

The Royonic SMD Tower ...

Offering the correct component in the right place and in a controlled atmosphere, ready for a quick and simple conversion of your SMD line, the Royonic SMD Tower is an automated, highly flexible and expandable buffer storage unit designed for production deployment. The SMD Tower from Royonic delivers up to 546 different SMD reels and trays, and needs a maximum of eight seconds to dispense any required reel or tray.

Access times can be reduced substantially with multiple Tower configurations, as putting-into-storage and storage retrieval can be performed in parallel. Storage capacity can be expanded by a multiple when combining several Tower units. To store components sensitive to humidity (MSDs) as per IPC/JEDEC standard 033A, the Tower may optionally be equipped with an adsorption unit. A controlled atmosphere with relative air humidity of less than 5% is created by feeding in dry air. Air temperature and humidity are recorded and provided as 'traceability data'. Additionally, the MSD utilization duration can be monitored.



... at a Glance.

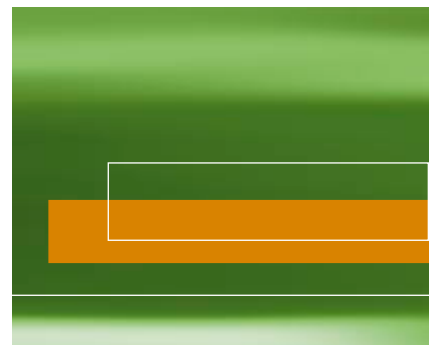
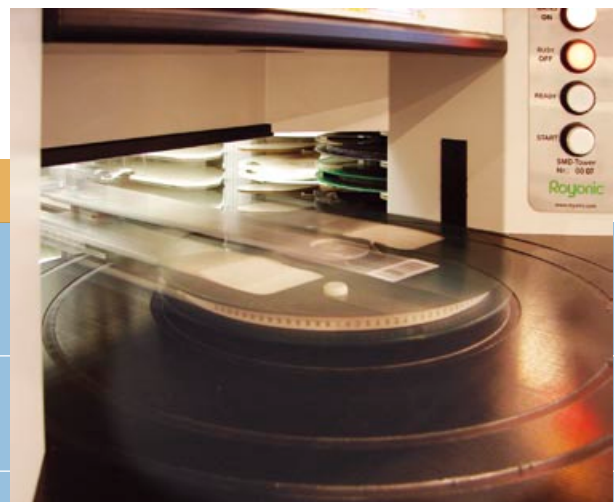
Regardless of whether you request a single reel or tray, automatically process a complete kitting list or even an entire component assembly programme, the Tower's database records every movement and keeps track of all stored reels and component quantities. Using a unique identification code ensures that always the correct article is provided or stored. Set-up errors due to mix-ups are absolutely impossible.

Return-to-storage is just as quick and convenient. Simply place the reel in the terminal and press the Enable button. The integrated barcode scanner reads all the relevant information and the reel is in its correct location within just a few seconds. The SMD Tower needs just one square metre of floor space to achieve this. The compact, circular arrangement of the cassette reels around the fast, central triple axis pick-up makes this possible.

The Royonic SMD Tower closes a gap in flexibly organised SMD product manufacture: where, up until now, reels had to be hunted for, one at a time, from space consuming and inflexible storage systems.

Where proprietary storage management systems could either not or only with great effort be integrated into available database structures. Where mix-ups resulting from manual processes were practically „pre-programmed“ and inevitable. The Royonic SMD Tower now enables space-saving, fast and error free supply of reeled components and trays.

Beside its main application as buffer storage for SMD assembly, the Tower can also be used as repair storage in conjunction with AOI systems, as access-protected safety storage for high-priced components, or as MSD storage for humidity-sensitive components.



Operation: Simple. Fast. Efficient.

Time is money – this particularly applies to modern SMD production. System-optimized storage speeds up the use of components on reels to an even higher level. Reels used more often than others are stored where they can be accessed more quickly.

The convenience of operation also helps to shorten working processes. Reels can be stored in any order. Simply deposit the reel in the SMD Tower and push the Enable button. The integrated barcode scanner automatically identifies the reel and transfers the component information to the PC. The database software checks whether there is already an entry for this item, and replaces it if necessary. Within a few seconds, the reel is deposited at the assigned position and the SMD Tower is ready to accept the next reel.

Retrieval is just as easy. Enter a part number or choose a kitting list or a component insertion programme. The items are then provided sequentially and booked out.

Safety and Flexibility for High Efficiency.

To err is human – and expensive. Conventional, manual access storage systems carry a large risk of mix-ups. Depending on when the mix-up is noticed, a proportional amount of damage may already have occurred. At best, setting-up time is extended and valuable production time shortened. At worst, entire production batches are beyond repair.

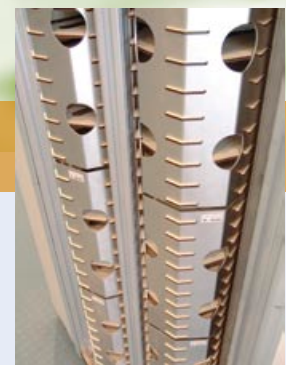
The SMD Tower makes such mix-ups a thing of the past. After a few averted mix-ups, the investment may already have paid for itself.

The SMD Tower's fast return on investment not only comes from fast and safe component reel storage/retrieval, but also from the system's high degree of flexibility which permits seamless integration into your production environment.

The SMD Tower can be equipped with reels between 8 and 32 mm thick and with a diameter of between 180 and 330 mm – in any combination permitted by the total given height of the system.

Trays can be used instead of 13"/32mm reels – and may also be mixed with reels. A 32mm reel position accepts up to three trays in a tray box.

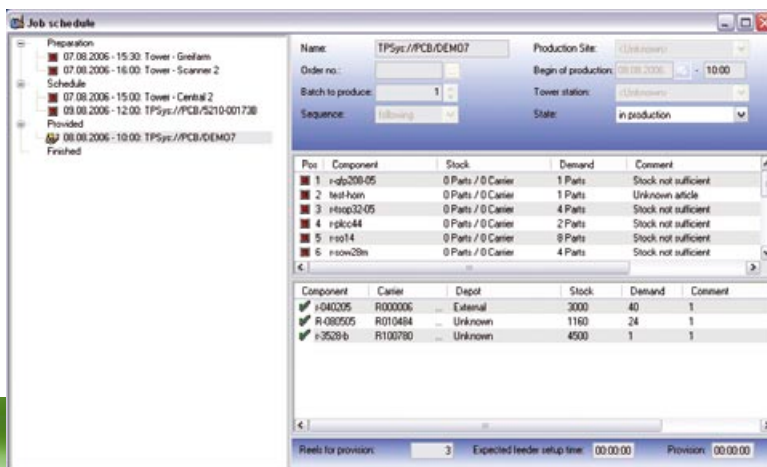
Up to 546 SMD reels can be stored on a floor space of just one square metre. Stocking capacity can be multiplied by combining several systems. The software manages an unlimited number of Towers and external storage locations.



The Software: Intuitive. Flexible. Powerful.

The control software, with its simple, intuitive interface, runs on a standard PC under Windows 2000/XP, and communicates with the SMD Tower via USB link. The software contained in the first unit's scope of delivery can manage an unlimited number of Towers and external storage locations.

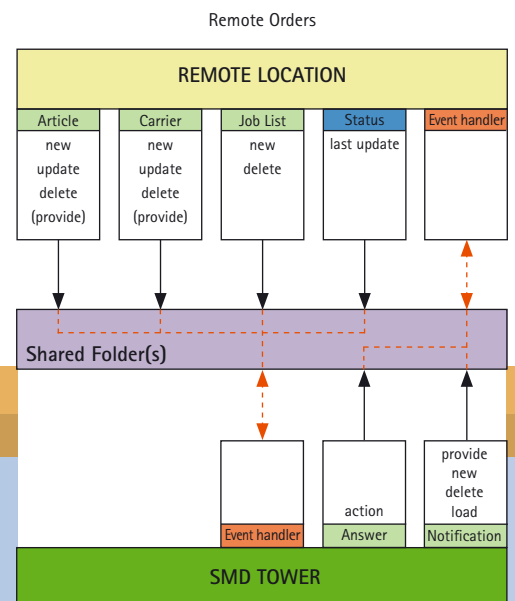
The software's client version works independently of the Tower and offers access to all databases. E.g. the client software can be used in the incoming goods department to record new components and their barcode registration. In this way, new, previously not recorded components will already be registered when they proceed to manufacturing and can be stored immediately.



The sophisticated enterprise resource planning software provides clear information about all relevant component data. The stock of data may either be managed independently or be controlled by a hierarchically higher system. Data synchronization is performed using a clearly defined remote protocol. Flexibly configurable user access minimizes the risk of operating errors.

The following master data are managed:

- Article name and comment
- Identification (barcode carrier)
- Storage location
- Manufacturer
- Packaging (reel, tray, tube etc.)
- Total / minimum stock
- Fifo
- Lead-free
- Design
- MSD / MSL (utilization duration)
- Reference
- User-defined fields

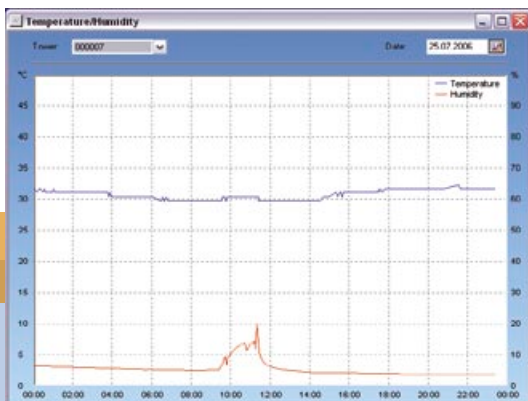


The 'Job Scheduling Module' is an important component of the software. The module manages several order lists (merchandise which must be provided depending on lot size). These lists are arranged chronologically by production dates in the scheduling module. Coloured indicators in front of the corresponding article signal whether the order can be manufactured completely, in part or not at all.

This job list can be generated as 'Bill of Materials' either manually or automatically, or alternatively be output as an order file via remote protocol.

Traceability

Comprehensive concepts for back-tracking through individual production steps are increasingly becoming a requirement. The Tower software stores all relevant information in the database, such as stock movements, temperature and relative air humidity, SMD utilization duration, and all user activities. All traceability data are also available as export files or in hardcopy.



Barcode Label Designer

The software comprises a label designer module to generate unique barcodes. Depending on label size, all data may be represented as barcode or as plain text. A carrier barcode generator automatically provides a consecutive ID code.



Communication with SMD Production Machines

If a data exchange with SMD production machines has been implemented (some turnkey solutions are available), then component stock data can be queried in real-time, and the stock of data can be updated continuously. The software acts as a set-up station and allows the user to assign articles to intelligent feeders via barcode. It then sends these feeder set-up data to the database of the production machine.

Further powerful functions such as job preparation or automatic minimum stock monitoring avoid unwanted production stand-stills. Considerable benefits in terms of process safety and optimization are also offered by functions such as stocktaking and statistic evaluation of stock movements.



Specification / Technical Data

SMD Tower	
Random Access Storage System for SMD Reels	
Reel sizes:	8 to 24 mm (7 " reels) 8 to 32 mm (13 " reels)
Freely configurable and expandable	
Access time:	8 seconds
Floor space (W x D x H):	980 x 1.100 x 2.200 mm
Weight:	300 kg
Power:	One phase 110 to 240 VAC / 50/60Hz / 300 VA

Software	
• Component management	• Job preparation
• Stock monitoring	• Barcoding
• Open data base structure	• Data Import/Export Function
• User Access System	• Inventory Function
• Traceability	

PC Hard- and Software Requirements	
Processor:	Pentium 2/500 or better
Memory:	256 MB ore more
HDD:	2 GB or higher
Removable media:	CD-ROM
Monitor/Resolution:	15" / VGA 1024 x 768
Color resolution:	16 bit
Interfaces:	USB 1.1 or higher
Network:	Ethernet, TCP/IP protocol
Operating system:	Windows 2000 / Windows XP

Capacity	
Magazines	Number
7 "	25
13 "	14

Magazines available		
Reel width	Reel Diameters	
	7 "	13 "
8 mm	•	•
12 mm	•	•
16 mm	•	•
24 mm	•	•
32 mm		•

32mm cassettes can alternatively house tray boxes.
1 Tray Box = 3 Trays (JEDEC)
Max. tray capacity = 294



Maximum capacity				
Reel width	Magazines/SMD Tower	Reels/Magazine	Number of reels	Total
8 mm / 7 "	25	14	350	546
8 mm / 13 "	14	14	196	

Standard configuration				
Reel width	Magazines/SMD Tower	Reels/Magazine	Number of reels	Total
8 mm / 7 "	19	14	266	482
8 mm / 13 "	4	14	56	
12 mm / 7 "	3	12	36	
12 mm / 13 "	3	12	36	
16 mm / 7 "	2	10	20	
16 mm / 13 "	3	10	30	
24 mm / 7 "	1	8	8	
24 mm / 13 "	2	8	16	
32 mm / 13 "	2	7	14	