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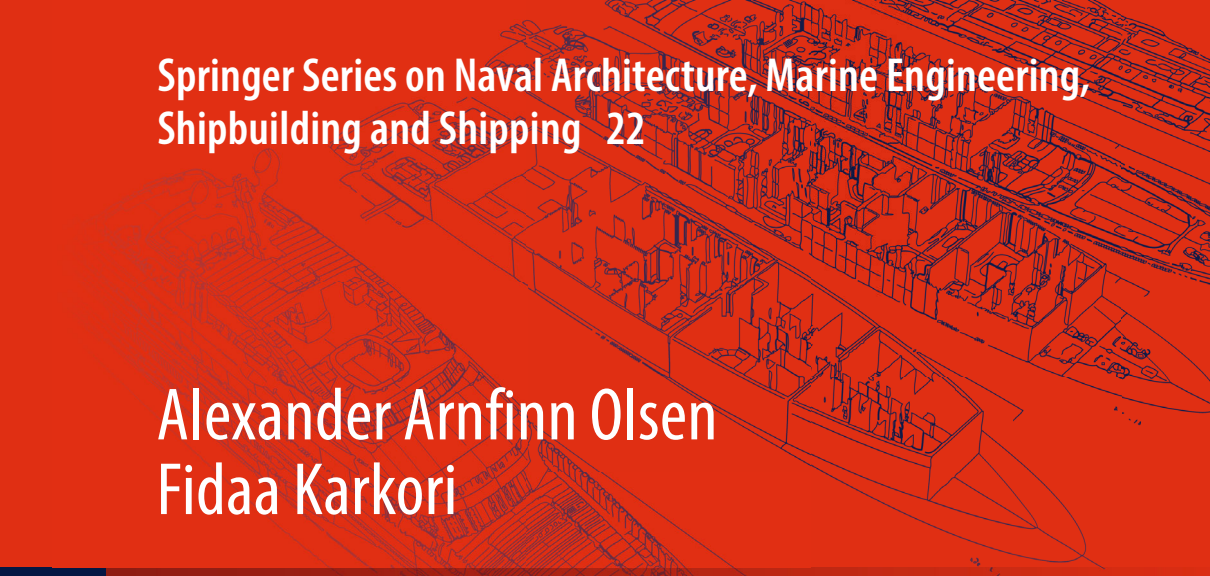

Alexander Arnfinn Olsen
Fidaa Karkori

Containerized Cargo Handling and Stowage

Principles and Procedures

Springer

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Volume 22

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In loving memory of Mohamed Karkori

Limitless and immortal, the waters are the beginning and end of all things on earth.

Heinrich Zimmer

Preface

When the first container vessel docked in the German port of Bremen on 6 May 1966, it caused, as does any novelty, vast excitement. But back then, nobody could imagine the extent of the revolution that had been set in motion. Initially, people smiled condescendingly at the "boxes," but soon it was the potential for rationalisation that became the central focus of attention. Labour-intensive and damaging cargo handling processes at the ports were no longer necessary. Transshipment times were cut to a fraction of those previously required on general cargo ships thanks to the possibility of moving entire truck loads on to ships in the form of containers. That said, the real revolution, however, only began as an increasing number of ports developed facilities for the transshipment, storage and clearance of containers. In parallel to this, the slot capacities for containers on ships rose from just a few hundred to the massive 23,000 we are seeing on the latest classes of ships, with even larger shipping units now being planned. Ship speeds, which have almost doubled since containerisation first got under way at the end of the 1960s, are also a significant factor that has enabled containerisation to grow exponentially. Ever faster and more economical transportation methods employing logistics systems that span the entire globe have made it possible to achieve the economies that we know today. These are synergy processes that will continue to lead to above average growth rates in container transport.

Many recurrent problems associated with traditional general cargo transport, such as petty theft, load damage as a result of repeated transshipment, and so forth, appeared to have been solved at once with the introduction of the "container" transport system. Its supporters were soon proclaiming a new age of damage-free transportation thanks to these huge metal boxes. These unrealistic hopes were soon dispelled in the face of new types of damage which were specific to containers. Organised crime emerged in place of petty theft, with entire containers being stolen to order. Professional cargo care, as provided by an experienced and well-trained crew during transportation on general cargo ships, is not carried out for containers, and the cargo is instead left "to its own devices." Professional stowage of the cargo by dock workers on board the general cargo ships now takes the form of stuffing (packing) the containers inland, either at "stuffing centres" or by the freight forwarder. This resulted in the

emergence of a new and typical pattern of damage. Moisture, mould and corrosion are equally responsible for damage as the failure to secure cargo correctly. Indeed, there is close correlation between the latter and accidents related to cargo securing on large container ships, which are responsible for the loss of hundreds of containers every year. This can also threaten the very existence of entire container ships and their crew. Employing untrained personnel to load containers can also have a negative effect on the quality of transport operations, as does reductions in packaging, which was initially welcomed on environmental grounds, but soon fell afoul of an exaggerated cost awareness.

This book aims to provide the professional cargo officer with a source of guidance and information based on accepted industry best practice. The global economy is dependent on the smooth exchange of goods. Any damage results in a waste of resources. Loss prevention measures are not only economically necessary but also directly protect the marine environment. Surveys of transport practice have revealed that almost seventy percent of all packed containers, swap bodies, road and rail vehicles, or other cargo transport units, exhibit shortcomings in packing and load securing which can result in damage. It should be recognised, however, that even a book which has been edited and updated over many years cannot take account of every variant which may be encountered in practice; therefore, this book does not make any claim to completeness, being less than comprehensive or perfect in many parts. Nevertheless, it is hoped that this book will serve as a source of guidance for the professional and will make at least some contribution to preventing cargo damage and loss. The authors hope that it will be possible gradually to update this book as new best practices emerge so that it will continue to be a useful source of advice to anyone responsible for packing and securing containers.

Southampton, UK — Alexander Arnfinn Olsen
December 2023 — Fidaa Karkori

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Contents

Abbreviations and Acronyms

‘	Foot/feet
“	Inch/es
°	Degree(s)
°C	Degrees Centigrade
°F	Degrees Fahrenheit
∞	Infinity
ABS	American Bureau of Shipping
ACEP	Approved Continuous Examination Programme
BACO	‘Ba’rge ‘co’ntainer carrier
BGV D 29	German Federal Accident Prevention Regulations
BIC	International Container Bureau
BV	Bureau Veritas
CAP	Common Agricultural Policy
CO_2	Carbon dioxide
CONRO	Container Roll-on/Roll-off
CPC	Cellular Palletwide Containers
CS	Calculation Strength
CSC	International Convention for Safe Containers
CSS Code	Code of Safe Practice for Cargo Stowage and Securing
CTU	Cargo Transport Unit
daN	Decanewton
DNV	Det Norske Veritas
DWT	Deadweight
f	Force
FCL	Full Container Load
FEU	Forty-foot Equivalent Unit
FIS	Freight Information System
FloFlo	Float-on/Float-off

FN	Normal force
Ft	Foot/feet
g	Gravity
g.n.t	Gooseneck tunnel
GL	Germanischer Lloyd
GP	General Purpose Container
GRP	Glass-fibre Reinforced Plastic
hPa	Hectopascals
ILO	International Labour Organisation
IMDG	International Maritime Dangerous Goods Code
IMO	International Maritime Organisation
ISO	International Standardisation Organisation
ITU	International Telecommunication Union
Kg	Kilograms
kN	Kilonewton
LASH	Lighters Aboard SHip
lbs	Pounds
LC	Lashing Capacity
LCL	Less Than Full Container Load
LoLo	Load-on/load-off
LR	Lloyds Register of Shipping
M	Metres
Mbar	Megabar
Mm	Millimetres
MPa	Megapascal
MS	Motor Ship
MSL	Maximum Securing Load
MT	Motor Tanker
MV	Motor Vessel
OBC	Oil-Bulk-Container Carrier
OS	Open-Side Container
OTOS	Open-Top/Open-Side Container
PA	Polyamide
PE	Polyethylene
PES	Polyester
PP	Polypropylene
RoRo	Roll-on/Roll-off Vessel
StoRo	Stowable Roll-on/Roll-off Vessel
TEU	Twenty-Foot Equivalent Unit
TIS	Transport Information System
TS	Turbine Ship
UK	United Kingdom
UN	United Nations

US	United States
UV	Ultra-Violet
VCI	Volatile Corrosion Inhibitors
VDI	Verein Deutscher Ingenieure
WoWo	Walk-on/walk-off Vessel

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