TEST RESULT OF FUEL CONSUMPTION

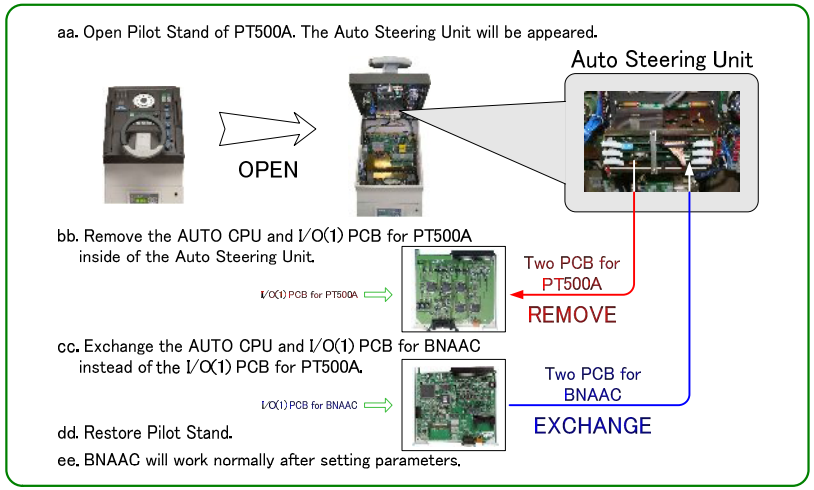
◆ Container Vessel (6,200TEU) and Cape Size Bulk Carrier (Example)

Sea State	Average Container [%]	Average 180 BC [%]
2	0.85	0.71
3	1.11	0.93
4	1.76	1.31
5	–	0.52
TOTAL	1.12	0.93

UPDATE PROCEDURE FROM PT500A

◆ Upgrading time will be only about 2hours, and can be upgraded on berthing under cargo handling, without sea trial.

◆ PT500D AutoPilot also can be upgrade to BNAAC by exchanging Auto Steering Unit.



YDK Technologies
URL :https://www.ydktechs.co.jp

Caution: Please read the manual before using this product

Marine Equipment Business Division
Address: Minami Shinjuku JEBL
5-23-13 Sendagaya, Shibuya-ku, Tokyo, 151-0051 JAPAN

International Sales Dept. Phone: (81) 3-3225-5383 FAX: (81) 3-3225-5316
Service Dept. Phone: (81) 3-3225-5392 FAX: (81) 3-3225-5316
Domestic Sales Dept. Phone: (81) 3-3225-5382 FAX: (81) 3-3225-5316

Osaka Branch Phone: (81) 6-4706-8027 FAX: (81) 6-4706-8028
Imabari Branch Phone: (81) 898-22-4559 FAX: (81) 898-33-2005

Represented by:

Subject to alteration due to technical developments without notice

2010.10 (YDK)

YDK Technologies

AUTOPILOT
BNAAC

Batch Noise Adaptive Autopilot Controller

PT500 Series UPGRADE

YDK Technologies Co., Ltd.

Bulletin 80B22M01E
2nd Edition

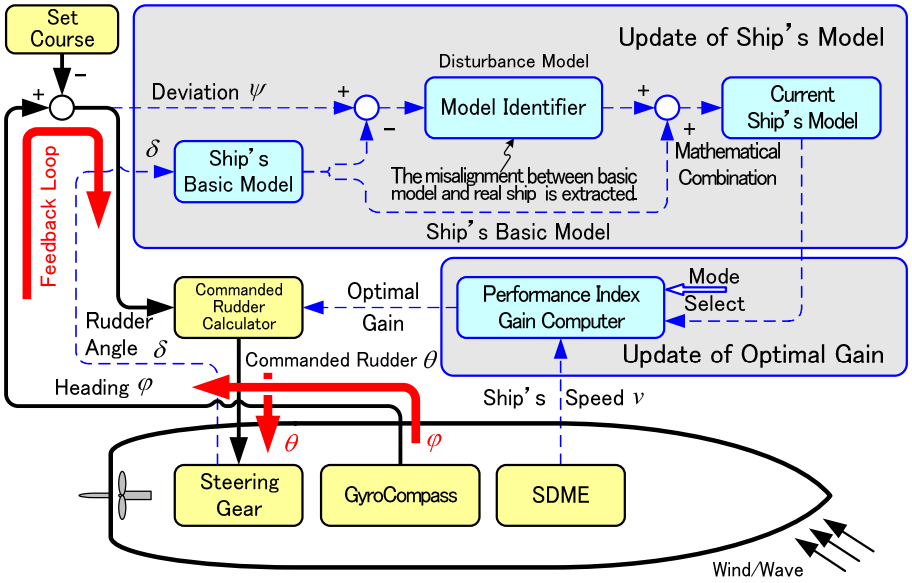
AUTOPILOT "BNAAC"

BNAAC IS THE NEW FUEL SAVE TYPE AUTOPILOT INTRODUCED THE LATEST MODERN CONTROL THEORY.

FEATURES

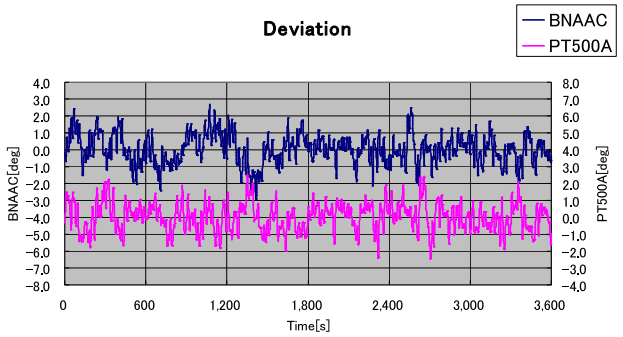
- Easy Settlement of the Ship's Basic Model
- Automatic Update of the Ship's Disturbance Model
- Improvement of Rudder Controllability by Detection of Disturbance
- Automatic Setting of Rudder Control Gain Optimally
- "Improvement of Fuel Cost" as Result of the Above-Mentioned Features

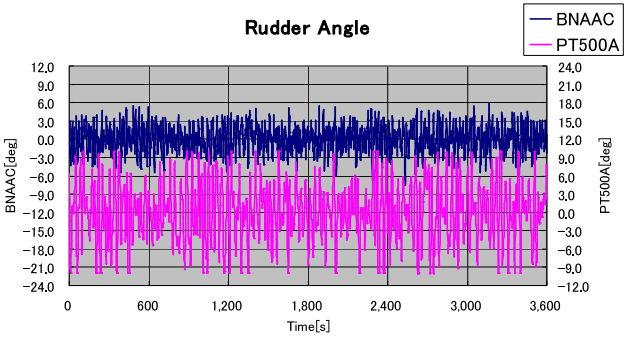
BNAAC BLOCK DIAGRAM



- Red arrow shows normal autopilot control loop. (Feedback Loop)
- Ship's Basic Model
  This model estimates ship's deviation based on the rudder input.
- Model Identifier (Disturbance Model)
  This model estimates disturbance around the ship.
- Current Ship's Model
  This model is update Ship's character and disturbance.
- Performance Index and Gain Computer
  This function calculates optimal rudder gain by current ship's model.

TEST RESULT OF CONTROLLABILITY





Ship's Type	Draught	Improvement Rate[%]			
		Rudder Angle	Deviation	Ship's Speed	Fuel Conpumption
VLCC	Full	60.89	-1.08	0.203	0.61

- BNAAC has achieved course keeping equal with PT500A by an amount of the steer which is 60% less.
- ship's speed was improved by BNAAC. As a result, fuel consumption was reduced compared with PT500A.