



Former Station 12 and SpecTec



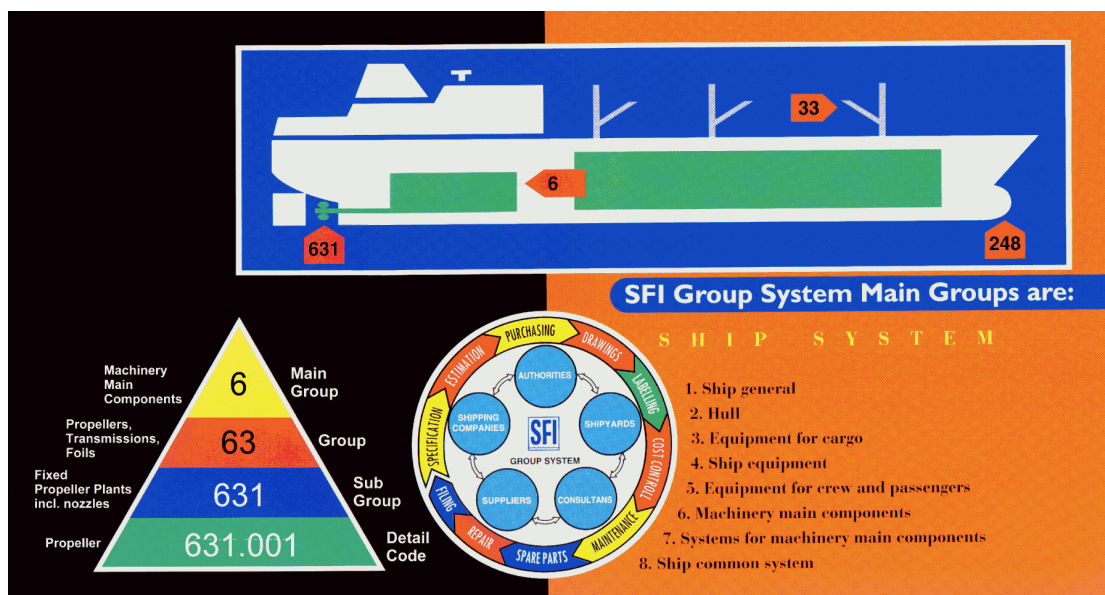
Product Description

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## 1. Introduction

**SFI Group System** is the most used classification system for the maritime and offshore industry worldwide. It is an international standard which provides a highly functional subdivision of technical and financial ship or rig information. SFI consists of a technical account structure covering all aspects of ship/rig specification, and it can be used as a basic standard for all systems in the shipping/offshore industry. More than 6000 SFI systems have been installed all over the world. SFI is being used by shipping and offshore companies, yards, consultancies, software suppliers, authorities, classification societies, et cetera.



## 2. Background, Purpose & Advantages

### 2.1 Background

SFI Group System was first released in 1972 as the result of a research project undertaken by the The Ship Research Institute of Norway (SFI: Skipsteknisk Forskningsinstitutt). Sales, marketing and upgrading of the SFI Group System is today undertaken by Xantic.

### 2.2 Purpose and Advantages

The main purpose of SFI Group System is to help shipping and offshore companies getting control of their operations by tying together all their operations like: purchasing, accounting, maintenance, technical records, et cetera.

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The SFI Group System provides great advantages for shipping- and offshore operations in the following areas:

- Communication
- Co-operation
- Cost Control
- Cost Comparison
- Quality Control
- Computerisation
- Development
- Education and Training
- Standardisation

### **2.3 Scope**

When the SFI Group System was established, the purpose was that it should be capable of accommodating all relevant ship or rig types, and it should be a common code for the flow of information between different enterprises within the maritime and offshore industry.

The system should be independent of company organization and methods of ship building, ship operation, maintenance and repair. It should further lend itself to be updated with regard to new ship types and new technology.

In order to meet the purpose of and the requirements to the system, the ships were divided into functions.

The ship functions are common to all parties who are concerned with the specifications, building and operation of ships.

In addition to the Group System with Detail Code, it may be necessary for each user to develop special codes, such as plan of finance accounts for budgeting and cost control of total company operation.

Shipyards using the SFI Group System for planning and control of production will require a supplementary company internal Work Breakdown Structure (WBS).

Shipping companies using the SFI Group System for operation and maintenance planning and control, will require a code for consumables.

### 3. The problems SFI solve.

#### 3.1 Controlling Shipping & Offshore Operations

SFI Group System will make better control and quality assurance of the shipping and offshore operations like maintenance, purchasing, accounting, filing, et cetera.

SFI is providing shipping and offshore companies, shipyards, authorities, suppliers and consultants with a common plan of technical account/codes in the handling of:

- Specifications
- Estimates
- Drawings
- Purchase
- Material Administration
- Maintenance and Repair Planning
- Instruction Material
- Budgets and Cost Control
- Files
- Et cetera.

The areas of system utilisation are steadily increasing, and the system has contributed greatly to increase efficiency in the maritime industry.

The SFI Group System is a very useful tool when routines are being established according to the quality loop (ref. ASO 9004, par. 5.1)



### 3.2 Specifications

Specifications are normally established at different levels of detail: Outline, Contract, Building, As Built and Repair Specifications.

Technical descriptions of components should be part of the As Built Specification and should follow the SFI Detail Code.

The databased version of the Group System lends itself especially well to the development of the various specifications.

A report generator makes it easy for the user to edit specifications according to requirements.

Specifications may be related to different Group System levels.

- Outline specifications to Main Group level.
- Functional requirements to Group level
- Functional solutions to Sub-Group level.
- Component selections to Detail Code level.

### 3.3 Estimates

Since estimates are based on specifications, they should follow the same break-down structure. The estimates normally contain cost of material and work hours production:

		Hours	Materials
73	Comp resses air systems		
731	Starting air systems	200	
731.001	Starting air compressor		150,000
731.003	Starting air emergency compressor		98,000
731.005	Starting air water/oil separator		17,000
731.010	Starting air tanks		33,000
731.012	Starting air bottles		9,500
731.014	Starting air coolers		12,000
731.016	Starting air compressor silencers		5,000

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### **3.4 Drawings & Document Handling**

Drawings can easily be numbered according to SFI, and complex drawings in CAD systems may be split into layers to show individual installations according to the SFI Group System.

Drawing identification may incorporate a SFI group System number. A standard drawing number may be composed as follows:

179-731-001

Ship no. – SFI Sub-Group no. – Consecutive no.

Drawings should be numbered according to Sub-Group level if possible. The Group and Main Group levels are usually used for system and arrangement drawings:

179-100-000 General arrangement

179-200-001 Profile and deck plan

179-350-000 Loading and discharging system

179-446-001 Engine stores arrangement

Item lists on arrangement drawings may also be coded according to the SFI Group System.

### **3.5 Purchasing**

A purchase is normally charged to a finance account (cost type) and to a SFI Group System number, often called a technical account (cost center).

When purchasing components, e.g. a yard may specify the individual item by the SFI Detail Code (6 digits). When e.g. a shipping company orders spare parts, these may be identified by the SFI Detail Code + consecutive numbers (9-10 digits).

### **3.6 Material Administration**

When components are purchased directly to order/ship, the SFI Detail Code may be used as a technical account.

The manufactures of spare parts may have their own part numbering system. For a shipping company it is often convenient to establish their own spare part numbering system related to the SFI Detail Code + consecutive numbers:

* 731.001	Starting air compressor
* 731.001.001	HP cylinder
* 731.001.002	LP cylinder
* 731.001.003	HP cylinder cover
* 731.001.004	LP cylinder cover

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### **3.7 Maintenance**

An operation- and maintenance system will often contain a register covering all maintenance units onboard. These units are normally identical to the components in the Detail Code:

\* 731.001 Starting air compressor no. 1

Maker :

Type :

Serial no. :

Capacity :

Procedures for preventive maintenance and class survey of a maintenance unit, will be entered with job identification:

\* 731.001 starting air compressor no. 1

Job A 3000 hours routine

Job B Class survey

All records of preventive and corrective maintenance should be filed and related to the maintenance unit. The technical account of planned maintenance systems like e.g. AMOS Maintenance & Purchase, AMOS Express and AMOS RAST is often based on the SFI Group System.

### **3.8 Repair**

Repair specifications is often based on information from the maintenance system. The repair bill should follow the repair specification structure. It is customary to quote prices from yard to shipping company at Sub-Group level. The repair bill should follow the repair specification structure.

It is customary to quote prices from yard to shipping company at Sub-Group level. The repair bill should follow the repair specification structure.

### **3.9 Operation Budget**

The SFI Group System is used for budgeting of maintenance and repair work, and for spare part consumption. In order to make a complete operation budget in a shipping company, it is necessary to link the Group System to a plan of finance accounts. Any suitable plan of finance accounts may be used together with SFI.

Most plans of finance accounts for spare parts and consumption articles. Budgeting of spare parts may be done in great detail in the SFI Group System.



### 3.10 Cost Control

Cost control of new building or repair is normally carried out at Sub-Group and Detail Code levels.

Direct purchases are charged to SFI Detail Code:

Materials			
	Planned	Real	Difference
731.001 Starting air compressor	150.000	158.000	+ 8.000

Work hours follow Sub-Group level. Activities and jobs must be established to follow up work progress.

Hours			
	Planned	Real	Difference
731 Starting air compressor	200	210	+ 10

### 3.11 Quality Assurance

In relation to ISO 9000 and IMO requirements for safe ship operation, it is necessary to establish procedures which ensure that rules and regulations from authorities and classification societies, and specification requirements are met, and that the ship/rig is operated safely.

The following procedures and instructions should be classified according to SFI:

- Surveyors manual
- Installation description

### 3.12 Filing

The SFI Group System is often used as a standard filing key for the shipping and offshore industry. SFI gives this industry a well structured and organized filing system of drawings, manuals, reports and publications.

- Testing and commissioning procedures
- Operating, start and stop manuals
- Maintenance instructions
- Faultfinding
- Spare parts
- Tools
- List of drawings

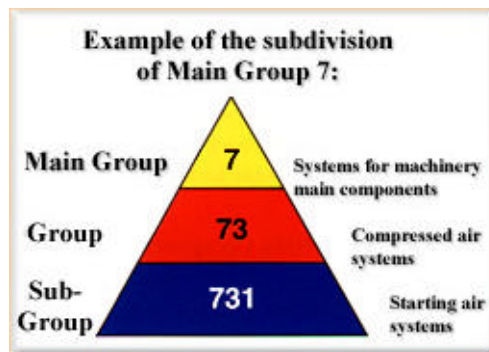
- Certificates
- Agents

## 4. The Coding Structure of SFI

### 4.1 SFI Group System (3 digit)

The SFI Group System is built up as a 3 digit decimal classification system. The ship/rig is divided into 10 main Groups from 0 to 9. Only main Groups 1- 8 are in use. The users may use Main Group 0 and 9 for classifying other main components that are not covered in the SFI standard.

Each of the Main Groups (1 digit) consists of 10 Groups (2 digit) and each Group is divided further into 10 Sub-Groups (3 digit).



The Main Groups of SFI for Ship will now be described.

#### 4.1.1 Main group 1 Ship General

Details and costs which can not be charged to any specific function onboard, e.g. general arrangement, quality assurance, launching, drydocking, guarantee work.

#### 4.1.2 Main Group 2 Hull

Hull, superstructure and material protection of the vessel.

#### 4.1.3 Main Group 3 Equipment for Cargo

Cargo equipment and machinery including systems for vessel`s cargo, loading/discharging systems, cargo winches and hatches.

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#### *4.1.4 Main Group 4 Ship Equipment*

Ship specific equipment- and machinery. Navigational equipment, maneuvering machinery, anchoring equipment, communication equipment. This group also includes special equipment like equipment for fishing.

#### *4.1.5 Main Group 5 Equipment for Crew and Passengers*

Equipment, machinery, systems etc. serving crew and passengers, e.g. lifesaving equipment, furniture, catering equipment, sanitary systems.

#### *4.1.6 Main Group 6 Machinery Main Components*

Primary components in the engine room, e.g. main and auxiliary engines, propeller plant, boilers, and generators.

#### *4.1.7 Systems for Machinery Main Components*

Systems serving machinery main components, e.g. fuel and lubrication oil systems, starting air system, exhaust systems, automation systems.

#### *4.1.8 Ship Common Systems*

Central ship systems; e.g. ballast and bilge systems, fire fighting and wash down systems, electrical distribution systems.

#### *4.1.9 SFI Coding Structure for Rig*

The main groups of SFI for rig are as follows:

Main Group 1: Rig General

Main Group 2: Hull and Structure

Main Group 3: Drilling Equipment and Systems

Main Group 4: Platform Equipment

Main Group 5: Equipment for Crew

Main Group 6: Machinery Main Components

Main Group 7: Systems for Machinery main Components

Main Group 8: Platform Common Systems

## **4.2 SFI Detail- & Material Codes (6 digit)**

The detail- and material codes are covering components and materials that may be related to the individual Sub-Groups. In order to reach the component level, it might be necessary to break the sub-groups further down by a detail code. This code has not yet been possible to standardize, due to the variety of equipment and numbers

onboard different types of ships, and due to slightly different requirements to the code for shipyards and shipping companies.

Usually there are 2 different classes of components and material that are used. One class comprises components and material that are ordered directly to a ship. The other comprises components and material that are ordered to stock. Consequently the codes are divided into two parts:

**Detail Code:** Components that are purchased directly to order/ship. The detail code is used to define the individual component and equipment that acts in the sub system function. In the Detail Code the supplementary codes are built up from 001-099.

**Material Code:** This code relates to material that is purchased to stock.

The relations between these codes are e.g. as follows:

- SFI Group System + Detail Code: 731.000 – 731.099
- SFI Group System + Material Code. 731.100 – 731.999

## 5. User Right of SFI Group System

### 5.1 SFI User License

For granting user rights of the SFI Group System, SFI User Licence Certificate has to be purchased from Xantic. There is one licence fee for each installation of SFI. This means that there is one license for each ship/site/rig that uses the coding structure of SFI. In addition is price on each book, file or dbase.

## 6. Formats of SFI Group System

### 6.1 SFI Manuals

The SFI manuals are available in the following formats:

- SFI for Ship: A5 book, 3 and 6 digit (Detail & Material Codes) + A6 Pocket version, 3 digit only. ASCII code and dbase for electronic maintenance system
- SFI for Rig: A5 book, 3 digit.

The A5, 3 digit manual contains the following parts:

- Summary charts of the main groups
- Detail description of groups and sub-groups
- Keyword register.

The A5, 6 digit manual contains the same as the 3 digit manual + 2 more chapters (only ship version):

- Detail Code
- Material Code

The A6 pocket manual contains (only ship version):

- Summary charts
- Keyword register

## **6.2 SFI ASCII Code and Dbase**

The SFI ASCII Code is a text listing file of the SFI Codes in a database in ASCII format. This file can easily be exported into other applications.

The SFI database may be used as a basic module in production planning, maintenance planning, repair, material administration, and budgeting and cost control.

Therefore it is recommended that the technical account in AMOS Maintenance, AMOS RAST and is based on the SFI coding structure.

## **7. Conclusion**

A classification system like SFI Group System will make a substantial contribution to standardized and well ordered information concerning ships/rigs and lead to improved communication both within a company and its external relations.

SFI Group System will make shipping and offshore operations more efficient because companies will save resources and avoid unnecessary pitfalls when implementing the standard of SFI.

SFI can be the common denominator tying together all functions of shipping and offshore operations like maintenance, purchasing, accounting, filing etc.

**SFI is tying it all together.**

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