



## About Us

We are **Atra Technologies**, an Embedded Experts having own production of embedded hardware and software with assured quality. We cater to Telecom, Mobile Applications & Embedded domains. Through our expertise in .NET & Open Source technologies we provide Application Development services.

We are involved in designing, programming and developing embedded software components and systems. Hence we position ourselves as a Techno-Commercial Company at Coimbatore [South India's Manchester] in India..

## Our Products and Services

**Atra Technologies** engineering team possesses considerable experience in solution development for all modern operating systems, both Windows and UNIX.

### ➤ Point Of Sale Terminal

This is an easy-to-use application for retailing businesses to track sales, inventory and customer information. The software can be easily customized for any business needs.

### ➤ Hand Held Devices

A hand-held automatic token/ticket vending machine, designed for the users in the era of mobile business by providing on the spot solutions using latest GPRS and GPS technologies.

### ➤ Spinning Production Monitoring System

Atra Online Spinning Production Monitoring System facilitates continuous monitoring of Production and Power at each machine individually and collectively. The data is processed to generate reports that help in seamless running of all operations and identify weak areas, help mills continuously to improve productivity, save costs, translating into higher profits.



➤ Weaving Production Monitoring System

Atra Weaving Production Monitoring System collects data from the every single Loom automatically in the mill. The data is processed to generate reports that help in seamless running of all operations and identify weak areas, help mills continuously to improve productivity, save costs, translating into higher profits.

➤ Global Positioning System Tracker

ATG01 is a specially designed vehicle locator with creative design and high quality configuration. With latest GPS SIRF-Star III chipset, it works by GPS/CDMA/GSM/GPRS. Even in most remote mountain areas, users can get accurate location details.

➤ RFID Products

Atra RFID Products is the use of an object (typically referred to as an RFID tag) applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader.

## What is RFID ?

The **Radio-frequency identification (RFID)** technology uses radio waves to identify, trace & track and authenticate individual objects as they move between physical locations. There are different methods for identifying objects with RFID, the most common is by storing a unique number that identifies a product and related information. RFID devices and software must be supported by an architecture that enables the collection and distribution of location-based information in real time.

The RFID system consists of tags and readers. A tag contains a chip and an antenna that stores the information for object identification. RFID tags can be attached to pallets, cases, or individual items. The tag transmits information to the reader, and the reader converts the incoming radio waves into a form that can be read by a computer system.

There are generally three types of RFID tags: active RFID tags, which contain a battery and can transmit signals autonomously, passive RFID tags, which have no battery and require an external source to provoke signal transmission, and battery assisted passive (BAP) RFID tags, which require an external source to wake up but have significant higher forward link capability providing greater range. RFID has become indispensable for a wide range of automated data collection and identification applications.

The most common application of RFID technology today is for tracking goods in the supply chain and product authentication. Another common application is for security - RFID is used to control building access and network security, and also for payment systems that let customers pay for items without using cash.

As technological progress in RFID lead to an even higher level of data transmission in addition to predicted lower cost - RFID technology will become ubiquitous within the supply chain industry and other industries, increasing overall efficiencies and dramatically improving the return on investment (ROI).

## What does RFID technology do?

Like barcode technology, RFID technology allows for the interchange of product data by means of radio waves.



## Components and functional mechanisms of an RFID system

The advantages of RFID data transfer are as follows:

- RFID is an extremely reliable and robust technology that is unfazed by adverse environments.
- No line-of-sight contact is needed between the printer, reader and RFID tag
- The data from multiple data media can be captured and read via a single reading process (bulk data acquisition)
- Makes data acquisition a more automated process

## Overview of the advantages of EPC/RFID

EPC/RFID: an indispensable technology in a global economy.

- EPC allows for automatic identification of products, pallets and shipping containers.



- EPC/RFID allow for the smooth and efficient cross-border management of information and product flows across industries.

#### Advantages of EPC/RFID technology

- Promotes just-in-time manufacturing and logistics
- Optimized inventory management with a few mouse clicks
- Reduces warehousing cost
- Optimized product availability
- Optimized traceability and quality assurance
- Optimized anti-shoplifting protection and reduced stock shrinkage
- Simplifies return management via a paperless product replacement workflow

#### Properties and benefits of RFID systems

- No line-of-sight contact between devices is needed
- Unaffected by dirt, dampness, and optical masking
- Long service life; virtually wear and tear-free
- High data storage capacity
- The use of passive and active RFID tags allows for read/write fields ranging from a few millimeters to several meters
- Data can be edited and added
- Reusable data media
- The system's anti-collision function allows for bulk or multiple data capture
- Cost efficient data acquisition with high granularity

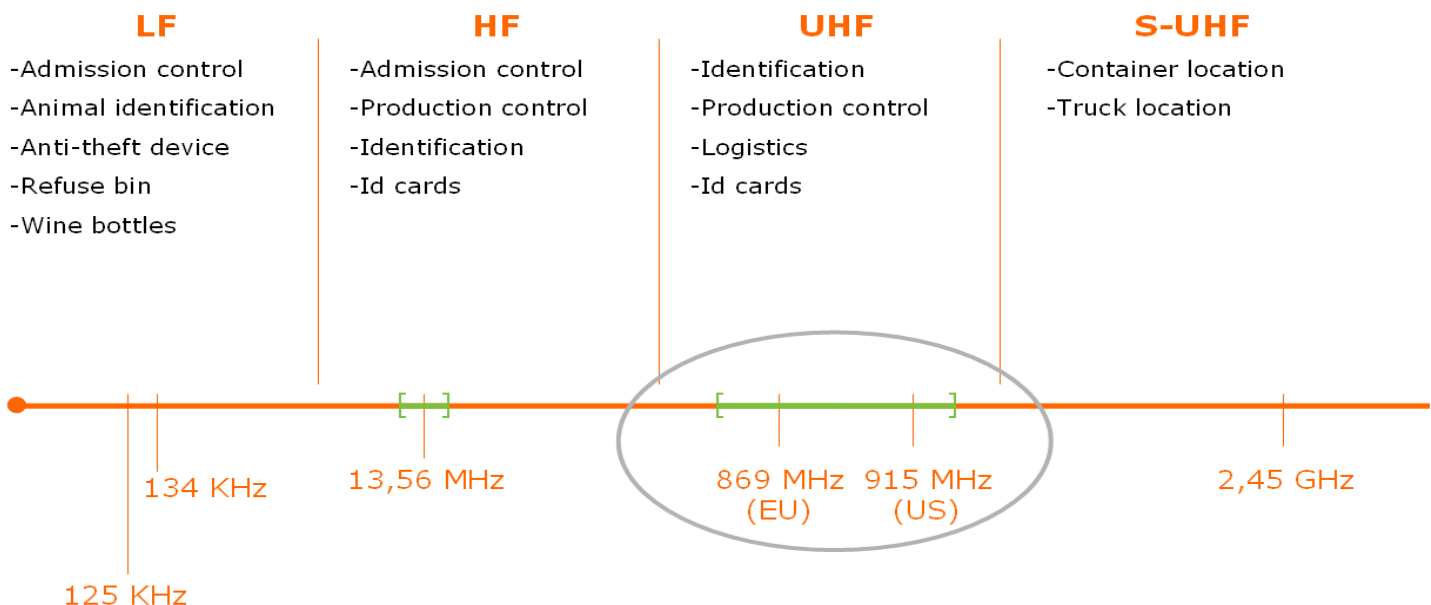
## Radio frequencies

Information in RFID systems is transferred by means of radio waves – much like a radio station, which broadcasts its programming on a short, medium or long wave frequency. These same frequencies, which are also used to transport data in RFID systems, are as follows: low frequency (LF): 125 megahertz; high frequency: (HF) 13.56 megahertz; and ultra high frequency (UHF): 860 to 960 megahertz.

The radio frequency that is applied in any given RFID system depends on the following factors:

- the required read range
- the required item read speed
- the type of product being read
- the quantity of products being read
- the country in which reading is performed

In recent years UHF (860-960 MHz; 865-868) has become the established frequency for general RFID applications based on the EPC global standard. EPC global has standardized this heretofore unoccupied frequency, thus allowing for worldwide interoperability.





## Common Uses RFID

- Computer vision for IT systems

Information Technology systems have been built from sophisticated computer networks and application software, but still largely rely on manual or semi automatic data capture. The integration of RFID into labelling objects used with such systems allow the computer to automatically identify objects within 13 meters of the reader and process the data automatically

- Warehousing

Tracking of containers and pallets, stocktaking

- Access control

Ability to read the identity of many people at the same time passing through doorways, tube station entrances, lift access and doorways.

- Identifying capital goods

Ability to read the identity of transponders mounted inside capital goods or packaging, when in the warehouse, when being transported and even when passing through doorways for an asset tracking system.

- Case lots of low value consumer items

Same system can be used for the producer, wholesaler and retailer at case lot level of consumer goods for transferring via truck, checking in and out of warehouse.

- Fleet Maintenance

RFID technology, commercial, government, and private fleets can provide hands-free access to their maintenance depot. Our technology also allows them to efficiently collect, track, and report operations and maintenance data for all of their vehicles that are in the depot..

- Containers labeling

Shipping, air freighting and rail movement.

➤ Courier parcels and documents

Remote identity, sorting, routing and track-and-trace information

➤ Parcels and mail bags

Remote identity, routing, track-and-trace information.

➤ Airline baggage

Identifying, sorting and routing - not confused by the transponders that will be read from labeled goods within the luggage due to the use of RFID systems.

➤ Compact discs and video retailing and rental

EAS, identifying and stock taking

➤ Laundry for hospitals and hotels

Identity, sorting and routing after bulk washing

➤ Motor vehicle tyres

Transponder embedded into tyre provides positive identification of case for identifying, wear tracking, usage tracking, anti theft.

➤ Files and documents

Identifying, track-and-trace, locating, association with person carrying documents past doorways - suitable for insurance industry/ government records.

➤ Passport, driver license

Anti-counterfeiting, identifying

➤ Manufacture

Labeling components for all kind of manufacture, storing, routing, warehousing, identifying like textile, automotive and more....



➤ Library books

Identifying, EAS, self service checkout/check-in, book location.

➤ Loyalty cards for retailing

Remote identification of client and association with database

➤ Pharmaceutical/ pathology

Tracking controlled and restricted drugs, warehousing, manufacture date, identifying high value drugs. Tracking pathological samples during processing

➤ Farm animals

Electronically identifying herd animals for control, for documentation of milk yield, for controlled feeding and dosing and for disease control

➤ Labelling clothes and shoes

Identifying, stocktaking, size distribution, self service, EAS. Reading clothes washing properties for an automated washing machine

➤ Dismantling items

For green legislation requiring the dismantling and sorting of old capital items, robot identification of parts and type of material.

➤ Marking explosives

Identity, track-and-trace, anti-theft

➤ Hospitals

Tracking patients, access control, preventing baby removal, patient location and identification, computer authorization of surgical procedures

➤ Marking hotel possessions

Remote identity of possessions in client's luggage



➤ Bank notes

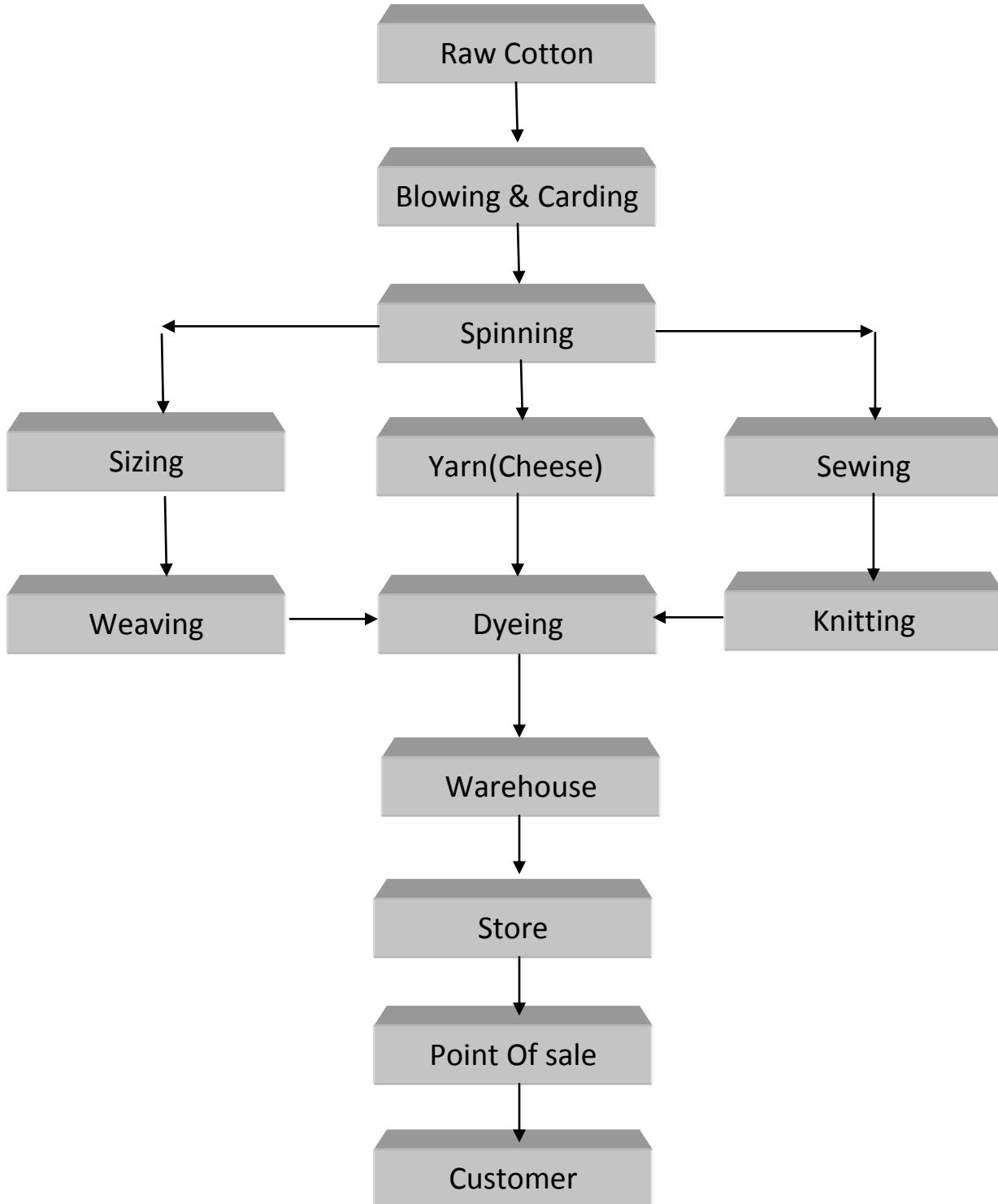
Anti-counterfeiting, accurate counting

➤ Grocery retailing

High speed scanning of baskets, trolleys and carts, stock-taking, goods receiving - the ultimate application and more .....

## TEX –RFID

**RFID for textile manufacturing** can enable cotton to fabric (finished goods) automation. The following figure shows the various types of textile manufacturing process.



## A general process model with weak points and RFID opportunities :

The following table shows the step by step process model with weak points and RFID opportunities.

### For Woven fabric Manufacturing:

	Step	Process	Pain Points	RFID Expected opportunities
<b>Raw Material</b>	1.1	Unload		
	1.2	Labeling, attaching security tags* Item wise (bales)		
	1.3	Picking	errors in picking, exception management searching items	Error detection in picking, Better item tracking and localization.
	1.4	Verification	time consuming, labour intensive	visibility of content
<b>Stock Room</b>	1.5	Store the items	Manual records update	Real time record update
	1.6	Picking the items	lost time, picking errors	Labour, errors and time saving. Quality of raw data Error reduction in ginning machine loading (warning systems). Better tracking and tracing (including employee theft) Automatic printing of delivery notes from the RFID Massive tag reading.
<b>Ginning</b>	1.7	Start the ginning process		
	1.8	Transport labeling		
	1.9	Print delivery note		
<b>Outgoing Area</b>	2.0	Verification of the expedition		
	2.1	Loading the truck	Errors in loading and related longer lead	Error detection in truck loading (warning systems)
<b>Spinning</b>	2.3	Labeling, attaching security tags* Item wise (bales)		
	2.4	Picking	Lost time, picking errors	Labour, errors and time saving. Quality of raw data

				Error reduction in truck unloading (warning systems). Better tracking and tracing (including employee theft) Automatic printing of delivery notes from the RFID Massive tag reading.
	2.5	Partly quantity control	Labour costs/losing time	Saving labour cost. 100% quantity check with out additional cost
	2.6	Start the spinning processing		
	2.7	Labeling, attaching security tags* Item wise (every spindle production items)		
	2.8	Verification of live stock	Possibilities of long Errors, Labour intensive	Real time live stock with out error in a few minutes
	2.9	Quality control	No visibility	100% visibility
	3.0	Storing preparation	Picking errors	Error detection in picking Better item tracking.
	3.1	Packaging for transport		
	3.2	Transport labeling		
	3.3	Loading truck		
<b>Sizing</b>	3.4	Unloading truck		
	3.5	Partly quantity control	Labour cost/losing time	100% quantity check without additional costs
	3.6	Start the sizing process And labeling attaching the tags into wrapping beams		
	3.7	Stock verification	Errors	Real time live stock updates
	3.8	Loading finished beams		
<b>Weaving</b>	3.9	Unloading the beam		
	4.0	Start the weaving process ie load the sizing beam into the loom		
	4.1	Unload the fabric from weaving machine		
	4.2	Labeling, attaching		

		security tags*		
		Fabric		
	4.3	Stocking	Unit on wrong place	Errors and time saving More control.
	4.4	Packaging and labeling	Error in stock maintenance	With out error in stock maintenance
	4.5	Loading the items		
<b>Rework Process Area</b>	4.6	Dying, Ironing, Dressmaking, washing		
	4.7	Transport stocking area	Unit on wrong place	Errors and time saving more control
	4.8	Quality control	No visibility	100% visibility
	4.9	Storing preparation	Picking errors	Error detection in picking
<b>Cross Docking Area</b>	5.0	Quality control		
	5.1	Sorting the cartons to the destination area	Wrong sorting	Labour, errors and time saving (earlier identification of wrong deliveries).
	5.2	Verification of the expedition	Wrong expedition	Labour, errors and time saving. Quality of raw data Error reduction in truck loading (warning systems). Better tracking and tracing (including employee theft) Automatic printing of delivery notes from the RFID Massive tag reading.
	5.3	Finalizing Transport	Sorting errors	
	5.4	Identification Transport unit		
	5.5	Transport labeling		
<b>Store</b>				
<b>Reception area backstore</b>	5.6	Unloading truck	Hidden picking mistakes, labour cost	Saving labour cost and time. 100% quantity check with out additional cost
	5.7	Quantity control and verification	Time, quantity errors	Automatic goods registration and verification 100% control
<b>Storage Area</b>	5.8	Item classification – front store or back store	No information about item location	More visibility of the item location saving time by faster item finding
	5.9	Inventory control	Labour cost/losing time	Saving labour cost and time.

				100% quantity check with out additional cost. More stock taking with less errors
	6.0	Selecting garments for sales floor	Labour cost/losing time, wrong selection	Saving labour cost and time, accurate selection
	6.1	Transport to sales floor		
<b>Sales Floor</b>				
	6.2	Placing garments	Garment put on to wrong self	
	6.3	All kinds of inventory control	Labour cost/losing time	Saving labour cost and time. 100% quantity check with out additional cost. More stock taking with less errors
	6.4	Searching item	Labour cost/losing time	Saving labour cost and time. More time for selling task
	6.5	Replacing founded garment	Searching for right self	Easily identified
	6.6	Identify and picking the item	Labour cost/losing time	Saving labour cost and time. More time for selling task
	6.7	Packaging garments		
	6.8	Transport to dock door		
	6.9	Creating transport label		
<b>POS</b>	7.0	Reading label	Time to read label	Saving time through reading labels simultaneously
	7.1	Removing security tag	Labour cost/losing time	Saving labour cost and time. (if EAS is integrated in RFID tag)
	7.2	Cashing process		Self check out (terminals)
	7.3	Putting items into the bag		

Note : We can provide RFID solution for all type of textile manufacturing processing like

- ❖ Cotton Fabric
- ❖ Leather Fabric
- ❖ Silk fabric and more....

We look forward and are excited at the possibility of working with your organization and synergizing our solutions with your requirements.