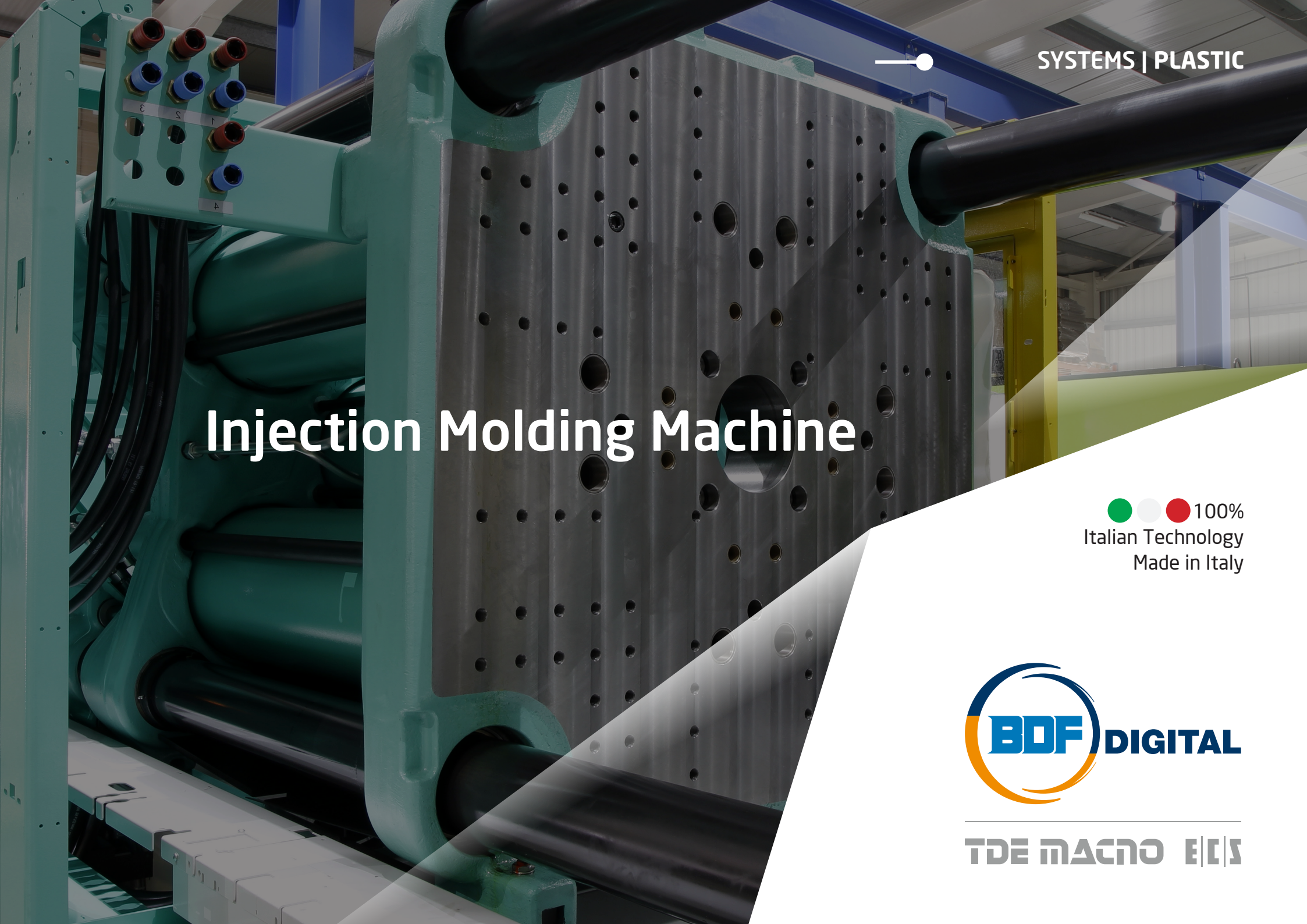


SYSTEMS | PLASTIC

Injection Molding Machine

100%
Italian Technology
Made in Italy

BDF DIGITAL

TDE MACNO EDS

50 years of excellence in automation and machine tools.

Innovation and technology.
Our mission: your best performance

1970
ECS was born, one of the first leader in CNC in Italy

1976
TDE (Tecnologie Digitali Elettromagnetiche) was founded, specialized in static conveters for all motor control

1986
BDF group founded in 1906, became shareholder of TDE.

1992
MACNO founded, specialized in plastics and injection molding machine

1997
TDE Automation acquires MACNO. TDE MACNO was born.

2016
TDE MACNO acquires ECS.

2017
From the merger of TDE MACNO BDF Digital S.p.A was born. Automation, System and Machine Tools are his three main industrial business division

2021
Thanks to more than 3 decades of experience BDF Digital is ready to market launch new solutions for automation and machine tools

+30.000
ACTIVE CUSTOMERS IN AUTOMATION AND CNC MARKET

+50.000
CNC INSTALLATIONS

+40.000
CONTROL SYSTEM FROM 2017

Injection Molding Machine

Optimized solutions for all plastic industry applications

From simple hydraulic injection molding machines to complex multi-component systems, **BDF Digital** solutions cover **the entire range of machines for the plastics industry**.

Thanks to more of 3 decads in controlling injection molding machines, BDF Digital is able to respond to requests in all markets.

Simplicity, smart operation, and strong performance are particularly important in controlling injection molding machines.

With Bdf Digital's partnership, you can develop **innovative automation** solutions with the highest service quality.

BDF Digital drives directly manage the servo pump with specific algorithms implemented in the integrated PLC.
The digital connection between the servo pump, the drives and the proportional valves ensures very fast communication with the press control.
The BDF Digital's drive is the controller in the full electric press machines, thanks to the algorithms developed in the drive.

We develop tailor made solutions optimized to your needs.

Partnership

All type of machine

Industry 4.0

Platform for the future

Future-proof platform

BDF Digital technologies are based on a embedded board with OS RT.
Due to its modularity and sophisticated software architecture, all KePlast controllers can be upgraded at any time. **This makes our control solutions future-proof.**

Software makes the difference

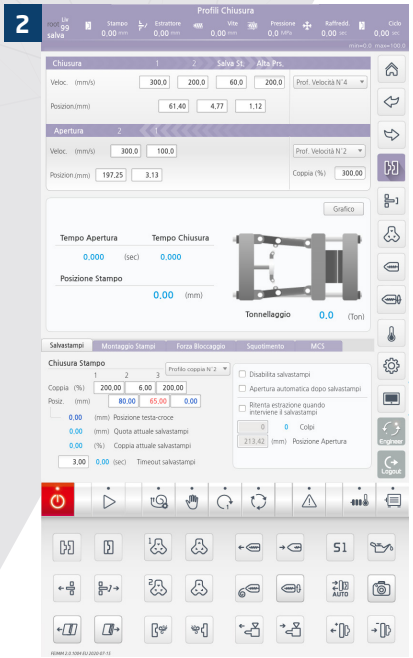
Implementing **Industry 4.0** requires a reliable automation specialist **with experience in software and IT**.
BDF Digital guaranty data exchange, recipe setting and data upload to ensure connectivity, **mobility and maximum productivity all over the world**.

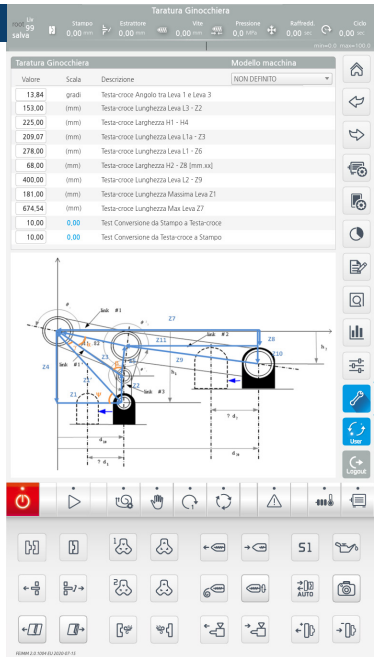
HMI for all kind of machines

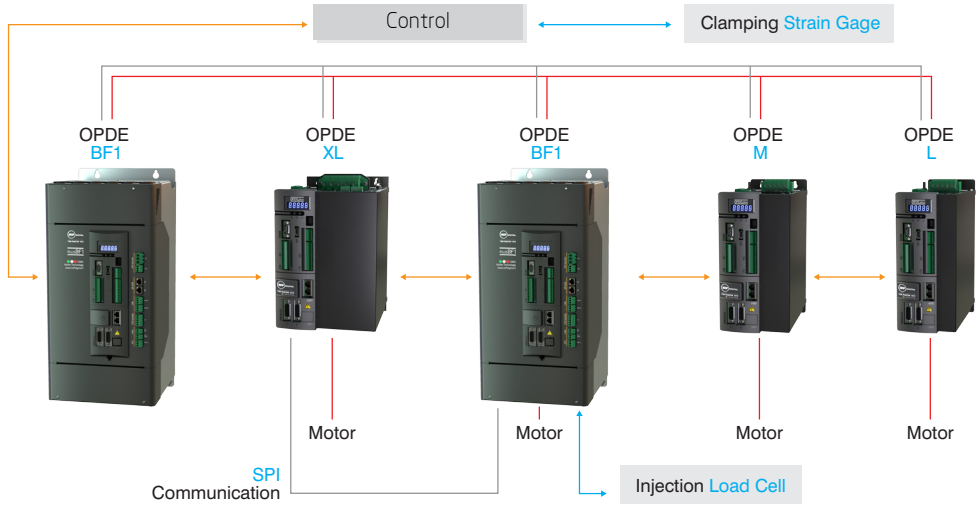
HMI developed by BDF Digital is ready to use, customizable according to the functions present on your machine

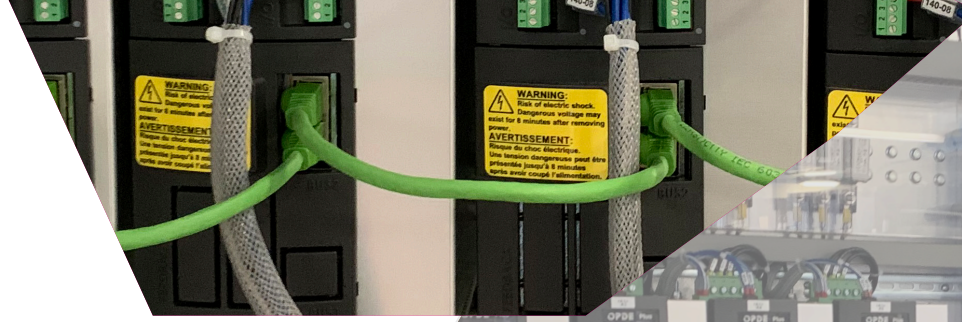
- **easy parameter setting** thanks to a user-friendly interface
- **graphic representation of the machine setting and operation**
- **quality management:** description - defective part report
- **traceability and waste counting** in relation to the machine settings
- **data management:** increase efficiency by saving and managing production data
- automatic saving of alarms with PopUp for control

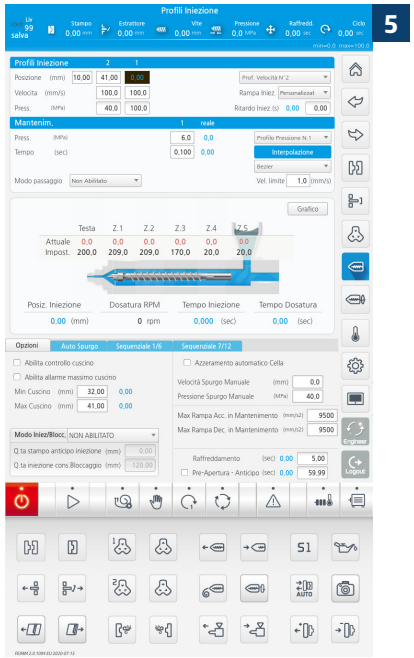
1

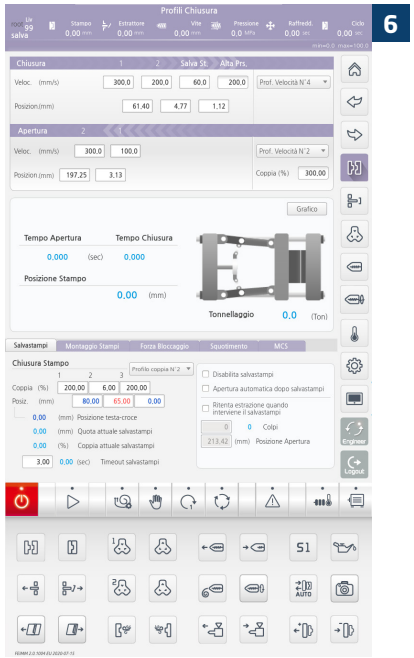










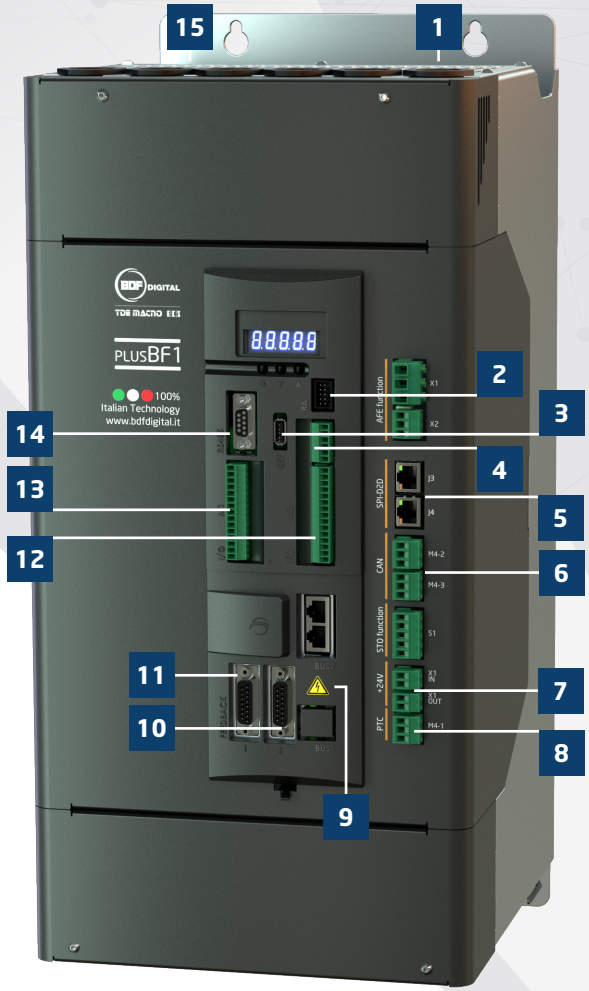


1. **Menù.**
2. **Parameter setting.** Activating setting area for user-friendly interface
3. **Injector temperatures.** Temperature sets, with tolerance bands and ON/ OFF weekly programming clock for switch on and off
4. **Visual animation.** Available to recognize the operating condition of machine by active animation system
5. **Injection.** Setting of the injection process with several phases (up to 10)
6. **Closing.** Setting of mold opening / closing with several phases (up to 5)

OPDE*plus*

The Servo Drives series of BDF Digital

1	AC Input: 3x200 ÷ 460V AC / DC Input: 280 ÷ 750VDC
2	Connector for the remote keypad
3	USB Key connector
4	Frequency Input (fMax 400 kHz)
5	Integrated Drive to Drive interface
6	CAN A/B interfaces
7	Regulation Power Supply 24 VDC
8	Motor thermal probes (PTC, NTC, KTY84)
9	Fielbus interface
10 / 11	1° - 2° Feedback Sensor
12 / 13	I/O Analog / Digital
14	RS 485 Modbus for PC programming and device interfacing
15	U/V/W motor power connection + and F for external braking resistor



PROFINET · PROFIBUS · Modbus · EtherCAT · CANopen

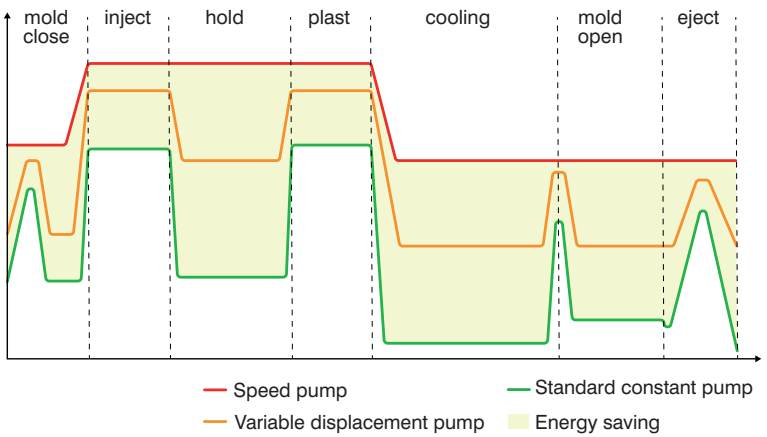
OPDE*plus*										
M		**L**	**XL**			**BF1**				SIZE
303 x 116 x 253		322 x 137 x 253	303 x 116 x 253			556 X 253 X 293				Size dimension: H x W x D [mm]
15	22	32	40	46	57,5	70	90	110	150	In @ nominal overload [Arms]
7,5	11,0	15,0	18,5	20,0	27,3	37	45	55	75	Nominal power Pn @ 400Vac Overload 200% x 3 sec. + 150% x 30 sec. [kW]
5	5	5	5	5	5	5 / 16	5 / 16	5 / 16	5 / 16	Chr. Frequency fPwm [kHz]

Strengths

Integrated **PID** pressure

PID Pressure algorithm with closed-loop speed and pressure control.
The software has been optimized for the injection molding machine requirements.

The axis speed and torque algorithm are **implemented in the motor drive**.
Execution frequency **is synchronous** to the cycle time (0.2ms with fPWM = 5KHz).
The pressure translator is connected to the 16bit analog input, with feedback directly on the drive. The axis control is extremely effective and guarantees excellent machine performance. Direct control of each axis
High energy efficiency
Simple hydraulic system
No cooling oil circuit



Energy saving

Maximum energy savings can be achieved thanks **to the independent control of each motor**: as shown in the upper graph, more than 70% of energy savings is achieved compared to the hydraulic machine. In addition, there is a saving of over 80% of the cooling water thanks to the non-use oil

Energy production by weight and by order

BDF Digital connects **with energy meters to provide information and track consumption trends**. The observation of the instantaneous and / or average power path allows to check the load conditions and to define **the consumption by weight and by order**.

Integrated robot control

The **main commands for robots and automation** for the servicing of plastic molding presses are integrated into the HMI, facilitating the operator's operations.

Market & Applications

Automation

GLASS | PACKAGING | PLASTIC | METALS | PAPER | HVACR | ROBOTICS | TEXTILE | CABLEWAY

Energy

SOLAR | WIND | HYDRO | STORAGE

Machine tools

TURNING | MILLING | BENDING | CUTTING

BDF DIGITAL

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