

rsMES

Manufacturing Execution System

Index

- Who We are.
- What is a Manufacturing Execution Systems (MES)?
- Software functionalities and UI.

Who We Are

rsAutomazione: made in Italy since 1993

We are a supplier of integrated solutions for production processes optimization.

We develop and implement strategies, services and software for your business. We believe our multi-disciplinary engineering approach, attitude to continuous improvement and preferential assistance are key to help you succeed.



Our Mission

Since its foundation, rsAutomazione has offered expertise and solutions aimed at improving the efficiency of numerical control processing and related activities, guaranteeing partner companies significant benefits in terms of costs and time to market.

Our mission is to set up a technological center that fully supports companies in their challenge to competitiveness.



What is a Manufacturing Execution System (MES)?

The MES is a production management system to monitor and manage information relating to the production department.

The objective is to control the production status in real time by monitoring times, costs, productivity, consumption and energy savings for each order.

It is possible to acquire and analyze information on the functioning of individual systems and machines or on the progress of work orders and processes.

The acquisition and processing of the main production KPIs thus allows the implementation and management of a data flow between the production department and other company functions.



rsMES Funcions

Funcion		Description
1	Machine Monitor	<ul style="list-style-type: none">• Real-time display of machine data• Graphs of the production trend• Productivity of the machine• Deviation between estimated time and real time
2	Machine data acquisition	<ul style="list-style-type: none">• Real-time data acquisition: machine status, operating mode, cycle time, piece counter, alarms etc.
3	Item List Management	<ul style="list-style-type: none">• Creation and management of the item list
4	Production Order Management	<ul style="list-style-type: none">• Visualization and management of production orders• Integration between orders and item list• Attachments: drawings, photos, videos, pdfs• Notes

rsMES Funcions

Function	Description
Production Phase Management	<ul style="list-style-type: none">• Production phases input• Time detail of each production phase• Final calculation of machine downtime costs due to breakdowns
Production Scheduling	<ul style="list-style-type: none">• Automatic management of the machine calendar• Automatic management of the production order Gantt
Quality Module	<ul style="list-style-type: none">• Automatic notifications on quality check• Measurement data input• Tracking
Maintenance Module	<ul style="list-style-type: none">• Maintenance calendar• Automatic deadline alerts
Energy Consumption Monitor	<ul style="list-style-type: none">• Acquisition of energy consumption data• Real-time consumption monitor• Correlation between consumption and order• Reports
Web server	<ul style="list-style-type: none">• Web server implementation for using rsMES with tablets and smartphones• Operator monitor on board the machine
ERP Interface	<ul style="list-style-type: none">• Import data flow from the ERP• Data flow export to the ERP

Supported CNCs

rsMES communicates directly with the CNCs through the standard protocols provided by the manufacturers.

- Fanuc (Focas libraries)
- Heidenhain (RemoTool SDK, librerie Heidenhain)
- Mitsubishi CNC (Communication SDK, Mitsubishi libraries)
- Mitsubishi DNC (TCP protocol)
- Mazak (standard MtConnect)
- Haas (standard MtConnect)
- Siemens CNC (OPC-UA protocol)
- Siemens PLC (S7 Siemens protocol)
- Keyence (Marking Builder libraries)
- Schneider PLC (MODBUS-TCP protocol)
- Selca (Selca libraries)
- Visel (HTTP protocol)
- Tacchella (XML file)
- Roboteco (FTP protocol)



Supported Communication Protocol

rsMES communicates directly with the CNCs through the standard protocols provided by the manufacturers.

- TCP-IP
 - OPC-UA
 - MT-CONNECT STANDARD (HTTP)
 - HTTP
 - FTP
 - MODBUS-TCP (Schneider)
 - S7 (Siemens)
- FILE
- DATABASE
- Third part libraries

The list is constantly updated. Other controls and communication protocols not listed can still be supported and integrated according to the needs of the customer and the manufacturer.



Production Monitor

The production monitor is the rsMES main screen. Here you can manage the following information:

- List of connected machines
- Connection status
- Status of the CNC
- Current activities
- Order in execution
- Production order quantity
- Percentage of progress of the production order
- Average cycle time
- Pieces produced per hour
- OEE (coefficient of production efficiency)
- Count pieces
- Energy consumption

Item list

RS Modifica Articolo

Distinta Base Tempi Ciclo Storico

Articolo* MPE068600 Fase* 0 LAVORAZIONE Fasi

Descrizione PERNO ECCENTRICO RUOTA X Categoria* PRODOTTO FINITO Categorie

Unità di Misura N. UdM Tipo Ciclo* INTERNO

Macchine* 15910-2023 Macchine Anagrafica Macchine

Descrizione TORNIO BIGLIA B750YS Ultima Modifica 15/09/2023 10:37:46

Programma ISO 4089 Avvia Trasmissioni PP

Cartella PP ISO C:\Users\Utente\Desktop\PROGRAMMI\COPAMEC Sfoglia

Ciclo di Lavorazione

Tempo Attrezzaggio (s)* 3540 Tempo Attrezzaggio (h:mm:ss)* 00:59:00

Tempo Lavorazione (s)* 180 Tempo Lavorazione (h:mm:ss)* 00:03:00

Tempo Carico (s)* 20 Tempo Carico (h:mm:ss)* 00:00:20

Tipo Carico* MANUALE Tempo Carico Mascherato (S/N)* N

Tempo Ciclo Totale (s)* 200 Tempo Ciclo Totale (h:mm:ss)* 00:03:20

Pezzi per Ciclo* 1 Divisore Conta Pezzi CNC* 1.000

Tempo Pezzo (s)* 200 Tempo Pezzo (h:mm:ss)* 00:03:20

Pezzi Ora Calcolati (pz/h)* 18 Pezzi Disponibili Attrezzaggio 0

Cicli Alternativi

Priority*	Tipo Ciclo	Macchina / Fornitore	Descrizione	Tempo Attrezzaggio (s)	Tempo Attrezzaggio (h:mm:ss)	Tempo Lavorazione

Distinte Base Articolo

Articolo	Sequenza	Fase	Categoria	Macchina	Descrizione	Tipo Ciclo	Articolo Consumo	Descrizione Art. Cons.

DB Articolo DB Articolo Fase Materiale Consumo

Cliente Ragione Sociale CO.PA.MEC. SRL

Note

File Disegno \\DESKTOP-8QQC5IK\Disegni_tecnici\disegni_netcom\MPE068600\MPE068600.pdf Sfoglia Copia Fase Preced.

File Foto Sfoglia Copia Fase Preced.

Cartella Articolo Sfoglia Visualizza File

Valorizzazione Gestire Ore senza Calendario Parametri PP ISO Note

Tipo	Causale	Componente	Nota

Note Modifica

Annulla Conferma

Production Order

RS Ordini di Produzione

Nuovo Modifica Cancella Cambia Stato Elenco Ordini Importa Stampa Note Operative Gestione Lotto Ordini Associati Nuova Fase Confezionamento Da Esportare Utility Help Esci

1 di 1 Ordine 147-14/09/2023-73794 Fase Articolo Macchina 15910-2023 Tipo Ciclo Stato Ordine Nuovo In Corso In Attesa Sospeso Chiuso Aperto Completato

Ordine	Fase	Descrizione Ord.	Articolo	Descrizione	Data Ordine	Stato	Quantita' Ordine	Pezzi Lavorati	Scarti Lav.	Pezzi Buoni Attrezzaggio	Pezzi Lav. Totale	Cliente	Ragione Sociale	Data Consegna Pianificata	Ora Consegna Pianificata	Data Consegna Richiesta
147-14/09/2023-73794	LAVORAZIONE		MPE068600	PERNO ECCENTRICO RUOTA X	15/09/2023	IN CORSO	16	3	0	0	3		CO.PA.MEC. ...	15/09/2023	08:00:00	15/09/2023

Commissa Ordine Cliente Riga Ordine Cliente Categoria Disegno DDT Ricevimento

Ordine di Produzione Schede di Lavorazione Controllo Qualità Foto - Disegno Articolo Programma ISO Grafici Tempo Ciclo (pz/h) Note Operative Report Controllo Qualità Stati ODP ODP Associati Confezionamento Distinta Base Parametri di Lavoro

Scheda

15/09/2023

Attività della Scheda

Macchina	Descrizione	Data	Ora Inizio	Data Fine	Ora Fine	Attività	Totale Ore	Totale Ore (Decimali)	Codice Oper. Inizio	Operatore	Codice Oper. Fine	Operatore	Conta Pezzi Iniziale	Conta Pezzi Finale	Nota

0 di 0 Attività ODP Riepilogo Attività Nuova Attività Modifica Attività Cancella Attività

Tempi Ciclo

Articolo	Descrizione	Macchina	Attività	Operatore	Data	Ora	Programma CNC	Pezzi Lavorati CNC	Conta Pezzi Generale CNC	Tipo Carico	Carico Mascher	Tempo Carico (h.m.s)	Tempo Lavorazione (h.m.s)	Tempo Ciclo (h.m.s)	Tempo Ciclo Medio (h.m.s)	Pezzi per Ciclo	Tempo Pezzo (h.m.s)	Tempo Pezzo Teorico (sec)	Fuori Tolleranza	Tipo Fuori sul T.C. Te
MPE068600	PERNO ECCENT...	15910-2023	NON DEFINITA		15/09/2023	10:47:42	(MPE 068600 C	6608	6608	MAN...	N		0:40:47	00:40:47	00:40:47	1	00:40:47	200,0		
MPE068600	PERNO ECCENT...	15910-2023	NON DEFINITA		15/09/2023	10:50:12	(MPE 068600 C	6609	6609	MAN...	N		0:02:30	00:02:30	00:21:38	1	00:02:30	200,0		

2 di 2 Visualizza Colonne Tempi Ciclo Storico

Item List and Production Order

The item list and the production order modules are used to:

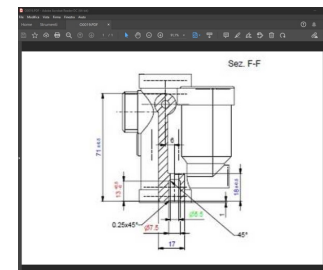
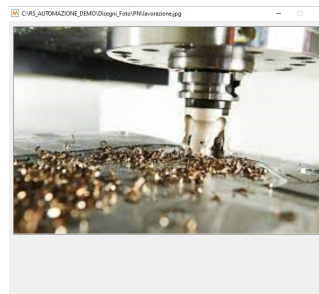
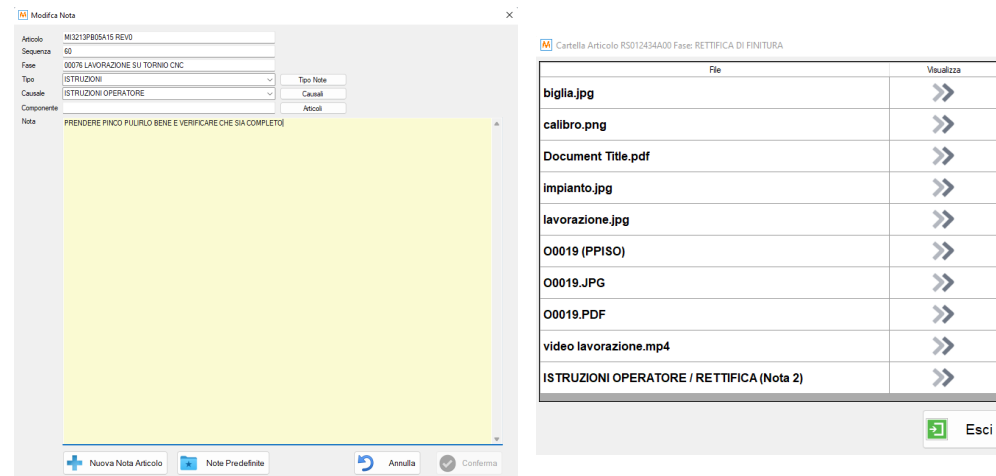
- Manage data of the items that will be produced
- Manage production orders

The presence of these two modules makes it possible to use the "stand alone" rsMES software (ie without the need to connect it to a company management system). rsMES is however able to interface with all types of management software through its import / export module and automatically populate the item list and production order fields.

Attachments and notes

It is possible to add notes or attachments (eg photos, videos, pdfs) to the production orders.

This function goes from a "paperless" perspective: the target is to digitize as much as possible the data flow within the production departments.



Operator Monitor

RS Monitor Produzione (Aggiornamento 3 sec.)
RS Monitor Macchina 14112-2018 (Aggiornamento 5 sec.)

TB545-1

admin

Elenco Macchine

Macchina	Target
CONFZ	OK
FAGOR-1	
ITALMACC	OK
MITSUBISHI	CP E
RS232	
SCM-AMP	OK
TB545-1	NOK
TB545-2	OK

14:12
26/09/2023

DATI MACCHINA/ORDINE CONTROLLO QUALITA' STORICO CONTROLLI DISEGNO FOTO ORDINI PIANIFICATI

ORDINI PIANIFICATI - MACCHINA TB545-1

Ordine	Articolo	Cod. Disegno	Fase	Macchina	Stato	Descrizione Macc.	Data Inizio Pianificata	Ora Inizio Pianificata
R05/45000371...	RS204857A 00		20.RETTIFICA PROFILO	TB545-1	NUOVO		14/10/2021	09:00:00
OP220001	RS012434A00		RETTIFICA DI FINITURA	TB545-1	NUOVO			
OP220007	RS012434A00		20.TB545-1	TB545-1	NUOVO			
OP220010	RS012434A00		0.0.LAPPATURA	TB545-1	NUOVO			
OP220013	RS012434A00		0.RETTIFICA DI FINIT	TB545-1	NUOVO			
OP220015	RS012434A00		0.RETTIFICA DI FINIT	TB545-1	NUOVO			
OP220017	RS012434A00		0.LAPPATURA	TB545-1	NUOVO			
OP210221	RS012434A00		50.TB545-1	TB545-1	NUOVO			
OP210221	RS012434A00	DISEGNO	RETTIFICA DI FINITURA	TB545-1	NUOVO			

Ordine	Articolo	Fase	Macchina/Reparto	Macchina

Tipo Nota	Causale	Nota
		mancanza materiale
		mancanza materiale
		test

Note Articolo

Componente	Tipo	Causale	Nota

Cambia Ciclo
 Cambia Stato ODP
 Nuova Fase
 Nuova Nota ODP
 Modifica Nota Articolo

14112-2018

AUTO

Tempo Ciclo Ultimo: **00:05:02**

Differenza Tempo Ciclo: 364,6% ●

Tempo Lavoro Ultimo: 0:05:02

Tempo Carico Ultimo:

Tempo Ciclo Min: 00:05:02 Max: 00:59:08

Tempo Ciclo Medio: 00:32:05

Tempo Ciclo Teorico: 00:01:05

Pezzi Ciclo: 1

Attività

Data Ora Inizio Attività:

Tempo Attività (h:m:s):

Operatore:

Ordine Produzione

Articolo: **10011915CL**

CHIOCCIOLA DX X

Fase: LAVORAZIONE

Ordine: 4062-23/08/2023-73738

Pezzi Richiesti: **40**

Produzione Oraria Ultima (pz/h): **11,92**

Produzione Oraria Media Ordine: **1,87**

Diff. Prod. Oraria Media: -97,5% ●

Produzione Oraria Teorica (pz/h): **55,40**

Pezzi Totali Prodotti: **2**

Scarti Totali: **0**

Avanzamento Ordine: **5 %**

OEE del 15/09/2023

Disponibilità: 1

Prestazioni: 0,22

Qualità: 1

OEE (%): **21,9**

Calendario Macchina 14112-2018 del Giorno 15/09/2023

Pz./h Teorico (blue bars), Pz./h Reale (green bars)

Operator Monitor

The user has several options to use the rsMES system:

- Desktop rsMES
- Web app rsMES (on tablet and smartphone)

The user may carry out the following activities:

- Production phases management.
- Operator activity selection and start / stop phase.
- Machine status check as well as cycle times, hourly production and production progress.
- Attachments and notes management.
- Management of the machine calendar or the production Gantt.

Web Server and Web App

WEB SERVER - MES

Operatore: admin

- Ordini di Produzione
- Apri Lavoro
- Lavori in Corso
- Chiudi Lavoro
- Monitor Produzione
- Monitor Macchine
- Programmi CNC
- Note Messaggi
- Esci

ORDINI DI PRODUZIONE IN CORSO

Macc.	ODP MES	Articolo	Fase	Desc.	Stato	Attivita'	Qta'	Tot. Pz. Lav.	D: C: Ri
TB545-1	OP210221	RS012434A00	RETTIFICA DI FINITURA	SUPPORTO TERMICO ARX	IN CORSO	PRODUZIONE	2000	491	160

Selezione Ordini

Ordine	<input type="text"/>	Articolo	<input type="text"/>
Macchina	TB545-1	Fase	<input type="text"/>

Visualizza Note ODP

Carico Produzione Ricerca Aggiorna

Seleziona Esci

NOTE ODP

ODP: 0608-2021

Articolo: MI3213PB05A15 REV0 CORPO CORTO

Fase - Macchina: 60.00076 LAVORAZIONE SU TORNIO CNC - 57 BIGLIA Y750

Note ODP

TIPO	CAUSALE	NOTA	ID
		.CONSEGNA URGENTE	

Note Articolo

TIPO	CAUSALE	NOTA	ID
ISTRUZIONI	ISTRUZIONI OPERATORE	PRENDERE PINCO PULIRLO BENE E VERIFICARE CHE SIA COMPLETO	47

File Disponibili

FILE	Percorso
AMMO REGOLABILE.pdf	C:\RS_AUTOMAZIONE_DEMO\Disegni_Foto\PN\AMMO REGOLABILE.pdf
Biglia-Smart.jpg	C:\RS_AUTOMAZIONE_DEMO\Disegni_Foto\PN\Biglia-Smart.jpg
calibro.png	C:\RS_AUTOMAZIONE_DEMO\Disegni_Foto\PN\calibro.png
Document Title.pdf	C:\RS_AUTOMAZIONE_DEMO\Disegni_Foto\PN\Document Title.pdf

Nuova Nota ODP Nuova Nota

Nuova Nota Articolo Modifica Nota Articolo

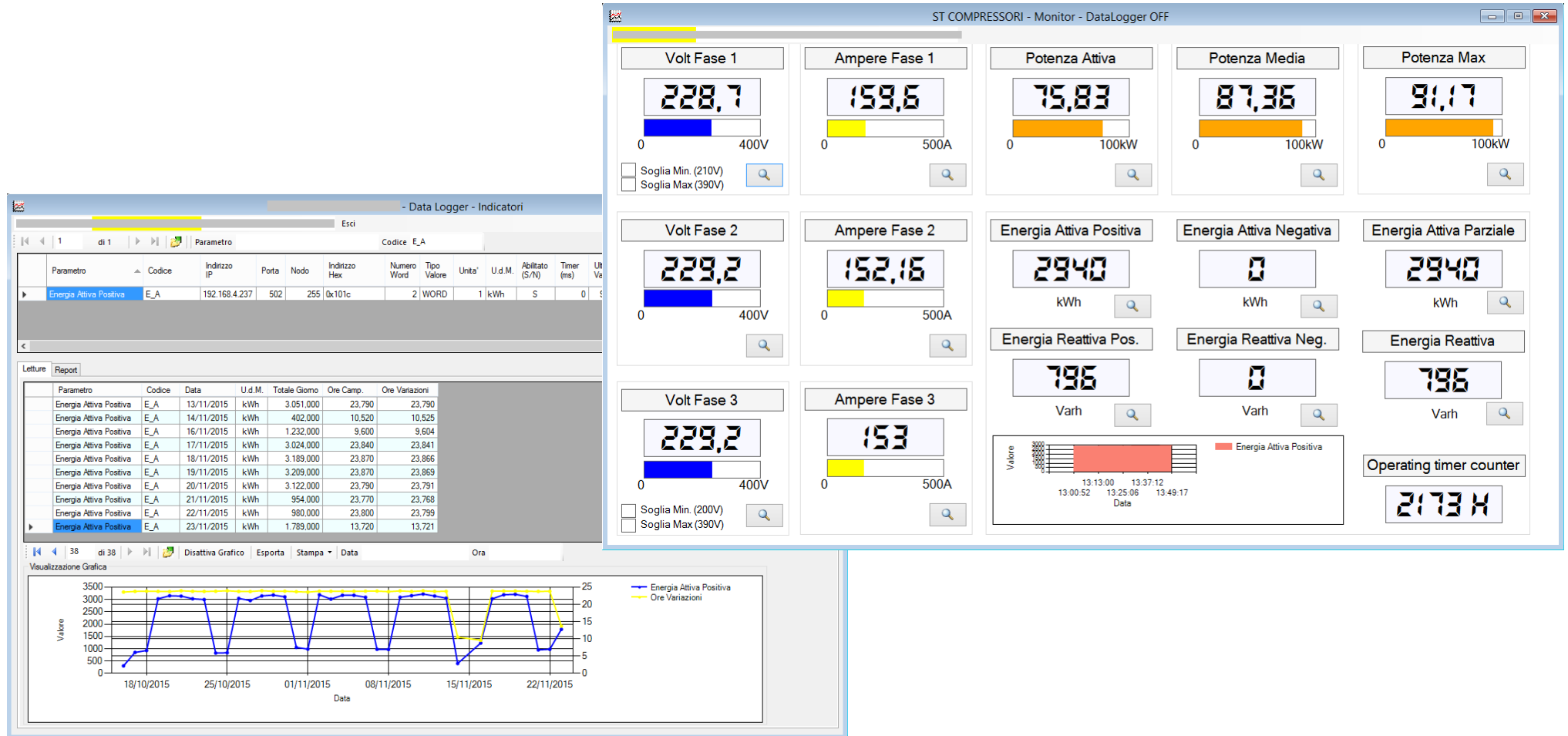
Visualizza Esci

Web Server and Web App

The web server functionality allows the use of rsMES with mobile devices such as tablets or smartphones. Everything is very simple and streamlined because it works with any device connected to the company network: there is no need to purchase expensive industrial tablets and access to the software is via a web browser (without the installation of specific apps).

- Operators can access rsMES with the tablet.
- Easy interface to manage the activities on the software with just a few taps.
- Management of production orders and process phases.
- Display of machine part programs.
- Notes and attachments management.

Energy Consumption Monitor



Energy Consumption Monitor

The energy consumption monitor is the tool that allows you to keep system consumption under control. Thanks to the data acquired and managed by the MES, consumption is correlated with the running program and the work order in progress.

- Real-time monitor of energy consumption.
- Correlation between consumption, part program and ODP.
- Measurement, in terms of energy efficiency or energy saving, of the deltas obtained from process optimization activities.

Production Scheduling

Supervisione MES - Modalità: Server - Gruppo: ADMINISTRATOR Utente: admin

Monitor Sistema Eventi Anagrafiche Configurazione Utility Administrator Finestre ? Esci

Monitor Macchine Monitor Anomalie Articoli - Tempi Ciclo Tempi Ciclo Storico Storico Allarmi Attività Ordini di Produzione Note Monitor Produzione Gantt Produzione Calendario Macchine Report Attività - Macchine - Produzione Report Personalizzati

Monitor Operatore Controllo Qualità Manutenzioni

Monitor Macchine (Aggiornamento ogni 2 sec.)

Gantt Produzione Tipo: ORE_PREV Ultimo aggiornamento: 05/03/2020 16:11:38

Calendario Macchine Tipo Tempo Ciclo Ordine in Corso Aggiornamento Automatico Help Esci

Selezione Macchine: MITS-01 - MITSUBISHI

Visualizzazione Gantt: 05 - Giovedì Marzo 2020

Visualizza solo Ordini Visualizza Giorni Visualizza Ore Visualizza Ore con Previsionale

Macchina	Descrizione	Tumi Tot.	05/03/2020		06/03/2020		06/03/2020		06/03/2020		06/03/2020	
			Giorno	16:00	17:00	08:00	09:00	10:00	11:00	14:00	15:00	16:00
MITS-01	MITSUBISHI	08:00:00	01-01-01 (C)	01-01-01 (C)	01-01-01 (C)	01-01-01 (C)	01-01-01 (C)	01-01-01 (C)	01-01-01 (C)	01-01-01 (F)	01-01-01 ATTR.	01-01-01 (C)
MITS-01	MITSUBISHI	Avanzamento	OP200005 01-01-01 AvR:400/560 (71%) AvP:421/560 (75%)* [F] [FP] Pz.Manc.: 139 T.C.:135.00 Prd./h= 26.67 [R]	OP200005 01-01-01 AvR:400/560 (71%) AvP:440/560 (80%)* [FP] Pz.Manc.: 112 T.C.:135.00 Prd./h= 26.67 [R]	OP200005 01-01-01 AvR:400/560 (71%) AvP:475/560 (84%)* [FP] Pz.Manc.: 85 T.C.:135.00 Prd./h= 26.67 [R]	OP200005 01-01-01 AvR:400/560 (71%) AvP:502/560 (89%)* [FP] Pz.Manc.: 59 T.C.:135.00 Prd./h= 26.67 [R]	OP200005 01-01-01 AvR:400/560 (71%) AvP:529/560 (94%)* [FP] Pz.Manc.: 31 T.C.:135.00 Prd./h= 26.67 [R]	OP200005 01-01-01 AvR:400/560 (71%) AvP:556/560 (99%)* [FP] Pz.Manc.: 4 T.C.:135.00 Prd./h= 26.67 [R]	OP200005 01-01-01 AvR:400/560 (71%) AvP:560/560 (100%)* [FP] Pz.Manc.: 0 T.C.:135.00 Prd./h= 26.67 [R]	OP200003 01-01-01 ATTR. [R]	OP200003 01-01-01 AvR:0/1000 AvP:360/100 Pz.Manc.: 64 T.C.:10.00 Prd./h= 26.67 [R]	OP200003 01-01-01 AvR:0/1000 AvP:360/100 Pz.Manc.: 64 T.C.:10.00 Prd./h= 26.67 [R]
MITS-01	MITSUBISHI	Previsionale	AvP:421/560 (75%)* [F] Pz.Manc.: 139 T.C.:135.00 Prd./h= 26.67	AvP:448/560 (80%)* Pz.Manc.: 112 T.C.:135.00 Prd./h= 26.67	AvP:475/560 (84%)* Pz.Manc.: 85 T.C.:135.00 Prd./h= 26.67	AvP:502/560 (89%)* Pz.Manc.: 58 T.C.:135.00 Prd./h= 26.67	AvP:529/560 (94%)* Pz.Manc.: 31 T.C.:135.00 Prd./h= 26.67	AvP:556/560 (99%)* Pz.Manc.: 4 T.C.:135.00 Prd./h= 26.67	AvP:560/560 (100%)* Pz.Manc.: 0 T.C.:135.00 Prd./h= 26.67			AvP:360/100 Pz.Manc.: 64 T.C.:10.00 Prd./h= 26.67

Avanzamento Pianificazione

Macchina	MITS-01	T001	T003	T007
MITS-01	MITSUBISHI			
T001				
T003				
T007				

16:11
05/03/2020

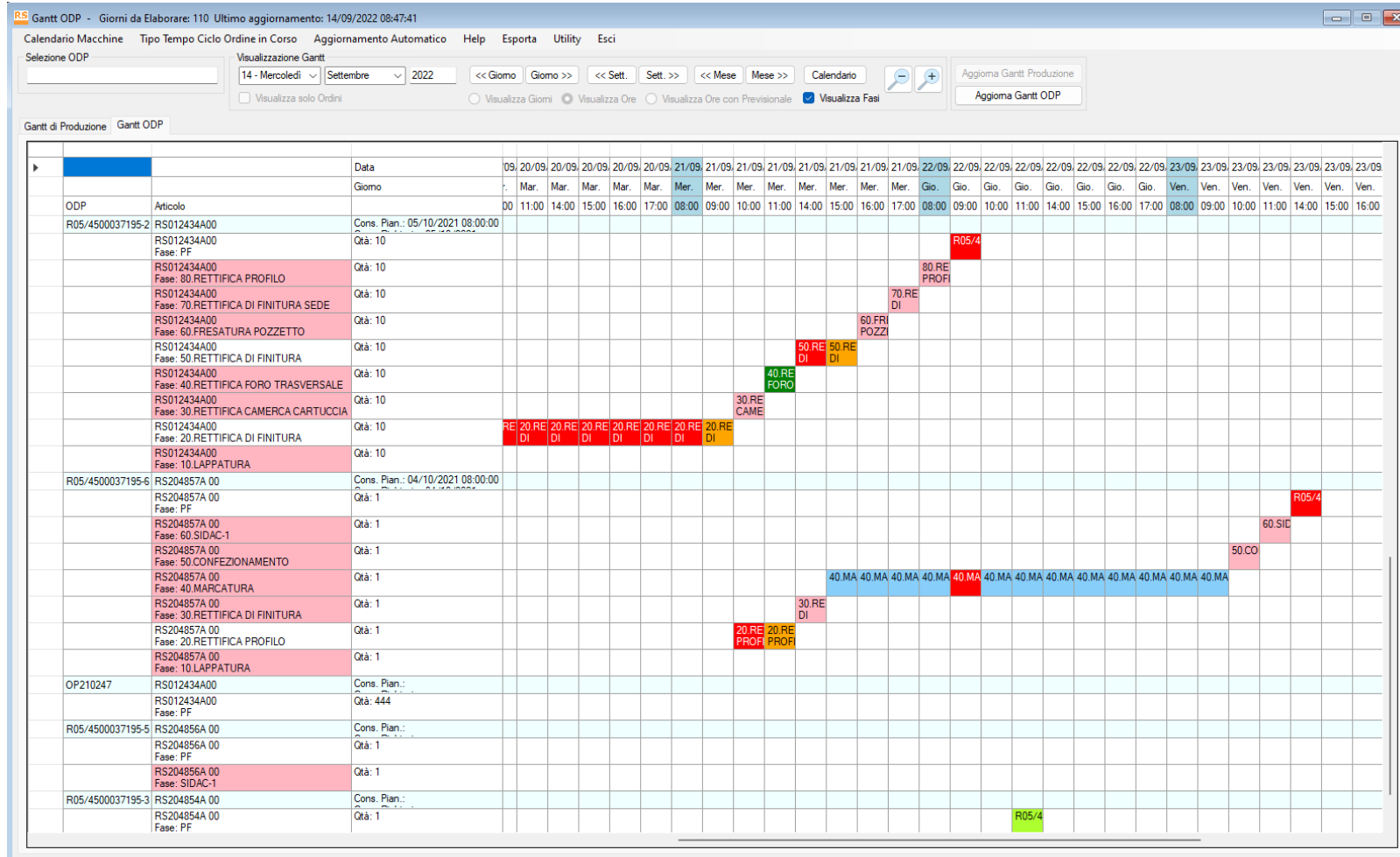
Gruppo: ADMINISTRATOR Utente: admin - Modalità: Server | DS: dell-g7\multidb_2014 DB:supervisione_et | Ver. 1.0.40.97 Build:97 Multi Modeling Software

Production Scheduling

The machine calendar is automatically filled by setting the system properly, according to the number of pieces to be produced, the theoretical set-up times, the planned start (or end) date and the number of pieces to be produced.

- The production calendar will initially be organized according to the theoretical times set in the production order (obtained from the estimate or from the history). The calendar is automatically updated as the piece counter and cycle time are detected by the machine.
- The automatic calendar update changes not only the start (and / or end) time of the current production order, but also of the subsequent ones.
- It is possible to manually modify each production order by anticipating or postponing its programming, resulting in a cascade update of all other orders.
- The operator will be able to see upcoming orders and prepare for any change in production.

Production Gantt



Production Gantt

A Gantt chart is a graphical representation of the calendar of activities you want to track. This tool is useful in order to plan, coordinate and track processes giving a clear illustration of the progress of the order. Through an overview of the planned tasks, all stakeholders are aware of the tasks and their deadlines.

The production Gantt is automatically created and it manages the progress of the production order through all processes (machine with CNC or virtual machine) that are monitored by the MES system.

Together with the automatic calendar of the machines, the production Gantt is a powerful tool to automating the analysis of the order progress and keeping all process phases, machine loading and delivery times under control.

Maintenance

Menu

- Monitor Manutenzioni
- Calendario Manutenzioni
- Calendario Manutenzioni (Window Monitor)
- Manutenzioni Da Eseguire
- Manutenzione Straordinaria
- Manutenzioni
- Parti di Ricambio Pianificate
- Parti di Ricambio Storico
- Schede Manutenzioni
- Anagrafiche
 - Anagrafica Impianti
 - Anagrafica Manutenzioni
 - Anagrafica Parti di Ricambio

Calendario Manutenzioni - Ultimo aggiornamento 14/09/2022 09:49:15

Manutenzioni al 14/09/2022
Da Eseguire 14
Scadute 366

Impianto selezionato

Aggiorna

Lunedì	Martedì	Mercoledì	Giovedì	Venerdì	Sabato	Domenica
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15 Scadute = 1	16	17	18 Scadute = 2	19	20	21
22	23	24	25	26	27	28
29	30	31				

Gruppo: ADMINISTRATOR Utente: admin | DS: mm-asp\multidb_2014 DB:manutenzioni_or - DS: DB: | Ver. 1.0.0.15 Build:15 | Multi Modeling

Maintenance

The maintenance sheet allows you to manage, for each machine, the scheduled maintenance deadlines and record all the data relating to extraordinary maintenance.

- Creation of the maintenance calendar for each machine.
- Pop-up warns of the impending maintenance deadline.
- It is possible to filter, for each machine, the list of all maintenance to be performed and already performed.
- Notes can be entered.



Thank you

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