



NEW

## Modular ISOBUS Control System

for Rear Mounted Mowers / Brush cutters

### INTRODUCTION

ISOBUS is a well known and mature technology; standardization of connections at the machine level (ISOBUS connectors and protocols), the ICT level (ISOXML), and the cloud level ensures seamless interoperability, enhances data integration and management, and promotes efficiency across various agricultural operations.

Nonetheless, its primary fields of application are large towed implements (Sprayer, Seeders, Planters, Harvesters).

**Walvoil** offers a complete solution for Rear-mounted Mowers / Brush Cutters where all the components of the control system comply with the ISOBUS standard.

The pre-compliance of the ISOBUS modular system was verified at the VT LAB - Fondazione REI, the only ISOBUS Lab in Italy certified by AEF (Agricultural Industry Electronics Foundation).



## ADVANTAGES OF THE SYSTEM

Thanks to the ISOBUS AUX assignment function, the controls on the joystick can be mapped to suit user preferences or accommodate physical limitations, for better ergonomics and accessibility.

The OEM's implement benefits from standardization in several ways: reduced development time, lower stocking and transportation costs. The OEM can activate or deactivate functions on a case-by-case basis (Software Defined Implement).

### Interoperability

- **Universal Compatibility:** being ISOBUS compliant, the brush cutter can work seamlessly with tractors and other compatible implements from different manufacturers.
- **Easy Connection:** connection and integration with other agricultural machines are simplified, reducing setup time.

### Automation and precision

- **Automatic Control:** the brush cutter can receive precise instructions from the task controller, enabling automated and optimized operations.
- **Operational Precision:** real-time communication allows for highly precise cutting operations, reducing waste and improving work quality.

### Operational efficiency

- **Real-Time Monitoring:** operational data can be monitored in real-time, allowing immediate adjustments to optimize performance.
- **Reduced Downtime:** integration with the task controller and other agricultural systems minimizes downtime caused by manual configurations or operational errors.

### Data management

- **Data collection:** the brush cutter can collect and record detailed operational data, such as running time, area covered, fuel consumption, etc.
- **Analysis and Reporting:** collected data can be analyzed by the FMIS (Farm Management Information Systems) to improve planning and operational efficiency in future tasks.

### Integration with FMIS

- **Optimized Planning:** the FMIS (Farm Management Information Systems) can use the collected data to better plan future cutting and maintenance operations.
- **Documentation and Compliance:** operations can be thoroughly documented, facilitating regulatory compliance and improving farm management.

### Cost reduction

- **Fuel Efficiency:** precise management of operations reduces fuel consumption.
- **Reduced Maintenance:** the ability to monitor and diagnose operational issues in real-time can lower maintenance costs and extend the machine's lifespan.

### Safety

- **Condition Monitoring:** Real-time monitoring of the brush cutter's operational conditions can prevent accidents and improve operator safety.
- **Alerts and Alarms:** the system can send alerts and alarms in case of abnormal operating conditions, allowing for a quick response to prevent damage or hazards.

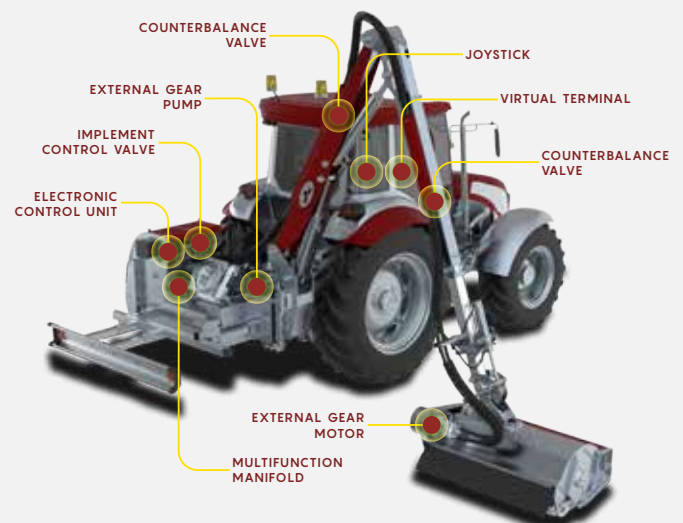
## SYSTEM ARCHITECTURE

The basic system consists of:

- the Implement ECU (IECU), that controls and monitors the Mower,
  - the Joystick with multifunction handle,
  - the Virtual Terminal (VT), as optional ISOBUS component.
- All these components conform to the ISOBUS standard (ISO 11783).

Other hydraulic components that complement the system are:

- a Flow Sharing valve for implement control (eg. DPX100),
- external gear pump (eg. double type 3TPW+2XP),
- external gear motor (eg. 3TPW) for Cutter,
- multifunction manifold for Easy Float function,
- counterbalance valves (eg. 1116 Series) for arms, and other on-line valves.



## SYSTEM ARCHITECTURE

### ECU: CED1200S



- Hardware Category 2, for applications up to Performance Level D / SIL 2
- Microprocessor-based PWM driver, up 12 proportional section
- IP67/IPx9K
- Fully programmable through Mathworks® tool

AEF functionalities: ☐ UT ☐ AUX-D ☒ AUX-N ☐ TC-BAS ☐ TC-GEQ ☐ TC-SC ☐ TECU ☐ TIM ☐ ISB ☐ FS

### Joystick and Handle: DJW and MTH



#### DJW Joystick

- Hardware Category 2, for applications up to Performance Level D / SIL 2
- Hall effect contactless sensor
- ISOBUS version, UT 2.0, AUX-N 1.0

#### MTH multifunction handle

- Proportional controls (up to 5) and on-off (up to 12) on front and operator sides
- Capacitive operator presence detection with lighting signal
- Backlight options

AEF functionalities: ☐ UT ☐ AUX-D ☒ AUX-N ☐ TC-BAS ☐ TC-GEQ ☐ TC-SC ☐ TECU ☐ TIM ☐ ISB ☐ FS

### Virtual Terminal



At the first connection the IECU downloads part of the software into the display memory that will be recalled at future vehicle start.

During this first connection the joystick will be initialized and the machine functions will be associated with the various control devices present on it.

### Implement control valve: DPX100



- Full Flow Sharing architecture
- Up to 120 l/min (31.7 US gpm) and 420 bar (6100 psi)
- Special inlet sections designed for steering applications
- Optional Low Leak sections
- Proportional electrohydraulic controls, optional spool position sensors
- Available with NG5 CANbus Control Module

### External gear pump: 3TPW+2XP



- 3TPW: up to 79.8 cm³/rev (4.87 in³/rev) and 300 bar (4350 psi)
- 2XP: up to 31.5 cm³/rev (1.92 in³/rev) and 250 bar (3600 psi)
- Optional priority valve for steering unit
- Wide range of flanges, shafts and auxiliary valves
- Long life expectancy

### External gear motor: 3TMW



- Up to 79.8 cm³/rev (4.87 in³/rev) and 300 bar (4350 psi)
- Optional priority valve for steering unit
- Optional antishock/anticavitation valves
- Wide range of flanges, shafts and auxiliary valves
- Long life expectancy

### Overcenter valves



- Up to 160 l/min (42.3 US gpm) and 350 bar (5100 psi)
- Load sensitive, relief compensated and vented configurations
- Single and double effect
- Galvanized steel body

### Multifunction manifold



Thanks to decades of experience, we can design and manufacture HICs able to meet our customers' needs and we can offer the best solutions with reference to machine control functions, selection of components and optimized solutions.

## COLLABORATION WITH CUSTOMERS

Walvoil has developed a customized ISOBUS system for its customer **Hymach**, a leading manufacturer of Rear-mounted Mowers / Brush Cutter.

The system offers all the functions of a modern, state-of-the-art Mower while combining them with the advantages provided by an ISOBUS system.

### Basic Functions:

Boom and Cutting Head Control  
 Blower and Suction System Control  
 Hood Opening and Closing  
 Trailer Opening and Closing

### Advanced Functions:

Easy Floating  
 Tractor Inclination Monitor  
 Power Efficiency Monitor  
 Oil Temperature and Fuel Consumption Monitor  
 Connectivity and Cloud Functions

ISOBUS System by  **walvoil**  
 MOTION BY PEOPLE  
 for  




**WALVOIL S.P.A.**  
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