

SAFETY OF MACHINERY AND EQUIPMENT

Safety Instructions for Heating Systems of EMA Indutec

This EMA heating system is constructed using state of the art technology and generally accepted technical safety guidelines. Nevertheless, hazards may result for the user or third parties during operation, or damage may occur to the machine or to other objects.

The machine should only be used:

- For its intended use
- In a completely safe condition
- When the protective equipment is in correct state
- When personal protective equipment is worn
- When the operating instructions have been read carefully
- When faults that could impair safety have been immediately rectified

During operation, inductive heating systems are supplied with **dangerous electric voltage**. The housing and switch cabinets to be opened must therefore be switched to zero potential before commencing service, maintenance, cleaning or repair work, and secured against being switched back on. The state of the electric system must be identified so that no unqualified persons have access to live parts.

The usual „**5 safety rules**“ according to DIN VDE 0105 hereby are:

- Disconnect!
- Secure against reconnection!
- Detect disconnection!
- Earth and short circuit!
- Cover and shield close voltage-carrying parts!

It is possible that the emitted **electromagnetic fields** influence electronic cardiac implants or metal implants. Persons with such implants should not remain in the vicinity during operation of the system. EMA Indutec offers EMF measurements as a service.

The processing machine required for the heating procedure comprises **moving and rotating parts**. In event of unauthorized removal of the necessary covers, incorrect operation or insufficient maintenance, there is a risk of causing severe health damage or material damage. It is essential to wear protective gloves and goggles for certain work.

If protective equipment is opened during or after heating up, you may obtain **burns from the parts and work pieces** heated by the inductor. In such a case, a cooling phase to room temperature must be observed, or wear suitable protective gloves. In event of insufficient cooling, burns are also possible on live parts (e.g. inductor, intermediate jaws and busbars), or on heated work pieces.

Depending on the local conditions, a **sound pressure level** higher than 85 dB(A) may occur that may lead to deafness. With such sound levels, the operating personnel are instructed to wear hearing protection.

When processing heavy pieces of metal, **safety shoes** must be worn.

The installation of the system is carried out by specialist personnel that have been instructed in an **EMC compliant installation**. The manufacturer's declaration is available for the supplier parts.

The customer is responsible for **safety on the construction site**. Personnel appointed on the construction site by EMA Indutec must be provided with a safety instruction by the customer.

There is a risk of injury from **fluids escaping under pressure** (cooling water, quenchant). System sections and pressure lines to be opened must be de-pressurized before commencing repair work.

Before **working on the compressed air maintenance unit**, close the main line and bleed the system.

Prescribed **maintenance and service work** must be carried out according to schedule. Before starting the servicing, adjusting, repair and maintenance work, the operating personnel must be informed. After finishing the servicing work, check the function of all safety equipment.

There is a **risk of intoxication** from eating and drinking at the work place. Eating and drinking is therefore forbidden at the work place.

The quenchant and the demineralized water must not be consumed or used for physical cleaning. The safety data sheet and the directions for using the quenching concentrate must be observed.

There is a **risk of slipping** from the quenchant or oil (e.g. lubricants) in the work area of the system. Walking areas must be secured, e.g. by non-slip flooring covers. Quenchant or oil on the floor must be rectified immediately. Binding agent, collecting vessels and extraction devices must always be ready for use.

Mechanical **components with safety-orientated functions** must be replaced as soon as the number of their actuations has exceeded the specified limit.

Systems from EMA Indutec have been designed and built in such a manner that all **fire risks** are avoided that could originate from the machine itself or from gases, fluids, dust, steams and other substance released from or used by the machine. Due to the heat on the inductor and on the work piece being processed generated due to the process, when used for its intended purpose, there is no risk of fire in the processing room of the system. As all eventualities, misconduct and fire hazards in the vicinity of the system cannot be foreseen, we recommend that fire fighting measures are taken (fire extinguisher, fire blanket, water hose, etc.). Moreover, we recommend to train the operator about fire prevention and fighting.

Despite the use of personal protective equipment, in event of a concatenation of unfortunate procedures, injuries may be caused to the operator or other persons in the area of the system. For this purpose, all persons working on the system must be informed about **first aid measures**. Moreover, all persons that have sustained injuries must then seek professional medical treatment.

Only **personnel with respective training and experience** as qualified electrician according to DIN VDE 0105 Part 1 (Operation of Power Installations) may work on electrical equipment. These specialist personnel must be familiar with all safety instructions and measures that are listed in the operating instructions for transporting, installation, operation, maintenance, cleaning and disassembly of the system.