

SFC 600

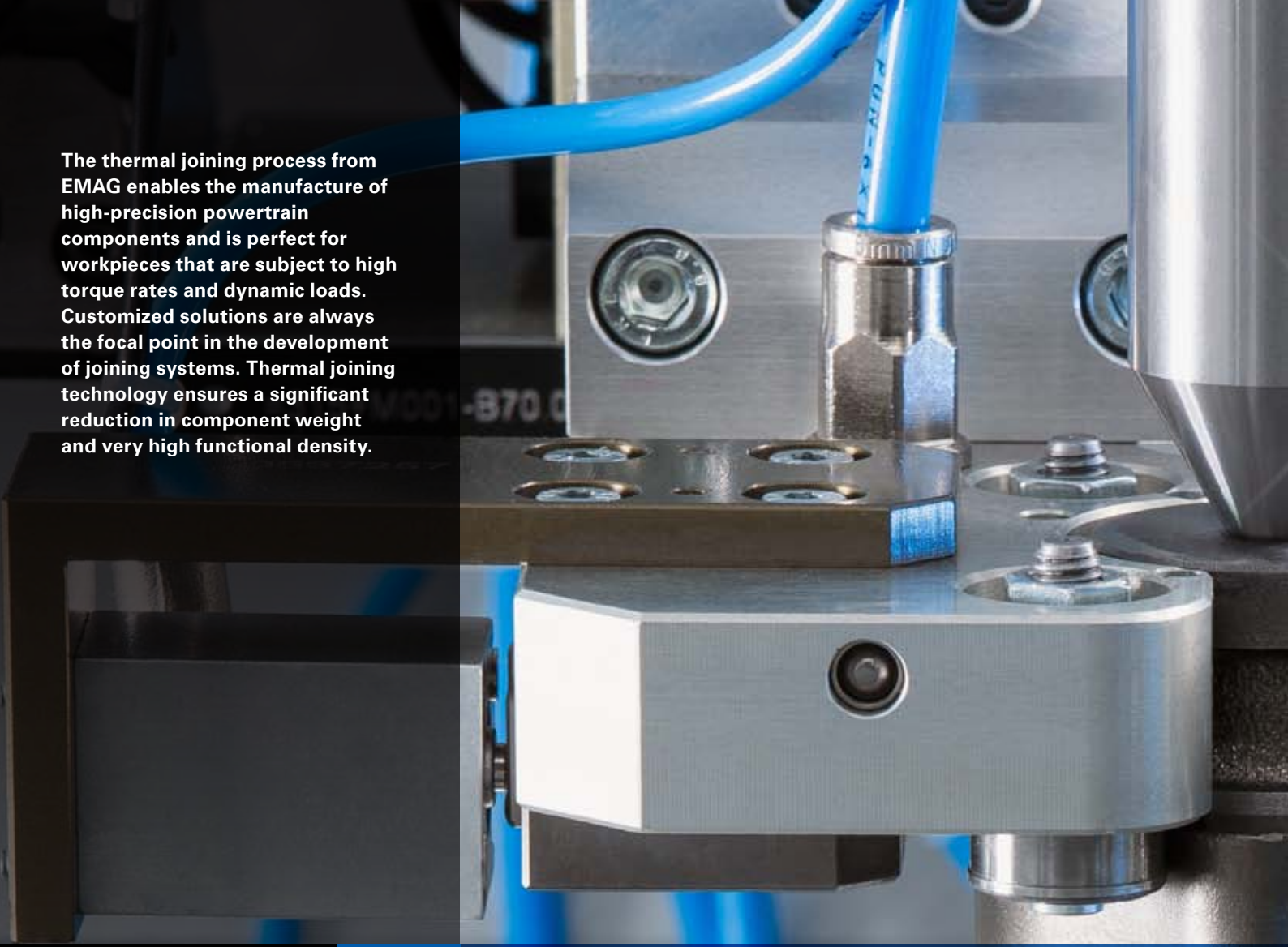


JOINING MACHINE

think

VERTICAL





The thermal joining process from EMAG enables the manufacture of high-precision powertrain components and is perfect for workpieces that are subject to high torque rates and dynamic loads. Customized solutions are always the focal point in the development of joining systems. Thermal joining technology ensures a significant reduction in component weight and very high functional density.

JOINING MACHINE  
SFC 600





## Benefits of the SFC 600

- + Lower costs compared to conventional production processes
- + Increased flexibility in production (design of the process chain, shorter retooling times, etc.)
- + The component sequence can be freely selected
- + Angle and axial position can be freely selected
- + Joining precision parts without re-work (for example cams with negative radii) is possible
- + Joining components made of different materials is possible

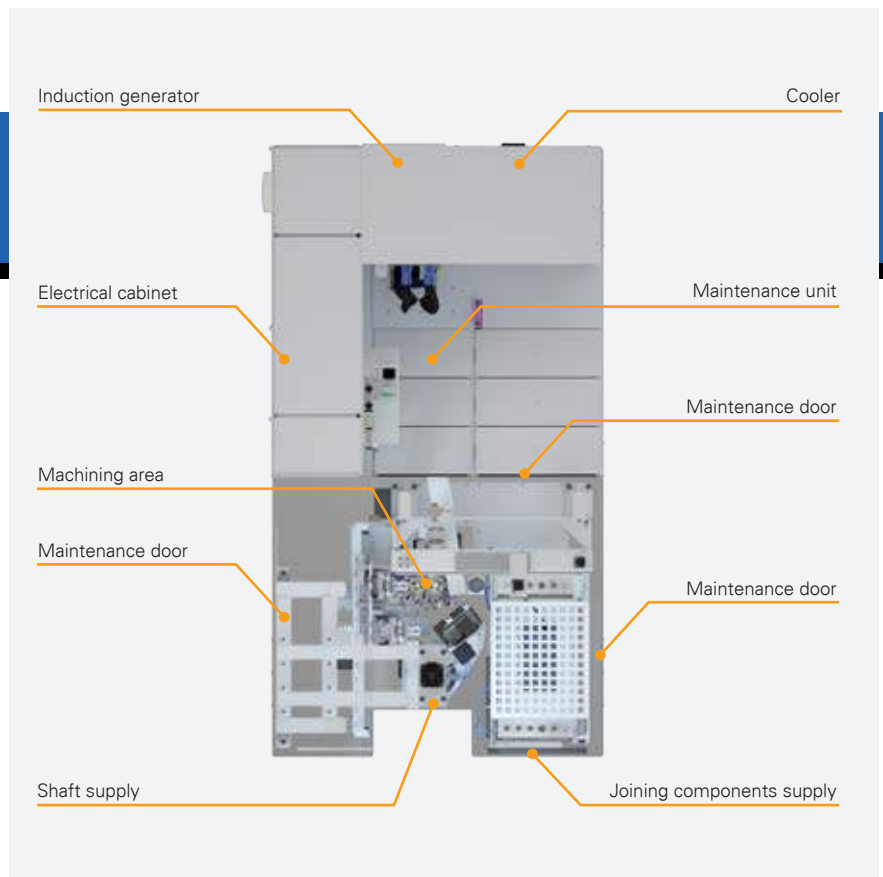
# POWER

## Joining by thermal, force-free processes

The SFC 600 is a highly productive joining machine designed for a variety applications such as joining small drive shafts or camshafts. A fast joining process is guaranteed by the completely NC-controlled high-speed joining axis.

When combined with the generators and heating systems developed by EMAG eldec, the SFC 600 delivers the complete technological process chain for heating and joining from a single source. The flexible design of the machine allows the SFC 600 to be used in a wide range of manufacturing scenarios – from manual loading to fully automatic line use.

JOINING MACHINE  
SFC 600



## TECHNICAL DATA

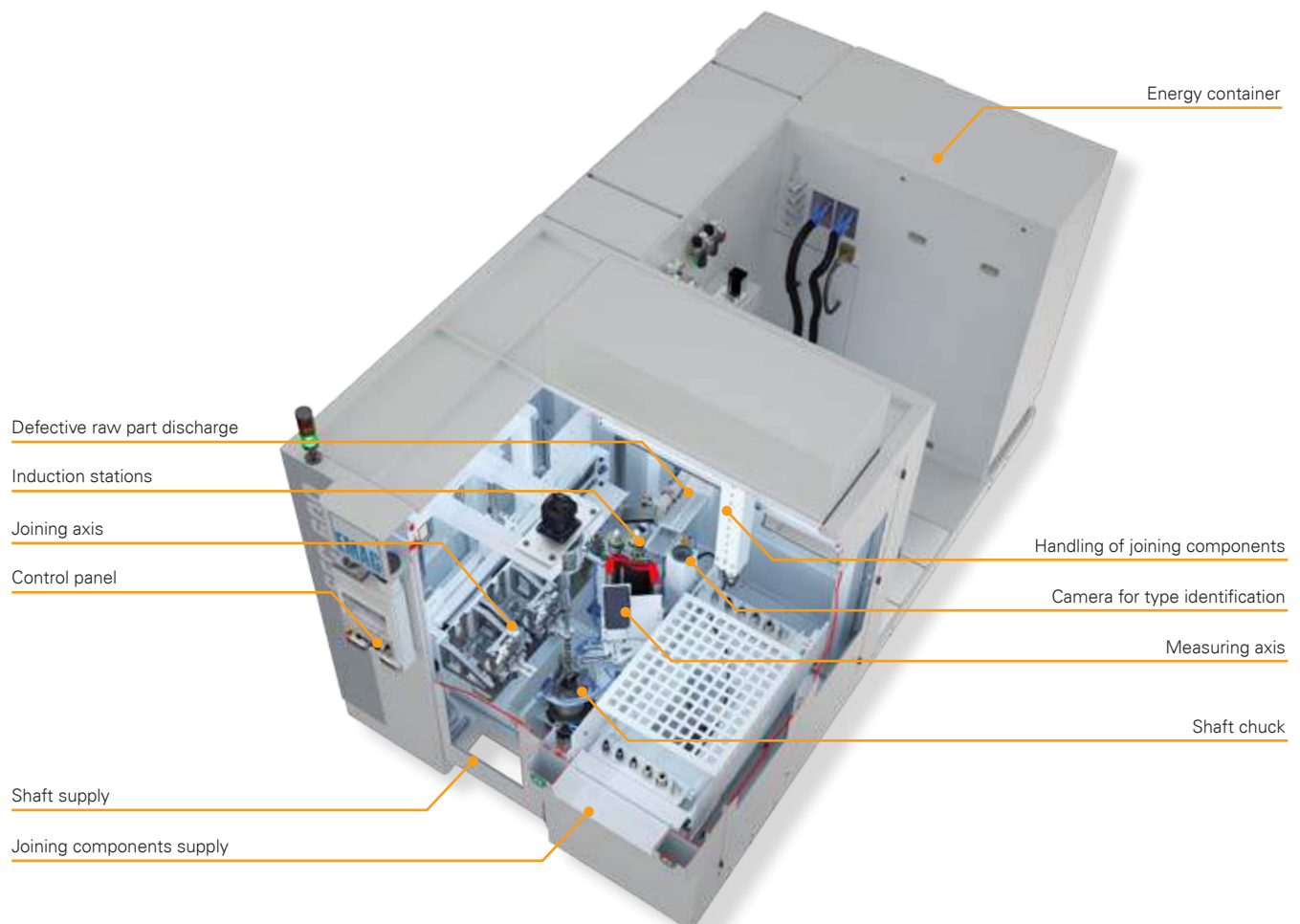
Max. workpiece diameter	mm inch	40 1.5
Component diameter, max.	mm inch	100 4
Workpiece length, max.	mm inch	600 23.5
Joining axis travel, X / Y / Z	mm inch	1,000 / 600 / 150 39.5 / 23.5 / 6



**eldec**

Member of the EMAG Group

A powerful eldec induction generator is used in the SFC 600 by EMAG. With its compact design and wide range of control features (optional Profibus / Profinet interface), the eldec medium-frequency generators are perfect for integration into entire production systems.





# Thermal, force-free joining of camshafts

Shaft assemblies and mechanical control assemblies are becoming increasingly important as an alternative to solid components in gearboxes and engines. The benefits of assembled components over conventional solid constructions are the significant reductions in weight. In addition, these components can have more compact dimensions, a design that better meets demands, increased flexibility in component design and production, as well as significantly higher efficiency in managing the range of versions.

The use of assembled camshafts opens up completely new perspectives in engine design. Assembled camshafts contribute significantly to developing fuel-efficient, environmentally-friendly combustion engines.

The patented EMAG process for joining without using thermal forces creates assembled camshafts with optimum precision while simultaneously minimizing the effort and expenditure for finishing processes.



JOINING MACHINE  
SFC 600



**Joining parts** (cams, sensor wheels, other parts) are supplied on two interchangeable pallets based on position. While the workpieces from the first pallet are automatically removed via a loading portal, the second pallet is already being loaded up.



**Workpiece recognition** using dot patterns or Data Matrix Code (DMC) for workpiece identification and determining the correct workpiece position. The piece is then transferred to the induction heating station.

## Joining electric motor shafts

The development in electric motor production has taken on a significantly higher role as a result of the increasing electrification of vehicles. Serial or parallel hybrids, range extenders and purely electric drive units make different demands on an electric motor and therefore also on the manufacturing process.

The SFC 600 joining machine provides the precision and productivity required for the manufacture of even high volumes. The joining machine scores particularly well as a result of its high positioning and repetition accuracy.

**HIGH  
PRECISION  
BY THERMAL, FORCE-  
FREE JOINING**



# DYNAMIC



**Joining process:** The pump cam is in the cooling phase at this position. All workpieces are gripped with roll grabs. This ensures maximum thermal insulation, in order to minimize loss of heat energy.



**Quality inspection of joining results:** The probe tests the axial position of the workpiece after the joining process. The prescribed slump is automatically corrected in the case of deviations.

# At home in the world.

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