercerising
5. Pad batch **/ Mangle**	6. Winch
7. Semi-automatic automatic Jiggers	8. Jet dyeing
9. Soft flow dyeing	10. Cabinet dyeing machine (for yarn)
11. High temperature and high pressure dyeing	12. Macro extracter
13. Multicylinder drying range/ Stenter	14. Hot air dryer for yarn dyeing
15. Semi-automatic /Automatic flat bed printing machine	16. Open width soaper
17. Curing/polymerizing	18. Drum washer
19. Calendering	20. Oil/gas fired boiler
21. **Thermo Pac with all type of fuels / other high temperature heating system subject to pollution control measures by the concerned State Authorities**.	22. Air Compressor 15 H.P. and above.
23. Husk/ Caddis fired boiler	24. **Bio-mass based gassifier**

j. <u>FOR TESTING ESSENTIAL</u>	**<u>OTHERS</u>**
1. Evenness tester	1. Electronic twist tester

2. Jute bundle strength tester
3. Jute fineness tester
4. **Yarn tensile strength tester**.
5. **Fabric strength tester**
6. Scotch guard applicator tester

2. Abrasion tester
3. Bending rigidity tester
4. Colour Fastness tester
5. Computerised colour matching
6. Rubbing fastness tester
7. Light fastness tester
8. Drape meter
9. Count balance
10. Laundero meter
11. Yarn twist tester
12. Yarn appearance tester (manual/automatic)
13. Ballistic raw jute strength tester
14. Fire retardancy tester
15. Latexing tester
16. Water proofing

k. Modern Industrial Humidification system for controlling relative humidity and temperature.

l. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX - H

LIST OF MACHINERY ELIGIBLE UNDER TUF SCHEME FOR ENERGY SAVING PROCESS CONTROL EQUIPMENTS FOR VARIOUS SECTORS

a. Energy saving and process improvement instruments / attachments:

1. Auto cono: -Multichannel Pre-set yarn length monitoring and controlling system for ring spinning, open end spinning, drawing frames, winders, twisters, texturising and crimping machines.
2. Chemical concentration indicator & controlling system: - For scouring, bleaching –mercerizing processing machines.
3. Fabric Profile System:- To monitor and control the speed of stenter machine while heat-setting/drying/finishing for process and quality improvement.
4. Loom Data Monitor: - Indicating no. of picks, no of stops, running and down time, speed (picks per minute), length as meters of the programmed piece & how is needed to complete the piece etc.
5. Fabric defect analyzer: - Low cost micro processors based system to record all types of defects in the fabrics which helps in locating the defect arisen point i.e whether at loom, spinning, knitting stage etc.
6. Cotton contamination analyzer:- Quality control system to classify the particles in terms of type/size, fibre length etc. Helpful for improvement of Ginning & spinning processes.
7. Moisture indicator and automatic controller:- Drying automatic system with software to control moisture level of sizing/stenter of fabric drying, to ensure natural regain of the fibre, which helps in even pick up during Drying and Printing.
8. Fabric Centering & Spreading system:- Web guiders with steering rollers and combined with full width scroll rollers assure crease free center line guiding of textile webs.
9. Automatic Fabric Straitening system:- Use for a fabric with perfect web when the manual control failures on high speed ranges.
10. Weight/Denier reduction process control:- It is used as concentration control system for polyester and polyester cotton blended fabrics in principle of weight reduction process using sodium hydroxide solution.

11. Web Guiding System:- Used for unwind, rewind printing, trimming, quoting, laminating, folding, slitting in an industry like paper, plastic, rubber, metal, textile etc.
12. Stop Motion for Spinning & Knitting :- It is used in carding, comber machine, roving frames / speed frames, drawing frames and knitting frames.
13. Weft Accumulator :-Used as weft feeder or shuttleless weaving machines with the weft instruction rate of 900 to 1500 mtrs. per minute per colour.
14. Warp Stop Motion, Yarn Inspector :-Optical electronic yarn instructor to detect yarn break / faults during the weaving /warping and weaving process.
15. Production Data Monitor:- Electronic multi shift counter with pre-determining measured length, control and pre-signal warning, designed for spinning machines both for ring and open-end, draw frame, twisters, doublers and cards, knitting machine, shuttleless loom, warping machine, sizing machine, shearing machine and fabric processing machines.

b. Promise-ProWin range of online production monitoring and speed control systems for spinning machines

c. Any other machinery considered appropriate by the Technical Advisory-cum-Monitoring Committee (TAMC).

ANNEX – J

LIST OF PROCESSING MACHINERY ELIGIBLE UNDER TUF SCHEME FOR 10% CAPITAL SUBSIDY

1. Singeing machine with auto mixing of air & fuel for temperature and flame control.
2. Process and dye kitchen management system for the whole process house.
3. Computer colour matching.
4. Computer controlled fabric inspection machine with fault analyzer and report generator.
5. Automatic roll folding and packing machine.
6. Relax / Tumble / Radio frequency / Microwave dryer / Hot air / Infrared / Radiant gas fired / Loop dryers.
7. Compacting machine.
8. Knit tubular mercerizing / bleaching cum mercerizing machine.
9. Knit fabric continuous bleaching plant
10. Rotary screen printing machine with magnetic / air flow squeege system, on-line washing arrangement, quick change over facility, automatic design setting.
11. Ink jet printing machine.
12. Loop ager / Flash ager
13. Washing range with arrangement of tension free fabric drying and reduced water consumption/water reuse system
14. Multi chamber stenter (minimum 4 chambers) with arrangement of oil / gas heating
15. Coating / Laminating / Embossing / Pinching machine.
16. Yarn / fabric mercerizing machine with/without Caustic Recovery Unit (without caustic recovery unit if unit already has it).
17. Open-width continuous scouring and bleaching range with microprocessor attachments and automatic chemical dosing
18. Open width Pad-dry and / or Pad-Steam continuous dyeing range with micro processor based energy control and water monitoring with / without thermosol.
19. Indigo dyeing range
20. Digital / laser / len engraving / screen making system for rotary screens.
21. Continuous weight reduction machine through micro wave technique (for Polyester goods only)
22. Machine for softening and stone wash effect on fabric / garments.
23. Compressive Shrinking range.
24. Sueding / peach finishing / brushing / raising / decatising / contipress / polishing shearing / pile cutting machine.
25. Fully automatic zigger with microprocessor controller
26. Effluent Treatment Plant (ETP) upto secondary and/or tertiary treatment facilities including Reverse Osmosis, Nano Filteration, Multiple effect stage Evaporators / Mechanical Evaporator.
27. Water softening plant.
28. Soft Flow Dyeing Machine

29. Automatic Flat Bed Screen-Printing Machine.
30. Automatic Flat Bed Garment printing Machine.
31. Automatic Dye Weighing and Dispensing System.
32. Fibre / Yarn Dyeing machines (package / cabinet type).
33. Curing / Polymerizing Machine.
34. Jet Dyeing Machine (Low liquor ratio 1:3.5 to 7).
35. Airo Machine (for durable mechanical finishes).
36. Ammonia finishing machine for fabrics including ammonia recovery plant.
37. Rope opening line with open width squeeze mangle.
38. Weft Straightner with electronic controls.
39. Wet fabric spreading & squeezing Machine.
40. Calendering Machine (7 bowls)
41. Fully Automatic Jigger with Microprocessor Control.
42. Foam Finishing Machine.
43. High speed micro-inkjet Engraver with UV exposing unit
44. Flock cutting / printing machine
45. Thermosoling range
46. Transfer printing machine
47. Fabric reversing machine
48. Slit opening machine
49. Milling machine
50. Kier decatising / Continuous decatising machine
51. Plasma Treatment machines
52. Solvent Scouring machines
53. Contifit / Super finish machine with micro processor controller.
54. Fabric Shearing machine.
55. Continuous Pressing & Chemical Setting machine.
56. Paper / Rotary Press machines.

Processing house for yarn/fabrics/garments/made-ups including wool, polyester / wool blends, knits, jute, independent fibre/yarn dyeing unit or fibre/yarn dyeing facility attached to spinning unit are eligible to avail the benefit.

Note : The 10% capital subsidy will be applicable to newly added specified processing machinery with effect from 6th October, 2005 (i.e., Date of approval of Cabinet Committee). Thus disbursement made by the lending agency in respect of aforesaid machinery on or after 6th October 2005 will be eligible for 10% capital subsidy.