



Automate DEEP DRILLING to the maximum

Translation of the article by the Italian technical journal
MACCHINE UTENSILI (machine tools) - September 2021

**THE I.M.S.A. MF1300/4P EVO
DEEP DRILLING AND MILLING CENTER
HAS A GUN DRILL CHANGE SYSTEM FOR
CHANGING 4 COMPLETE DEEP DRILLING
UNITS, AN 80-POSITION ISO50 TOOL
CHANGER AND A TWO-POSITION
PALLET CHANGER.**

This particular drilling machine has been commissioned by a Canadian manufacturer of moulds for the automotive sector, particularly demanding in terms of autonomy and reliability of the machine fleet. A mould-maker that already uses 9 other IMSA deep drilling and milling machines located in 3 sites in North America.

The IMSA gun drill change solution, first implemented in 2009, replaces 4 deep drilling units each consisting of a gun drill complete with chip box, nose bushing, steady rests and ISO50 spindle holder. This allows you to maintain proper constructional alignments and thus minimize vibration and increase straightness.

Why the gun drill changer? The choice of the IMSA solution is not related to the autonomy of the single gun drill tool, because drilling 30 - 40 meters in classic mould materials is already the norm on an

IMSA deep drilling machine, before stopping to replace or sharpen the drill.

The choice of the "4P" which changes 4 gun drills automatically makes it possible to manage even 4 different diameters on the machine. Combining a tool changer for ISO50 milling tools and a pallet changer, like on this production unit destined for overseas, means you can really work without an operator and be able to anticipate what you'll need for the next job.

MACHINE SETUP IN DISGUISED TIME

What might this mean in a concrete case? For example, while the machine is working on a mould, the machinist can set up everything needed for the next mould that will be on the table in 6 hours, on

which a conditioning circuit will have to be made with numerous deep double-tilt holes of a different diameter from the one we are currently working with, and a series of complementary machine operations of various types with the tools we are already preparing in the ISO50 tool changer, and clamping the next mould on the second pallet changer station. All in complete safety.

In fact, both the gun drill changer, the ISO50 tool changer and the pallet changer are specially arranged in separate areas sheltered from the machine's working area. A machinist who is in charge of several production units will therefore be able to systematically organize the next working hours in advance, while this machine is already working autonomously. ■

EVO-Series Gun Drilling and Milling center for molds, equipped with 4-Station Gun Drill Changer

- MF1300/4P EVO is designed to drill molds up to 12 tonnes size.
- A workpiece of diameter 2750mm max can rotate inside the machine structure.
- Deep drilling up to 1300 mm in a single cycle, diameter range from 5 to 40 mm solid.
- Heidenhain CNC Series 600.
- Performance is guaranteed in any vertical position thanks to our vertical gantry column structure, which supports the column both at the lower and upper end (16 times more rigid than a column guided only at the base).
- Compound-angle machining in molds with complex colling circuits is possible by combining table rotation and ram tilting movement.



- The two spindles are separate and optimized: IMSA dual-spindle configuration for gun drilling and auxiliary machining. The switchover from gun drilling to milling and back is totally automatic, by M function, without any operator's intervention.
- MF1300/4P EVO's gun drilling spindle has a power of 11 kW, 4200 rpm and is liquid-cooled.
- IMSA Gun Drill Changer automatically replaces 4

- gun drill units.
- Separate ISO50 liquid-cooled milling head with 29 kW power and 6000 rpm, for a maximum torque of 200 Nm.
- ISO50 automatic tool changer with 20 / 40 / 80 tool pockets.
- 4-Sides Machining Concept: the long transversal movements and the translating table increase the workpiece reachability, and enable a single workpiece setup in the table center.

- Advanced RTCP for the compound-angle machining. Two-spindle management with a single origin on the 4 faces. Specific IMSA/HEIDENHAIN function control the deep drilling process.
- In this specific case, the Gun Drilling Center MF1300/4P EVO was equipped with a 2-position Pallet Changer and with a double screen with cameras into the machining area.