The **SMART** Choice of Control & Automation

**SMART**chief II

– *always on top of the situation*
We proudly present the SMART Solution

SMART® Chief II is the newest generation of Integrated Automation Systems covering all functions of Alarm & Monitoring Systems (AMS) to total seamless integration as an Integrated Alarm, Control and Monitoring System (IACMS) more often called an Integrated Automation System (IAS).

The system core is based on our well proven and reliable STI-technology combined with the latest in marine computers and software application technology. The STI-technology consists of standardized building blocks, STI-modules, giving a series of advantages.

- Decentralized or centralised system
- Fieldbus solutions
- Ethernet solutions
- Fibre optic solutions

The STI-modules are constructed from advanced electronics, each with individual software giving an "intelligent" I/O unit specially design for marine and offshore demands.

- All modules are intelligent
- The modules are identified with unique use of node and module address
- All channels have galvanic isolation
- Indication of signal, voltage and communication status

Taking the market needs seriously special features are built into the STI-modules giving the user a greater flexibility in operation and maintenance.

- Electronic fusing of 24V and 5V supply to every single module
- The internal power supply is galvanic isolated from 24V
- Redundant power supply

All system data are communicated to the systems workstations and local operator panels which are designed for optimal operation and functionality. Custom design of user-friendly graphics to monitor, alarm or control the various ship equipment, is a key element in our design. All functions are easy at hand such as AMS functions, Pump Control, Valve Control, Tank Sounding, PMS control, CCTV, Fire alarm and other seamless integration needs.

A virtual network

The main core of the system is a Spider distributed real time database, collecting, maintaining and computing all values in the system. Every computer in the network contains a Spider that is continuously synchronized with all other Spiders via a redundant Ethernet (IEEE 802). Due to this no data will be lost as long as there is at least one Spider up and running. On the operator stations a Citect graphical user interface is provided. Each Citect coexists with the local Spider in a seamless integration utilising a combination of ActiveX and OPC for exchange of information and operator commands.

- Redundant bus solution down to module level
- Automatic registration of new modules
- Full quatro redundancy
- Time sampling of any change on node level
- All logging, trending and alarm management are distributed
- Seamless integration
The **EASY** Way of Management

• easy to install • easy to understand • easy to operate • easy to maintain

Taking care of values involves taking all parties in consideration under design and construction. The systems shall be easy to understand and design from a consultant’s point of view. Logical structure and easy connections is important for the yard. Duration, reliability and easy operation together with low cost maintenance are more important for the operator and owner.

SMART®Chief II provides benefits for all parts involved. The combined easiness, durability and service functions, insures a safe investment giving all parts increased values. The system displays a full system functionality overview, giving all parts an easy overlook and secure control.

SMART®Chief II is approved by the major classification societies.

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**Yard benefits**

• Same technology despite any system solution
• Easy module identification
• Modular construction
• High degree of flexibility
• Reduce need of space
• Easy connection
• Effective installation

**Owners benefits**

• Reliable operations
• Easy and functional Man-Machine operation
• Easy to operate and maintain
• All retrofit or repairs can be done while the system is running (“Hot” system changes)
• All outputs are set to safe mode if a communication error occurs
Every ship contains a various number of systems for operational or security purposes. An IAS task is to integrate these functions in a seamless manner despite system fabricate and function. SMART®Chief II is prepared to make these integrations in the extent of the owners wishes. SMART®Chief II gives you full operation, view only or a combined function, with more than 70 different communication protocols.

SMART®Chief II
The ship “nervous” system, capable of controlling and monitoring all necessary automation onboard.

Fire Alarm
Standalone system with effective overviews on IAS graphics.

Switch Boards
Reliable Main and Emergency Switchboards for all vessel sizes.

Starters
Cost effective solutions giving better performance.

Power Management
Advanced operation of PMS through user-friendly graphics.
CCTV
Integrated operator station giving full view and operation.

Cargo Control & Monitoring
Full control through IAS with connected Level-gauging Systems; Radar or Pressure.

Ballast Control & Monitoring
Full control through IAS with connected Level-gauging Systems; Radar, Pressure or Air.

On Demand
Integration of more than 70 serial protocols still expanding through project demands.

On Demand
Direct integration is not always necessary to give effective package deliveries.
Using our system and process know how, a series of smart features are designed into the SMART® Chief II system. The SMART-functions involves cost reduction features, technical advantages and operational benefits.

**SMART® Chief II**

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**Tailor-made Graphics**

SMART® Chief II’s easy, effective and safe operation is provided by graphics designed for each individual purpose. Easy visual symbols combined in a recognizable layout, gives the operator an immediate understanding. SMART-features like “hot buttons” between pages and direct adjustment on each symbol, makes operation smooth and tailor-made.

**Auto identification**

The STI I/O-modules has an inbuilt Auto-identification so that service personnel are able to add new I/O modules (On/Off, 4-20mA, +/-10V, RTD, ThermoCouple-modules) into the free I/O slots in any cabinet connected to the SMART Chief II system. The system can then be configured and activate the new I/O-alarm tags for the new modules. All these operations can be done runtime without switching off any power supplies or restarting any part of the system.

**Local operation Panel (Alarm Panel)**

SMART® Chief II EAS panel is also designed to be used as a local operator panel. Communication direct on the STI-bus provides opportunity for local operation, indication of channel values and acknowledgement of the system. This includes direct operation of local valves and pumps or other equipment connected to the system.

**Ferry**

Specialized needs for comfort and advanced operation such as LPG/Electrical propulsion.

**Container**

Integration of specialized needs.
To ALL KINDS of Vessels

- **Offshore**
  Safe automation meeting offshore demands.

- **Fast Ferry**
  Light weight combined with fast and easy operation increases security.

- **Tanker**
  Full control of machinery and cargo space from Coaster to VLCC.

- **Sto-Ro**
  Secure and smooth operation of ship functions.

- **Special**
  Extreme functionality provided for Seismic, Research or other specialized vessels.

- **Fishing**
  Easy integration and cost effective solutions for all sizes.

- **Supply**
  Advanced integration of large numbers of systems on PSV’s, AHTS’s.

SMART® Chief II’s construction and functionality makes it equally suitable for any type or size of vessel or installation, from the small coast vessels to larger cruise vessels. Our list of references contains a broad variety of successful installations worldwide.
To the General Cargo Carrier MT Credo, NB 134 at Shanghai Edward Shipyard, China, for Swedish owner Donsötank together with Finnish owner ESL- Shipping, we have supplied complete SMART® Chief II IAS with integrated ballast & cargo monitoring and control system, in a package together with Fire Alarm System, Main & Emergency Electrical Switchboards, Starters and CCTV. The “package” also contains complete el-design for the vessel, ensuring optimal integration and system functionality.

To Ulstein Verft, Norway, NB 263, 264, 266, 267, 269 and 270 for several of Norways largest offshore vessel companies we have supplied complete IAS system based on hardware signals and software signals trough up to 19 serial lines! The IAS operate as the vessels central nerve system and the operators can control and monitor most of the vessels sub-systems from our screens. At Ulstein Verft NB 271, an Offshore Construction Vessel for Solstad/SBM, we delivered Smart® Chief Tanksounding for 84 tanks and 4 draft measure points.

Wagenborg Shipping B.V. have installed Smart® Chief system in more than 30 vessels. The latest are the advanced and beautifully designed Sto-Ro vessels Balticborg and Botniaborg. The vessels were built at Voldharding Shipyards as newbuildings 528 and 529. The systems handles more than 2000 I/O’ displayed on a large number of specially designed graphics. The system functionality is developed together with the ship owner providing optimal operation interfacing Maintenance System, PMS, Main Engines, SAJ Draft Sensor System, Tank Sounding, Fire Alarm and VDR.

“At your Service around the World around the clock”

Taking care of values also include services and maintenance. Bjørge Steinco Moland are available for prompt service all over the world through own offices, partners and collaborators.

Caring About Values

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