2017
Main Engine Remote Control System
Company Profile

Nanjing Southeast Industrial Equipment Corporation is a public company on the list of National Equities Exchange and Quotations (NEEQ). The abbreviation is Southeast Share and stock code is 832124.

Established in 2003, SECORP is a new high-tech enterprise and double software enterprise. SECORP has been committed to the development and applications of marine ancillary products. At present, the company products are mainly divided into three categories: 1. the electrical ancillary products, such as main engine remote control, bridge console and switch panel, etc. 2. the ancillary products for marine engine, such as oil supply unit and marine growth preventer etc. 3. the ancillary products for navaids, such as wiper & clear view screen, foghorn and electric horn. We provide products and service for many well-known enterprises and brands, such as Shanghai Waigaoqiao Free Trade Zone Group Co. Ltd., CSSC Chengxi Shipyard Co. Ltd., Yangzijiang Shipbuilding, COSCO Shipyard, China Merchants Heavy Industry Co. Ltd., and Shanghai Shipyard; MAN, MTU, S.E.M.T, and DAIHATSU.


SECORP adhere to the enterprise spirit of “Keep it sample, Strive for perfection” and the quality policy of “innovation in manufacture, customer satisfaction”. Realize enterprise vision of “Create our better life with my hard work”.

Contents

- Brief Introduction to the Propulsion Control System .................................................. 9
- System Layout Drawing .................................................................................................. 10
- System Configuration ..................................................................................................... 11
- Certificates .................................................................................................................... 13
- Control Strategy ........................................................................................................... 14
- Operability .................................................................................................................... 15
- Human Interaction ........................................................................................................ 16
- Economy ....................................................................................................................... 16
- Easy to Maintain .......................................................................................................... 17
- Global Service .............................................................................................................. 18
- Some Installation Cases ................................................................................................ 19
**Brief Introduction to the Propulsion Control System**

- **Intelligent lever handle** Easy for operation
- **Module design** Flexible installation
- **Industrial bus** Save time and effort
- **Global services** Ease to use
- **Touch screen technology** Operation simple

Following intelligently, Zero misoperation
Support 32 operation station at most
Save the cost for cables more than 85%
Commissioned and service for more than 15 countries
Easy for use, Zero barrier for use

### System Layout Drawing

The system is applicable for 2-stroke and 4-stroke diesel engines, connected with controllable pitch propeller or fixed pitch propeller, and can be widely used in diesel engines powered, hybrid or diesel electric power propulsion plant.

**Applicable scope**

- **4-stroke diesel engine with controllable pitch propeller CPP**
- **4-stroke diesel engine with fixed pitch propeller FPP**
- **2-stroke non-reversible diesel engine with controllable pitch propeller CPP**
- **2-stroke reversible diesel engine with fixed pitch propeller FPP**

---

**Location No. | Installation Position | Composition | Type**
---
1. | Wheel house | Lever system | DNYK-T1
2. | Bridge wings | Lever system | DNYK-T1
3. | Engine control room | Lever system | DNYK-T1, DNYK-JP
4. | Control box | Control box, pneumatic/soft shaft/electric actuators, Speed measuring unit | DNYK-L, DNYK-A/GS/EI, DNYK-A/S
5. | Tail shaft | Speed measuring unit | DNYK-S6
6. | Bow thruster room | Control box, pneumatic/soft shaft/electric actuators | DNYK-L, DNYK-A/GS/EI
System Configuration

Lever System

Type: DNYK-T
Power supply: DC24V
Power consumption: 15W
Weight: 6.5Kg
Communication mode: RS485
Installation way: embedded
Emergency stop: hardwired

Control Box

Type: DNYK-L
Power supply: DC24V
Power consumption: 100W
Weight: 12Kg
Communication mode: RS485
Installation way: wall mounted
Dimension: 600X400X250 mm

Power Supply Unit

Type: DNYK-P
Input power supply: AC220V/AC110V 50Hz/60Hz
DC24V
UPS(30 min)
Output power supply: 6 circuits, DC24V
Output power: 350W
Weight: 25Kg
Size of control box: 480 x 450 x 100 mm
UPS size: 145 x 400 x 220 mm

Actuator

Pneumatic actuator

Type: DNYK-AI
Power supply: DC24V
Power consumption: 15W
Air supply: 3MPa
Control signal: 4~20mA
Controlled air pressure: 0~0.5MPa
Reversing air pressure: 4 loop, 0.7Mpa
Weight: 30Kg
Installation way: wall mounted
Installation dimension: 360X280X140 mm

Soft shaft actuator

Type: DNYK-SS
Control signal: 4~20mA
Outline dimension: 96 X 96 mm
Hole size: 91 X 91 mm
Measuring range: customed

Electrical actuator

Type: DNYK-EL
Power supply: DC24V
Air supply: 3MPa

Velocity Direction Finding Unit

Speed sensor

Type: DNYK-MS
Power supply: DC5~24V
Control signal: Pulse
Frequency response: 0Hz ~ 30KHZ
Resolution modulus: Pitch ≥ 5mm
Mounting distance: 0.5 ~ 2mm
Measurement accuracy: ±1 pulse
Output mode: NPN

Tachometer

Type: DNYK-SS
Control signal: 4~20mA
Outline dimension: 96 X 96 mm
Hole size: 91 X 91 mm
Measuring range: customed
Certificates

15 years of experiences in research & development and manufacturing of safety protection and remote control system. Provides products for well-known diesel engine enterprises and brands.

Related certificates

- The product has obtained the CCS (China Classification Society) type approval certificate, the certificate No. is No. NJ12T00114.
- Obtained the GL (Germanischer Lloyd) type approval certificate, the certificate No. is No. 46545-12HH.
- Obtained Environmental Test Report (test No. EM2012-038) and electromagnetic compatibility test report (test No. ER2012-038) from China Shipping Industry Electronic Equipment Environmental and Reliability Test Center.
- Obtained Quality Management System certificate (certificate no. is 00511Q21132R0S).

Control Strategy

- **Control of acceleration and deceleration speed**
  When the main engine is accelerating or decelerating under a scope of “Full” (Maximum speed) speed, the system will control the acceleration and deceleration speed, the speed rate will be set at HMI.

- **Maximum speed manually controlled**
  The chief engineer maximum speed control

- **Minimum speed control**
  Minimum speed limit speed value corresponding to the lowest stable speed of host when rotational speed set point below this limit, propulsion system to the minimum speed governor to the algorithm procedures, ensure that the host can stable operation.

- **Automatically slow down control**
  When the main engine is failure and need to be slowed down, the remote control system will show the alarm for “cancelable slow down” and “noncancelable slow down” on the control panel according to the cause for slow down.

- **Save fuel and reduce emissions**
  Optimize propulsion control program to meets the demand of economy operation.
Operability

When the crew member push the lever at local operation station, the other levers at other operating station also will be run to the same position. The synchronizing function can greatly simplify the crew’s operation and improve the navigation safety and efficiency.

In addition, the information display panel of the DNYK propulsion control system can observe the current position of the currently controlled lever and the driven lever to minimize the misoperation.

It also has the auxiliary telegraph function, when the lever is failure, it can contact the cabin by push a button, to ensure the safety of navigation.

Human Interaction

SECORP DNYK operating system uses a capacitive multi-point touch to upgrade the man-machine interaction experience, and finish all operations easily, the complex tasks can be finished by touching.

Economy

Design with bus make the whole ship can be connected with special PROFI/BUS 2-core communication cable, which will save the cost of materials and construction time of shipyard.
Easy To Maintain

Fault detection
- The system is equipped with expert diagnosis system. The crew can search the fault code to directly read the fault information and maintenance methods.

Maintenance manual
- The control unit has built-in product manuals and maintenance manuals for crew.

System upgrade
- It supports the USB upgrade function. The crew can use the U disk supplied by manufacturer to upgrade the program.

Standby power supply
- It is equipped with special battery module; it can be stored for 200 days under a continuous power off.

Global Services

We provided service for project of Shanxi Diesel Engine Heavy Industry Co., Ltd. in Antigua and Barbuda
We provided service for project of Consort in sigapore
We provided service for project of ZGPT Diesel Heavy Industry Co., Ltd. in Pakistan
We provided service for project of Xiekeux shipyard Co., Ltd. in Singapore
We provided service for project of LongShun Fishing Company in Taiwan.
We provided service for project of CNBM in Iraq.
We provided service for project of Zijin Mining Group Co., Ltd in Russia.
We provided service for project of BPOB–RPCL Proergen LTD., in bengal

We will continue to provide high-quality service for our users all over the world.
## Main Engine Remote Control
### Some installation cases

<table>
<thead>
<tr>
<th>SN</th>
<th>Q’ty</th>
<th>Vessel type</th>
<th>Hull number</th>
<th>Shipyard</th>
<th>Shipowner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Accommodation vessel</td>
<td>NB126</td>
<td>Tianjin Xing Shipbuilding Heavy Industry Co., Ltd.</td>
<td>South East Asia pipeline Company Limited</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3200 m3 product oil tanker</td>
<td>YHSC1306/0-01Y</td>
<td>Nanjing Yonghua Shipbuilding Co., Ltd.</td>
<td>Thailand N.T.LMARINE Ltd.</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>3000 t product oil tanker</td>
<td>ESS130205/06</td>
<td>Nanjing Dongjia Shipbuilding Co., Ltd.</td>
<td>Thailand N.T.LMARINE Ltd.</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>558 Container vessel</td>
<td>BDS ~ 8 #</td>
<td>Ningbo Boda Shipbuilding Co., Ltd.</td>
<td>Indonesia Meratus Line</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Ocean fishing vessel</td>
<td>JL81#</td>
<td>Pengxia Zhonghai Jingju Ship Industry Co., Ltd.</td>
<td>Taiwan Longzhun Fishery Co., Ltd.</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>2300t oil tanker</td>
<td></td>
<td>Zhejiang into chau ship industry Co., LTD.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>13000t chemical tanker</td>
<td>3 # ~ 4 #</td>
<td>Zhanjiang Mingjiuqing</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Fujian Changqing 1 # 2#</td>
<td>CX3500POT-001/2</td>
<td>Fujian Changqing Shipbuilding Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>Mawei</td>
<td>1 # ~ 4 #</td>
<td>Fujian Mawei Shipbuilding Ltd.</td>
<td>Fujian Mawei Shipbuilding Ltd.</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>1200 Passengers liner</td>
<td>WJ2259/060</td>
<td>Nanjing Wujiazi Shipbuilding Co. Ltd.</td>
<td>Nanjing Ferry Company</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>8500t oil tanker</td>
<td></td>
<td>Huanghua Shipyard</td>
<td>Brightoil</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>Ninghai tug 6001</td>
<td>Ninghai tug 6001</td>
<td>Qinhuangdao Shipyard</td>
<td>Jiangsu Fanzhou Shipping Co.,Ltd.</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>4000P tug</td>
<td>Chengxi 4000P tug</td>
<td>SPG Fuxing Shipping Service Sanlin Shipyard</td>
<td>SPG Fuxing Shipping Service</td>
</tr>
<tr>
<td>14</td>
<td>8</td>
<td>5000P tug</td>
<td>Sanlin 1#~5#</td>
<td>SPG Fuxing Shipping Service Sanlin Shipyard</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>Teaching remote control system</td>
<td></td>
<td>Chinese People’s Liberation Army, Zhenjiang Ships and Boats College</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>MaK bench test control system</td>
<td></td>
<td>CSSI Anqing Jier Engine Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>DK bench test control system</td>
<td></td>
<td>Anqing CSSC Diesel Engine Co., Ltd.</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>400 Passengers liner</td>
<td>FY201632</td>
<td>Zhejiang Fangyan Ship Industry Co., Ltd.</td>
<td>Beibu Gulf Tourism Co., Ltd.</td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>Journey to Fairyland 1# and 2# cruise ship</td>
<td>FY201632/1</td>
<td>Zhejiang Fangyan Ship Industry Co., Ltd.</td>
<td>Beibu Gulf Tourism Co., Ltd.</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>“Rainbow Dolphin No.1” Wind Farm Service Vessel</td>
<td>N1030</td>
<td>Nanjiang Rainbow Offshore &amp; Engineering Equipments Co., Ltd.</td>
<td>Jiangsu Rainbow Heavy Industries Co., Ltd.</td>
</tr>
</tbody>
</table>

**Images:**
- Multifunctional Ship
- Chemical Tanker
- Passenger Ship
- Ocean Fishing Vessel
Headquarters address: No. 398, Wangxin Road, Zhongshan Science & Technology Park, Luhe District, Nanjing, Jiangsu, PRC
Post code: 211505
Phone exchange: +86–25–57700077
Telephone number of sales department: +86–25–85549445
Telephone number of technical department: +86–25–57700077–8201
Telephone number for aftersales service: +86–25–57700077–8304
Fax: +86–25–58848466
E-mail address of sales department: sales@secorp.cn
Company website: www.secorp.cn