

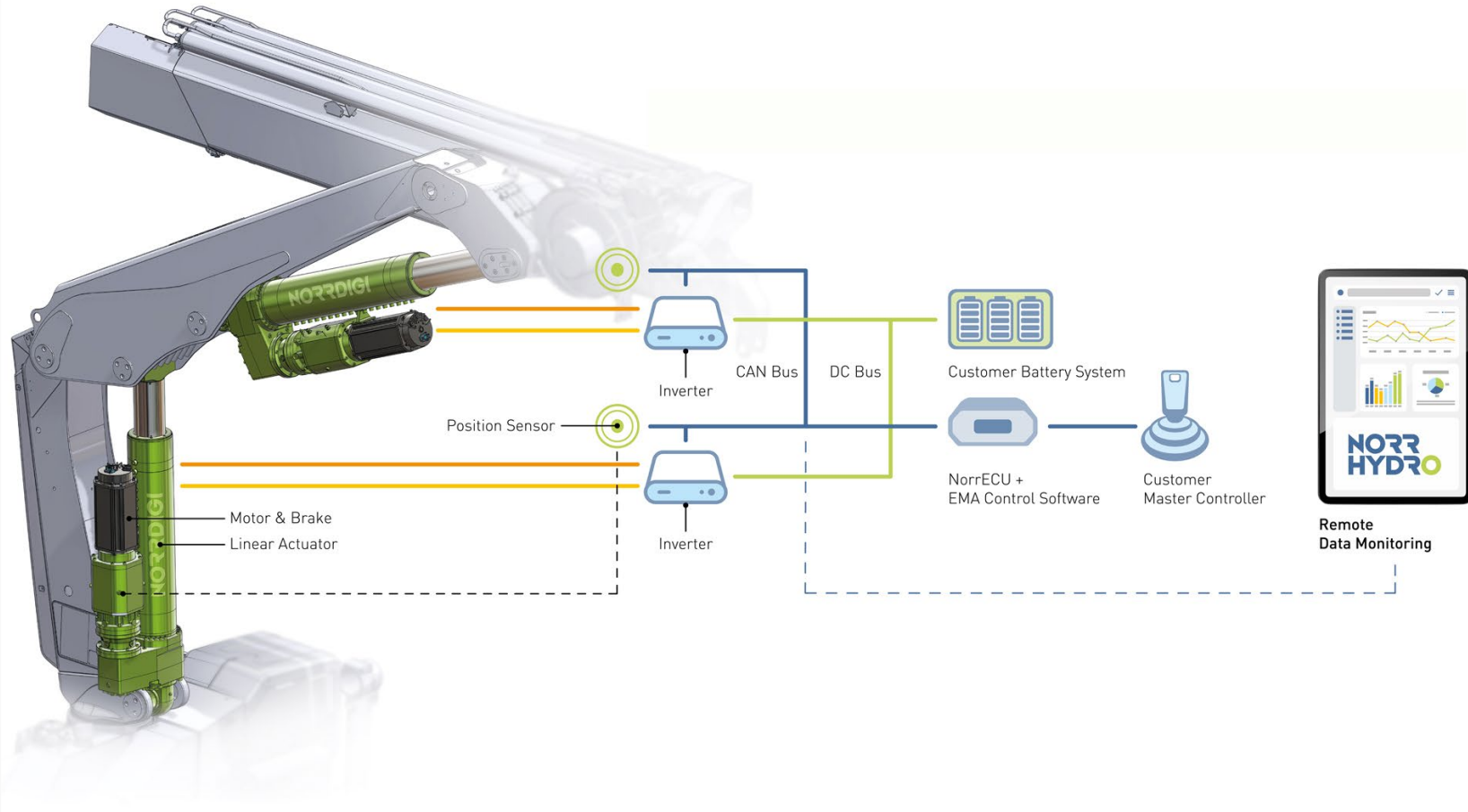


NorrDigi® EMA – Electromechanical Motion Solution

www.norrhydro.com



Full Control System Design by Norrhdyro



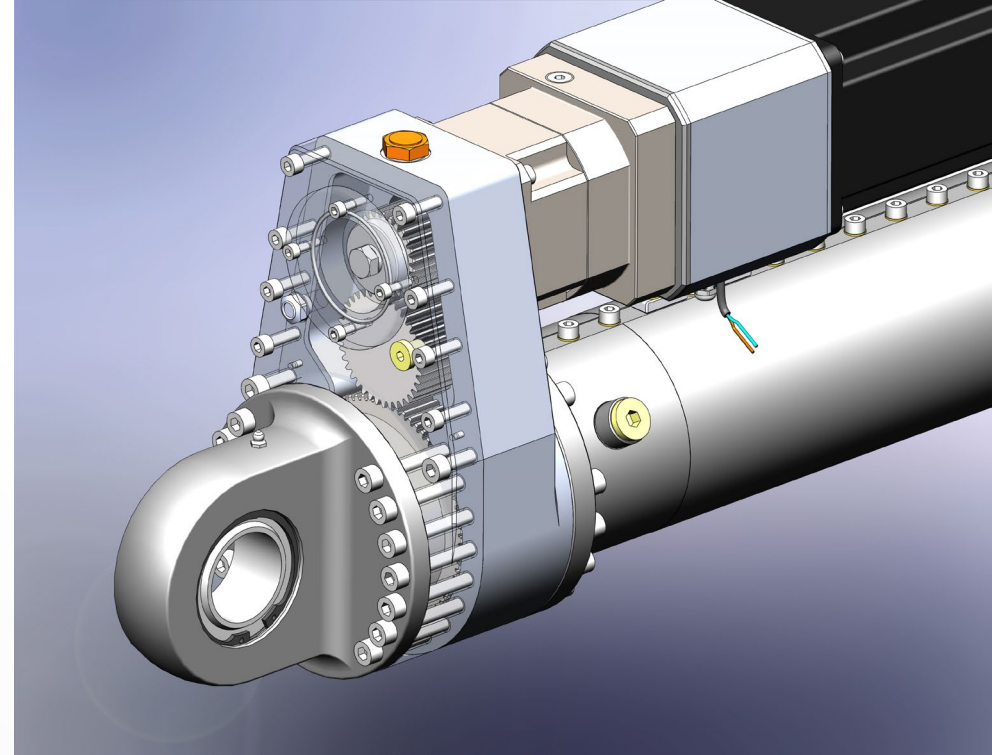
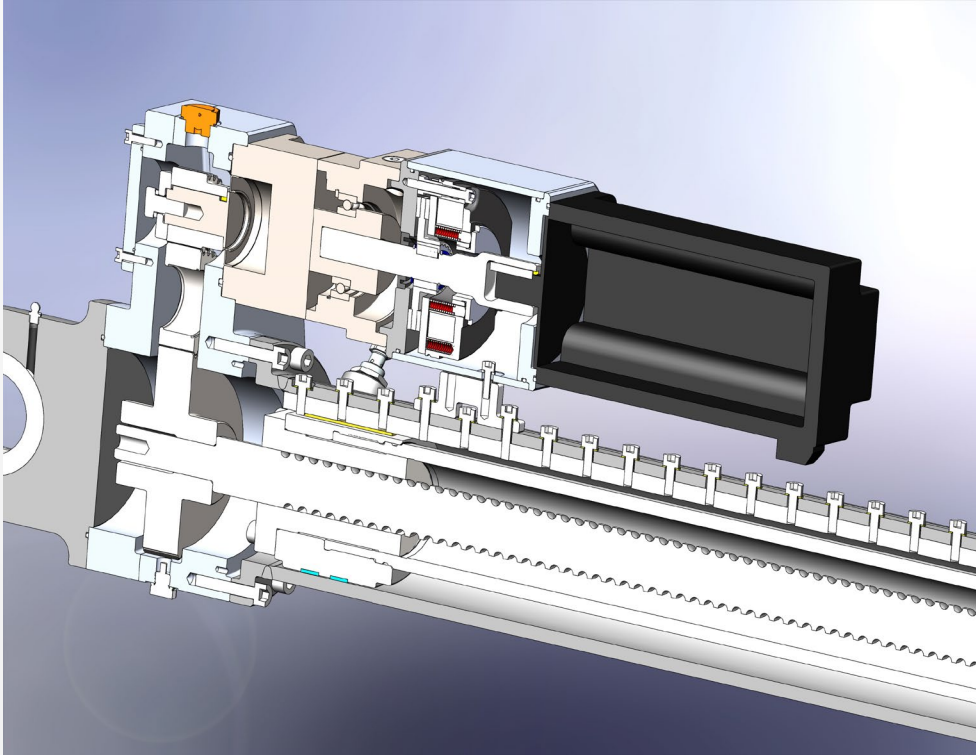
Main features:

- 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 Section View



NorrECU EMA Controller

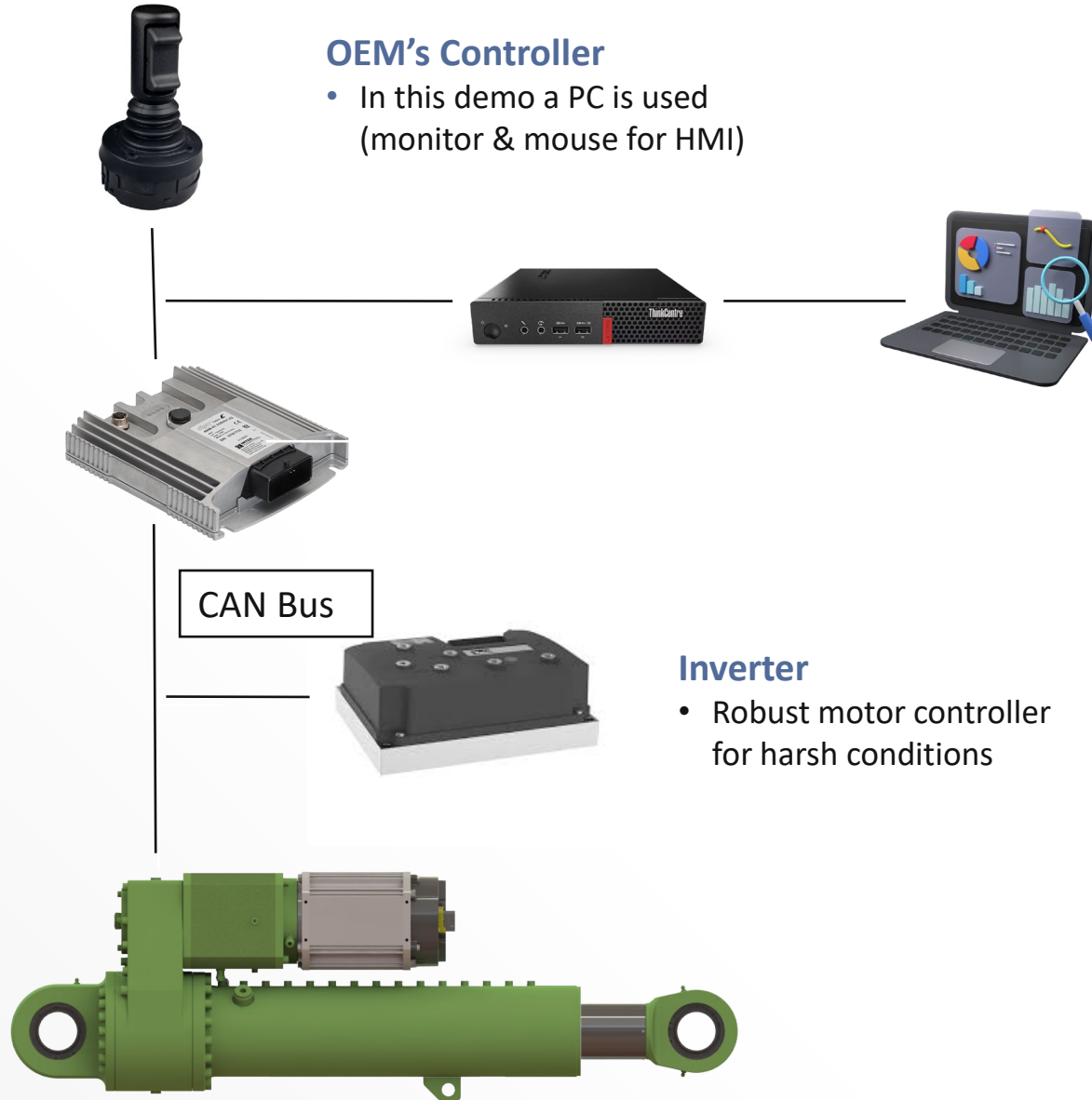
- Actuator speed & position control
- Safety features
 - Brake control logic
 - Actuator end cushioning
 - Power system protection
- CAN Open interface for OEM's system
 - Control signals
 - Feedback signals
 - Tunable parameters
 - Diagnostics data
- Customization on request
 - Control via analog/digital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

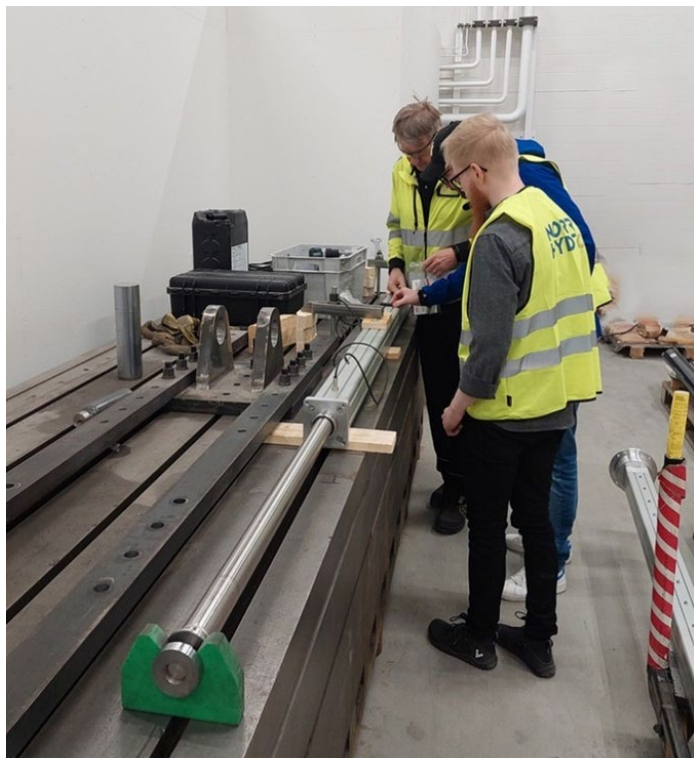
POWER: 8kW

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 headquarter 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 was 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 wanted 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 into 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

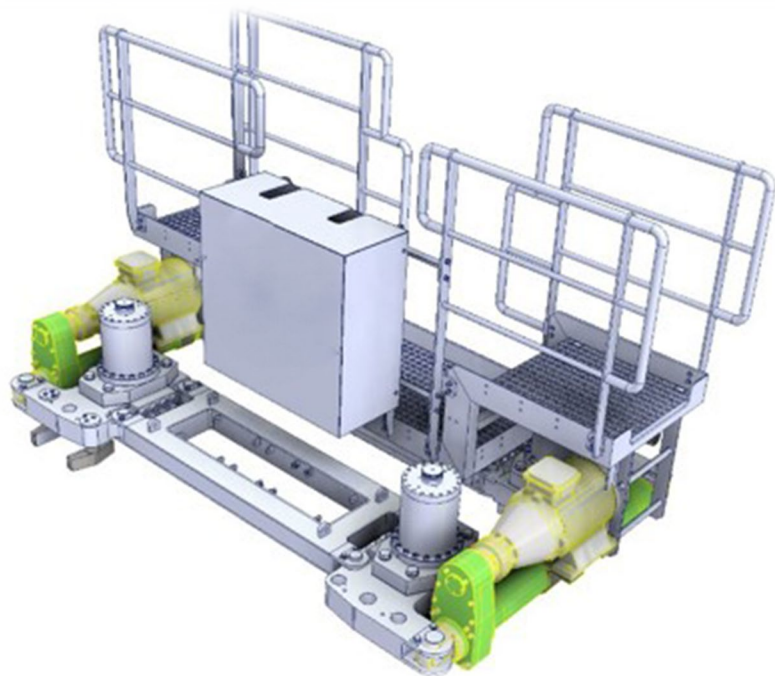
POWER: 10.5 kW

MOTOR: PMAC

STROKE: 620 mm

SPEED: 60 mm/s

DECK FITTINGS: ELECTRICAL PUSH AND PULL UNIT



INDUSTRY

Marine and offshore.

CHALLENGE / OBJECTIVE

Remove hydraulic lines and separate power sources for fittings and equipment on deck. Electrification of equipment.

SOLUTION

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

RESULTS

In production.

KEY PRODUCT

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

Customer (confidential)

Customer specializes in delivering next-level engineering solutions tailored to unique demands. Engineers can design any lifting-related equipment and aim to provide state of the art solutions for every project.

TECHNICAL DATA

FORCE: 300 kN

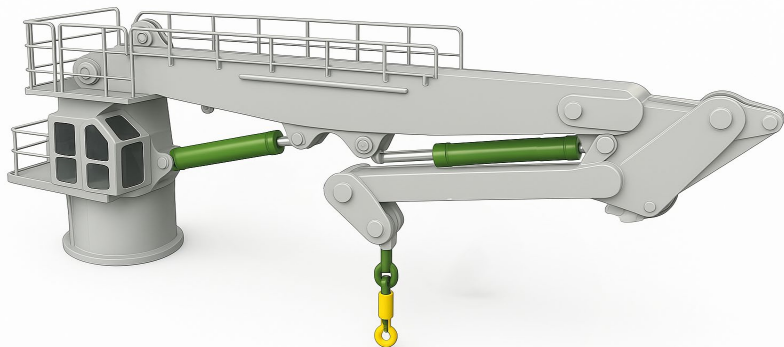
POWER: 11 kW

MOTOR: AC

STROKE: 1080 mm

SPEED: 67 mm/s

DECK FITTINGS: KNUCKLE BOOM CRANE



INDUSTRY

Marine and offshore deck fittings

CHALLENGE / OBJECTIVE

Electrification of hydraulics on deck crane to remove oil based hydraulic systems

SOLUTION

NorrDigi EMA cylinders for lift and extended arm. NorrDigi control system integrated into OEM master control based on parameter set by customer.

RESULTS

In concept phase.

KEY PRODUCT

NorrDigi EMA cylinders, motors, absolute encoder for actuator position sensing, optional limit switches, motor space heater

Customer (confidential)

Customized pedestal crane manufacturer for operation in a challenging environment. Robust and rigid construction of the best quality materials: extensive use of high-quality components from reputable suppliers that offer a worldwide service.

TECHNICAL DATA

FORCE: 350 kN

POWER: 11 kW

MOTOR: PMAC

STROKE: 1662 mm

SPEED: 30 mm/s

Customers

– Diversified customer base spanning multiple industries



FORESTRY



MATERIAL
HANDLING



CONSTRUCTION
EQUIPMENT



MINING



MARINE &
OFF-SHORE



RECYCLING &
LIFTING

PONSSE



SANDVIK



KALMAR

BROMMA



junttan
respecting ground

LEGUÁN

Metso

Lännen

waratah

LOGSET

normet

MAGGREGOR

TOIJALA WORKS
Engineering Your Vision

KLEMM
Bohrtechnik



KONECRANES
Lifting Businesses™

Avant Wood



DINOLIFT

arctic
a brand of aebschmidt

Application areas

Adaptive design enables perfect fit for the customer's platform:



Earthmoving machines



Material handlers



Reach stackers



Mining machines



Forestry machines

NorrDigi process steps

01

Project start

Requirements and project plan approval

02

Engineering

3D modelling in customer's machine

03

Prototyping

Proto construction and testing

04

Testing

Final design and external testing

05

Serial production

Production drawings and ramp up



Partner in Success

Thank you!

More information:

www.norrhydro.com

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