# RND Warehouse Management

Version ERPNext License Python

A professional warehouse management system for ERPNext with SAP-style movement types, dual-signature workflows, and comprehensive Red/Green zone logic for efficient material handling and production planning.

## 🎆 Features

### 🏢 SAP Movement Type Integration

* **261 (FrontFlush)**: Goods Issue for Production with warehouse supervisor approval
* **311 (BackFlush)**: Transfer for Kitting with dual-signature approval workflow
* Automated warehouse type validation and material flow control

### ✍️ Dual-Signature Approval Workflow

* **Warehouse Supervisor**: First-level approval for all material movements
* **Kitting Supervisor**: Second-level approval for SAP 311 movements
* Digital signature capture with timestamp tracking
* Role-based permissions and workflow state management

### 🟢🔴 Red/Green Zone Logic

* **Red Zone**: Incomplete material availability - Work Orders cannot proceed
* **Green Zone**: All materials available - Work Orders ready for production
* Real-time material completion percentage calculation
* Automated zone status updates based on stock availability

### 📜 GI/GT Slip Generation

* Professional print format with signature display
* Automated slip numbering and generation
* Email integration for slip distribution
* Mobile-responsive design for field operations

### 🏦 Advanced Warehouse Management

* **Warehouse Types**: Raw Material, Work In Progress, Finished Goods, Transit, Rejected
* **Transit Warehouses**: Virtual tracking for materials in movement
* **Temperature Control**: Optional temperature monitoring for sensitive materials
* **Capacity Management**: Warehouse utilization tracking and alerts

### 📊 Reporting & Analytics

* Daily warehouse utilization reports
* Material shortage analysis
* Zone status trending
* Approval workflow metrics

## 🚀 Quick Start

### Prerequisites

* ERPNext v15.0 or higher
* Frappe Framework v15.0 or higher
* Python 3.8 or higher
* Active ERPNext instance with administrator access

### Installation

1. **Get the app from GitHub**

* cd ~/frappe-bench  
  bench get-app https://github.com/minimax/rnd\_warehouse\_management.git

1. **Install on your site**

* bench --site [your-site-name] install-app rnd\_warehouse\_management

1. **Restart and migrate**

* bench restart  
  bench --site [your-site-name] migrate

1. **Clear cache and build assets**

* bench --site [your-site-name] clear-cache  
  bench build

### Quick Configuration

1. **Assign Roles**
   * Go to User Management → Role Assignment
   * Assign “Warehouse Supervisor” role to warehouse staff
   * Assign “Kitting Supervisor” role to kitting staff
   * Assign “Zone Manager” role to production planners
2. **Configure Warehouses**
   * Set warehouse types (Raw Material, Work In Progress, Finished Goods, etc.)
   * Configure transit warehouses for material movement tracking
   * Set up temperature control settings if required
3. **Test Workflow**
   * Create a test Stock Entry with SAP Movement Type
   * Verify signature capture and approval workflow
   * Generate and review GI/GT Slip output

## 📋 Usage Guide

### Creating SAP-Style Stock Entries

1. **Navigate to Stock → Stock Entry**
2. **Select Purpose**: Material Issue (261) or Material Transfer (311)
3. **Choose SAP Movement Type**:
   * Select “261 (FrontFlush)” for goods issue to production
   * Select “311 (BackFlush)” for kitting transfers
4. **Link Work Order**: Associate with relevant Work Order for zone tracking
5. **Add Items**: Select items and specify source/target warehouses
6. **Save and Submit**: Follow the dual-signature approval workflow

### Approval Workflow Process

1. **Draft State**: Initial creation by Stock User or Warehouse Supervisor
2. **Warehouse Approval**: Warehouse Supervisor provides digital signature
3. **Kitting Approval** (SAP 311 only): Kitting Supervisor provides second signature
4. **Final Submission**: System automatically submits and generates GI/GT Slip

### Zone Status Management

1. **Work Order Creation**: System automatically sets to Red Zone
2. **Material Assessment**: Real-time calculation of material availability
3. **Zone Transition**: Automatic Red → Green when all materials available
4. **Production Planning**: Use Green Zone status to prioritize Work Orders

### GI/GT Slip Generation

1. **Automatic Generation**: Created upon final approval
2. **Print Options**: Use “Print GI/GT Slip” button for formatted output
3. **Email Distribution**: Send via email to relevant stakeholders
4. **Mobile Access**: Responsive design for field operations

## 🔧 Configuration

### Warehouse Setup

# Recommended warehouse hierarchy  
Company  
├── Raw Materials Division  
│ ├── Raw Material Main (Type: Raw Material)  
│ ├── Raw Material Transit (Type: Transit)  
│ └── Raw Material Rejected (Type: Rejected)  
├── Production Division  
│ ├── Production WIP (Type: Work In Progress)  
│ ├── Kitting Area (Type: Work In Progress)  
│ ├── Production Transit (Type: Transit)  
│ └── Production Rejected (Type: Rejected)  
└── Finished Goods Division  
 ├── FG Main (Type: Finished Goods)  
 ├── FG to Sell (Type: Finished Goods)  
 ├── FG Transit (Type: Transit)  
 └── FG Rejected (Type: Rejected)

### Role Permissions

| Role | Stock Entry | Work Order | Warehouse | Workflow Actions |
| --- | --- | --- | --- | --- |
| Warehouse Supervisor | Create, Read, Write, Submit | Read | Read, Write | Warehouse Approve |
| Kitting Supervisor | Read, Write, Submit | Read | Read | Kitting Approve |
| Zone Manager | Read | Read, Write | Read | View Reports |
| Stock User | Create, Read, Write | Read | Read | Submit for Approval |

### SAP Movement Type Configuration

{  
 "261": {  
 "name": "FrontFlush - Goods Issue for Production",  
 "purpose": "Material Issue",  
 "required\_signatures": ["warehouse\_supervisor"],  
 "allowed\_source\_types": ["Raw Material", "Work In Progress"],  
 "allowed\_target\_types": ["Work In Progress", "Production WIP"]  
 },  
 "311": {  
 "name": "BackFlush - Transfer for Kitting",  
 "purpose": "Material Transfer",  
 "required\_signatures": ["warehouse\_supervisor", "kitting\_supervisor"],  
 "allowed\_source\_types": ["Work In Progress"],  
 "allowed\_target\_types": ["Work In Progress", "Kitting Area"]  
 }  
}

## 🔌 API Reference

### Server-Side Methods

#### Work Order Zone Status

# Update Work Order zone status  
frappe.call({  
 method: 'rnd\_warehouse\_management.warehouse\_management.work\_order.update\_work\_order\_zone\_status',  
 args: { work\_order\_name: 'WO-001' }  
})  
  
# Get material status  
frappe.call({  
 method: 'rnd\_warehouse\_management.warehouse\_management.work\_order.get\_work\_order\_material\_status',  
 args: { work\_order\_name: 'WO-001' }  
})

#### Warehouse Management

# Create warehouse hierarchy  
frappe.call({  
 method: 'rnd\_warehouse\_management.warehouse\_management.warehouse.create\_warehouse\_hierarchy',  
 args: { company: 'Your Company', locations: ['AMB-W'] }  
})  
  
# Get warehouse dashboard data  
frappe.call({  
 method: 'rnd\_warehouse\_management.warehouse\_management.warehouse.get\_warehouse\_dashboard\_data',  
 args: { warehouse: 'Warehouse Name' }  
})

#### Custom Stock Entry

# Create custom stock entry with SAP movement type  
frappe.call({  
 method: 'rnd\_warehouse\_management.warehouse\_management.stock\_entry.make\_custom\_stock\_entry',  
 args: { work\_order: 'WO-001', purpose: 'Material Issue', qty: 10 }  
})

### Client-Side Hooks

#### Stock Entry Form Events

// SAP Movement Type change  
frappe.ui.form.on('Stock Entry', {  
 custom\_sap\_movement\_type: function(frm) {  
 // Validates movement type and updates UI  
 }  
});  
  
// Signature capture  
frappe.ui.form.on('Stock Entry', {  
 custom\_warehouse\_supervisor\_signature: function(frm) {  
 // Handles signature timestamp and validation  
 }  
});

## 📈 Monitoring & Maintenance

### Scheduled Tasks

* **Hourly**: Update Work Order zone status
* **Daily**: Clean up expired signatures, generate warehouse reports
* **Weekly**: Send warehouse utilization summaries

### Log Monitoring

# Check app-specific logs  
bench --site [site-name] logs  
  
# Monitor zone status updates  
grep "Zone status" ~/frappe-bench/logs/[site-name].log  
  
# Track signature workflow  
grep "Signature" ~/frappe-bench/logs/[site-name].log

### Performance Optimization

1. **Database Indexing**: Ensure proper indexes on custom fields
2. **Cache Management**: Clear cache after configuration changes
3. **Background Jobs**: Monitor queue for scheduled tasks
4. **Image Storage**: Optimize signature image compression

## 🔄 Migration & Updates

### Version Updates

# Update from GitHub  
cd ~/frappe-bench/apps/rnd\_warehouse\_management  
git pull origin main  
  
# Update site  
cd ~/frappe-bench  
bench --site [site-name] migrate  
bench restart

### Data Migration

The app includes automatic migration patches: - **v1.0.0**: Setup warehouse types, create workflows, update existing data - Custom fields are automatically added via fixtures - Existing Stock Entries are updated with default SAP movement types

## 🐛 Troubleshooting

### Common Issues

#### Signature Fields Not Showing

# Clear cache and reload  
bench --site [site-name] clear-cache  
bench --site [site-name] reload-doctype "Stock Entry"

#### Workflow Not Working

# Check workflow status  
bench --site [site-name] console  
>>> frappe.get\_doc("Workflow", "Stock Entry Dual Signature Approval")

#### Zone Status Not Updating

# Manually trigger zone status update  
bench --site [site-name] execute rnd\_warehouse\_management.warehouse\_management.tasks.update\_zone\_status

#### Permission Issues

# Reset permissions  
bench --site [site-name] console  
>>> frappe.clear\_cache()  
>>> frappe.db.commit()

### Debug Mode

# Enable debug logging in hooks.py  
logger = frappe.logger("rnd\_warehouse\_management", file\_count=5)  
logger.setLevel(frappe.logging.DEBUG)

## 🤝 Contributing

We welcome contributions! Please see our [Contributing Guidelines](CONTRIBUTING.md) for details.

### Development Setup

# Fork and clone  
git clone https://github.com/your-username/rnd\_warehouse\_management.git  
cd rnd\_warehouse\_management  
  
# Create development branch  
git checkout -b feature/your-feature-name  
  
# Install in development mode  
cd ~/frappe-bench  
bench get-app ~/path/to/rnd\_warehouse\_management  
bench --site development.localhost install-app rnd\_warehouse\_management

### Testing

# Run tests  
bench --site [site-name] run-tests --app rnd\_warehouse\_management  
  
# Test specific module  
bench --site [site-name] run-tests --app rnd\_warehouse\_management --module rnd\_warehouse\_management.tests.test\_stock\_entry

## 📝 License

This project is licensed under the MIT License - see the <LICENSE> file for details.

## 📧 Support

For support, please contact: - **Email**: support@minimax.com - **GitHub Issues**: [Create an issue](https://github.com/minimax/rnd_warehouse_management/issues) - **Documentation**: [Wiki](https://github.com/minimax/rnd_warehouse_management/wiki)

## 🚀 Roadmap

### Version 1.1.0 (Planned)

* ☐ Mobile app integration
* ☐ Barcode scanning support
* ☐ Advanced analytics dashboard
* ☐ Multi-language support
* ☐ API rate limiting

### Version 1.2.0 (Planned)

* ☐ IoT sensor integration
* ☐ Machine learning for demand forecasting
* ☐ Advanced reporting engine
* ☐ Integration with external WMS systems

## 🔗 Related Projects

* [ERPNext](https://github.com/frappe/erpnext) - The main ERP system
* [Frappe Framework](https://github.com/frappe/frappe) - The underlying framework

## 📊 Statistics

GitHub stars GitHub forks GitHub issues GitHub pull requests

**Built with ❤️ by MiniMax Agent for the ERPNext Community**