

The Bend  
The Combi  
The Laser  
The Punch  
The System  
The Software

## Prima Power FMS

**Unique production power  
based on unrivalled experience**

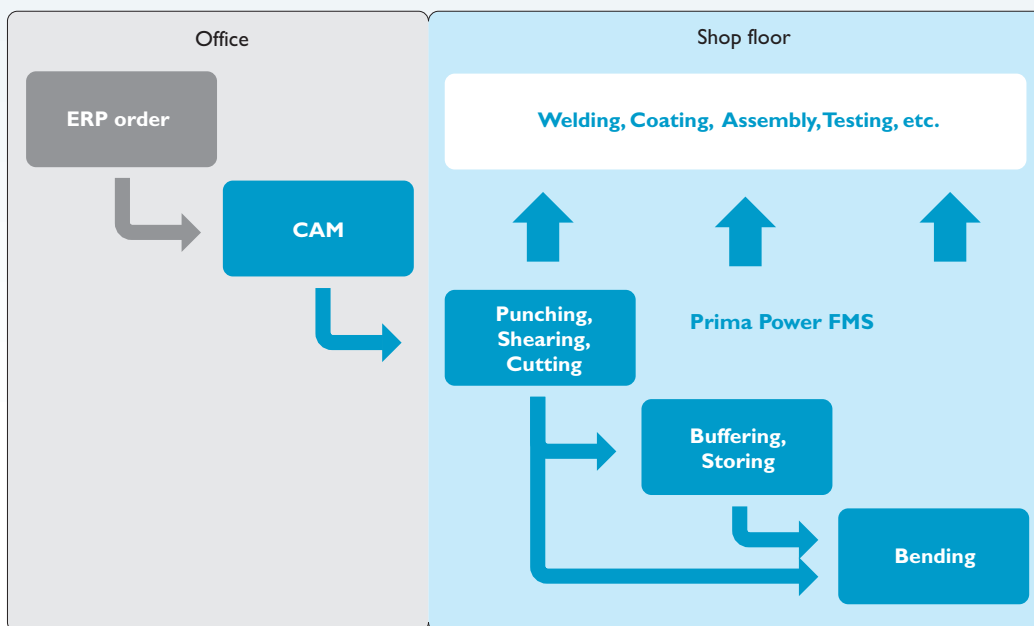
# Why Flexible Manufacturing?

Two things that very often dictate today's component manufacturing strategies are production economy and the need for agility, the ability to cope with changes in batch size, materials and expected throughput times. The technological solution is Flexible Manufacturing.

## What it is

### A Flexible Manufacturing System

- 1) automates information flow from production management through programming to production reporting
- 2) provides an integrated production system, reducing the whole fabrication process into a single stage
- 3) fully automates manufacturing stages
- 4) fully automates material handling including intelligent buffering
- 5) implements manufacturing stages automatically as planned



## What you get

When you need to meet the requirements of change and production economy Flexible Manufacturing brings a single overall solution with numerous productivity enhancing benefits:

- 1) more production with less floor space
- 2) less storage and work-in-progress
- 3) less man hours and more machine hours through unmanned operation
- 4) shorter lead time for product changes and new products
- 5) minimized times for set-up changes – fast, automatic change from one product to another
- 6) automation – high, even component quality
- 7) automation – integrated scheduling and no intervening manual work stages
- 8) no lost production due to damages caused in shop logistics

# Why Prima Power FMS?

Prima Power is among the top four global specialists in sheet metal working technology, with a comprehensive product range in laser systems and sources, punching, shearing, bending and automation for sheet metal industry. It is market leader in 3D laser systems for automotive, aerospace and energy markets.

Today's performance is backed by over 30 years of experience in the sector and well over 12,000 machines and systems installed in 70 countries. Manufacturing facilities are located in Italy, Finland, the US and China. Products and services are available through a worldwide sales and service network consisting of Group units and distributors.

Prima Power's FMS solutions are Combo FMS® and Night Train FMS®, customized systems for meeting ambitious production targets.

## More than two decades

The history of Prima Power's flexible manufacturing systems is a long and famous one, the first one being installed as early as in 1990. While today's technical solutions are naturally far more advanced, the fundamental philosophy remains unchanged. FMS is a sound production strategy, and the hundreds of systems that we have delivered all over the world prove the soundness. We can make Flexible Manufacturing strategy work for the benefit of its users.

Prima Power FMS technology automates the material and information systems of a facility and combines individual manufacturing stages into a single flexible process.



### Putting things together

We do this using more than two decades of FMS experience and the wide Prima Power range of high performance machine tools, integrated cells and automatic material handling. Due to the wide range, the optimum solution can be found for all work stages.

Typical work stages that we can integrate in an automatic FMS process are punching, forming, tapping, marking, shearing, laser cutting and bending. The modular Prima Power FMS concept allows the system to be built according to plant-specific requirements. Further, the system need not remain static. Cells, individual machines and work stations can be upgraded, changed or added, and storage capacity expanded. Your manufacturing technology can live with the times.

The Prima Power years of experience guarantee that the solution for each function, as well the overall engineering of the system, are based on thoroughly proven knowhow in

- system customization
- software
- machine tools and cells
- material handling automation
- customer support and service



## Strategy at work

With Prima Power FMS technology, the manufacturer gets superior cost efficiency and flexibility. With customized production, efficiency approximating that of serial production can be reached also in small batch fabrication. At the same time, the technology is perfectly suited to highly efficient serial production. A well engineered FMS can become a dedicated manufacturing line for one product now, and in a few seconds or minutes for another product next month, or next year.

Summed up, this amounts to the agility and flexibility needed for competitiveness now and in the future.

Easy to use  
Cost efficient  
High productivity  
Flexible  
Modular

# green means®

## Green Means® FMS



Over the years, the Prima Power product range has been developed towards greater flexibility and operating economy through versatility, high automation level and low energy and maintenance cost.

Also for a long time, the ecological aspects have been included among design criteria. This translates into technology and knowhow which meet the requirements of both productivity and more sustainable manufacturing.

We provide Green means.

### Servo-electric technology

In many ways, servo-electric solutions simply perform technically better than alternative ones. This forms the basis of productivity, and on top of that come the inherently low energy consumption and maintenance cost, which mean truly significant savings in the course of time. Prima Power punching, right angle shearing and bending solutions feature this technology for better operating economy and sustainability: the less energy, the less CO<sub>2</sub> emissions.

As for hydraulic oil, if an automatic bending cell is integrated, a small quantity is needed for one auxiliary system, not a drop more in the whole factory-wide manufacturing solution. There is no oil that needs to be purchased and disposed of as hazardous waste.

### Fiber laser technology

Again, when fiber laser technology is chosen, energy consumption is reduced and so is CO<sub>2</sub> – drastically.

### Less factory logistics

The entire material flow of Prima Power FMS solutions is automated. It is a safe estimate that an FMS eliminates the need of one forklift – and everything it means in terms of environmental impact.

### Less space

Consider the economical aspect of extending production premises, and the ecological ones. Another safe estimate is that an FMS requires only 50 – 60% of the floor space needed for the same production using stand alone machines and cells.

### Prima Power FMS – overall ecology

The very concept of Prima Power FMS has inherent sustainable features. It entails compactness for smaller space requirement. Prima Power machines and cells have been designed for low energy consumption, no hydraulic oil, economical material use, fast set-up and high component quality. Automation eliminates human errors that often produce wasted material. All this sums up to smaller emissions.

Environmental considerations become more and more important, and Green Means® technology is part of the corporate image of modern companies committed to ecologically sustainable operation. The Green Means® approach allows this and the production of high-quality components at a lower cost. Prima Power FMS is the ultimate in Green Means® technology.

# Prima Power software

The characteristics that a good solution for system software must necessarily have include total coverage, efficiency, simple integration with other systems and, of course, ease of use. During the past few years, Prima Power has made an extensive development effort to create such a solution.

For the user, the benefits of Tulus® software range over previous software are numerous, but the family is also compatible with previous programming and control generations.

Whatever the size of the system, the Tulus® family provides a flexible process management and control solution which can be integrated with other systems and customized to meet specific requirements. A perfect example is Tulus® Power Processing, which communicates with the factory ERP and performs as Manufacturing Execution System.



## Tulus® Cell

- Tulus® Cell controls machines by tasks and provides an easy way of adding new production orders to the task list. The task list contains all essential information of machine-related tasks within the same window.
- Tasks can be reorganized, added or removed depending on the production schedule even during machine run.
- Task management automatically responds to the working order, giving immediately a new production schedule including tool and material changes as well as estimated delivery times.
- Tool setup is fast due to graphical turret view and online tool data synchronization with NC Express™.

## Tulus® Bend

- Online bending process follow-up & machine task list.
- Line production control in any location.
- Different bending modes available.
- Assemblies can be defined also in bending task list.

# Tulus®

Software for efficient  
sheet metal working



## Tulus® Storage

- Storage support for PSBB lines and PR + EBe cells.
- Part, cassette and material inventory.
- Storage status monitoring.

## Tulus® Terminal

- Easy-to-use user interface for each process step, for example, welding or coating.
- Own task list for managing the work load and instructions for each work step.
- Part position information is known and managed during the whole production process.
- Possibility to control external storages.
- Up-to-date reporting of the parts made as well as damaged parts.

## Prima Power CAM

- **NC Express™** programming system is a user friendly, integrated and automated tool for managing Prima Power equipment in the most efficient manner.
- NC Express™ is a scalable application – the system may be used as a single part drafting and tooling program or as a fully-automated machine tool programming system. Either way the results are the same – optimized automatic NC-code creation.
- **Master Bendcam** provides a simple and fast programming solution for Prima Power bending automation from a 3D model.
- Master Bendcam provides simplified programming through pre-set bending cycles, optimization with 3D simulation and complete tool management.

## Tulus® options

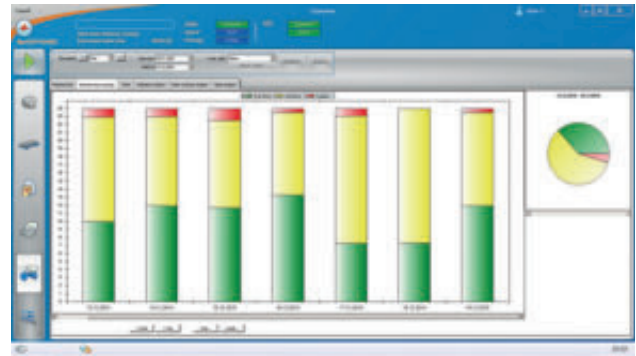
**Tulus® Performance Reporting** makes a huge amount of information available about machine performance and utilization rate and allows analyzing where improvement is possible for production planning and where tool maintenance would be helpful.

**Performance Reporting** panel can be used on any non-Tulus® or non-PowerLink machine to give information about run, idle, and fault times for reporting.

**Tulus® Production Reporting** prepares reports on processed production, for example, information of what material has been used and what parts have been completed in production.

**Tulus® Mobile Information System** makes it possible to get information on how the machine is performing directly to your mobile phone. Data sent to and from a mobile phone includes active alarm info, status inquiries and up coming machine tasks such as tool change.

**Tulus® Web Information System** is easy to use with any device with Internet connection and gives a good visual overview of the entire production. It provides information about the machine and when operator intervention is necessary, for example, when the next machine stop is going to be.

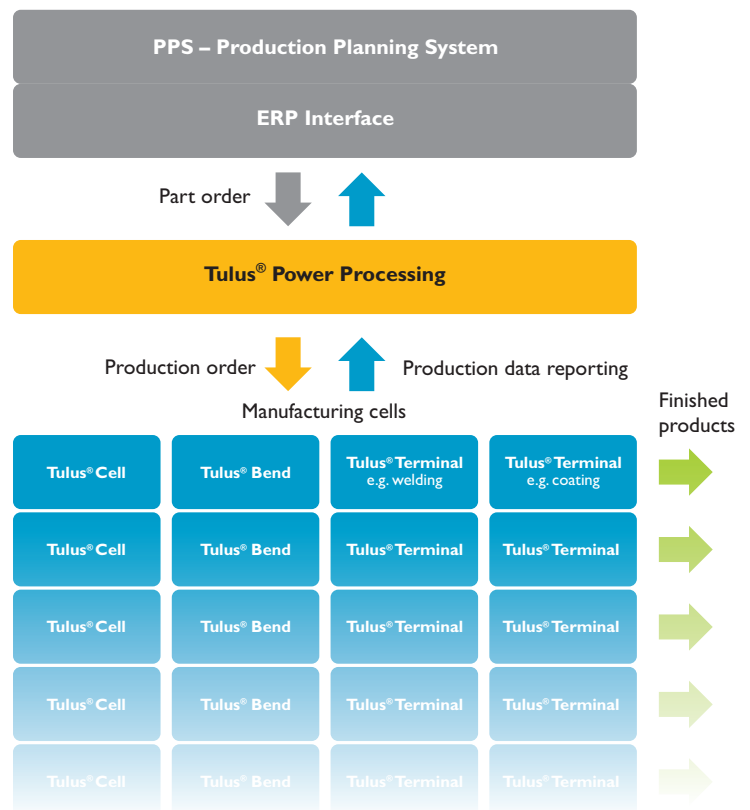


Performance Reporting

Product Reporting

## Power Processing

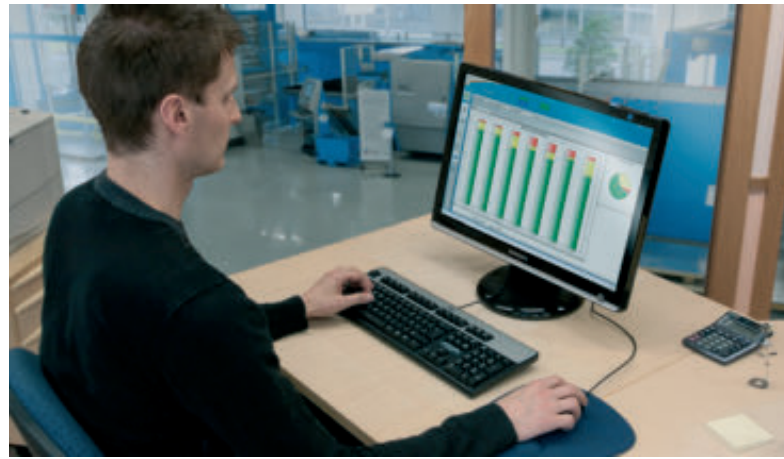
- Manufacturing Execution Systems
- Remote optimization and control the whole production process from part order handling to the finished part.
- Two-way ERP connection; Tulus® receives part orders directly from ERP and sends production and performance reports back to the ERP system.
- Possibility to control production runs, part orders and machine work loads as well as the storage inventory.
- Parts can be nested automatically with little if any manual CAM operation required.
- All product components of the same material are nested and manufactured together.
- Parts can also be nested and manufactured on the basis of product assembly.
- Assembly and part management.
- Production and performance reports and management of raw material inventory.
- Storage management and inventory of parts as well as of complete products (part assemblies).
- Part routing gives the user the possibility to define the order of the process steps (e.g. welding, coating etc.).
- Interface for supporting different machines.



# Example

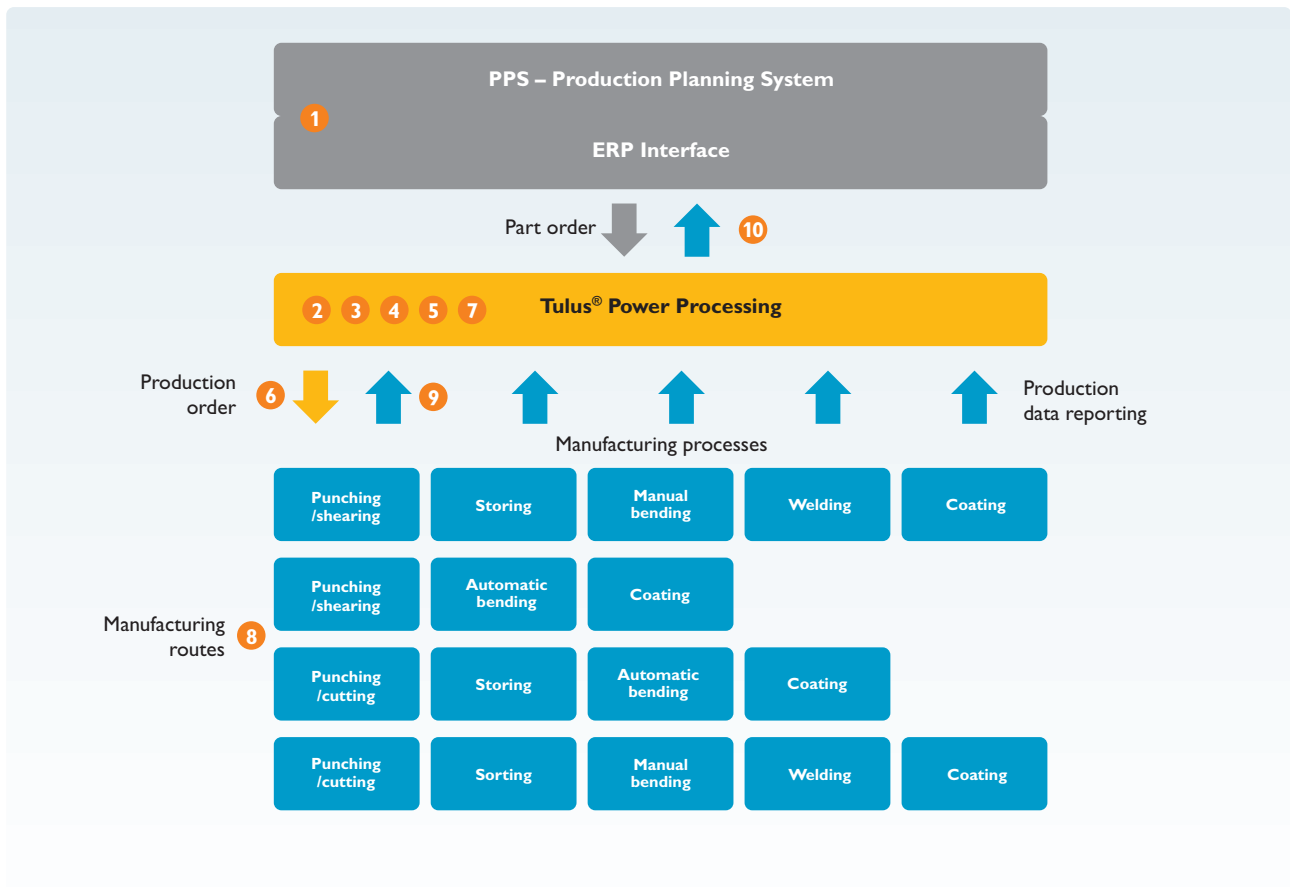
A company has several product families. Within a family, both common parts and numerous product specific components are used. Most components are made on order-driven basis, while some are manufactured in longer series for stocking. Daily variation in production process is considerable.

Orders are uploaded into a real-time ERP system and forwarded as production orders. The production process is monitored step by step.



## Example

- 1 Order information is transferred from the ERP system into the Manufacturing Execution System of Tulus® Power Processing.
- 2 Power Processing receives product and component data.
- 3 Stock balance check (automatic storage and shop floor)
- 4 Production routing is defined.
- 5 Automatic nesting and tooling for different machines for parts missing from the stock balance
- 6 Production orders are transferred to the work queue of machines or...
- 7 ... scheduled in machine time calendar.
- 8 Routing of work pieces to different work stages
- 9 Reporting by work stages
- 10 Reporting back to the ERP system



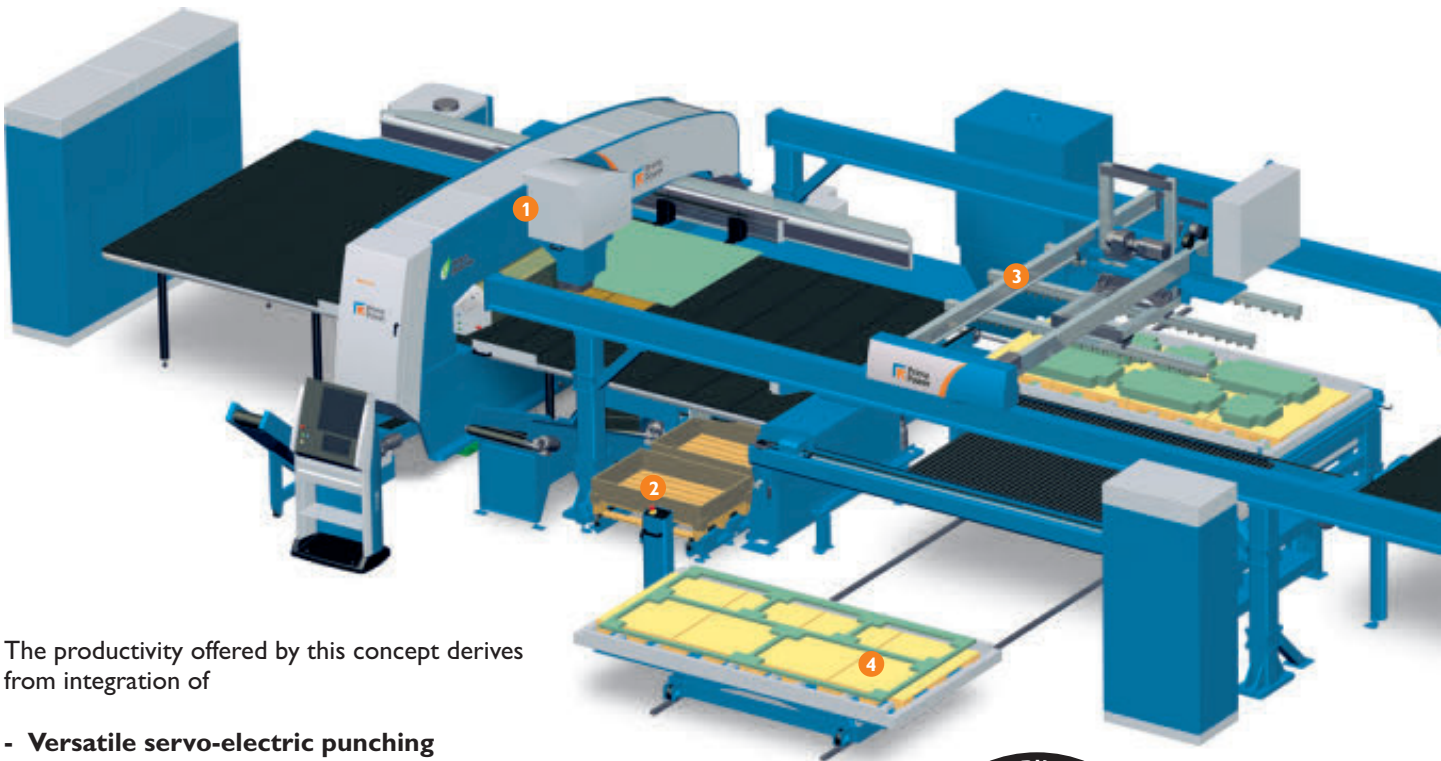
# Prima Power LPBB – the art of integration

The outstanding productivity offered the LPBB flexible manufacturing system results from several factors.

Firstly, it is automatic and the process is extremely fast, which means low manufacturing cost per component. Secondly, it features both machine flexibility and routing flexibility, which is why minimum production time is wasted when changing from one product to the next one and the

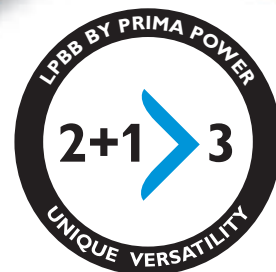
production time can always be put to maximum use. And thirdly, with the combination of integrated work stages and the precision with which they are performed even the most challenging fabrication tasks can be handled.

LPBB integrates punching, laser cutting, intelligent buffering and high-quality bending.



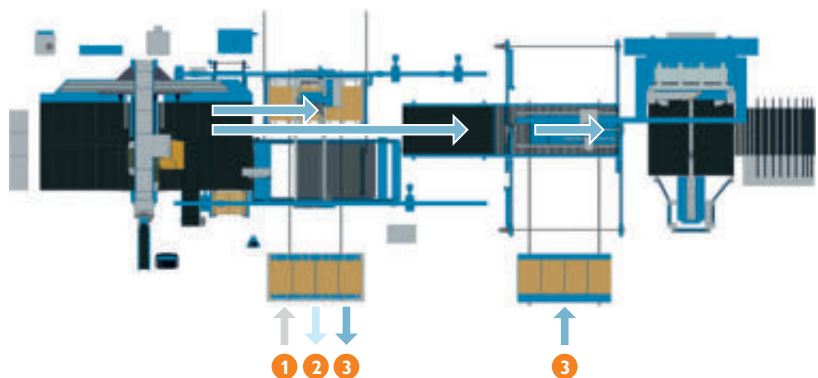
The productivity offered by this concept derives from integration of

- Versatile servo-electric punching
- Modern laser cutting
- Servo-electric bending
- Automatic, flexible material flow and
- Sophisticated software



## Material flows

Raw material flow	1 Raw materials
Skeleton flow	2 Skeletons
Part flow	3 Laser cut / punched parts





# Punching, laser cutting and bending integrated and automated

## For a good reason...

Very fast reaction times are expected in modern production. The machine needs to be flexible and extremely fast for a quick response to production orders, often for very small quantities.

There is may be a rush order, or a test series to prove delivery capacity; here the laser is often the answer. Again in longer series punching adds manufacturing speed and cost efficiency, allowing e.g. versatile forming and providing competitiveness unmatched by individual laser or punching machines.

## LPBB makes it easy...

With laser cutting there are:

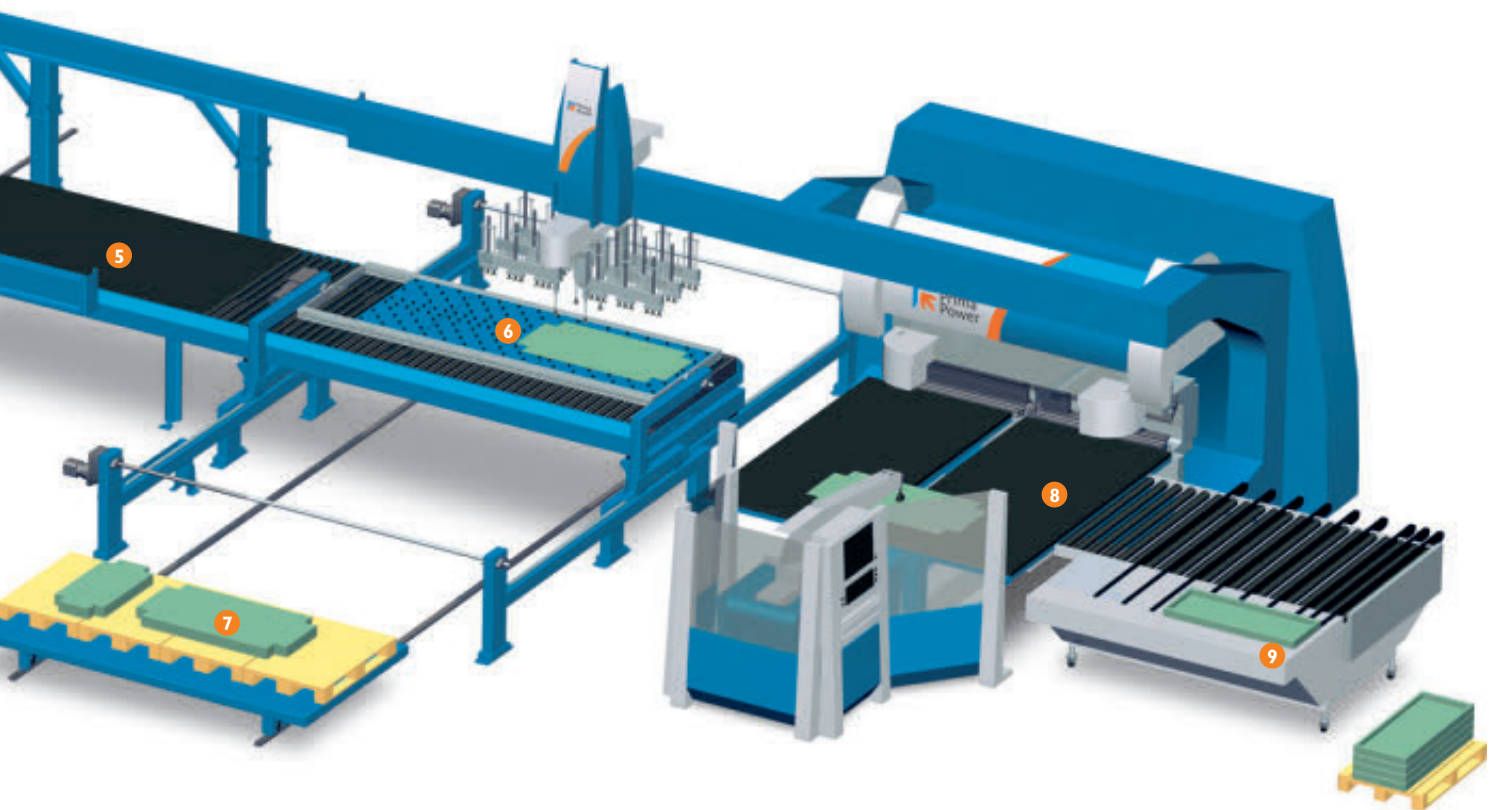
- no burrs
- no nibble marks
- no problems with tonnage
- no tools
- no die clearance
- no sharp corners
- no delays – fast set-up

... and when you punch you can also:

- tap
- countersink
- form
- rib
- make extrusions
- hem
- make louvers
- use wheel tools
- use a wide range of Multi-Tools®

... and servo-electric bending features:

- high accuracy and surface quality
- high repeatability
- versatility and flexibility
- customization with a range of options
- high productivity with automatic tool change
- off-line programming
- low running costs



1

Integrated servo-electric punching and fiber laser cutting head, LPef

2

Small part shorting for laser cut parts, SUC

3

Loading and stacking robot LSR

4

LSR input/output station for raw materials, stacked parts and skeletons

5

Direct connection from LSR to express bender EBe

6

Part centering device PCD and bend part turning device BTD

7

PCD wagon for external parts feed in

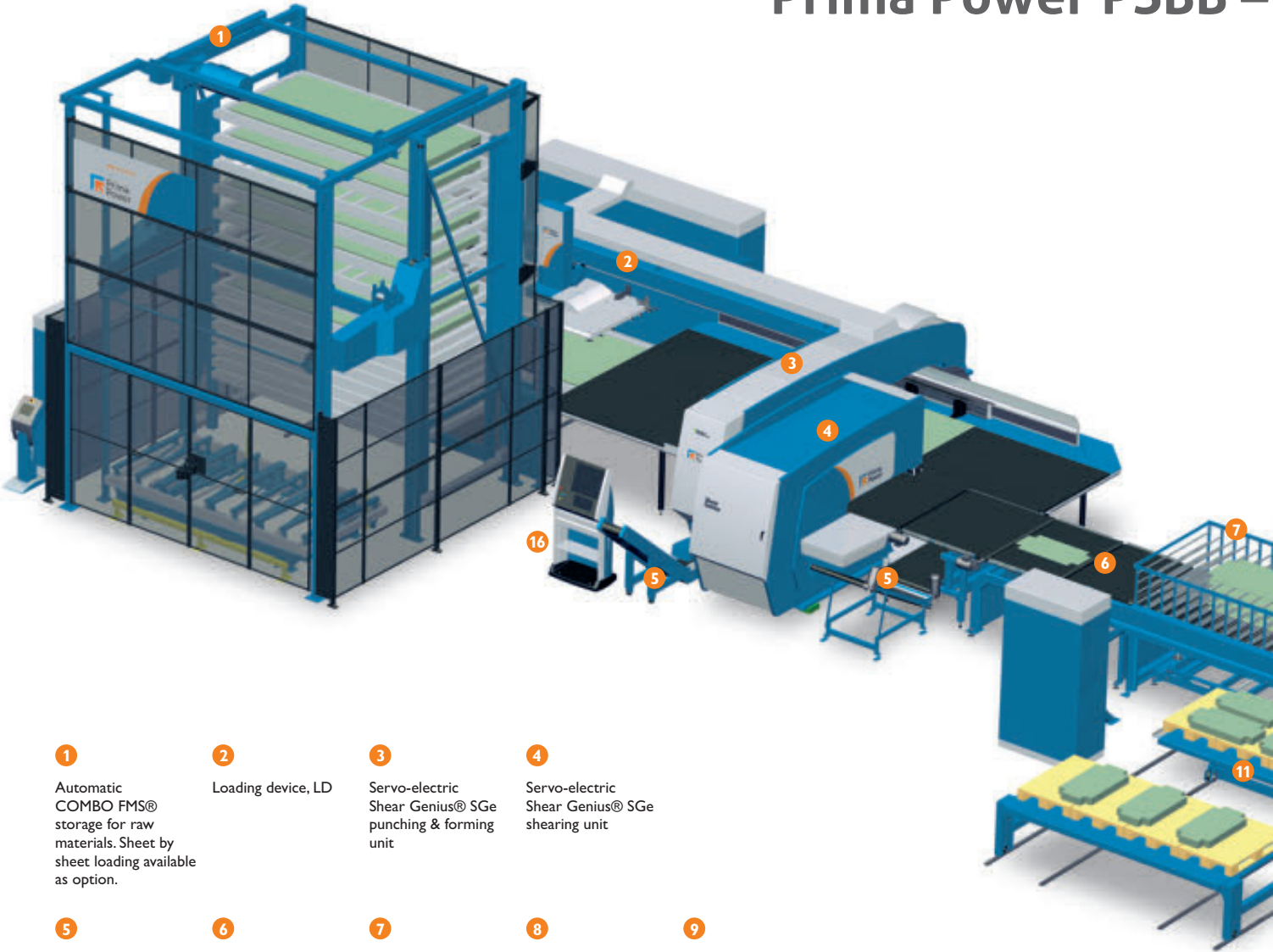
8

Servo-electric express bender EBe

9

Tilting unloading table TUT

# Prima Power PSBB –



- 1**

Automatic COMBO FMS® storage for raw materials. Sheet by sheet loading available as option.
- 2**

Loading device, LD
- 3**

Servo-electric Shear Genius® SGe punching & forming unit
- 4**

Servo-electric Shear Genius® SGe shearing unit
- 5**

Scrap conveyors
- 6**

Sorting conveyors, C 1500
- 7**

Sheared part buffer, SPB
- 8**

Picking & stacking robot, PSR
- 9**

Buffer area for parts to be bent
- 10**

Position conveyor
- 11**

Input and output wagons for parts
- 12**

Bend part turning device, BTB
- 13**

Loading device of EBe
- 14**

Automatic, servo electric panel bender, EBe
- 15**

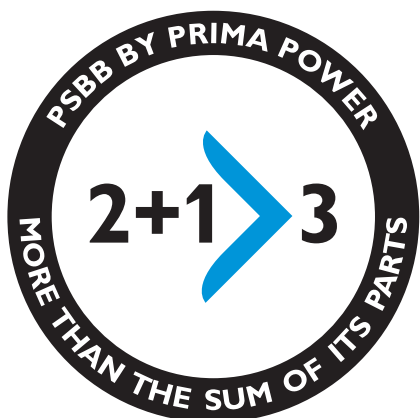
Unloading system with tilting unloading table, TUT
- 16**

Tulus® graphical user interface

## Flexible production

Material flow can be arranged in flexible ways to transfer parts directly to automatic bending, balance the different time requirements of bending and punching/shearing, to exit material from the system and to bring new material into it. The flexible and versatile buffering function ensures that optimum operation in terms of manufacturing cost and throughput time can always be chosen, whatever the manufacturing task at hand.

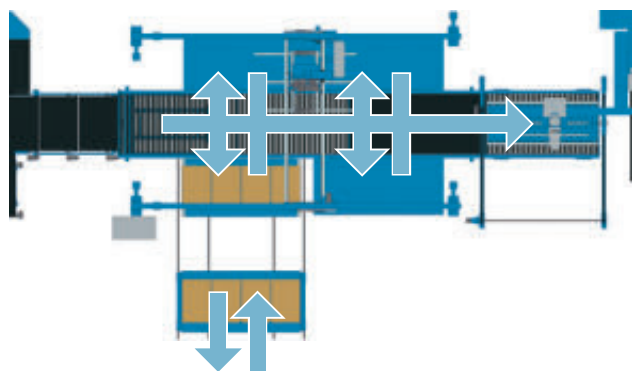
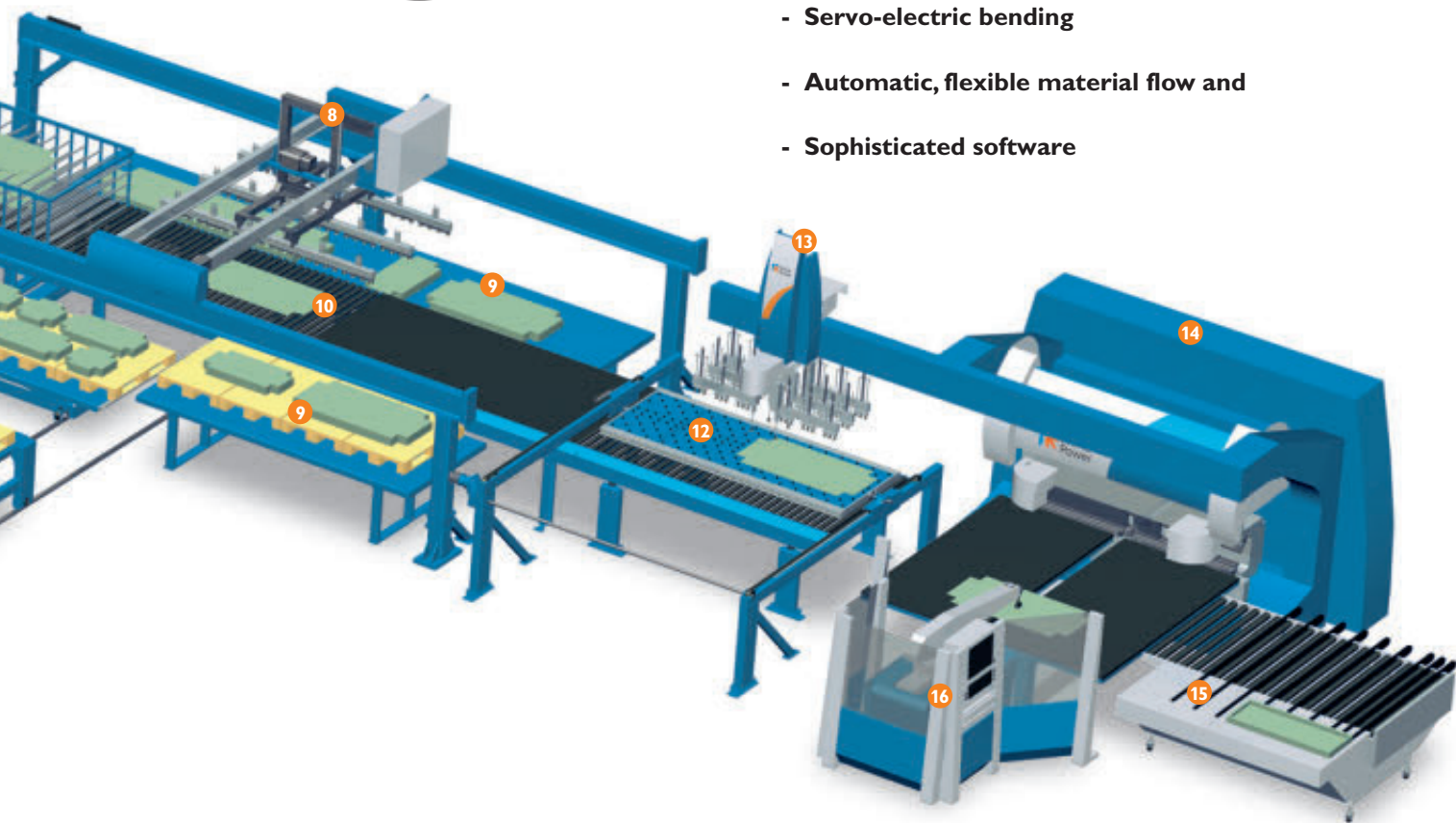
# a Compact Flexible Manufacturing System



Basing on decades of experience in modular Flexible Manufacturing Systems Prima Power created the compact PSBB line, which processes blank sheets into ready-bent, high-quality components automatically. PSBB stands for punching – shearing – buffering – bending.

The productivity offered by this concept derives from integration of

- Versatile servo-electric punching
- Integrated servo-electric shearing
- Servo-electric bending
- Automatic, flexible material flow and
- Sophisticated software



## Flexible ways to produce

- Direct material flow from Shear Genius® to bending cell EBe
- Use of whole stacking area for buffering in direct connection
- Simultaneous stacking on tables/wagons and retrieval of components from tables/wagons to bending cell EBe
- Use of whole stacking area in unattended operation

# Prima Power COMBO FMS®

COMBO FMS® is a flexible material system with the compact COMBO storage as key module in automating the material flow. It makes different materials available whenever needed automatically and without delays; it can also serve as an intermediate storage for ready components and as a buffer.

There can be one or two shelving units in the COMBO storage and height can be chosen by needs. From one to three machines or cells can be integrated in the system; depending on the required work stages and techniques, these are selected from the wide range of Prima Power solutions for punching, laser cutting, integrated punching / shearing and punching / laser cutting.

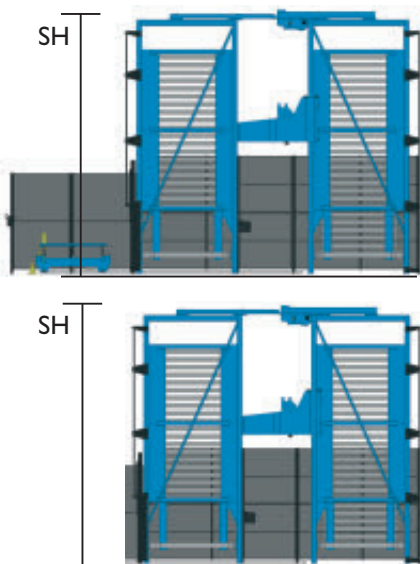
When fast response time for material change is needed, a highly productive optional feature is available for loading single sheets with a special gripper to the machine cells equipped with loading device LD connection to COMBO storage. Thus the storage crane has a dual function: handling sheets stacks on cassettes and loading individual sheets.



COMBO integration provides also an optimal solution for lights-out production as capacity of available materials and stacking areas can meet requirements.

The new SCW connection between COMBO storage and Prima Power automation modules such as picking and stacking robot PSR and stacking system STS allows bringing work pieces into storage. Thus Night Train FMS® style capacity for extended unmanned production becomes available at smaller investment value.

## Storage heights



## COMBO6

	Storage rack height SH (mm)	Max. load per pillar (kN)
H10	3,185	135
H12	3,545	155
H14	3,905	175
H16	4,265	196
H18	4,625	216
H20	4,985	236
H22	5,345	256
H24	5,705	277
H26	6,065	297

Heights from H28 to H38 on special order

## COMBO8

	Storage rack height SH (mm)	Max. load per pillar (kN)
H8	3,185	110
H10	3,545	137
H12	3,905	157
H13	4,265	181
H15	4,625	204
H17	4,985	228
H19	5,345	252
H20	5,705	275
H22	6,065	299

Heights from H24 to H33 on special order

## Main technical data, series 5.x

	COMBO6	COMBO8
Sheet size, mm (min/ X and Y ... max/ X and Y)	1,000 x 300 ... 3,074 x 1,565	1,000 x 300 ... 4,300 x 1,565
Max cassette load, kg	3,000	3,000
Cassettes/storage block, pcs (standard)	H10 ... H26	H8 ... H22
Storage blocks/storage, pcs	1...2	1...2
Machine connections, pcs (depends on layout)	0...3	0...3
Stations, pcs (depends on layout)	1...2	1...2
Different cassette types	material cassette skeleton cassette stacking cassette	material cassette skeleton cassette stacking cassette

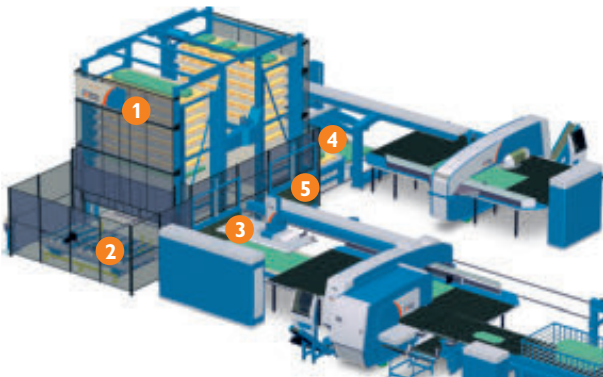
The total number of cassettes in COMBO storages depends on mix of cassette types and the number of connections.

# Flexible, modular automation with COMBO FMS®

Systems are customized using the wide Prima Power range of high performance machine tools, integrated cells, automatic material handling solution and software. Due to the wide range and modularity, the optimum solution can be found for every application and all system sizes.

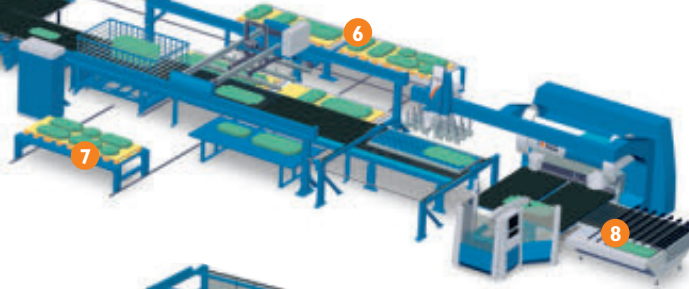
## COMBO FMS® for more capacity and higher utilization

Integration of automatic storage capacity helps utilize bending capacity to the full, allows connection with other machines providing vast buffering capacity for optimum production flow and increasing unmanned production time.

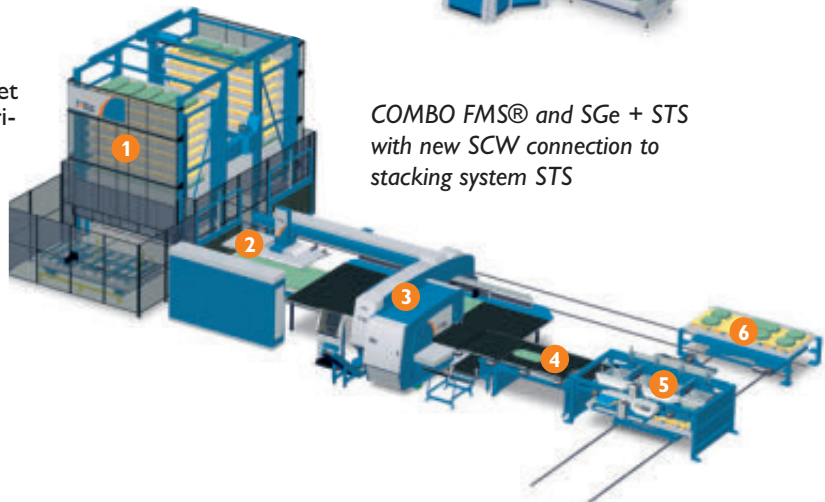


COMBO FMS(R) with E6 + LST6 and PSBB line with new SCW connection to picking and stacking robot PSR

- 1 Automatic COMBO FMS® storage for raw materials and stacked parts
- 2 COMBO FMS® IOW-station for raw material and stacked parts
- 3 COMBO FMS® LD connection for raw material
- 4 COMBO FMS® LST connection for raw material and stacked parts
- 5 COMBO FMS® PSR connection for stacked parts
- 6 Change stations for COMBO FMS® PSR connections
- 7 Lower and upper wagons for part removal / external part production
- 8 Unloading system with tilting unloading table, TUT

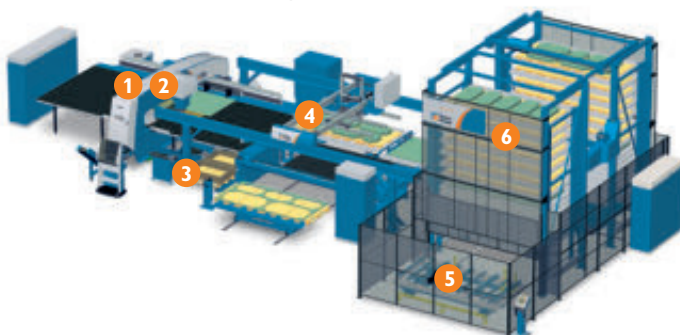


- 1 Automatic COMBO storage with sheet by sheet loading option for raw materials and stacked parts
- 2 Loading device, LD
- 3 Servo-electric Shear Genius SGe
- 4 Sorting conveyors, C1500
- 5 Stacking system, STS
- 6 SCW connection to COMBO FMS® storage for stacked parts

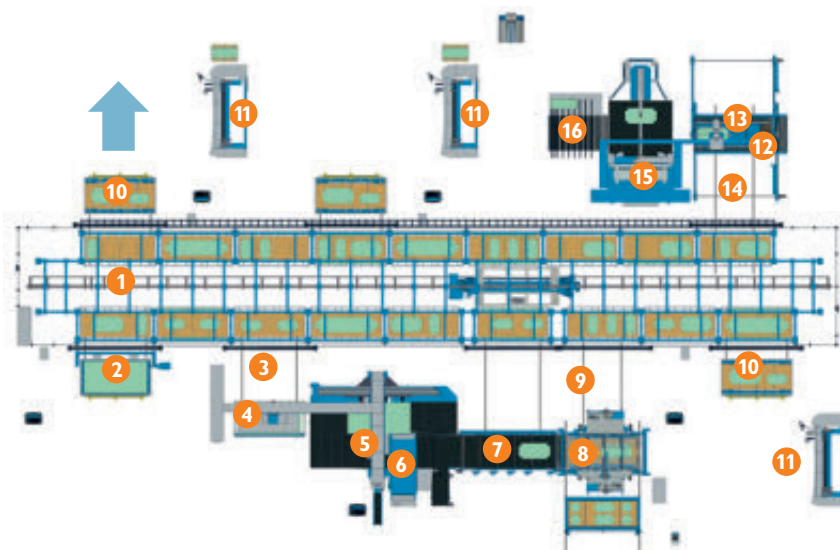
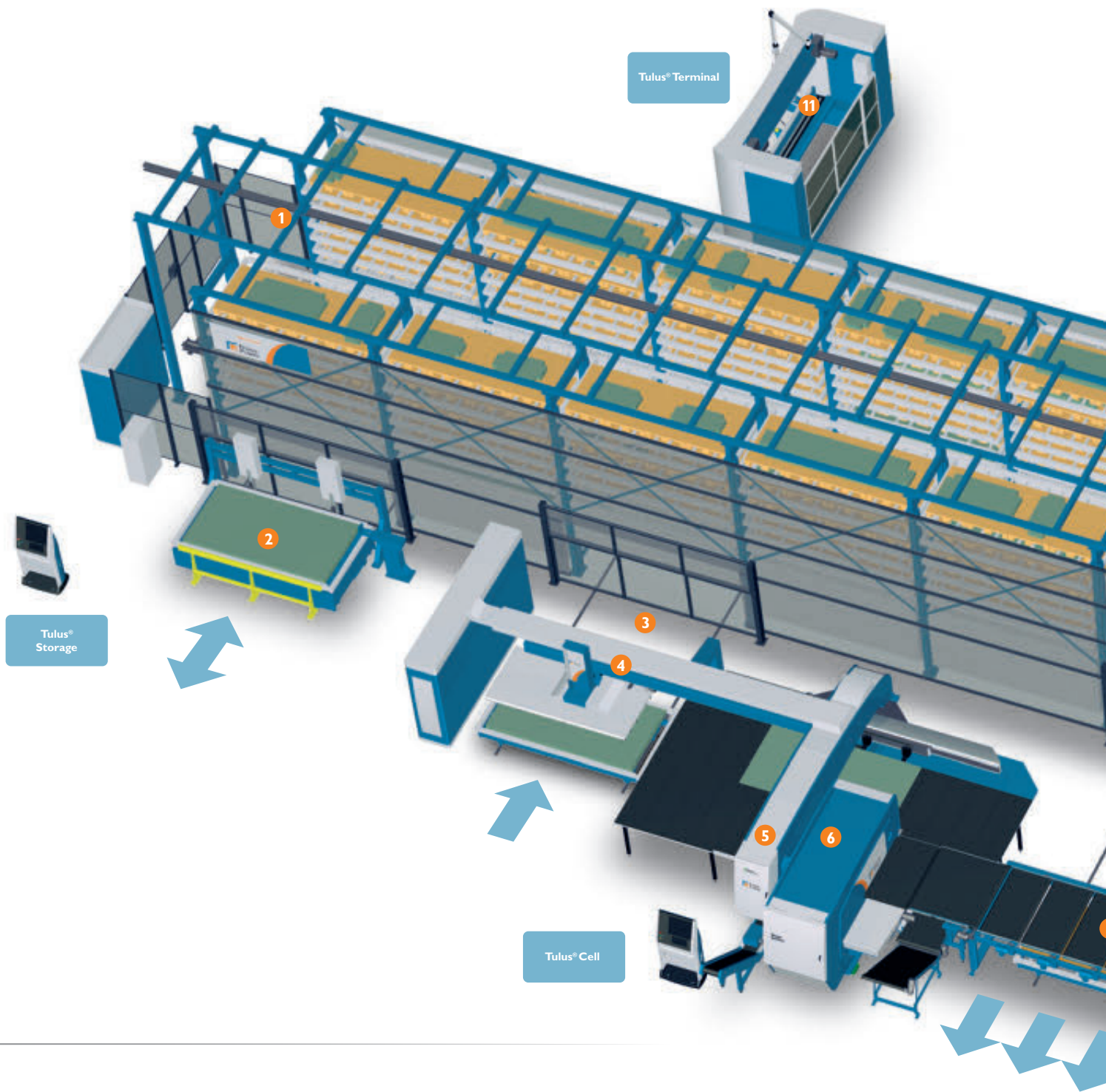


COMBO FMS® and SGe + STS with new SCW connection to stacking system STS

COMBO FMS with LPef + LSR

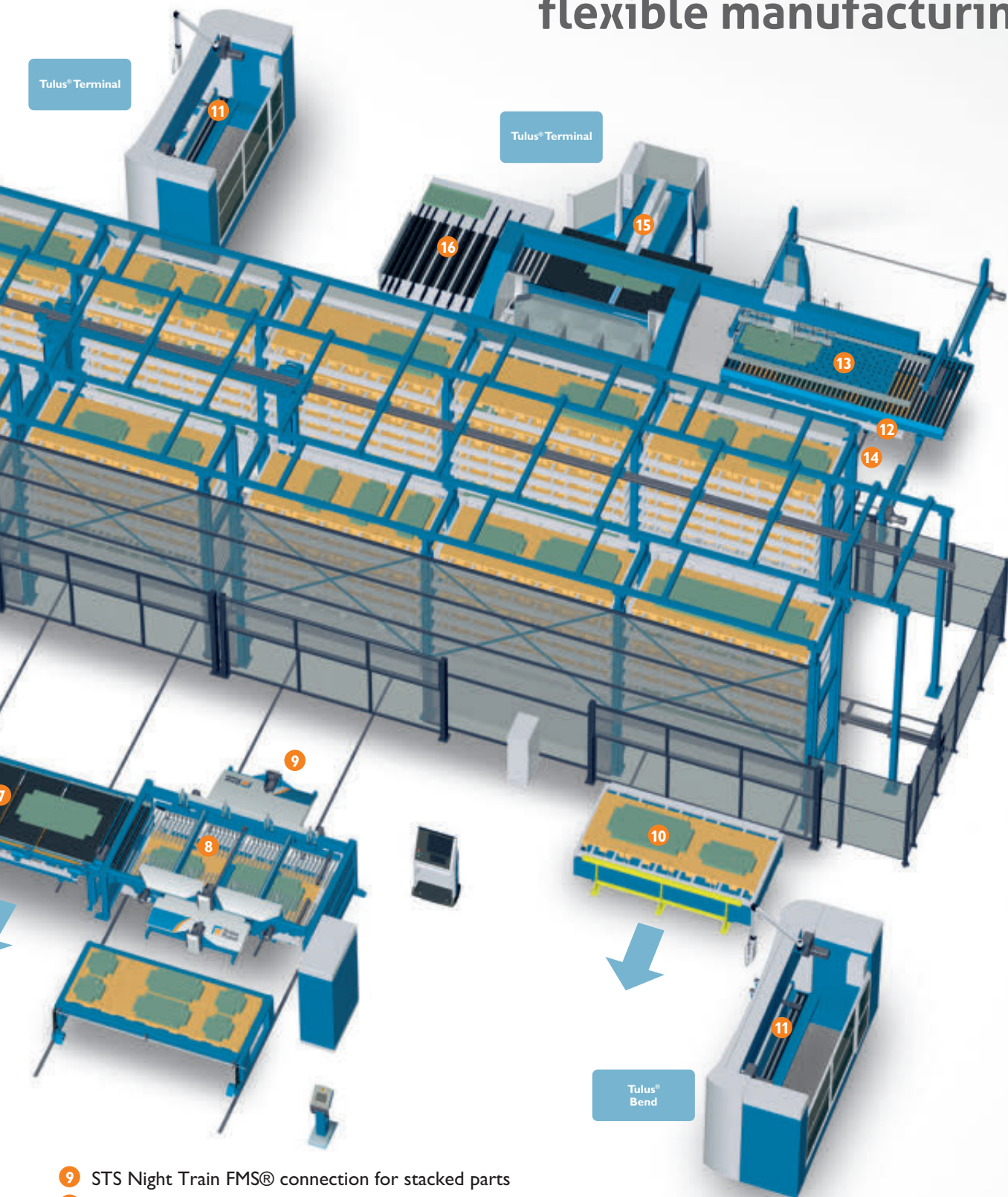


- 1 Servo-electric punching cell, LPef
- 2 Integrated fiber laser cutting head, LPef
- 3 Sorting address for laser cut parts, SUC
- 4 Loading and stacking robot, LSR
- 5 COMBO IOW-station for loading and unloading
- 6 Automatic COMBO FMS® storage for raw materials and stacked parts



- 1 Automatic Night Train FMS® storage for raw material and stacked parts
- 2 Night Train IO-station for loading and unloading of raw material and stacked parts
- 3 LD Night Train FMS® connection for raw material
- 4 Loading Device LD
- 5 Servo electric Shear Genius® punching & forming unit
- 6 Servo electric Shear Genius® shearing unit
- 7 Sorting conveyor C1500 with Night Train FMS® connection
- 8 Stacking system STS

# Night Train FMS® – leading technology in automated flexible manufacturing



- 9 STS Night Train FMS® connection for stacked parts
- 10 MO/MOL-station for unloading of stacked parts and raw material
- 11 Prima Power press brake
- 12 Part centering device PCD
- 13 Bend part turning device BTD
- 14 PCD Night Train FMS® connection for stacked parts
- 15 Automatic, servo-electric panel bender EBe
- 16 Tilting unloading table TUT

# Night Train FMS®

The history of Prima Power's flexible manufacturing systems is a long and famous one, the first one being installed as early as in 1990 and followed by hundreds of others.

Night Train FMS® automates the material and information systems of a facility and combines individual manufacturing stages into a single flexible process. Systems are customized using the wide Prima Power range of high performance machine tools, integrated cells, automatic material

handling solution and software. Due to the wide range and modularity, the optimum solution can be found for every application and all system sizes.

The flexibility of Prima Power FMS technology extends beyond our own range of machines and cells. The standard Prima Power interface allows also the integration of other suppliers' machines in the system.

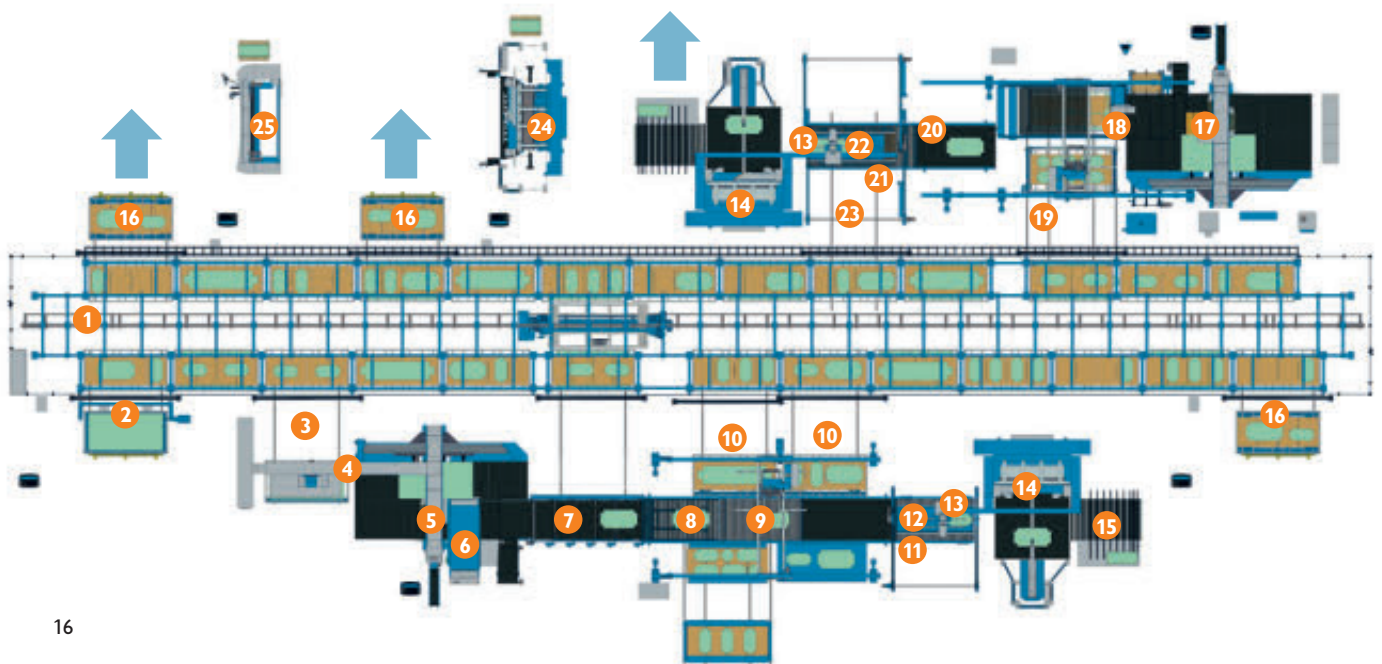
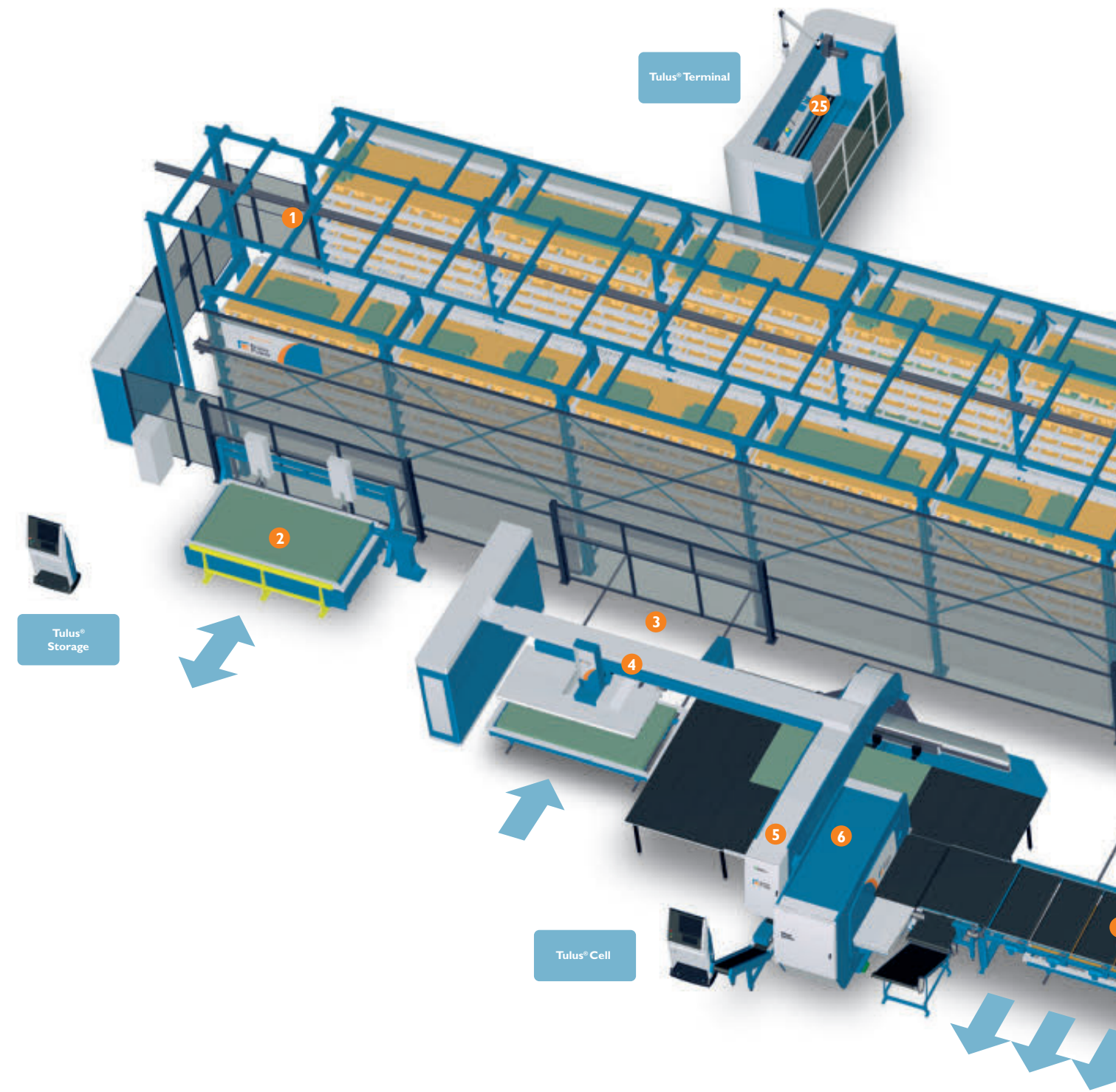
## Flexible Manufacturing Systems since 1990



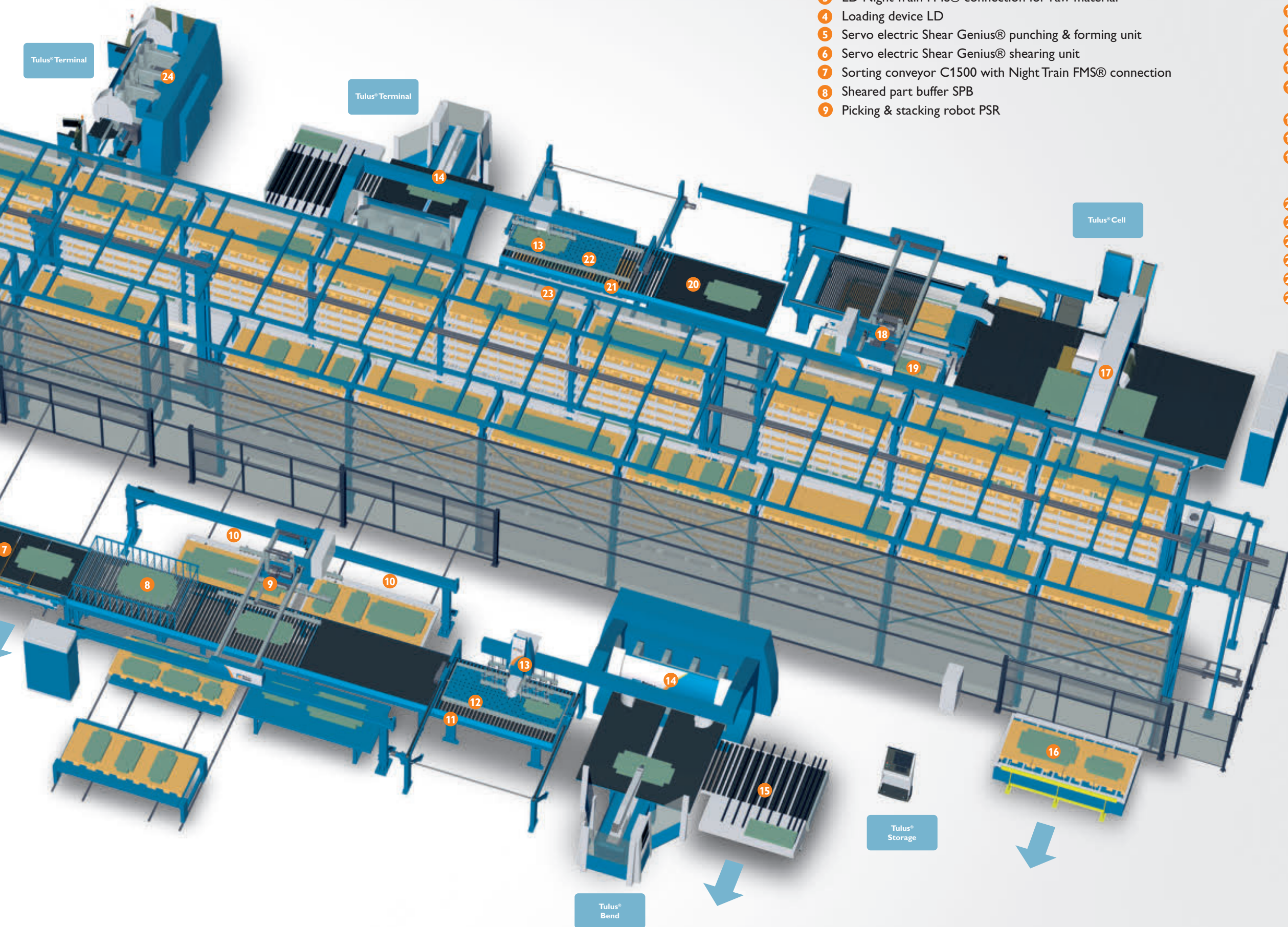
Main data of Night Train (NT) series 5.x	NT6	NT8
Sheet size [min (X and Y) ...max (X and Y)]	1,000 x 300 mm ... 3,074 x 1565 mm	1,000 x 300 mm ... 4,300 x 1,565 mm
Max cassette load	3,000 kg	3,000 kg
Cassettes/storage block (max.)	H10 ... H38 pcs	H8 ... H33 pcs
Storage blocks/storage	Depends on layout	Depends on layout
Machine connections	0...64 pcs (depends on layout)	0...64 pcs (depends on layout)
Stations	1...64 pcs (depends on layout)	1...64 pcs (depends on layout)
Different cassette types	material cassette skeleton cassette stacking cassette	material cassette skeleton cassette stacking cassette

Storage heights	NT6		NT8			
	Storage height SH (mm)	Max. load per pillar (kN)	Storage height SH (mm)	Max. load per pillar (kN)		
	H 10	2,915	170	H 8	2,915	136
	H 12	3,275	204	H 10	3,275	170
	H 14	3,635	238	H 12	3,635	204
	H 16	3,995	272	H 13	3,995	221
	H 18	4,355	306	H 15	4,355	255
	H 20	4,715	340	H 17	4,715	289
	H 22	5,075	374	H 19	5,075	323
	H 24	5,435	408	H 20	5,435	340
	H 26	5,795	442	H 22	5,795	374
	H 28	6,335	476	H 24	6,335	408
	H 30	6,695	510	H 25	6,695	425
	H 32	7,055	544	H 27	7,055	459
	H 34	7,415	578	H 29	7,415	493
	H 36	7,775	612	H 31	7,775	527
	H 38	8,135	646	H 33	8,135	544

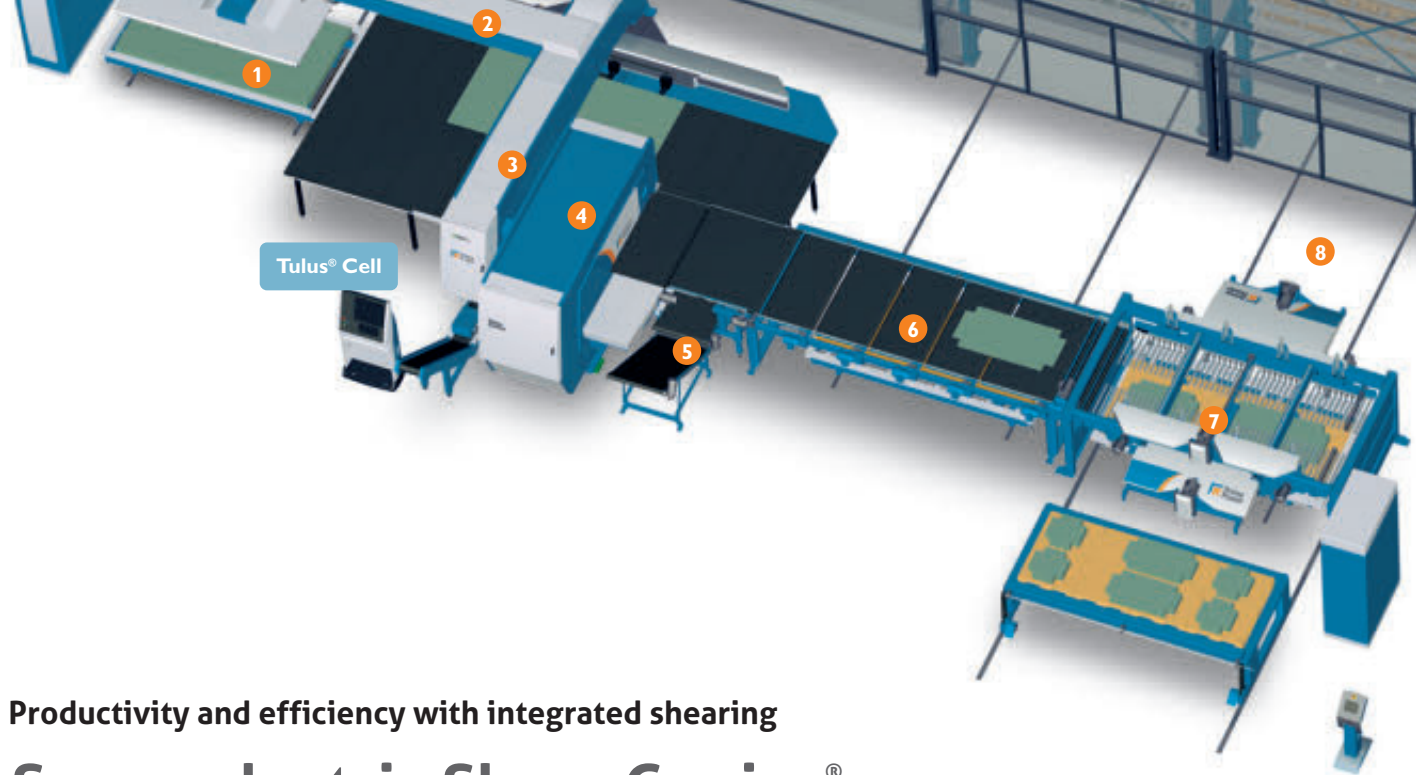




# A system that meets specific requirements and adapts as they change



- 1 Automatic Night Train FMS® storage for raw material and stacked parts
- 2 Night Train FMS® IOW-station for loading and unloading raw material and stacked parts
- 3 LD Night Train FMS® connection for raw material
- 4 Loading device LD
- 5 Servo electric Shear Genius® punching & forming unit
- 6 Servo electric Shear Genius® shearing unit
- 7 Sorting conveyor C1500 with Night Train FMS® connection
- 8 Sheared part buffer SPB
- 9 Picking & stacking robot PSR
- 10 PSR Night Train FMS® connections for stacked parts
- 11 Part positioning conveyor as connection to EBe
- 12 Bend part turning device BTD
- 13 Loading device of EBe
- 14 Automatic, servo-electric panel bender EBe
- 15 Unloading tilting table TUT
- 16 MO/MOL-station for unloading of stacked parts and raw material
- 17 Laser-punch cell LPef
- 18 Loading and stacking robot LSR
- 19 LSR Night Train FMS® connection, 3-level connection for raw material, stacked parts and skeletons
- 20 Belt conveyor as connection to EBe
- 21 Part centering device PCD
- 22 Bend part turning device BTD for PCD
- 23 PCD Night Train FMS® connection
- 24 Servo-electric FastBend FBe
- 25 Prima Power press brake



## Productivity and efficiency with integrated shearing

# Servo-electric Shear Genius®

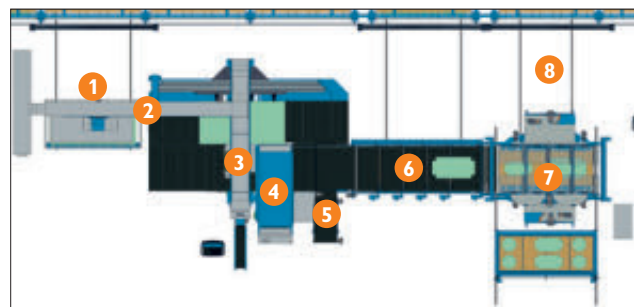
Nearly thirty years of experience in right angle shear technology combined with proven field performance in nearly 2,000 applications throughout the world has allowed providing Shear Genius® with major benefits:

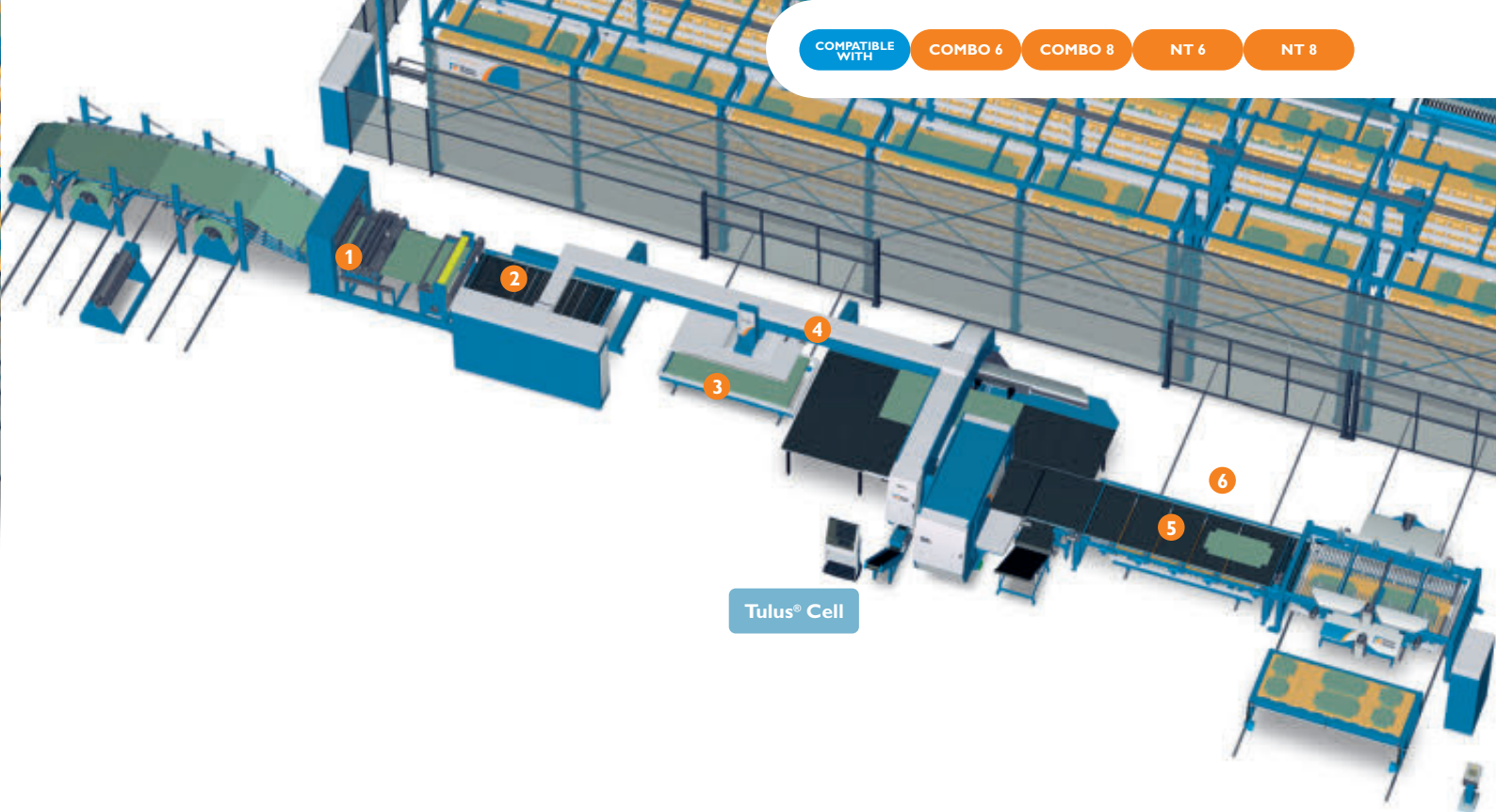
- Automated flexible fabrication
- No skeletons, less punching scrap – savings in raw material
- Higher sheet utilization with shearing technology
- No nibble marks
- Higher productivity
- Low manufacturing costs
- Fast return on investment

### Servo-electric Shear Genius®

- Max. sheet size of raw material:  
SGe6 3,074 mm x 1,565 mm  
SGe8 4,300 mm x 1,565 mm
- Loading, punching, forming, tapping, shearing and part sorting in a single unit
- Servo-electric punching, forming and bending
- Servo-electric shearing with automatic clearance setting
- Positioning speed up to 150 m/min
- 30 ton ram force
- Hit speed up to 1,000 1/min
- Up to 384 tools with Multi-Tools®
- Low running costs – no expensive consumables
- **Power consumption 5 kWh**

- 1 LD Night Train FMS® connection for raw material
- 2 Loading Device LD
- 3 Servo-electric Shear Genius®, punching & forming unit, 30 t, 1,000 hpm
- 4 Servo-electric Shear Genius®, shearing unit, blade 1,000 x 1,500, ACS
- 5 Part sorting, chutes and scrap separation conveyors
- 6 Sorting conveyor C1500 with Night Train FMS® connection
- 7 Stacking System STS
- 8 STS Night Train FMS® connection for stacked parts





Tulus® Cell

## Material savings

### Coil line connection

While using standard size sheet is the most common solution, in certain types of production coil material can be chosen for optimum part specific production time and savings in material cost. Sheared material is loaded into the fabrication process, and it can also be routed into the storage while the cell or system operates.

No filler parts are needed. Further, benefits of a coil connection include the possibility of nesting more than one part over 1,500 mm in length in X-direction and simple balancing of punching and bending.

With a coil line, all material lengths are "standard" – nesting (NC Express™ coil nesting) can be made for optimum sheet length. The saving potential is truly significant as a result of lower price of coil material, no material wasted in filler parts and no need to stock sheet material of different sizes.

- 1 Cut-to-length line
- 2 Positioning table (as mechanical connection point to cut-to-length line)
- 3 LD Night Train FMS® connection for raw material
- 4 Extended loading device LD long
- 5 Sorting conveyor C1500 for small part management
- 6 C1500 Night Train FMS® connection for small parts

## Handling of small and unstackable parts

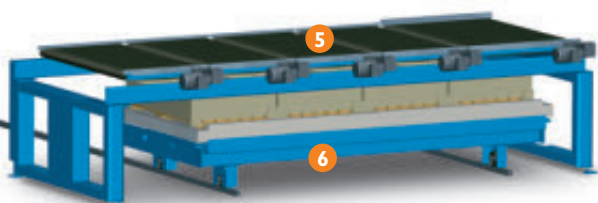
A sorting conveyor C1500 connection to Night Train FMS® is available.

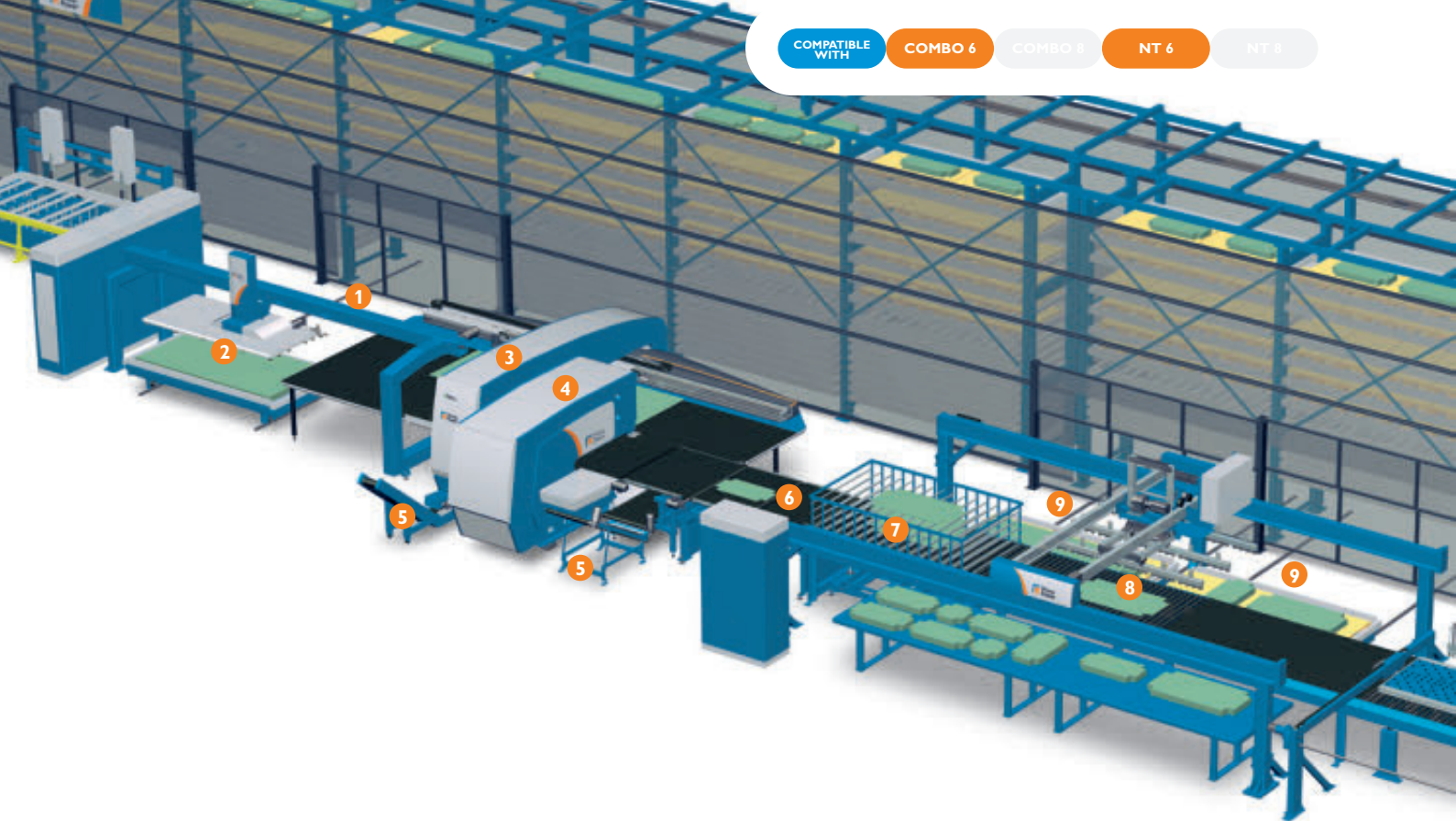
C1500 provides an intelligent solution for material handling of parts which cannot be stacked and parts that will be bent on a manually operated press in the following work stage, etc. Thus it also extends the possibilities of utilizing unmanned night shifts productively for long runs and fabrication of small components.

EUR pallet cassettes with collars or EUR pallet cassettes with boxes are used in the connection. The cassette is moved on the under sorting conveyor. More sorting addresses can be added by programming cassette movement in crosswise direction cassette.

Work piece size (X x Y), max. 800 mm x 1,500 mm

Work piece size (X x Y), min. 120 mm x 20 mm





## Peak performance in integrated punching and shearing

# Shear Brilliance

The new, fully servo-electric Shear Brilliance features linear drive technology in sheet positioning and raises manufacturing speed and productivity up to a new level. With long travel of the coordinate table full working area can be used without repositioning, accurately and at great speed. The sheets are pre-positioned during machine operation, which reduces loading time dramatically.

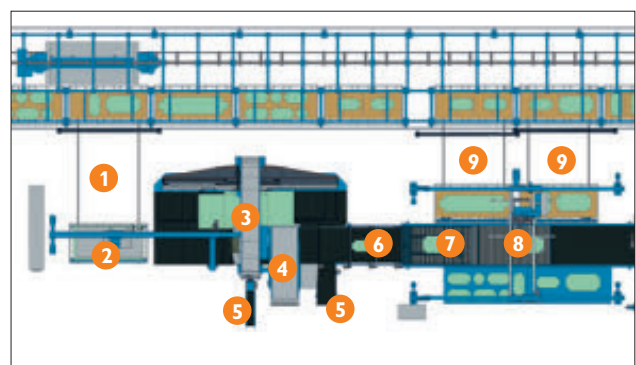
New generation punching technology, very high tooling capacity, the large common working area for punching and shearing as well as high-speed co-ordinate table movements combine to provide truly outstanding productivity.

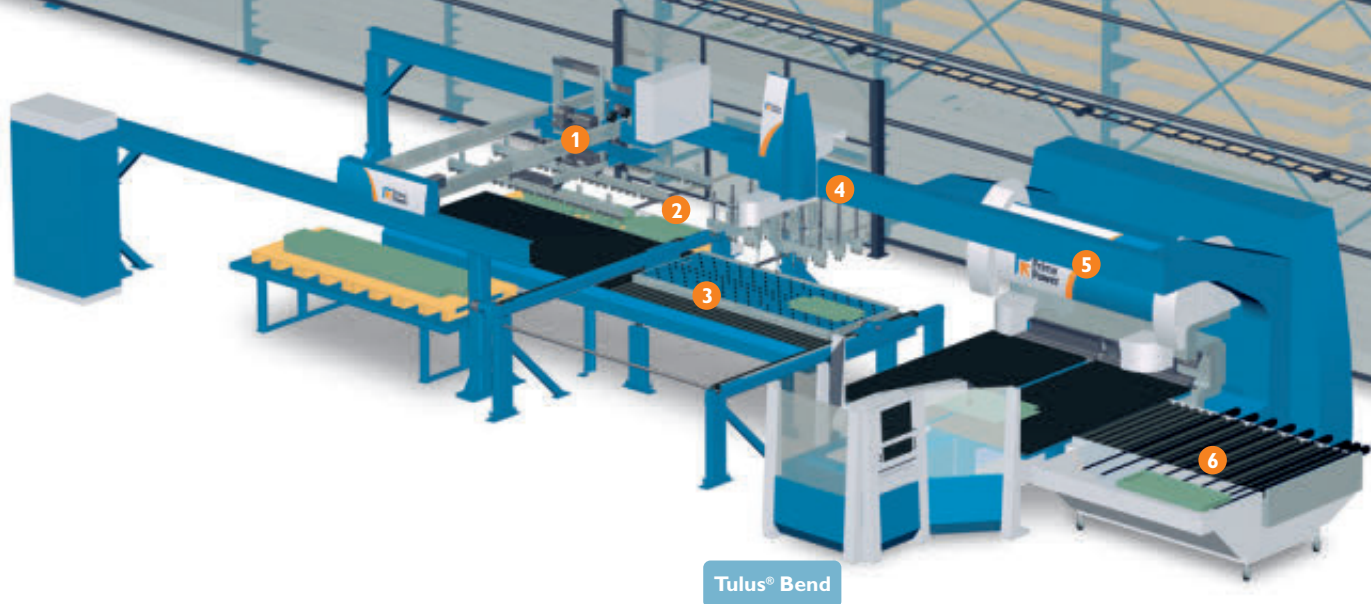
Given the right type of production targets, Shear Brilliance provides unsurpassed productivity.

### Servo-electric Shear Brilliance

- Max. sheet size of raw material: SBe6 3,100 mm x 1,565 mm
- Loading, punching, forming, tapping, shearing and part sorting in a single unit
- Servo-electric punching, forming and bending
- Servo-electric shearing with automatic clearance setting
- Common working area 3,100 mm
- Positioning speed up to 210 m/min
- 35 ton ram force
- Hit speed up to 1,300 1/min
- Up to 576 tools with Multi-Tools®
- Low running costs – no expensive consumables
- **Power consumption 8 kWh**

- 1 LD Night Train FMS® connection for raw material
- 2 Loading device LD
- 3 Servo-electric Shear Brilliance SBe, punching & forming unit, 35 t, 1300 hpm
- 4 Servo-electric Shear Brilliance SBe, shearing unit, blade 1,000 x 1,500, ACS
- 5 Part sorting, chutes and scrap separation conveyors
- 6 Sorting conveyor C1500
- 7 Sheared part buffer SPB
- 8 Picking and stacking robot PSR
- 9 PSR Night Train FMS® connections for stacked parts





Tulus® Bend

## An automatic solution for high-quality bending

# EBe + PSR

### Servo-electric Express Bender

High accuracy with best balance between volume and flexibility together with optimal automation level

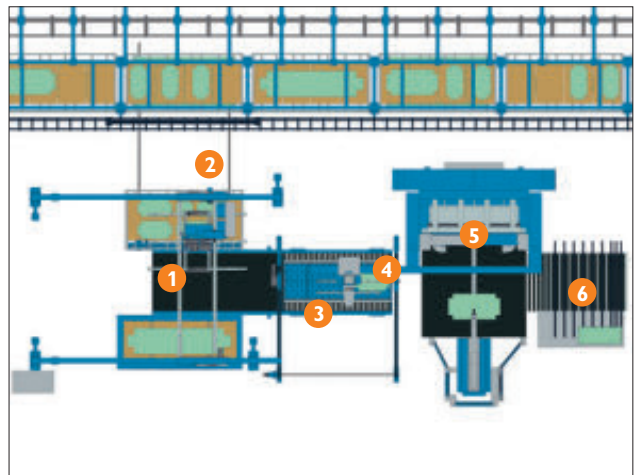
- Max. bending lengths  
EBe4 2,250 mm  
EBe5 2,750 mm  
EBe6 3,350 mm
- Capable of even the most intricate bending tasks thanks to universal tooling set – with off-line programming
- Excellent bending accuracy and surface quality
- High repeatability
- High productivity and flexibility thanks to automatic tool change ATC and loading in hidden time
- Two operating modes for optimum surface quality
- Low maintenance costs
- Low noise level
- **Power consumption 9.5 – 13.5 kWh**

Highly flexible picking and stacking is provided by the PSR robot, coming in two sizes (6 and 8) and short and long models.

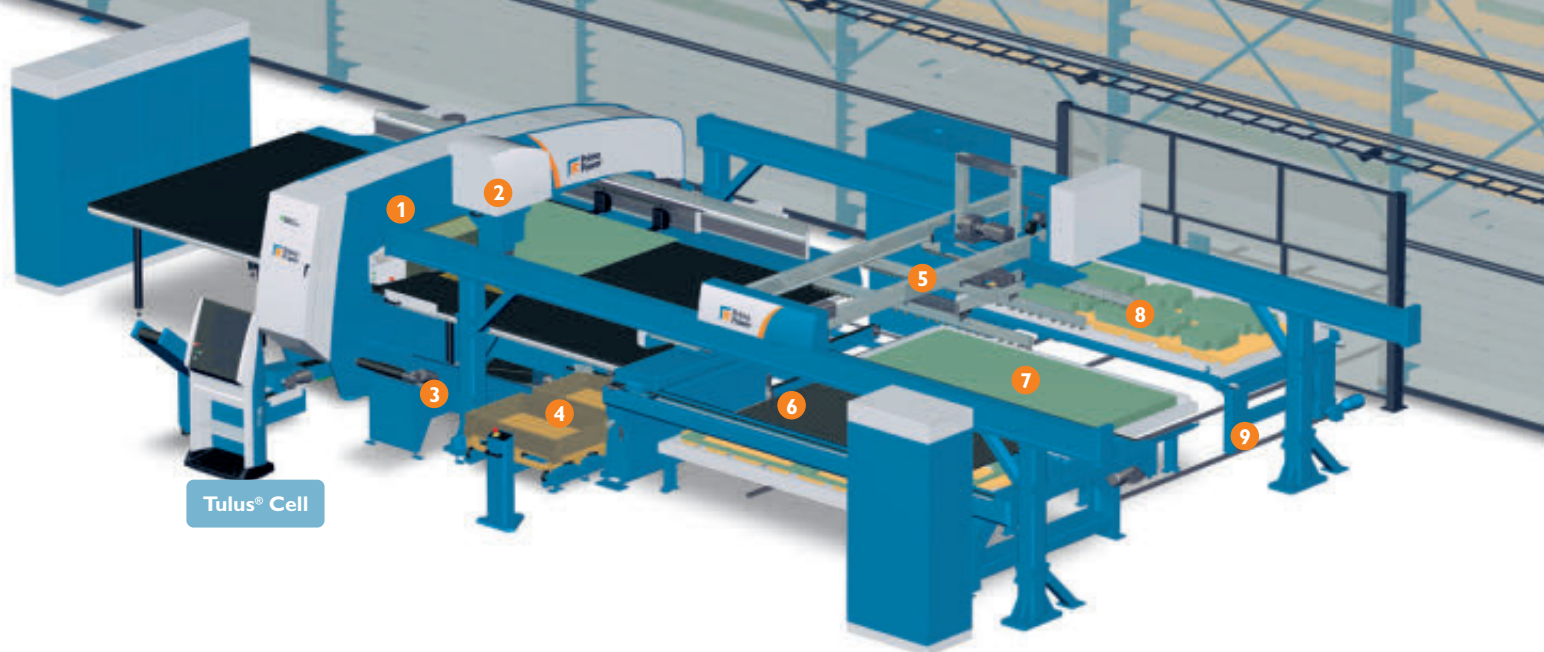
The short model has one connection to Night Train storage and is typically used between it and the bending cell.

The robot picks parts for bending from storage cassettes, or a table for external parts.

- 1 Picking and stacking robot PSR/1
- 2 PSR/1 Night Train FMS® connection for stacked parts
- 3 Part positioning conveyor and bend part turning device BTD
- 4 Loading device of EBe
- 5 Automatic, servo electric panel bender EBe
- 6 Tilting unloading table TUT



If the longer PSR is connected to the bending cell, a shearing-punching cell can later be installed later to form a complete PSBB line.

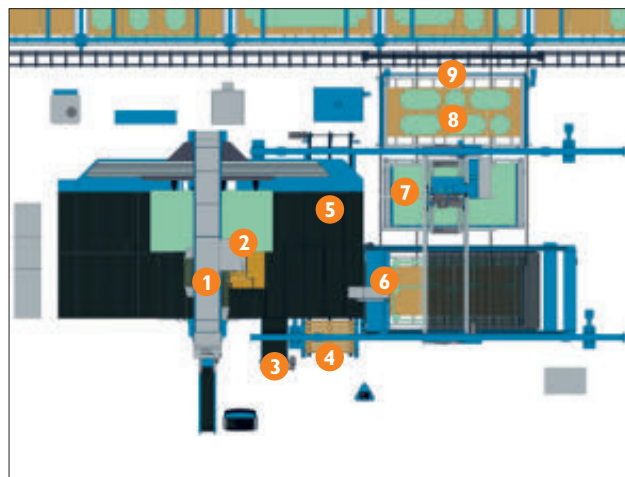


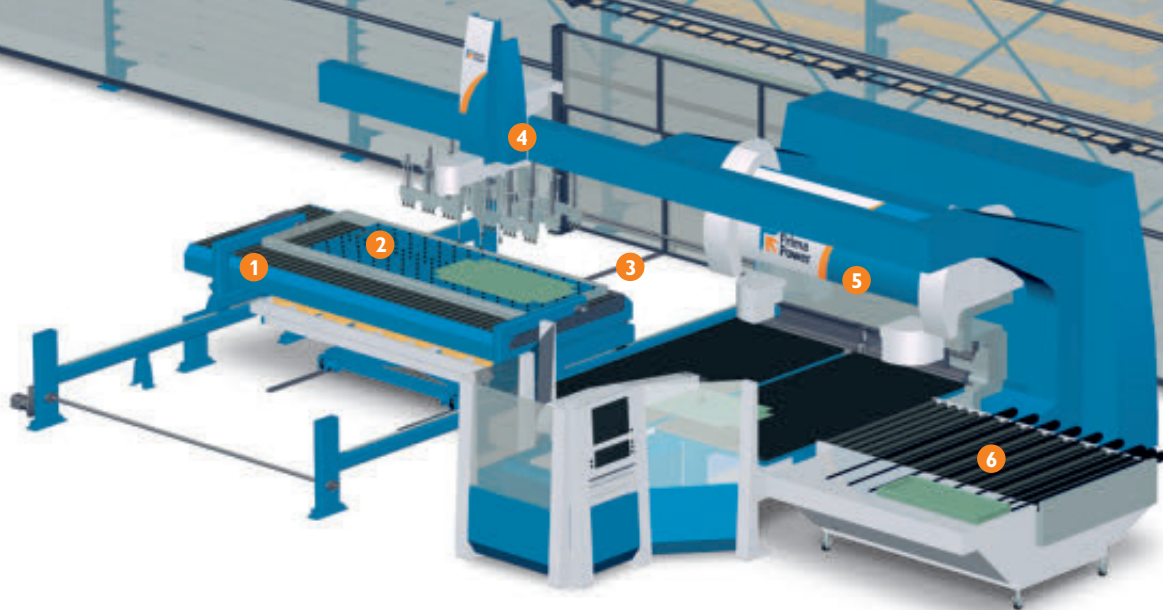
## Servo-electric large sheet format punch-laser cell

# LPef + LSR

Up to full 30 ton servo-electric punching force throughout the stroke  
 High brilliance up to 4,000 Watt fiber laser  
 Max. material thickness 8 mm  
 Laser cutting of materials like copper or brass  
 Special upforming system  
 3 different tapping solutions  
 3 different drop doors for laser and punched parts  
 Small part sorting (9 different addresses) of laser cut parts up to 800 mm x 800 mm  
 Automatic laser scrap separation  
 Sorting and stacking of components  
 The component held by robot during cutting (RALC) for reliable part removal  
 Closed design for eye safety and optional cabin for noise reduction  
 Low running cost – no expensive consumables  
 Lowest electrical power consumption in its class

- 1 Servo-electric punching & forming unit E6
- 2 Fiber laser cutting
- 3 Automated laser scrap sorting
- 4 Small part sorting SU9
- 5 Loading and sorting robot LSR
- 6 Skeleton unload
- 7 Raw material
- 8 Stacked components
- 9 LSR Night Train FMS® connection





## Compact Night Train connection

# EBe + PCD

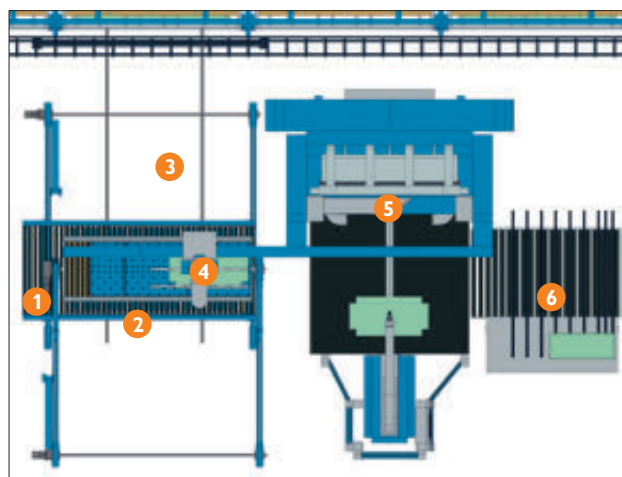
### Servo-electric Express Bender

The servo-electric panel bender provides high performance without environmental impact. This has been achieved using the best techniques for maximum energy efficiency, high machine reliability and reduced maintenance.

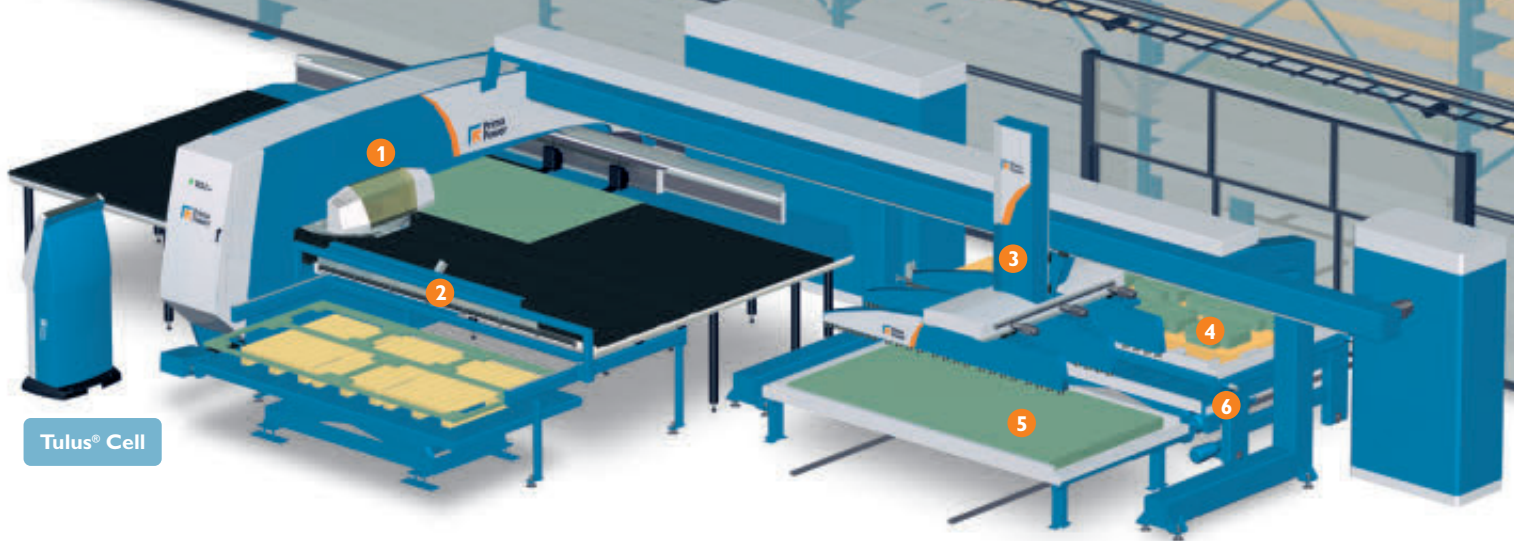
- Max. bending lengths
  - EBe4 2,250 mm
  - EBe5 2,750 mm
  - EBe6 3,350 mm
- Capable of even most intricate bending tasks thanks to universal tooling set – with off-line programming
- Excellent bending accuracy and surface quality
- High repeatability
- High productivity and flexibility thanks to automatic tool change ATC and loading in hidden time
- Two operating modes for optimum surface quality
- Low maintenance costs
- Low noise level
- **Power consumption 9.5 – 13.5 kWh**

New part centering device PCD provides compact connection to Night Train FMS. Parts can be picked from any position to bending process from Night Train cassette. PCD can be equipped also with bend part turning device BTB. PCD is used also with LPBB lines, and it can be used as a stand-alone solution with EBe to provide the panel bender with more work load from multiple stacks.

- 1 Part centering device PCD
- 2 Bend part turning device BTB
- 3 PCD Night Train FMS® connection
- 4 Loading device of EBe
- 5 Automatic, servo electric panel bender EBe
- 6 Tilting unloading table TUT







Tulus® Cell

## High performance servo-electric punching

# E6 + LST

Loading, punching, forming, tapping and part sorting in a single unit

Servo-electric punching, forming and bending

150 m/min sheet positioning speed

Punching force up to 30 ton

Max punching speed 1,000 hpm

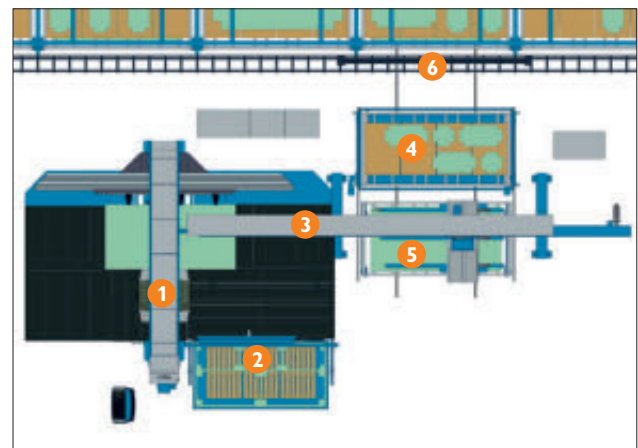
Up to 200 tools and 250 rpm index \*)

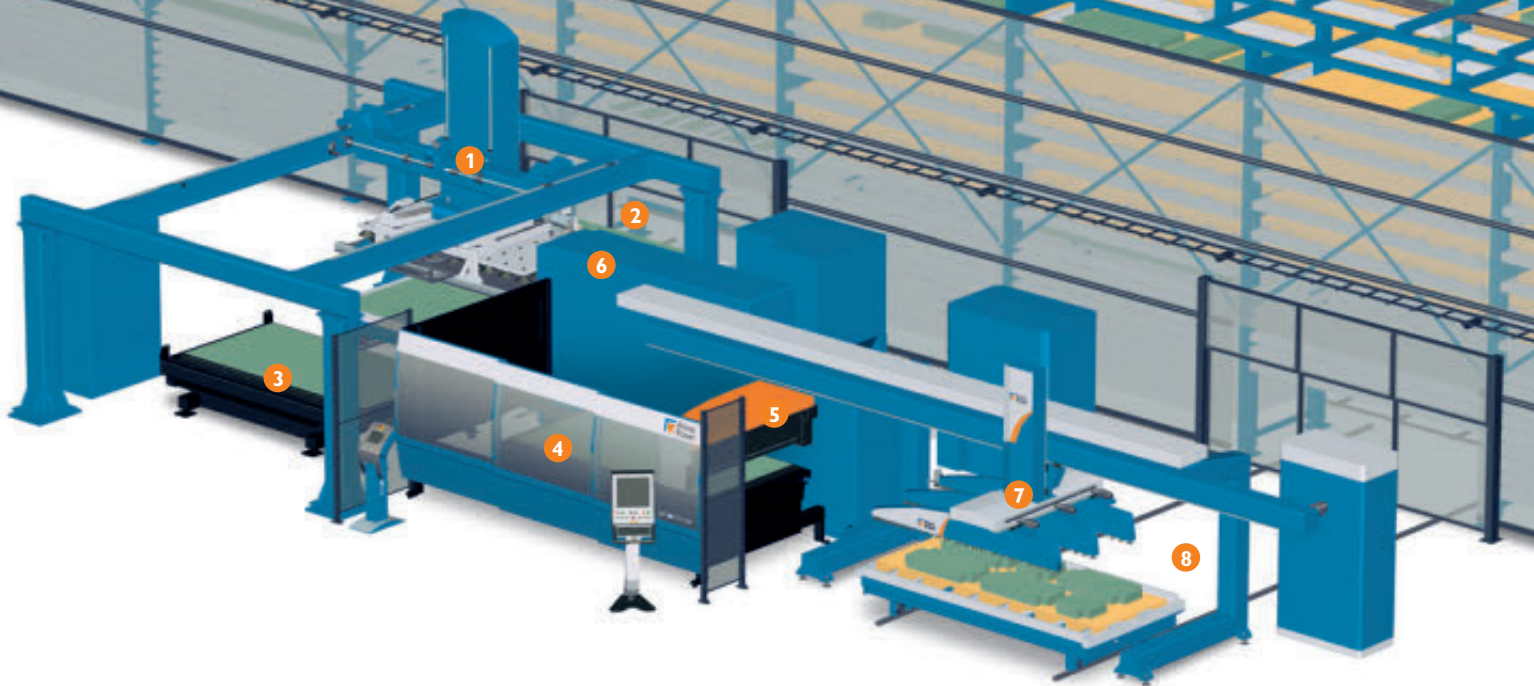
Low running cost – no expensive consumables

Power consumption 5 kWh / 25 A main fuses

\*) No. of tools with Multi-Tool® technology – no external tool changer

- 1 Servo-electric punching & forming unit E6
- 2 Unloading device UDC for skeleton removal
- 3 Loading and stacking robot LST
- 4 Stacked components
- 5 Raw material
- 6 LST Night Train FMS® connection for raw material and stacked parts





## From beam to stacked parts

# PLATINO®

Max. sheet size (X/Y) 3,048 mm x 1,530 mm

High brilliance fiber laser up to 5,000 W (according to the application) integrated in the machine

Machine design using a synthetic granite frame

Open structure concept allowing total accessibility

Positioning speed X/Y axis (simultaneously) up to 140 m/min

Autofocus cutting head with mono lens

Integrated database for laser cutting technology

Group's own numerical control based on standard PC

Automatic nozzle changer (option)

Various optional automation modules available

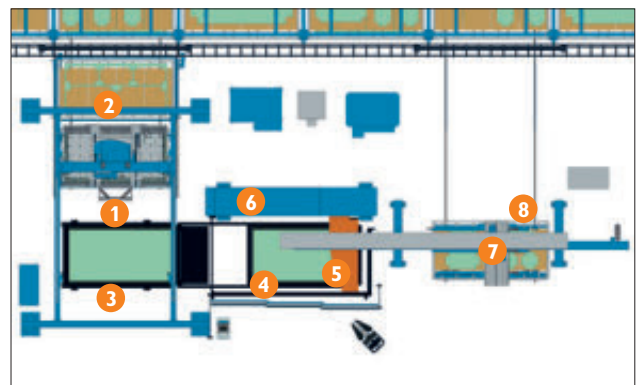
Note: Group's own CO<sub>2</sub> laser from 2,500W up to 5,000W (according to the application) can also be integrated in the machine

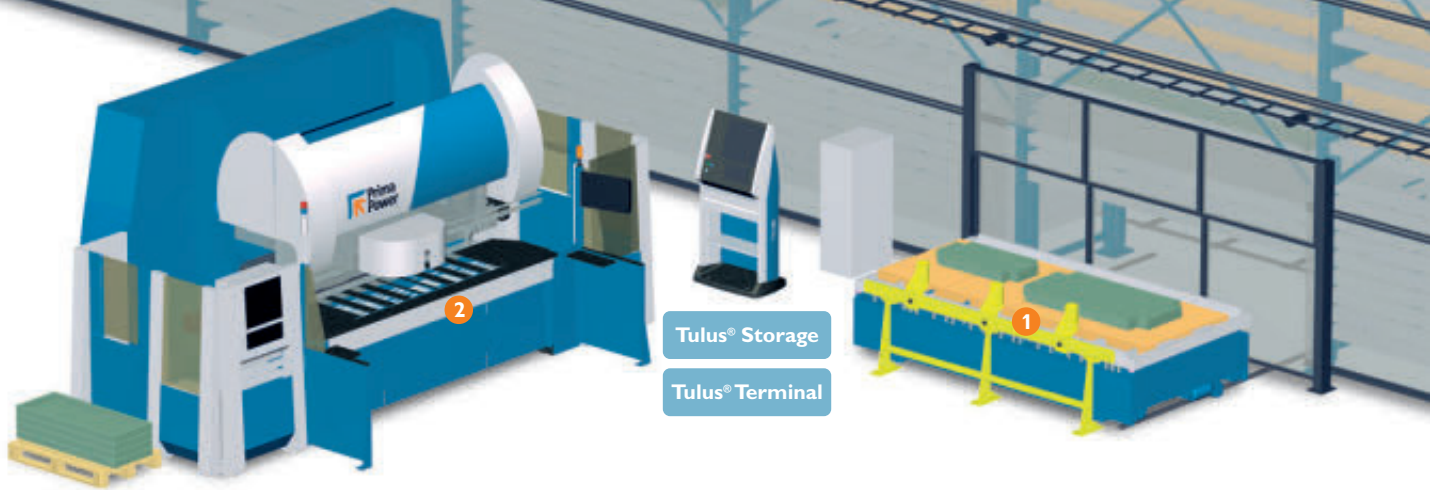
### Reliable part sorting with LST robot

Laser cut parts can be picked and stacked in a reliable way when an LST robot is integrated as part of 2D laser cell.

Maximum process reliability is ensured by picking parts direct from the cutting head and active check of part separation from the skeleton.

- 1 Loading and unloading device LU
- 2 LU Night Train FMS® connection
- 3 Pallet changer
- 4 Cutting table
- 5 Moving X and Y axes with cutting head
- 6 Machine frame
- 7 Stacking robot LST for laser cut parts
- 8 LST Night Train FMS® connection





## Bending automation for productivity

# Night Train FMS<sup>®</sup> with servo-electric FastBend

A productive step from press brakes towards fully automatic bending.

This bending centre combines speed and versatility to achieve unprecedented productivity even with basic level of automation. With FastbBend you can produce complex components quickly and flexibly, from intricate door frames to pre-worked parts with large embosses and cut-outs and to components for a wide range of industries and applications.

- Max. bending lengths  
FBe4 2,250 mm  
FBe5 2,650 mm  
FBe6 3,350 mm

### - Power consumption 7 kWh

Very low maintenance cost

Elimination of skilled operator need, still maximum productivity

Excellent bending accuracy and surface quality

High repeatability

Improvement in safety and working conditions

without loss in production

Lower tooling costs

Compact layout

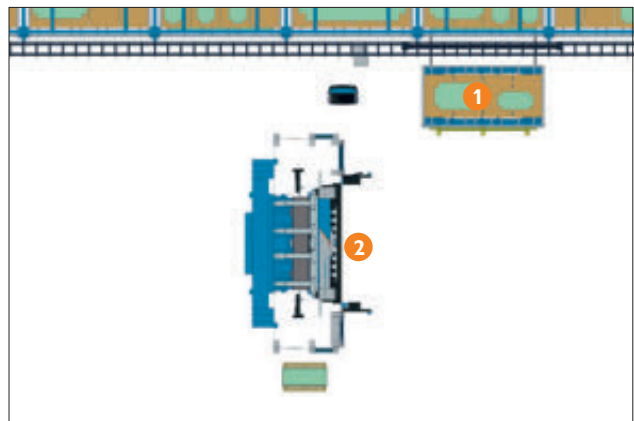
Lower noise level

Less vibration

No foundation required

With automatic tool change ATC and bar code reader the machine makes automatic setup and activates new part program.

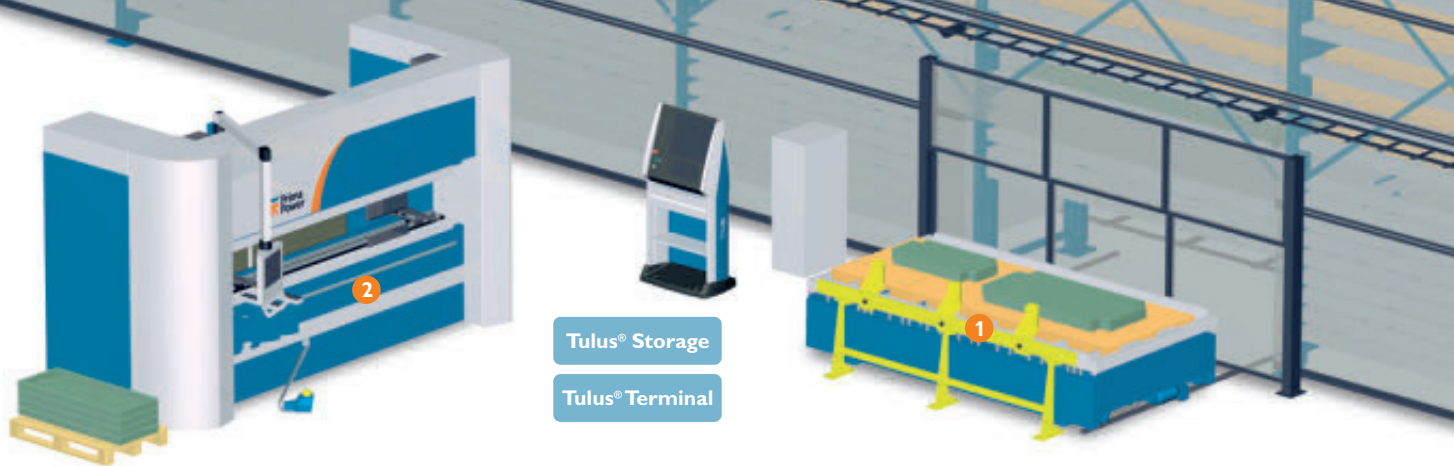
- 1 MO/MOL – station for raw material and unloading of stacked parts
- 2 Prima Power FastBend



With Tulus<sup>®</sup> Terminal software semi-automatically operated Fast Bend FBe can be made an integral part of a Prima Power FMS. The smart work queue feature makes the operator's work easier and more efficient than ever before.

Basic features of Tulus<sup>®</sup> Terminal:

- Work queues with instructions
- Automatic ordering of flat parts from storage
- Choice of the part for bending by automatic activation of the bending program
- Report of finished parts
- Report of defective parts



## Green Means® with servo-electric bending

# Night Train FMS® with Prima Power press brake

### SERVO ELECTRIC PRESS BRAKE

Smoothly running pulley-belt force transmission

Highly equal force distribution

Rigid O-frame construction

Low energy consumption and low maintenance costs

The frame configuration allows a perfect parallelism of the bending

### HIGH PRODUCTIVITY

High acceleration and deceleration with short response times = high dynamics = short cycle times

“Block Laser” with 2 mm speed change point

### FLEXIBILITY

Wila quick clamping tooling system

310 mm stroke/ up to 700 mm opening

Max. bending length also between side frames

User friendly control with 7” touch screen, 2D graphics, automatic bending sequence calculation, 3D simulation for AutoPol programs

Up to 6-axis back gauge

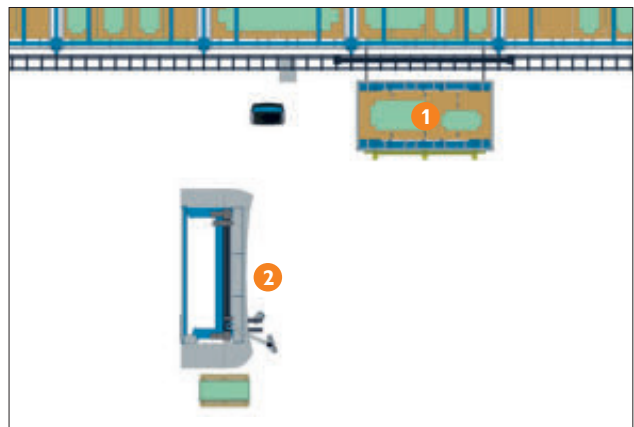
Possibility of front gauge CNC controlled

### RELIABILITY

Servo electric drive system and no hydraulics = fewer critical components

5-year warranty for the mechanical force transmission system

- 1 MO/MOL – station for raw material and unloading of stacked parts
- 2 Prima Power press brake



With Tulus® Terminal software manually operated press brakes can be made an integral part of a Prima Power FMS. The smart work queue feature makes the operator's work easier and more efficient than ever before.

Basic features of Tulus® Terminal:

- Work queues with instructions
- Automatic ordering of flat parts from storage
- Automatic work queue generation in press brake control
- Report of finished parts
- Report of defective parts

# Prima Power Service

While Prima Power Service is a source of truly versatile forms of cooperation including training, updates and upgrades, system extensions, etc, two key elements are of course professional field service and the fast availability spare parts.

Prima Power service engineers, many with decades of experience, are thoroughly trained and work supported by their units and the service headquarters and hubs in Italy, Finland, the US and China.



*Key to better productivity*



To ensure top rate spare part service, a four-level solution is used. Spare parts are stocked in the locations mentioned above, but the focal point in our global spare parts delivery system is the Prima Power Logistic Center in Belgium.

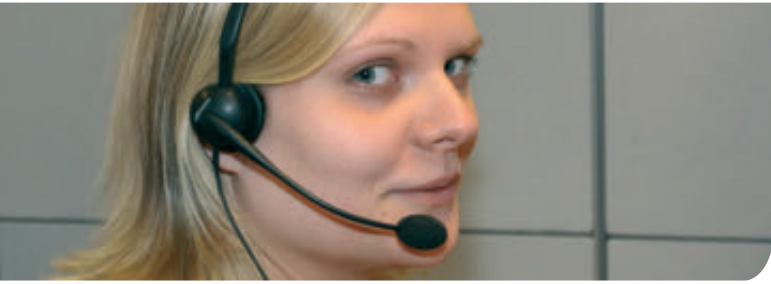
Group units and distributors also stock spare parts and, depending on the technologies included in the system, we have defined technology-specific spare part packages that we recommend having at the factory.



- FIELD SERVICE**
- ONLINE SERVICE**
- SPARE PART SERVICE**
- CONSULTATION**
- UPDATES AND UPGRADES**



## 24/7 presence – Prima Power The Operator



Prima Power's **The Operator** is a completely new concept to offer fast and analytical Just In Time Service wherever the customer operates. It consists of three product groups, OPView, OPSupport and OPEfficiency.

**OPView** is a combination of different analyses performed on the machine. Some of these are made in the background while the machine is used in production. Based on analyzed data OPView will generate a condition report.

From the condition report it is easy to follow machine condition and make the necessary repairs in scheduled manner. If OPView full package is selected, the machine maintenance schedule is adjusted automatically basing on the data.

**OPSupport** is an on-line help available whenever it is needed. There is a remote connection to the machine from where a specialist can see machine status and alarm history. There is also a live view by web cameras to the machine and an interactive communication channel via Skype in order to ensure the most effective support.

**OPEfficiency** is a powerful tool for analysing and improving production. It gives complete reports on machine run, idle and failure time with details that help decide on actions needed.



### Service agreements

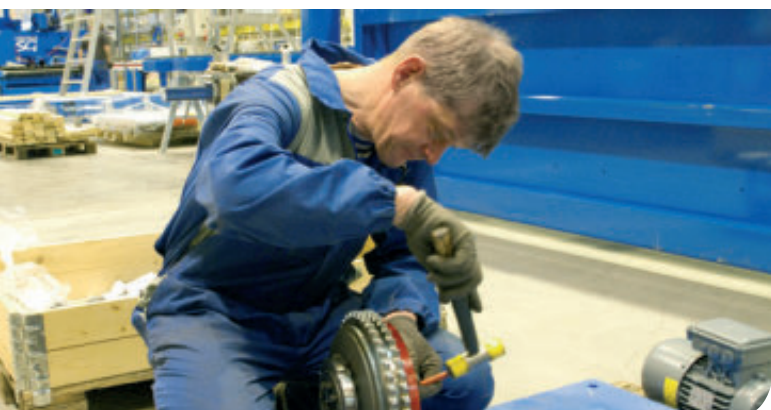
With a service agreement, the customer and Prima Power define the terms of service deliveries; it is the most cost efficient way of ensuring maximum uptime of the system. It is a comprehensive package of essential Services for your requirements – you do not pay for anything that you do not need.

As standard, there are three levels of agreements:

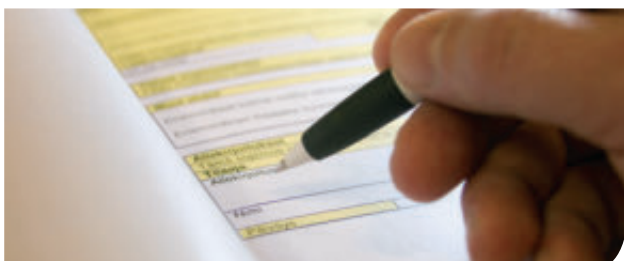
**Preventive Care**, which includes full preventive maintenance inclusive of machine parts, labour and travel. Service interventions are invoiced separately at discounted price.

**Extended Care**, which includes everything that is in Preventive Care as well as service interventions and spare parts.

**The Operator**: State-of-the-art remote support, diagnostics and data analysis system to ensure maximum availability for the machinery.



Service agreements are tailored for installed machinery and your requirements. For example, different levels of availability can be defined for optimum during high and low production seasons. Further, the level of local support can be agreed on case by case.



[primapower.com](http://primapower.com)

