

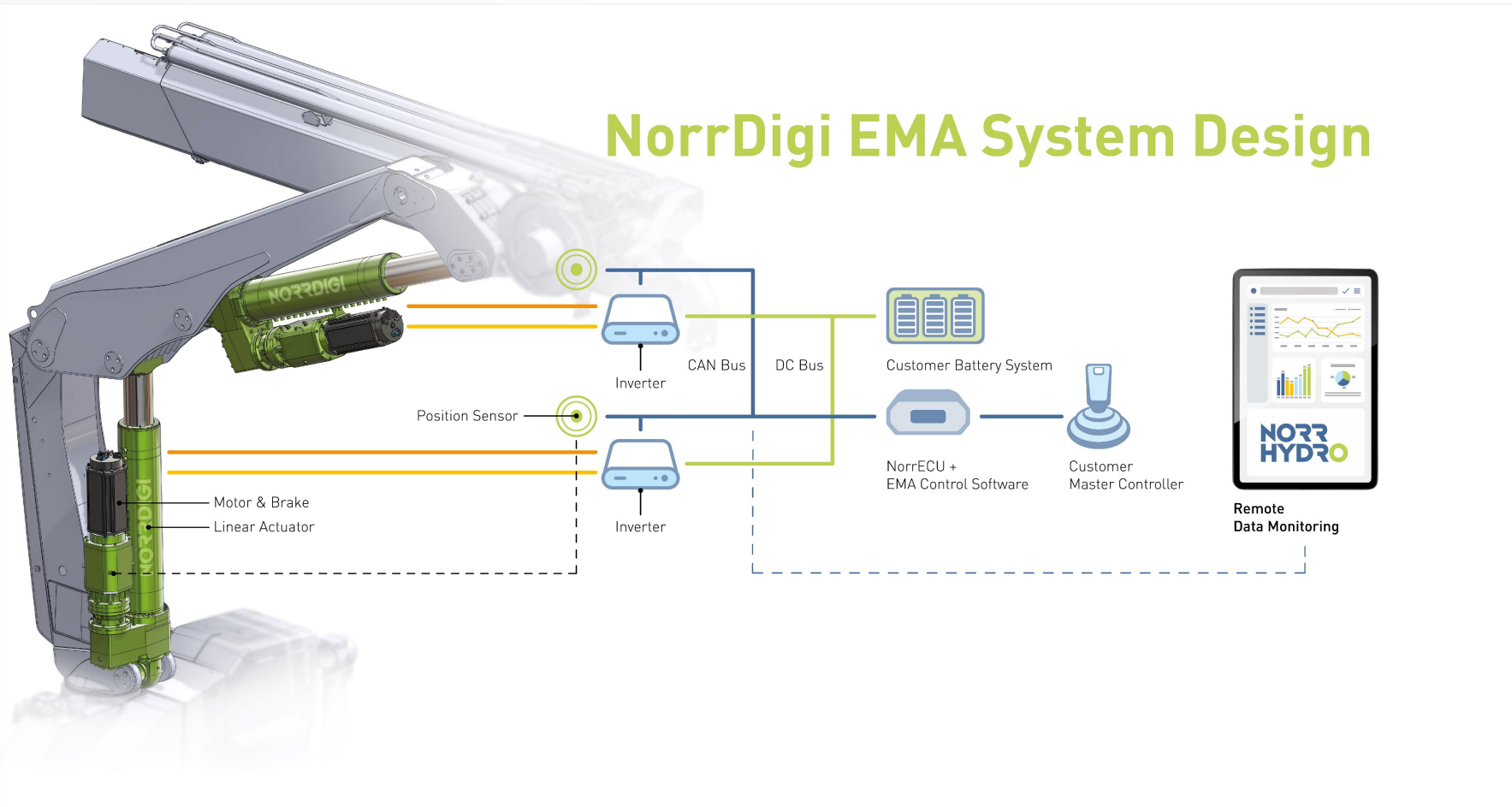


NorrDigi® EMA – Electromechanical motion solution

www.norrhydro.com



Full control system design by Norrhdyro



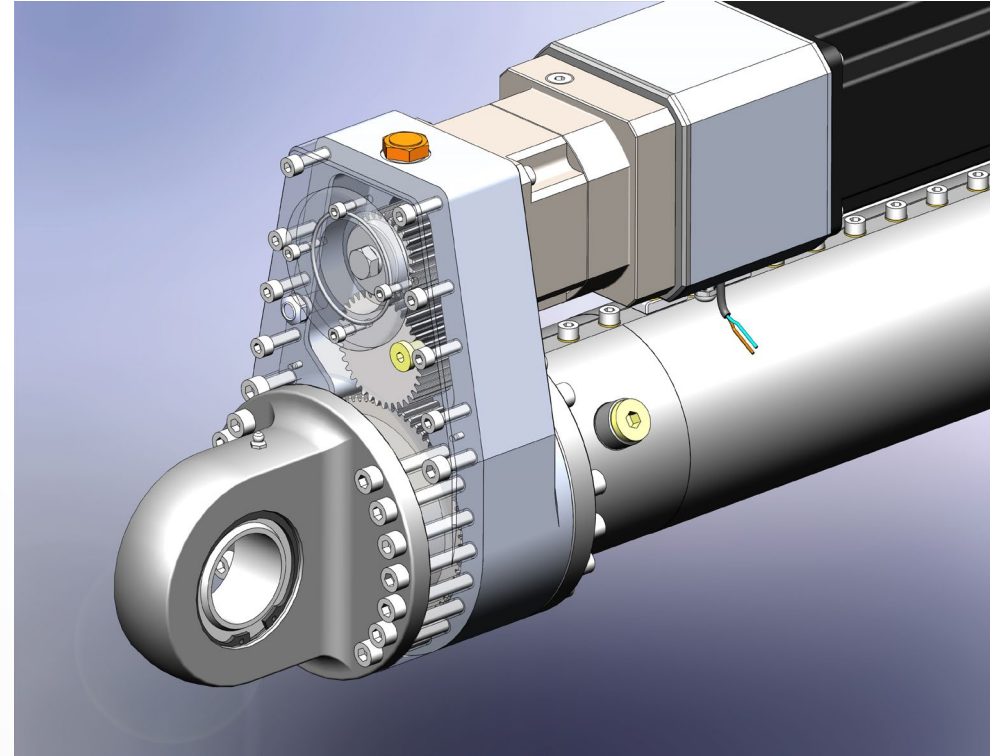
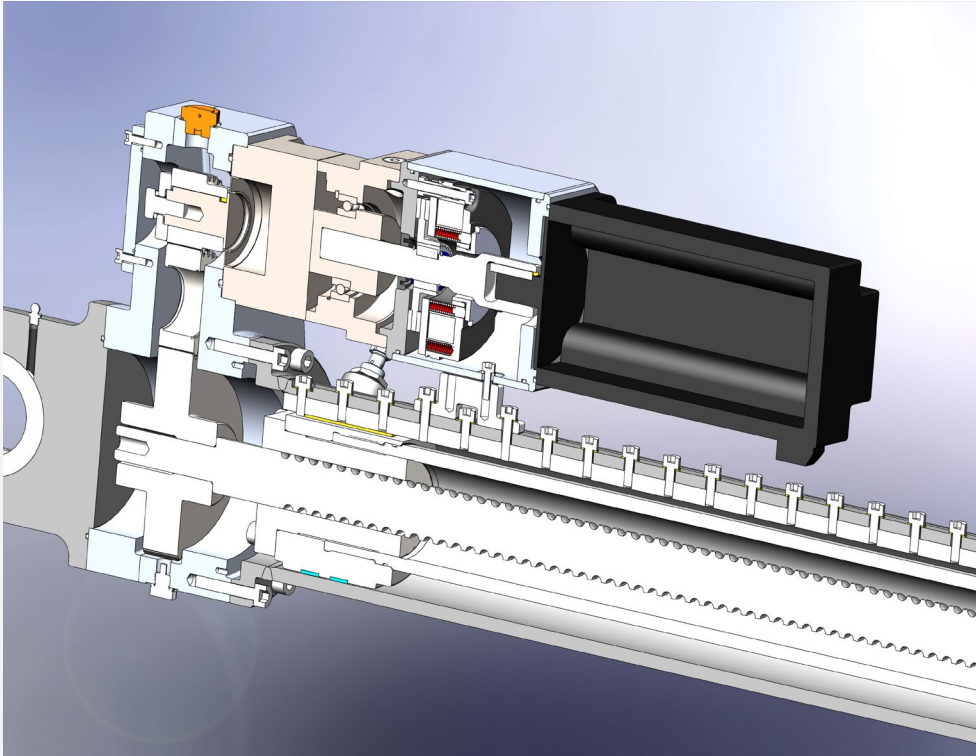
Main features:

- Force: 10 – 3000 kN
- Power: 0,1 – 300 kW
- Stroke: max. 6 m
- Speed: max. 1 m/s
- Efficiency: 70-80 %

Typical applications:

- Mobile machinery
- Lifting systems
- Battery operated systems
- Marine deck applications
- Industrial press / process industry
- Material forming
- Wood and food industry

EMA design



NorrECU EMA Controller

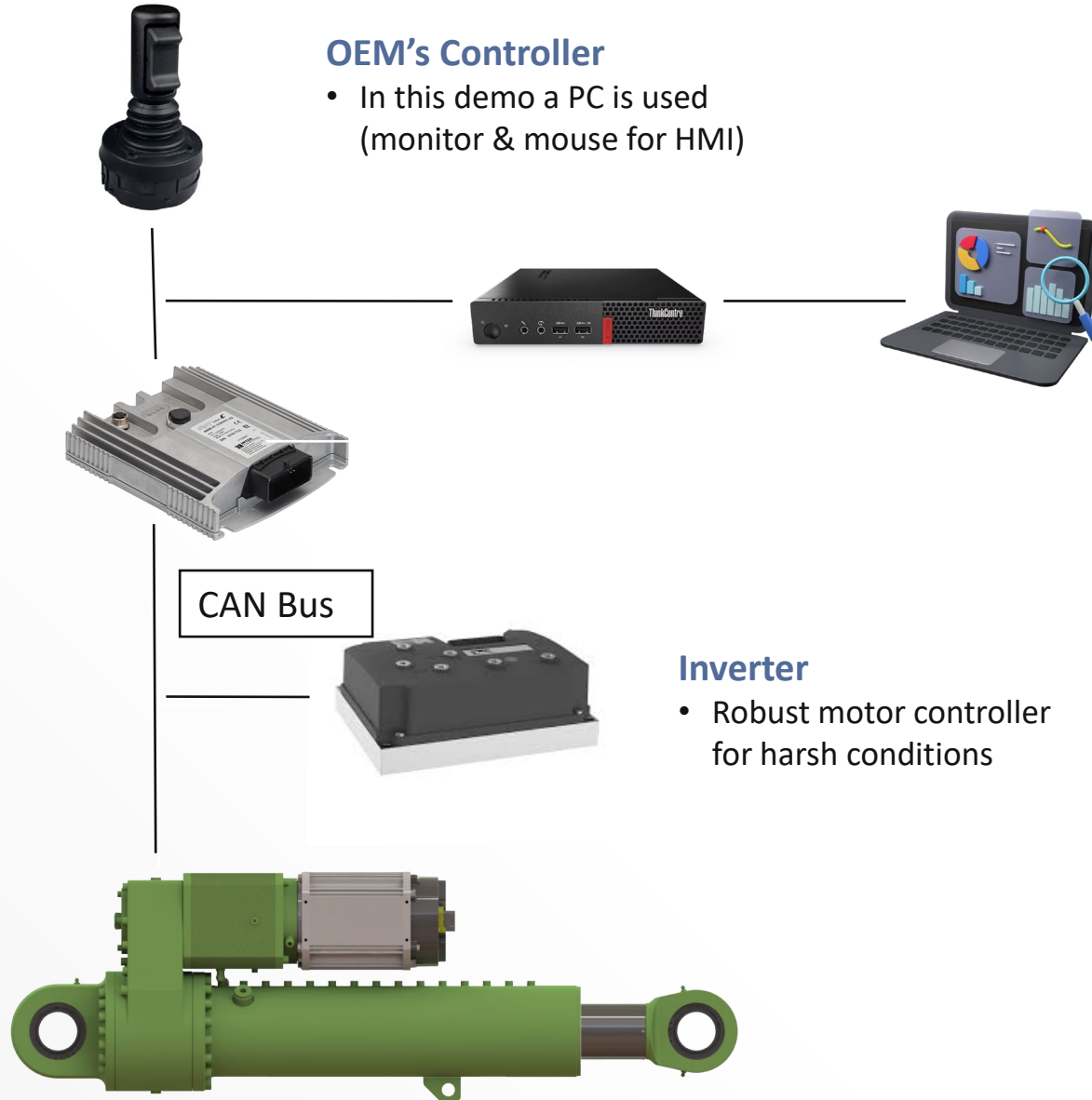
- Actuator speed & position control
- Safety features
 - Brake control logic
 - Actuator end cushioning
 - Power system protection
- CAN Open interface for OEM's system
 - Control signals
 - Feedback signals
 - Tunable parameters
 - Diagnostics data
- Customization on request
 - Control via analog/digital signals
 - Control of multiple actuators
 - Data analytics for preventive maintenance

EMA cylinder

- Heavy load ball screw & gear reduction
- PMAC Electric motor for harsh conditions
- Holding brake
- Absolute position sensor
- Limit switches (optional)

OEM's Controller

- In this demo a PC is used
(monitor & mouse for HMI)



COMPACT DESIGN WITH IMPROVED EFFICIENCY, SAFETY AND DURABILITY



Machines and technology for thermo mechanical timber modification



“

"This is a real win-win, as we can provide our customers with a more compact and user-friendly solution that is also compatible with Avant Wood's patented control system technology and user interface,"

Kari S  ynevirta, Avant Wood

”

INDUSTRY

Forestry, Material processing.

CHALLENGE / OBJECTIVE

Customer looking for hydraulic solution to perform crucial functions in the TMTM wood modification process: precise positioning, speed, and even mechanical pressure.

SOLUTION

NorrDigi Electromechanical design (4+4 pcs) to perform a synchronized and even pressure on the processing chamber. The solution is oil free for minimal maintenance in remote locations.

RESULTS

The compact design is much more efficient than conventional hydraulics; precise maneuverability and soft end-cushioning improve safety and durability. The electric cylinders provide higher energy efficiency and lower weight than traditional hydraulics.

KEY PRODUCT

NorrDigi EMA cylinders and motors.

AVANT WOOD

Avant Wood is the global leader in wood modification technology, enabling the enhancement of material properties to meet customer—and end-product-specific requirements, regardless of the wood species.



TECHNICAL DATA

FORCE: 700 kN

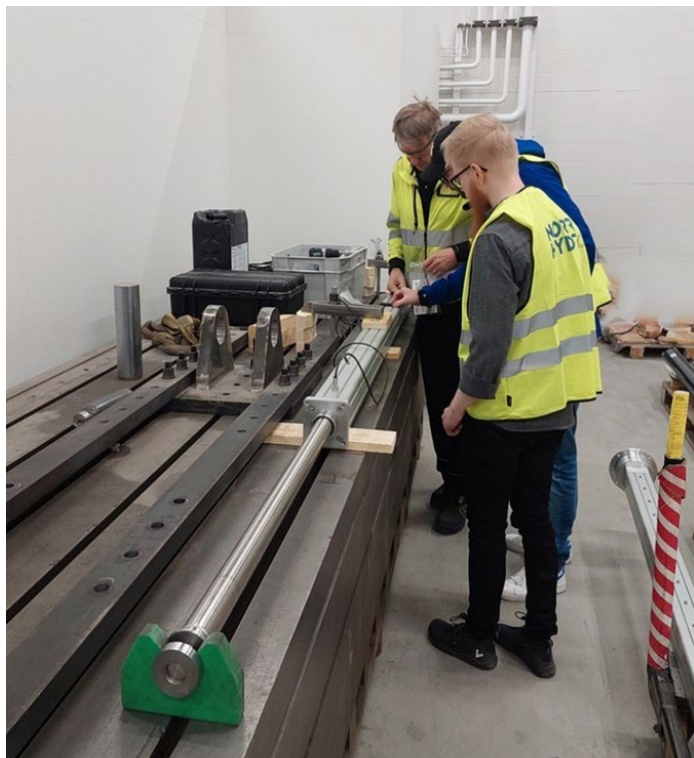
POWER: 8kW

MOTOR: PMAC Servo

STROKE: 2000 mm

SPEED: 5 mm/s

PRODUCTIVITY GAINS, REDUCED DOWNTIME AND PRODUCTION WASTE



INDUSTRY

Pharmaceutical Industry, Production.

CHALLENGE / OBJECTIVE

Orion sought a maintenance-free alternative to the pneumatic cylinder for the tablet mass production line to reduce downtime due to frequent breakage in old solution.

SOLUTION

Norrhydro's electromechanical actuator (EMA) was chosen and seamlessly integrated into the production environment.

RESULTS

Maintenance-free operation with adjustable and more precise motion control was achieved. EMA's extensive data collection provides useful information on the system's operations such as engine torque, cylinder speed, number and duration of work cycles and extensive fault reports.

KEY PRODUCT

NorrDigi EMA cylinder with electric motor.

ORION'S PHARMACEUTICAL PRODUCTION FACILITY IN ESPOO

Orion is a global Finnish pharmaceutical company. Orion's corporate headquarters is located in Espoo, where manufacturing of tablets, injections, and inhalation products is taking place.



TECHNICAL DATA

FORCE: 1 Kn

POWER: 2,7 kW

MOTOR: AC Induction

STROKE: 3300 mm

SPEED: 250-500 mm/s

OIL FREE SOLUTION WITH ENHANCED SAFETY AND MOVEMENT CONTROLL



INDUSTRY

Transportaion industry, cold storage container.

CHALLENGE / OBJECTIVE

Customer sought to eliminate risk for oil spill and contamination in cold storage of food products in mobile containers. Customer looking for robust controls for pallets in several layers to improve space utilization in cold containers.

SOLUTION

NorrDigi[®] EMA has been implemented to shift loading platform for pallets inside container. Hydraulic pipes and hoses removed. Control system implemented instead of hydraulic system.

RESULTS

Oil free system and environment for end user.

KEY PRODUCT

NorrDigi EMA cylinder and control unit.

Customer (confidential)

Customer is a leading supplier of truck box bodies designed for delivery operations. They offer cost-efficient body structures with innovative designs that meet specific customers' needs.

TECHNICAL DATA

FORCE: 70kN

Voltage: 24VDC

MOTOR: PMAC

STROKE: 1000mm

SPEED: 20mm/s

ENERGY EFFICIENCY AND EASY INTERGATION OF CONTROL SYSTEM



INDUSTRY

Municipal waste management, mobile crane application.

CHALLENGE / OBJECTIVE

Customer looking to upgrade current hydraulic solution to increase energy efficiency and reduce noise. Major cities in EU are setting tighter restrictions on CO2 emissions and demand a rapid transition to electrification in municipal transportation.

SOLUTION

NorrDigi EMA cylinders for lift and boom movements. Norrdigi control system integrated to OEM master control based on parameter set by customer.

RESULTS

Final tests are ongoing.

KEY PRODUCT

NorrDigi EMA cylinders, motors, ECU and control logic with parameter setting.

Customer (confidential)

Customer shapes the industry of safe, smart and sustainable load handling. With the most engaged people and partners, we are committed to delivering the best customer experience every day.

TECHNICAL DATA

FORCE: 700 kN

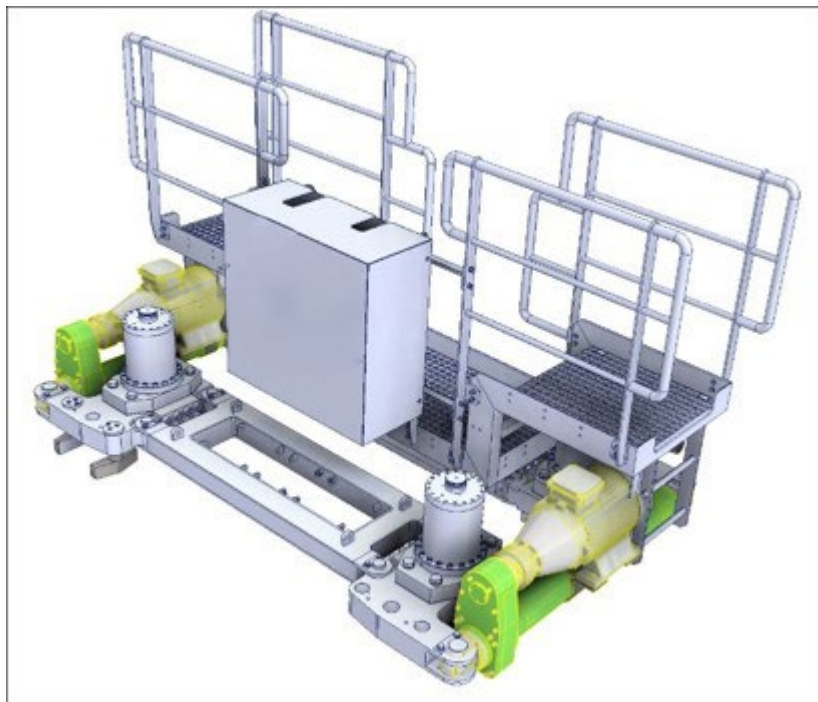
POWER: 10.5 kW

MOTOR: PMAC

STROKE: 620 mm

SPEED: 60 mm/s

ELECTRICAL PUSH AND PULL UNIT



INDUSTRY

Marine and Offshore.

CHALLENGE / OBJECTIVE

Electrification of hydraulics on deck.

SOLUTION

NorrDigi EMA cylinders for push and pull movement.
NorrDigi control system integrated to OEM master control based on parameter set by customer.

RESULTS

In production.

KEY PRODUCT

NorrDigi EMA cylinders, motors, ECU and control logic with parameter setting.

Customer (confidential)

The customer develops, designs, delivers, tests, commissions and services heavy lifting and material handling equipment for use in any environment.

TECHNICAL DATA

FORCE: 500 kN

POWER: kW

MOTOR: AC

STROKE: 1000 mm

SPEED: 65 mm/s

Customers

– Diversified customer base spanning multiple industries



FORESTRY



MATERIAL
HANDLING



CONSTRUCTION
EQUIPMENT



MINING



MARINE &
OFF-SHORE



RECYCLING &
LIFTING





Partner in Success

Thank you!

More information:

www.norrhydro.com

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