



## **Development of shipping process: Neles Finland Oy**

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## Abstract

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<p>The status of the shipping process between the plants of a valve automation manufacturer was explored in this thesis. The work was done as part of a project for the organization Neles Oy, Maintenance, repair, and operations Order Management (MRO OM) team. The goal was to determine the present condition of the shipping process, identify and develop problem areas, and analyze potential future development needs.</p> <p>The knowledge base discusses the concept of the process and the stages of the process development process. It is also necessary to understand what kind of software and documents are in use during the process. Therefore, some theoretical internal vocabulary has also been explained in the theoretical part.</p> <p>The empirical part of the thesis was performed as a development project, detailing what and how was created along the process. The project management methods are focus group interview and one's own observation in addition to the work. Focus group interview was provided for few MRO OM team employees, who already had experience in the process and have their point of view in the possible issues.</p> <p>Three figures have been produced for thesis that represent the original status of the shipping process, the outcomes, and the ideal shipping process for future development. One of the outcomes, the weekly submission is set as a separate work queue in the MRO OM team. Furthermore, as part of the weekly departure, shipping instructions were produced for the organization so that other employees of the MRO OM team may become acquainted with the work queue and handle it in the future. The development of the shipping process was successful based on the project and daily work.</p>
<b>Keywords</b> Shipment, process, development, KSA, Finland, forwarding

## Table of content

1	Introduction.....	1
2	Process development and shipping process .....	3
2.1	Process development.....	3
2.1.1	Process .....	3
2.1.2	Process system.....	4
2.1.3	Procedure.....	4
2.1.4	Process and procedure improvement .....	5
2.1.5	Theory of constraints (TOC) .....	6
2.1.6	Project and it's management .....	7
2.2	Shipping process.....	8
2.2.1	Delivery terms .....	9
2.2.2	FCA.....	10
2.2.3	CPT .....	11
2.2.4	Systems used in shipping orders at Neles .....	12
2.2.5	Necessary documents in dispatch .....	13
3	Project .....	15
3.1	Case company .....	15
3.2	Project management methods and report structure .....	16
3.3	Examination of the initial situation of the process .....	18
3.4	Understanding issues of the shipping process.....	20
3.5	Defining and developing the process.....	21
3.6	Presenting weekly departure process.....	22
3.7	Taking the developed process onto action .....	23
3.8	The pursuit of an ideal process.....	24
3.9	Shipping instructions for the weekly shipment .....	26
4	Discussion .....	28
4.1	Overview .....	28
4.2	Process improvement and defining future improvements .....	29
4.3	Evaluation of the reliability and validity of studies .....	31
4.4	Assessing own learning.....	32
	References.....	35
	Appendices .....	38
	Appendix 1. Original shipping process to Neles Saudi Plant .....	38
	Appendix 2. Weekly shipment for Neles Saudi Plant.....	38
	Appendix 3. Ideal weekly shipment process for Neles Saudi Plant.....	39
	Appendix 4. Neles Saudi Plant booking instructions for weekly shipments.....	40

## 1 Introduction

The process is a logical series of steps followed by the team to accomplish the planned results. The final stage in the business process is to send an order to a customer, after which the product is delivered to the customer. However, placing an order is a separate procedure with many different stages, and there are occasionally too many or too few steps, causing the shipping process to fail. To prevent wasting too many resources and to simplify the sending of orders, the process must be updated on a regular basis.

Maintenance, repair, and operations Order Management (MRO OM) team from Neles Finland Oy (Neles) organization has commissioned the development work. It is an industrial business that is a major provider of valve and valve automation solutions in the industry. Order management to the Middle East arose from a team manager who identified the need to improve the process in this area. The thesis has been focused as much as possible so that areas for improvement can be examined closely. In my delimitation, I consider that the Middle East is made up of several countries and that paperwork and delivery of orders vary. The factory-to-factory (FtF) orders submitted to Neles Saudi Plant (Saudi Plant) indicated the most essential requirement for development. As a result, I focus my thesis on shipment of FtF orders so that I could accurately describe and reflect on the many stages of development. The organization will benefit from describing the thesis process in the report and it can be used to also develop other shipment processes in the future.

The project's objectives are divided into project tasks as follows:

PT 1. Developing shipping process to increase the efficiency of the process in FtF shipments to Saudi Plant.

PT 2. Identify issues in the shipping process which needs to be improved.

PT 3. Provide possible developments for the future improvements.

Table 1: Project based overlay matrix

Project Task (PT)	Knowledge base	Project Management Methods	Outcomes
<b>PT1.</b> Describe developed shipping process	Process system and management, procedure, TOC (2.1.1-2.1.5)  Project management (2.1.6)  Observation, analysing process in the beginning of the project (3.3)	Waterfall (2.1.6)  Focus group interview  Team meetings  Observation	Developing process (3.5)  Weekly shipment (3.6, Table 5)  Booking instructions for a weekly shipment (3.9, Appendix 4)
<b>PT2.</b> Identify issues in the shipping process	Process and process improvement, TOC (2.1.5-2.1.6)  Observation  Procedure (2.1.3)	Team meetings  Focus group interview  Observation	Defining issues of the shipping process (3.4, table 4)
<b>PT3.</b> Provide possible developments for the future	Process and process improvement, TOC (2.1.5-2.1.6)  Observation  Analysing developed process	Focus group interview  Observation  Testing of the developed process	The pursuit of an ideal process (3.8)

The process development is needed because of the process's intricacy and multi-stage nature. Scheduling, unclear instructions, and the various stages of booking shipments have proven to be detrimental to efficiency in that process. This thesis is project-based work. The purpose of a project-based thesis, according to Mika Säteri (2020), is to offer a functioning output for the commissioning organization. An issue is usually solved, a method is built, and its phases investigated, or a field practice is developed. A service or product is built, tested, and developed through practical activities.

## **2 Process development and shipping process**

This chapter discusses the theoretical topic of process improvement in order to obtain a better knowledge of the significance and modes of development work utilizing measurement techniques. The first half of the chapter examines the process's concept, development, and how it may produce the intended goals. It then goes into the process, how it differs from the procedure, and why modifications to the process and procedure are critical to the organization's growth. The TOC and the five TOC processes are then reviewed to assess and improve the organization. Furthermore, the meanings of project and project management are covered. The second section of the chapter defines the submission process, discusses the delivery words used for the thesis process, and explains the systems used inside the process so that the needs of various systems at different phases of the shipping process may be understood.

### **2.1 Process development**

#### **2.1.1 Process**

The process is a logical series of steps followed by the team to accomplish the goal (Ould, 2005). A process is a set of interrelated activities designed to transform inputs into outputs. It gets you from where you are to where you want to be. An effective process realizes planned activities and achieves planned results. (Berman, 2014, chapter 1.) According to Berman (2014, chapter 1), to be able to analyze the process system, we must first define terms that are involved in the process:

1. An input is what you already have or expect to receive in time to start a step/activity. It may be intangible, such as time, a customer's need, or an engineer's expertise, or it may be a physical object, such as a raw material or part.
2. An output is what you want to deliver to the customer so the next step/activity can proceed.
3. A trigger is the signal for a process to start. It may be time-based, condition-based, or based on the completion of another process.
4. A process always has a customer, whoever needs the output of the process.

### **2.1.2 Process system**

Process system is a business model that illustrates how processes fit together to achieve the company's goals. The processes are linked because the output of one becomes the input of another. In practice, input-output ratios are used to "glue" processes together. It introduces a way within which work instructions fit into processes, and processes fit together to represent the overall operation of the organization. An effective process system is a shared overall picture that helps you and your co-workers to identify how your processes fit together and where they don't. This provides a framework for managing improvements, ensuring that they are coordinated and compatible. It may help you to understand how your business works and improve it by finding gaps where work isn't getting done correctly or inefficiencies where more resources are being used than are required. The process system should be strong before creating or improving any processes.

(Berman, 2014, chapter 1.)

According to nTask (2020), the goal is to enhance business processes so where you can:

- find strategies to accomplish stages more efficiently and quickly.
- to discover the processes that are causing you and your team to produce poor results.
- to discover inefficient stages in your workflow so you may avoid them.

The emphasis in systems thinking is on connections, linkages, and flows. It underlines the importance of each employee, unit, or activity being a part of a bigger total, and that, in the end, the outcomes produced by these communities working together are justified. (Harmon, 2014, 1).

### **2.1.3 Procedure**

A procedure is a process of carrying out a task or process. It specifies who is responsible for certain process actions and in what order, as well as other important information. A procedure usually includes a process map. The rest of a procedure document describes its scope and purpose, as well as further information on each step in the process map and who does it, as well as any other essential information, such as roles and duties, records, or references to related documents. The lowest-level processes specify how to do an operation in detail, step by step. (Berman, 2014, chapter 1.)

Procedures provide value for the company in different ways, for example, they provide a specific course to follow so the organization will accomplish the main goal. They are responsible for ensuring that interfaces are agreed upon, they multiply expertise and support new employees in performing more rapidly. Also, procedures standardize the working process, allow developments, and avoid vulnerabilities. (Berman, 2014, Chapter 1.)

A process map is a flowchart that uses flowchart symbols, which are shown in figure 1. The most often used symbols are the rectangle for a process step, the diamond for a decision point, and the oblong for a terminator. It is important to provide defining in the symbols for the reader to comprehend the symbols in the process. (Berman, 2014, Chapter 7.)

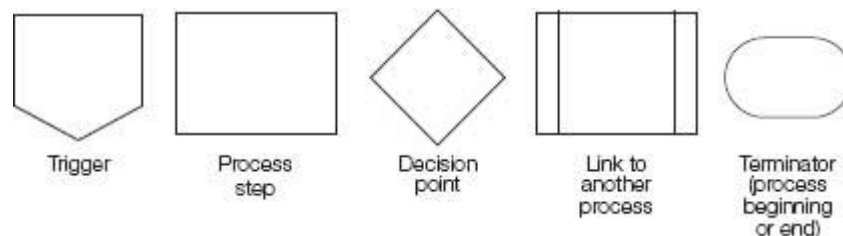


Figure 1: Process map symbols (Berman, 2014, chapter 7)

After the procedure is drafted, it needs to be sent for a review to the colleagues who also have experience in previous process. Before launching the procedure to all teams, it needs to be tested to confirm that it is working. (Berman, 2014, chapter 9.) Piloting a process change can reveal areas for improvement, not just in the method but also in the training and process infrastructure offered to users. (Berman, 2014, chapter 10).

#### 2.1.4 Process and procedure improvement

It is important to keep the process system up to date. Sometimes an instant modification is required, but in many situations, minor improvements are enough to enable the process in question to continue until the next revision is required. (Berman, 2014, chapter 5.) Improving the process means improving the way the process is performed out. If the process' operation does not change, better results will not be achieved. This might necessitate the growth of information collection, competency, information systems, working techniques, and collaboration, among other things. It is possible to develop without processes, but it is ineffective. (Laamanen, Tinnilä, 2009, 14.)



When are procedures and process improvements needed for the company?

According to Berman (2014, chapter 1), procedure improvements are needed to train new employees faster by providing them with easy instructions or when the process is complicated and need to be clarified. The process needs improvement when it seems that workers are wasting a lot of time and resources.

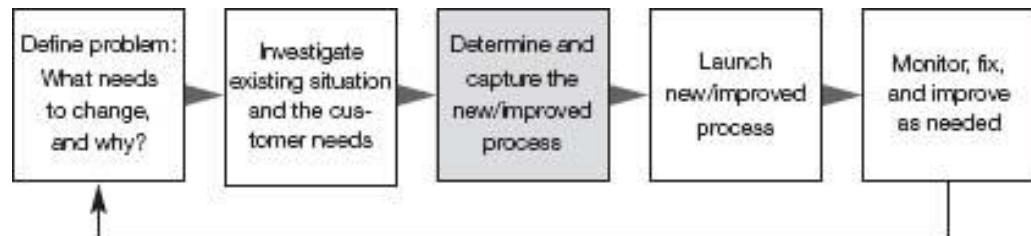


Figure 2: The Process improvement process (Berman, 2014, chapter 6)

As is seen in figure 2, to improve the process, first needs to define the issue or find the possible need for improvement. Following that, the present condition, and the requirements of all stakeholders in the process must be investigated and based on gathered information must be decided whether a completely new process is required or whether the current process can be improved. To launch the new or improved process, all the details of the current process need to be defined. During the launch phase, the necessary training, tools, and infrastructure are provided to complete the procedure. The final phase is to monitor the functioning of the procedures by monitoring them and making the necessary changes, modifications, and improvements.

### 2.1.5 Theory of constraints (TOC)

TOC is an improvement technique developed by an Israeli physician, Dr Eli Goldratt in the 1980s. Goldratt recognized that the weakest link in an organization's performance is system constraints and that this insight can provide the focus mechanism for all levels of government to separate many areas of their responsibilities that can be improved so that the organization can achieve more target units for all stakeholders. This focusing process should enable each section of the organization to identify not only the equipment required to develop the organization, but also which parts of the process should be abandoned to avoid harming the organization's operations. This focusing process was supported by a decision support system and the necessary comprehensive thinking tools (TOC Thinking Processes) and was called the Theory of constraints (TOC). (Barnard s.a.,

2-3.)

According to Barnard's article (s.a.,3), here are TOC's five focal steps for holistically analyzing and improving any organization:

1. Identify the System Constraint
2. Determine ways to take advantage of the system constraints.
3. Everything should be based on the preceding decision.
4. Increasing the System Constraint
5. If a constraint was violated in a previous phase, don't allow inertia to become the system constraint; return to step 1.

If the TOC's five focuses are implemented across the organization, a business strategy will be created to grow sales by transforming operational improvement into a decisive competitive advantage in the target market. This method assumes that the market is a system constraint to which the entire company should be subjected, and that "ending the exploitation of a system constraint" entails recognizing substantial customer demands that, when met, result in the acquisition of new customers. (Barnard, s.a., 4.)

### **2.1.6 Project and its management**

A project is a process that is performed to achieve a goal. (Newton, 2016,19). Project activities aim to develop the controllability and measurability of the organization's operations. (Mäntyneva, 2016, 9). The lifecycle of a project depends on the methodology being used. This has been a subject of development and debate among the project management community over the last few years. (Newton, 2016, 28.)

Newton (2016, 28) divides, that project management has many different methodologies. For example, the waterfall project goes through the whole life cycle, including all phases, once. The operation of this lifecycle begins with the project definition and finishes with the project closure once each step has been completed once in the same order (Figure 3). In the iterative life cycle, the same processes are performed but are repeated multiple times. Iterative lifecycles enable you to progress quickly with prototypes with relatively simple customer requirements, and then incrementally improve the deliverables as you learn from the process of development.

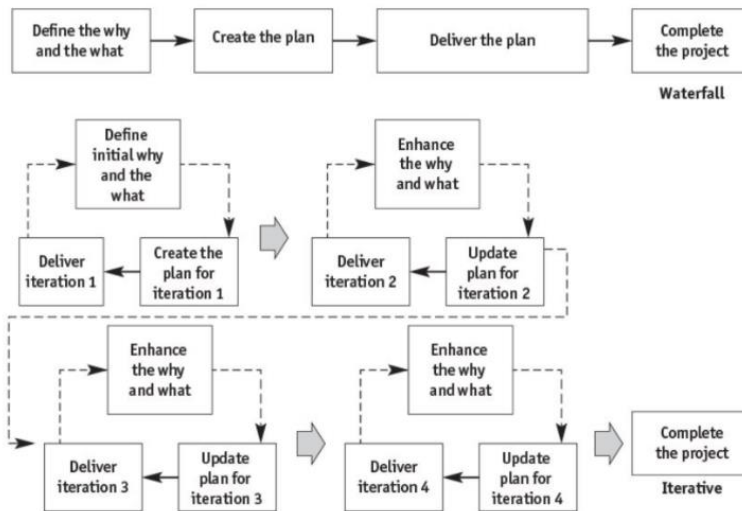


Figure 3: Waterfall versus Iterative lifecycle of a project (Newton, 2016, 27)

Project management was created to secure the project's progress and completion. The development project brings about beneficial and focused improvements in the activities and organizations that are being developed. (Mäntyneva, 2016, 10.) Operational development projects are carried out within own organization. The goal of these is to improve the productivity and efficiency of an organization's operations. Operational development projects can focus on, for example, the development of operating and working methods, organizational reform, and the development of staff skills. (Mäntyneva, 2016, 12.)

## 2.2 Shipping process

The supply chain of a manufacturing firm has three main functions to integrate and manage: buy, make, and distribute. (Sople, 2011, chapter 1). Work duties and processes include packing, loading, transporting, and unloading. The outgoing process, or logistics, begins with the client's order and finishes with the delivery of the items to the consumer (Sakki, 2014, chapter 1.) The delivery process is part of the outgoing process, which begins with packaging the order and ends with delivery to the consumer.

Shipping includes a total of ten significant processes. It's critical to determine who is responsible for whatever stage with the shipper or freight forwarder. The International Chamber of Commerce has formalized this procedure as Incoterms. The first stage in the shipping process is to arrange for product pickup and transportation to the export port. Some vendors provide transportation services on their own. When the items reach the export port, they must be packaged and ready to ship. When the shipment arrives at the port of export, the items must be unloaded

in line with the port of export's requirements. Labels must be applied to all boxes and containers. This prevents order to transfer from being delayed. (Kennemer, 13.4.2020.)

The order must be loaded for transport once it has been emptied from the transport truck. The delivery method used often depends on the size and weight of the shipment. Before it can be dispatched, the shipment must be cleared for export. This procedure is frequently carried out automatically, however some papers may be required at times. Delivery will not commence until the shipment is handed to the export duty. (Kennemer, 13.4.2020.)

The following phase entails the actual delivery of the order. This occurs after the exporting country has filed the customs declaration. The order can be transported by aircraft or ship to the destination country. Air transportation is usually used when the goods are not too large and faster delivery is desired. Larger and heavier items are transported by sea. This sort of cargo typically takes longer than a flight but maybe less expensive. The order must be unloaded when the cargo ship arrives at the port of import. The shipping business is in charge of this process. At this point, the shipment is at the customs office in the destination country. (Kennemer, 13.4.2020.)

Before it can be shipped to the destination, the order must be cleared by the customs office in the country of destination. Depending on the number of imports received on a particular day, the processing may take some time. Before the cargo is released from the customs office, import charges and taxes must be paid. The cargo gets passed through customs after the requested import duties and taxes have been paid. Then, from the customs office to the destination, proper transportation must be arranged. The final step in the delivery procedure is to unload the items at the destination. Most transport companies provide shipment loading and unloading services. (Kennemer, 13.4.2020.)

### **2.2.1 Delivery terms**

The delivery of products from the seller to the consumer involves several work processes that cost both sides financially. When multiple operators use the same procedures, commercial practices emerge over time, the content of which is documented so that they may be invoked efficiently. It is appropriate to use generally accepted names and shortcuts to describe trading procedures. (Railas, 2020, chapter 1.1.)

The delivery term is an abbreviation created from the initials of the contract and the three words that form part of the contract. The obligations of the seller and the buyer, such as those relating to the conclusion of a carriage contract or an export and import clearance, are referred to as operational liability. The reimbursement of expenses incurred as a consequence of measures, as well as the reimbursement of predictable or unexpected expenditures before and after delivery, as well as the responsibility to make payments, is referred to as cost liability and finally, liability refers to the duty to pay the financial repercussions of the destruction or damage to goods, which can take a variety of forms depending on the circumstances. In shipments to Saudi Plant are used two different delivery methods: FCA and CPT. (Railas 2020, Chapter 1.1.)

### **2.2.2 FCA**

According to Railas (2020, chapter 9.3.2), in Free Carrier (FCA) clause the seller delivers the products by turning them over to a carrier or other person authorized by the buyer at the seller's premises or another designated location. For transportation, the items must be carefully packaged and labelled. The parties may also agree on a packing method. As a result, the seller must bear the expense and risk up to this point. Notification and the customary evidence of delivery of the goods must be delivered to the buyer. This might be a freight forwarder's receipt, for example. The seller is responsible for assisting the customer in acquiring the necessary transportation documents. The seller must take care of the export declaration of the goods when the export declaration is necessary. (Railas 2020, chapter 9.3.2.)

The buyer may order the carrier to give the seller with a transport document, which will subsequently be supplemented by an on-board notation, according to Article B6 of the FCA Incoterms® 2020. The items will be received on behalf of the buyer by the carrier, or another person specified by the buyer; the buyer is responsible for obtaining insurance coverage for the primary shipment. For the products to transit via the third nation, the buyer must also fulfil the import and transit requirements. The buyer is also liable for handling fees at both the origin and destination terminals, as well as loading and transporting the products to their final destination, discharging the cargo, and import fees. (Railas 2020, chapter 9.3.2.)

FCA is designed for all forms of transportation, including combined modes. When employing delivery clauses, it's usually best to aim for a single contract that covers the whole transport chain from door to door. Depending on the delivery location, the

obligation for organizing transportation and the risk of transportation damage and delay usually falls to one party, namely the buyer. (Railas 2020, chapter 9.3.3.)

Export packaging	Loading charges	Delivery to place	Export duty, taxes & customs clearance	Origin terminal handling charges	Loading of carriage	Freight charges	Insurance	Destination terminal handling charges	Delivery to destination	Unloading at destination	Import, duty, taxes & customs clearance
Seller			Buyer								

Figure 4: Free Carrier based on Railas (2020, chapter 9)

The FCA terms of delivery has the sellers' benefits of passing the risk of the products as well as the costs to the seller as soon as the items are given over for forwarder, leaving the seller exclusively responsible for providing the documentation to customs. The concern, however, is the buyer's nomination of forwarder, which leaves the risks to the seller until the products are picked up. For example, if the items are damaged in inventory while waiting for the buyer to nominate the forwarder, the seller is responsible of the damage. (Montezuma, 2021.)

### 2.2.3 CPT

In Carriage Paid To – delivery term, the seller must arrange for the items to be transported from the point of delivery to the chosen destination via a carriage contract. The seller has the option of obtaining a carriage contract via transfer, according to Article A4. The carriage contract shall be made at the seller's expense, using the customary route and in line with current practice, and using the mode of transportation used to carry the items in question. The seller shall deliver the items to the agreed-upon carrier on the agreed-upon date or within the agreed-upon timeframe and inform the buyer of the delivery. The seller can choose the transport company to which he delivers the products and the place of delivery. The seller also pays for freight and other transport costs, such as loading and unloading if they are covered by the transport contract. In most cases, the seller is responsible for the costs incurred before the products are delivered. (Railas, 2020, chapter 10.2.)

According to Railas (2020, chapter 10.2), the buyer must be given all of the information he requires to complete the processes for obtaining the products. For transportation, the items must be carefully packaged and labelled. The parties may also agree on a packing method. The buyer may have the ability to choose the delivery timing of the products, depending on the terms of the agreement. Unless the seller is liable under the carriage contract, the buyer is responsible for all costs

incurred after delivery, as well as all costs and expenditures incurred for the products while traveling to the agreed-upon location and unloading charges. The buyer is responsible for completing the import clearance process and paying all associated fees, as well as all applicable tariffs and taxes. Unless the expenses are included in the freight, the buyer must additionally fulfill the requirements for shipping the goods via the third nation and pay the charges. In addition, the buyer is responsible for any expenditures incurred as a result of failing to notify the buyer of the delivery time, destination, or receiving location.

Export packaging	Loading charges	Delivery to place	Export duty, taxes & customs clearance	Origin terminal handling charges	Loading of carriage	Freight charges	Insurance	Destination terminal handling charges	Delivery to destination	Unloading at destination	Import, duty, taxes & customs clearance
Seller		Buyer		Negotiable							

Figure 5: CPT terms based on Railas (2020, chapter 10)

The CPT terms has advantages and disadvantages to sellers being responsible for an order until it arrives at a defined location. Advantage is that the goods are sent as soon the order is packed, without waiting for shipping permission or carrier information from the buyer. The risk of the term is that costs can increase, if the buyer has informed the wrong place of destination or has issues of receiving the delivery. (Montezuma, 2021.)

#### 2.2.4 Systems used in shipping orders at Neles

This chapter will be explained the programs that are used in the shipping process. Systems are NTG, Infor M3, QuickBase, and SharePoint. Each system has a distinct role in the process, and each system is used on daily basis.

##### NTG

The Neles Transportation Gateway (NTG) is Neles' transportation system, where shipments are booked and where the shipment's status may be tracked. In addition to Neles, the service is available to Neles' contract carrier firms that can add the necessary documents to the bookmarking. For example, carriers who have a contract with Neles are K&N Air, DHL Global Forwarding (DGF), and DHL Express and Economy.

##### Infor M3

According to ERP Focus (s.a.), Infor M3 is an ERP software system for national and international manufacturers, distributors, and after-sales service providers. It uses cutting-edge technology to deliver an excellent user experience and sophisticated analytics. Software features are for example billing, order and project management, sales, purchasing and shipping, and distribution. Neles uses all of these features on daily basis.

### **SharePoint**

Microsoft SharePoint is a cloud-based tool for sharing and managing material, knowledge, and applications (Microsoft 365, 2021). SharePoint's dynamic and productivity-enhancing team sites help each team work together more effectively. There, users may provide files, archive documents, and check instructions and resources. On daily basis, the MRO OM team uses SharePoint, for example, to provide documents, check on work queues, update status on high-priced orders, check on instructions, and archive shipping documents.

### **Quickbase**

Quickbase is an application development platform that bridges the gap between business and IT teams by allowing problem solvers of all technical backgrounds to collaborate to build a safe, robust, and long-lasting application ecosystem (QuickBase). GDC is a QuickBase leased software created in case company. It offers several tools, each with its unique function. Lines with specific status, order responsibility, project name, and general status may be found by the user.

The GDC has also sub-applications which are divided based on the task that needs to be completed. In CO Management, an action item may be created for a certain order, which is requests to other users or teams to do the requested tasks. It is also possible to make prioritization and revision requests for the order. In the Sales Portal, Saudi Plant can make requests about the situation of the order and shipping requests, in which Saudi Plant provide the MRO OM team with shipping permissions and instructions for shipping packed orders.



Table 2: Systems used in Neles and its functions

System	Systems functions
NTG	Booking shipments, follow-up shipments status.
M3	Order management, shipping, and distribution.
SharePoint	Archiving documents, check work queues, search instructions
Sales Portal	Conversations between teams and Saudi Plant, order follow up, receiving shipping permissions.

### 2.2.5 Necessary documentation in exporting

This chapter describes the documents required for transmission. The documents that the MRO OM team must submit with the order, in this case, are the commercial invoice, packing list, and loading list. The reason for the need of these documents is the bilateral trade between EU and non-EU countries. (European commission, s.a.).

The commercial invoice is a legal bill for goods sent by the seller to the buyer that defines the products sold as well as the payment required from the consumer. Customs uses the commercial invoice as one of the primary documents in establishing customs charges. (International Trade Administration, s.a.) The commercial invoice needs to contain information for example information of exporter and importer, quantity, and measures of packages, what packages includes and customs tariff on the contents. As the trade happens between factories of the same organization, the commercial invoice is used in export and import of goods. (Laivauskäsikirja, s.a.)

The packing list contains the amount, description, type and quantity of packaging, total net weight and weight (in kilograms), markings and measurements, as well as the seller, buyer, consignor, invoice number, date of shipment, method of transport, and carrier. The packing list can be used as a relevant document. It is not a substitute for a commercial bill. Because customs authorities may check the shipment using the packing list, the invoice must match the information on the packing list. (International Trade Administration, s.a.)

The loading list is a document that lists all goods are loaded. The document serves as a vital for the shipping department in charge of loading the shipment upon its arrival. The document contains information on the order and packaging, including which forwarder is scheduled for pickup, the departure date, and the shipments M3 reference. The loading list contains information about the products that have been booked to the shipping number.

Table 3: Documents used in FtF deliveries

<b>Commercial invoice</b>	<b>Packing list</b>	<b>Loading list</b>
Commercial information	Package information	Order and package information
Exporter and importer information	Exporter and consignee information	Forwarder and pickup information
Shipping information	Freight forwarder information	M3 shipment reference

### 3 Project

This is the empirical part of the thesis that discusses the development project, its design, completion, and potential development ideas for the future. The project started in spring 2021 with a discussion between me, the team, and the team manager. The aim was to complete the project beginning of summer, but unfortunately, the summer holiday season and big workload stretched the completion of the project. While this development part of the process for the thesis is complete, projects are coming up that will further develop this shipping process.

The chapter begins with an introduction to the case company, Neles, and its MRO OM team, whose primary responsibilities include monitoring order status and customer support with the help of sales teams in various countries, booking orders, stamping, and archiving documents. Following the presentation, the project's structure, and management processes, as well as the original delivery process that existed before the project, will be discussed, along with an outline of the difficulties that occur and an analysis of how they influence the shipping process. The following is a summary of the first challenges encountered by the MRO OM team and the Saudi Plant, as well as the negative implications of those issues. Following that, I'll describe the weekly shipment procedure and the benefits it provides. I'll also go through the weekly shipments to Saudi Plant shipping instructions for the MRO OM team. Finally, will be discussed about potential future enhancements to the process and how they could influence it.

#### 3.1 Case company

Neles provides valves and valve automation technology and services to all process sectors with over 65 years of experience. Neles has customers in 115 countries and nearly 2 900 employees globally. In 2020 the company's sales were 576 million euros. Valves are used in pulp and bioproduct mills, as well as oil refineries, to maintain the safety of process facilities and to control and evaluate process flows. They are necessary because of their essential role in the productivity and safety of process facilities.

*"Neles is a focused world-class flow control company striving to deliver the most reliable customer experience to the process industries. With our team of nearly 3000 professionals worldwide, industry leading technologies and service capabilities we have a solid foundation to build on. Reliability is inbuilt in our values and culture."* Olli Isotalo, President and CEO, Neles.

I received the request from the MRO OM team manager of the organization, that improvement in the Middle East export process is needed. There are several difficulties in the export procedure. Even though much progress has been achieved, there are still improvements that need to be addressed. Team occasionally receives extensive and difficult shipping instructions from Saudi Plant. Complicated instructions need time from the MRO OM team to understand and follow the instructions correctly. With a heavy workload, difficult instructions divert time away from other orders and requests, potentially risking the entire delivery process.

At first, I planned to write the thesis of the whole Middle East export process management and to find areas of the process which need improvement or to be abandoned from the process. After getting acquainted with the process and identifying the problems, I decided to focus my topic on improving the efficiency of the export process to the Neles Saudi Arabia Plant and to analyze the current measures that already have been done. Because FtF orders are critical, and shipping permits readily mix in with other Middle Eastern shipping permissions, the subject area was considered as suitable for this project.

### **3.2 Project management methods and report structure**

This thesis was created as project-based development work. A project development methodology, focus group conversation, and observation was used to acquire data. I chose action research as my method of development work because it focuses on creating studied knowledge and bringing about practical change (Bister, 2019, 37). The shipping process is an example of action research, which describes and analyzes the current situation while looking for potential issue areas. The next part explains a goal-oriented submission process based on theory, interviews with colleagues, and personal observations. Finally, potential future enhancements of the process that might improve the process flow are explored. The empirical part, Chapter 3, identifies and improves the defects in the process, is based on Theoretical Chapter 2, which discusses the process, why it needs improvement, and how to improve it. The process development process is represented in Figure 2.

The thesis aimed to develop a FtF order sending process for Neles Saudi Plant. The sub-goal was to find out the problem areas of the process, how they affect the process and how the development of problems would affect the smoothness of the process. In addition, the sub-goal was to identify possible future development points for the process as well as what the ideal process might look like. The development

process began in the spring of 2021 with a review of the current and targeted status of the shipping process. The shipping process was defined from receiving a shipping request until delivery according to delivery. The genuine status of the spring 2021 process was originally examined, followed by a discussion of the issue areas between the process and MRO OM and the sales team, as well as the influence of the problem areas on the process's smoothness. With this, the outputs of the development process, the weekly departure, and its shipping instructions are presented. The outputs were able to bring solutions to the problems found. Based on the developed process, further problem areas are identified that could be developed in the future. The project was underway from April to August 2021. The Neles MRO OM team and the Saudi Plant team participated in the project. As a result of the thesis, the results of the project are analyzed and possible future development ideas are highlighted. As part of the thesis procedure, figures representing the process stages at the start and outline of the project, as well as an image of the ideal process, were created. In addition, as a result of the development project, a delivery instruction was prepared for the MRO OM team for weekly FtF orders.

Work in development is commonly called a procedure. Seeing the process makes it easy to work more systematically and check what needs to be done at each stage before moving on to the next. Identifying impediments and defining goals is the first step in the development process. Following the implementation, the plan, an assessment of the success of the improvements is made. (Ojasalo, Moilanen and Ritalahti, 2020, chapter 2.2.)

For a lengthy moment, the MRO OM team at Neles has felt the need to improve the process. Daily tracking of shipping requests, looking for them in the Sales Portal's Shipping requests, and ordering independently by various team members has been time-consuming and at times confusing. As a result, the need for process development and goal mapping is essential. The development of the submission process, the identification of problems, and establish of potential future development ideas were the topic and goal of this thesis. Areas for improvement are identified by describing the initial process that provided an overall picture of the situation. This description is based on the theory of process improvement (chapter 2.4), in which the first step is to go through the current state and analyze it to determine whether the process needs to be developed or whether a completely new process is needed.

Reviewing the process in the spring of 2021, these issues, shown in Table 4, surfaced. Information was gathered through observation and interviewing MRO OM team members with previous experience of the Middle East delivery process. During the project, meetings were also held from time to time with the participation of Neles Finland and Neles Saudi staff. It was essential to provide a solution that would allow the process to be created from all issue areas, expedite the shipping process, and reduce unnecessary task phases.

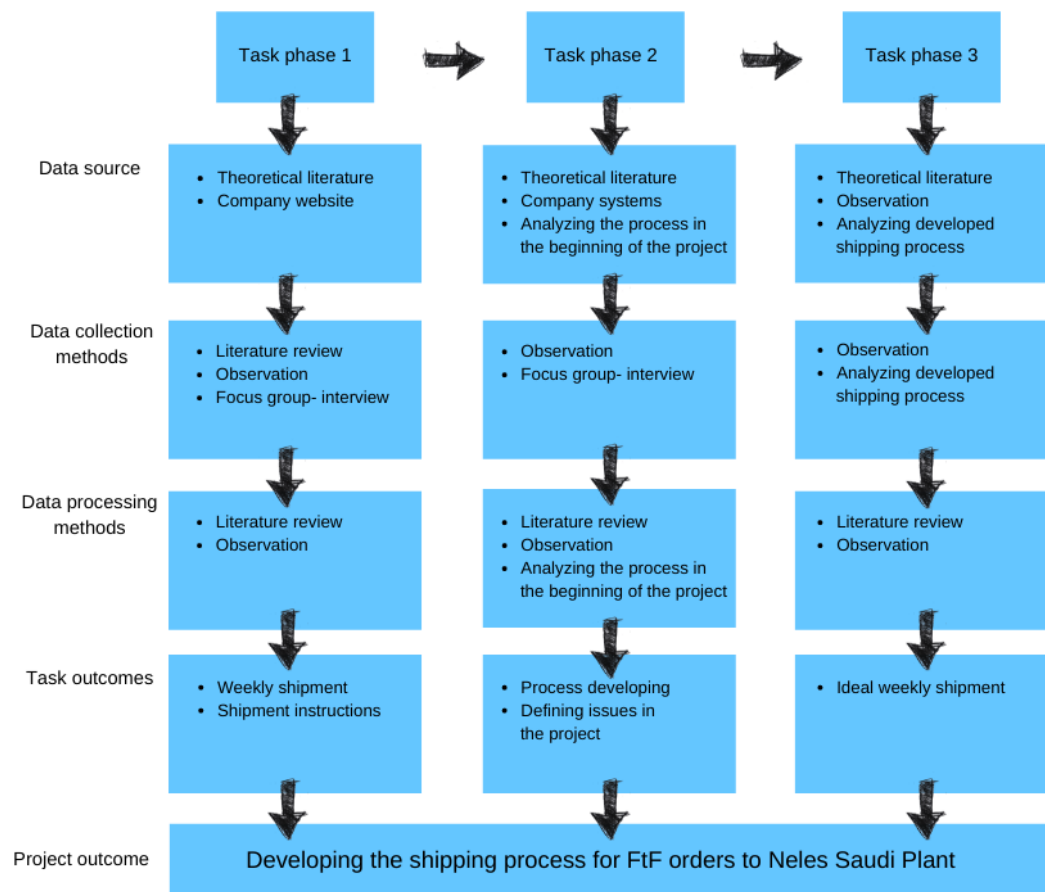


Figure 6: Project management methods (based on Haaga-Helia thesis basis)

### 3.3 Examination of the initial situation of the process

The identification of development aims, and the comprehension of relevant challenges is the beginning point for research development (Ojasalo, Moilanen, and Ritalahti, 2015, 23). The purpose of this thesis is to develop and renew the process. The information was collected through independent observation and an interview with members of the MRO OM team who had previous experience with the Middle East shipping process. The interview was held as a focus group, which helps to create ideas for development. As in addition to observation, it is beneficial to get information and awareness about the condition of the process from the work

community (Ojasalo, Moilanen and Ritalahti, 2015, 25).

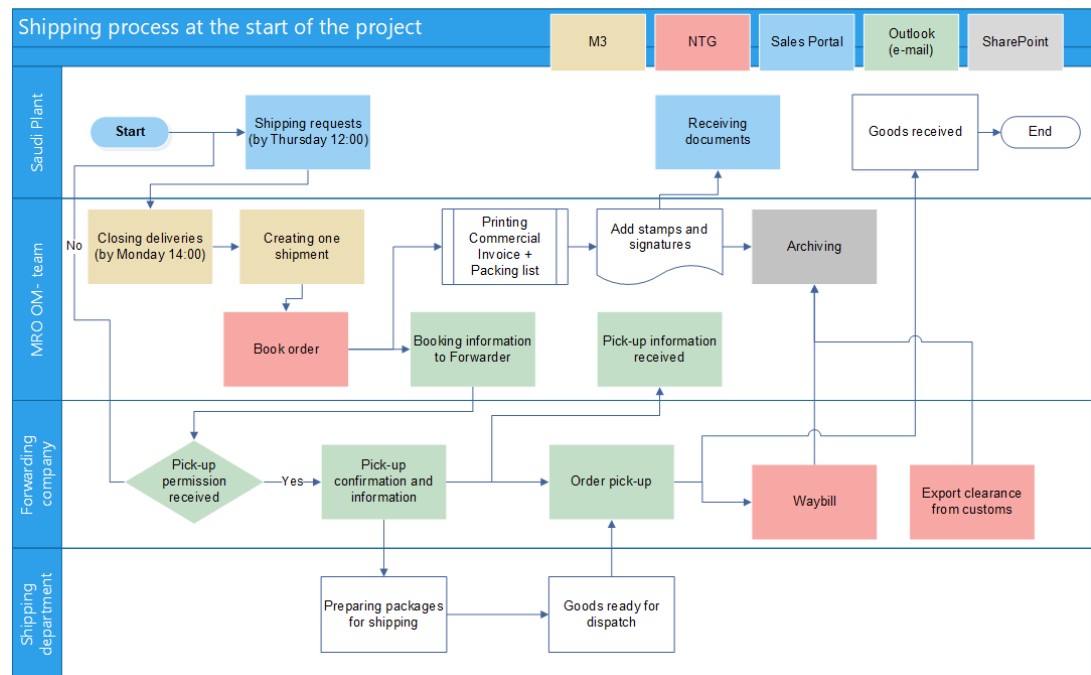


Figure 7: Original shipping process to Neles Saudi Plant (based on Berman, 2014)

I have generated flowcharts with MS Visio, utilizing the symbols presented by Berman (2014), which are used to draw the process map. I have used Terminator, process step, and link to other process symbols from Figure 2. In flowcharts, I show different steps in different colours, which refer to the program used during the process step. White represents a phase when the software is not in use.

The process begins with the shipping request, which the MRO OM team receives from the Saudi Plant team in the Sales Portal. A request is shipping approval for an order and includes shipping instructions and information, such as which forwarding organization will handle the shipment. Orders to Saudi Plant require a shipping request because partial deliveries are not permitted since Saudi Plant requires orders to be shipped as a whole.

After receiving shipping request, the MRO OM specialist will book the order in the M3 software. Before booking the shipment, the right address and client contact details, as well as the relevant delivery method and conditions, are checked. When all of the information is correct, the shipment can be arranged by the shipment number. Invoices and packing lists must be printed, signed, and stamped after each shipment is created. The documents are supplied to the Saudi Plant and archived in Neles' SharePoint.

Next, the shipment will be triggered to transfer from the M3 to the NTG system, and the loading list printed. The MRO OM specialist must ensure that all shipping information is valid in the NTG system and select the optimum day for collection, which is typically two to three days. NTG will also show the best possible next day for pick-up. When the booking is confirmed, the specialist will use the NTG's reference to notify the forwarder that the order is available for pick-up.

As sending an email to the forwarder, it's important to add the shipping department as cc, so they will also receive the information and start preparing the shipment for dispatch. If the dispatch department does not get all of the information, it will be unable to release the package for dispatch when the forwarder arrives to pick up the order. As the forwarder answers to email and provides us and the dispatch department with pick-up information, the order will be waiting for pick-up day at the dispatch department. When the order is picked up, the shipping process is complete for the MRO OM team.

### **3.4 Understanding issues of the shipping process**

When it comes to process improvement (figure 3), the issue must first be defined: what is problematic or where is there an opportunity for development (Berman, 2014, chapter 6). I noted that the operating hours of the Finnish and Saudi Arabian offices differed, which had an impact on product delivery. The Saudi Plant office is open Sunday through Thursday, while the Finnish office is open Monday through Friday. On Sundays, we occasionally receive highly essential shipment requests, although the Finnish office is closed, which creates a delay in order delivery and is reflected in the MRO OM team's statics of responding to shipping requests. We are unable to adjust the office hours, although this issue is detailed in the chapter on process improvement.

Each order has its shipment number and must be booked separately in NTG in this shipping method, which causes a significant workload for the MRO OM professionals as we proceed through the process. When many orders are booked for shipping at the same time, there is a considerable risk of order references and documentation being mixed up, which can lead to confusion and time loss for the forwarder.



Another problem was discovered while processing shipment requests for work. The most significant element of the process to deliver the order to the Neles Saudi Plant is the shipping request. The shipping approval from the Saudi Plant is necessary for orders sent to Neles Saudi Arabia. When shipping permission is obtained, it gets mixed up with other shipment requests and either takes a long time to handle or can easily be taken by multiple individuals by accident if the first person who took the request forgot to sign it. This may result in the MRO OM staff having to undertake extra work and wasting time that might be used for another order booking or shipment request.

Aside from these difficulties, additional potential areas for improvement were discovered and will be investigated more in the future. The Saudi Plant requires the MRO OM team to sign and stamp papers before they are distributed to the sales or client. Invoices, waybills, and export approval must all be archived. These duties are taking up time that may be better spent on other tasks. These will be covered in detail in Chapter 3.7.

Table 4: Defining overall issues

<u>Issue</u>	<u>Negative affect</u>	<u>Development time</u>
Opening hours	<ul style="list-style-type: none"> <li>• Delay in shipping orders</li> <li>• Long respond lead in statics</li> </ul>	During the project
Shipping request	<ul style="list-style-type: none"> <li>• Mixing up with other requests</li> <li>• Possibility for unnecessary extra work</li> </ul>	During the project
Booking shipments separately	<ul style="list-style-type: none"> <li>• Big workload with documents</li> <li>• Risk of order references and documents</li> </ul>	During the project
Archiving documents	<ul style="list-style-type: none"> <li>• Documents in different places</li> <li>• Time waste</li> </ul>	In the future

### 3.5 Defining and developing the process

The MRO OM team attempted to retain Neles Saudi Plant's orders as our work queue in the spring of 2021. I was in charge of the work queue so that I could gain a good understanding of the process and search for ways to improve it. I oversaw

follow-up and sending orders during the trial period. The project was partially effective, but daily monitoring consumed time and resources that might have been spent on other tasks. After much thought and several meetings and conversations, we decided to test out a weekly departure, which turned out to be a viable option. This solution has an impact on delivery hours and shipping requests issues which are visualized in table 6. Beside weekly departure, the delivery terms for future orders have been agreed to change from FCA to CPT, which means the free carrier account number is not needed as Neles is responsible for the shipment.

The shipping of orders once or twice a week through a designated freight forwarder is referred to as weekly departure. For the Saudi Plant, I recommended a weekly departure experiment to see whether it would give a solution to the most pressing difficulties. Following the parties' agreement, I started arranging the weekly departure into a work queue by going over the method with participants. First, I identified when the departure department would be available to pick up orders from the forwarder organization. After receiving the information, I contacted the freight forwarder and enquired about the possibility of a weekly departure through them. Finally, after we decided on the weekly departure dates, I contacted our NTG project coordinator, who was able to alter the M3 program settings such that the order packing would've been scheduled so the Saudi Plant would have time to receive shipment permission before the weekly departure.

### 3.6 Presenting weekly departure process

The next step of the project was to set up a schedule for the weekly shipment. As shown in Table 5, I was able to decide the exact dates that must be met for the weekly departure to be successful. It has been agreed with Saudi Neles Plant that a delivery request must be submitted every Thursday, so the order can be shipped on the pick-up date next week.

Table 5: HKI Plant Weekly Shipment Schedule

Destination	Contract carrier	Shipping request deadline	Shipment booking deadline	Pickup by Carrier
Saudi Arabia, Dammam	Nominated forwarder	Thursday 12.00	Monday 14.00	Tuesday 14.00

This is the best solution for the issues with opening hours between offices as it manages the MRO OM team to go through the shipments on time. If critical

shipment permissions will be received after the deadline, it is possible to book shipment separately outside of the weekly shipment. This development also creates a solution for the issues with shipping requests. As seen in Table 4, there have been issues with mixing up with requests if more than one person works on the same request without adding their name as Task owner. Referral requests to Neles Saudi Plant are handled by one person with the weekly departure, avoiding confusion and unnecessary workload.

Table 6: Solutions for issues in shipping process

<u>Issue</u>	<u>Negative affect</u>	<u>Solutions</u>
Opening hours	<ul style="list-style-type: none"> <li>• Delay in shipping orders</li> <li>• Long respond lead in statics</li> </ul>	Weekly deadline for shipping permissions
Shipping request	<ul style="list-style-type: none"> <li>• Mixing up with other requests</li> <li>• Possibility for unnecessary extra work</li> </ul>	Work queue for by one person
Booking shipments separately	<ul style="list-style-type: none"> <li>• Big workload with documents</li> <li>• Risk of order references and documents</li> </ul>	Booking orders in one shipment

### 3.7 Taking the developed process onto action

Although the pattern alterations are minor, they have a significant influence in practice. Setting a weekly deadline for the Saudi Plant to provide us with delivery requests and instructions to avoid issues with office hours. We also prevent difficulties with orders that are sitting in stock waiting for a shipping request because if we identify an order that is ready to ship, we request a shipping request for the following weekly shipment from the Saudi Plant.

M3 now has an address code that automatically enters the correct address and contact information. This ensures that each order's details are correct, and it saves the expert time by removing the need to double-check the address information. Orders booked in M3 to one shipment free up time for other tasks because the documentation does not need to be archived separately. Furthermore, because the order is booked in M3 for a single shipment, just one shipment number needs to be triggered to the NTG program.

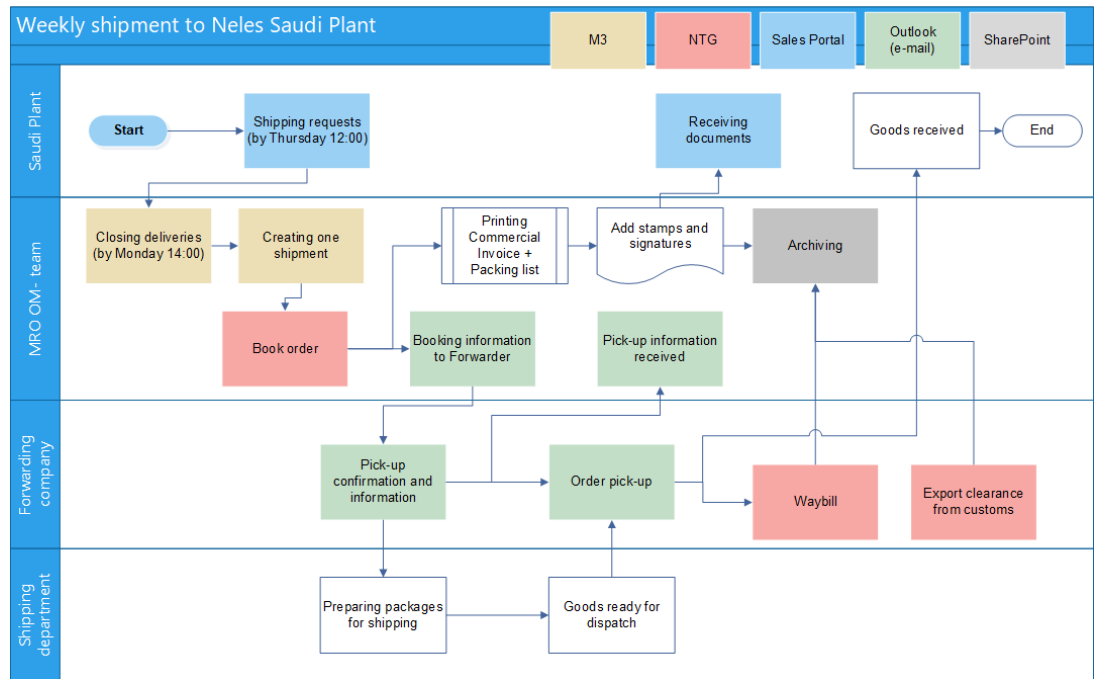


Figure 8: Weekly shipment for Neles Saudi Plant

The effect can also be seen in shipment requests. For items delivered to the Neles Saudi Plant, the Saudi Plant team can offer unambiguous shipping authorization and instructions. Because the Saudi Plant is not required to submit delivery documentation for these orders, we may avoid the risk of receiving false documents and waiting for the appropriate documentation.

### 3.8 The pursuit of an ideal process

Although the weekly departure has proven to be a great process improvement, there are still certain challenges affecting the shipping process. As in Theory of Constraints (chapter 2.1.5), step five encourages to return to step 1 if the restriction is still deficient. This chapter has identified those shortcomings and the Theory of constraints is used as a basis, as the company is an industry sector and potential frameworks and constraints need to be identified on an ongoing basis, including the MRO OM side.

The first issue, which was mentioned in Table 4, is the documents that are necessary for the customs. Saudi Neles Plant has always required the MRO OM team to sign and stamp commercial invoices and packing lists manually, which is a time-consuming job that has already been improved. At the start of the COVID-19 pandemic at the beginning of 2020, employees were recommended for remote work, leaving the office with a minimal number of people. During spring 2020 MO

MRO OM team and Saudi Plant agreed that instead of stamping and signing manually, they accepted digital signatures as well as stamps. When there was no longer a need to print, sign, stamp, and scan copies of papers individually and send them by courier, the booking shipments became more efficient. In the future, it could be considered whether a signature and stamps are necessary, as no authority requires it.

The second issue, which has already been identified and rectified, is the creation of a separate filter for Saudi Arabia in Sales Portal shipping requests to prevent mixing up with other shipping requests. At the outset of the project, I asked whether it was feasible to develop a distinct filter for the Neles Saudi Plant so that all FtF orders could be inspected more easily. Our MRO OM specialists identified the filter needed towards the end of the project and moved it ahead. The filter is now being developed, and when it is ready to debut in the process, it will have a significant influence on weekly shipping filtering as well as efficiency.

The archiving of shipping records has been recognized as the final issue. The issue is that Neles uses a variety of platforms, and the documentation is archived on SharePoint. Each shipment-related document, invoice, packing, and loading list, as well as confirmation of exit, must be dragged and dropped into SharePoint separately. The goal is to centralize shipping information and documentation. The NTG system would then be modified such that each document is saved in the transmission data. This would eliminate unnecessary “waste”, which would bring more clarity to the process and ensure that all documents are archived. This change would also benefit the Saudi Plant, as they would be able to obtain all documentation at one location instead of having to queue for signed and stamped documents to be attached in shipping requests.

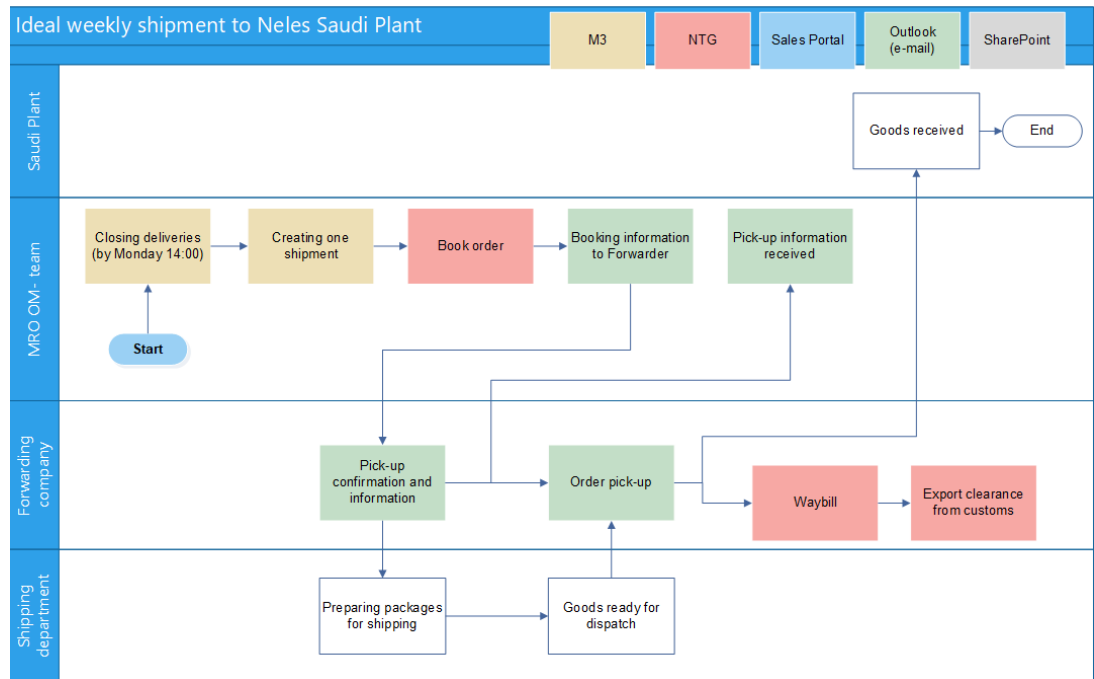


Figure 9: Ideal weekly shipment process for Neles Saudi Plant

The optimal shipping process for the Neles Saudi plant, as shown in the procedure (figure 7), has no subprocess stages if there is an improvement in obtaining signed and stamped papers from the Saudi Plant and being able to archive documents in NTG. Removing the partial delivery prohibition and switching the delivery method from FCA to CPT would allow finished order lines to be shipped instantly, eliminating the need to wait for a shipment request or freight payer account number. With these enhancements, it would be able to take advantage of system constraints (chapter 2.5) and continue the process improvement process by monitoring and repairing the process that has already been improved.

### 3.9 Shipping instructions for the weekly shipment

On July 23, 2021, testing of weekly shipments started. After the testing phase, I submitted shipping instructions for the weekly departure to the MRO OM team. The team manager approved the shipping instructions, and procedure is now part of the thesis' functional section. The original shipping instruction document is in attachments.

The instructions' objective is to offer complete information on the process phases so that each member of the MRO OM team may work in a queue independently. This guide will also provide rapid access to the job queue for prospective new workers. The instructions have been simplified to the greatest extent feasible, and each step

has been thoroughly reviewed. If the wording of the instructions is confusing to the employee, the procedures are also presented graphically. Each piece of software has its part so that the procedure may be followed in the correct order. The guide is based on similar shipping instructions to other countries found on the MRO OM team's SharePoint.

## **4 Discussion**

This chapter goes through the final reflection. The reflection contains an evaluation of the thesis's results, dependability, and ethics, as well as recommendations for future study. Finally, I reflect on the thesis process from a learning perspective.

### **4.1 Overview**

The project started with the mapping of needs with the MRO OM team manager in the spring of 2021. The general picture of the Middle East's future was discussed, and in the end, I decided to focus my thesis on developing the FtF shipping process in Neles, Saudi Arabia. An assignment agreement was completed in March 2021 by me, the thesis adviser, and the manager of the Neles Finland MRO OM team. The process improvement project started in the spring and ran through the summer. Due to schedule conflicts and summer vacations, the project took a long time to complete. With the manager's help, I planned the project and looked for opportunities for improvement.

The original shipping process of the order is where the whole project was started from. I was going through the process on a practical level through work and searched the issues in the process. I created the flowchart based on figure 2. The whole process was covered, from the shipping request to how orders are booked and what documentation are required for delivery. The process between the MRO OM team and the forwarder organization, as well as the challenges encountered during shipment bookings, were all detailed. Finally, the changes made to the process and their impact on the problems are described in chapter 3.4.

The MRO OM team manager and the Saudi Plant collaborated on the development. Every month, we had a meeting to review the present situation and how it could be improved. Eventually, was decided to ship manufacturing orders weekly to decrease the effort for both teams. Due to personnel taking summer vacations at different periods, the process' development stretched until August 2021. During that time was attempted to move FtF orders into a single work queue, allowing one of the team members to monitor the order status and work to prevent possible delays. I think the experiment proved successful, although no changes to the experiment could be observed for the rest of the team yet.



Inefficiency and, as a result, delays in sending orders are regarded as the most serious issue. This issue was made up of minor issues that arise at various phases of the procedure. All orders leaving for Neles Saudi Plant require a shipping permit and without it, the MRO OM team will not be able to book an order for dispatch. The different opening hours of offices have at times contributed to delays in sending orders when the receipt of replies or a request for the shipment has not coincided with office hours. Because the operating hours could not have been altered, a solution that satisfied both the MRO OM and Saudi Plant teams had to be found.

Another problem identified was the booking each order to a separate shipment number, which meant that each shipment also had to be triggered separately to NTG and also booked there separately. Also booking each order to a different shipment number meant that each shipment had to be triggered and booked separately at NTG. This has been proven to result in extensive work for the MRO OM team, as well as the possibility of misunderstanding documentation and order references, which would be a waste of time for both the MRO OM team and the forwarding company.

While processing shipping requests, the following issue occurred. Once shipping permission is received, it either interferes with other posting requests and takes a long time to complete, or there is a possibility that more employees may add the request to their queue, causing the MRO OM team to have additional work to do.

#### **4.2 Process improvement and defining future improvement areas**

After several meetings between the MRO OM team and the Saudi Plant employees, the teams were able to agree on a weekly departure, and we were able to convince the Saudi Plant of the benefits of using it. This would imply sending orders weighing more than 200kg once a week, necessitating deadlines that were acceptable not just to the parties but also to the forwarding company. (Chapter 3.5.) In August 2021, the weekly departure process was launched. Before starting the weekly departure, I was in contact with the Saudi Plant, the shipping company, the dispatch supervisor, and the software manager so that all areas were on time and the schedule was suitable for everyone. As all was done remotely due to COVID-19, I had to be in contact with every department and person via email or via Teams. This caused difficulties for the project when answers had to be expected, and some answers could have been obtained more quickly in person at the office.

When the weekly departure began at the end of August, the changes were immediately noticeable. The parties' deadlines for the shipment permit as well as the posting of the shipments ensured that the orders were left on time and when requested. Changes in the M3 software save the booking time when the address information is ready and backed up. Also, booking orders for the same shipment brought time savings and increased efficiency when documents are centralized on a single reference. When the MRO OM team takes care of the necessary paperwork at the weekly departure, both parties avoid the risk of documentation interference. Keeping the weekly departure as a separate work queue also ensures that Neles Saudi Plant's shipping requests are handled only by the person in the job queue, allowing other MRO OM team members to redirect their work effort to other jobs. I think these changes are significant and will increase the efficiency of the team. Statistically, changes can be analyzed for shipping requests, how many there are, and how quickly the team responds to them. The weekly shipment has been in use for 2 months, which is still too short a time to analyze the function.

I have produced a flowchart of the spring 2021 situation for the thesis as well for weekly shipment. By comparing them, you can see what kind of changes have been made to the process. Although the changes are very small visually, their significance has become apparent even in the short term.

Furthermore, I have provided the MRO OM team with shipping instructions for the weekly departure so that other members of the team may familiarize themselves with them and, in the future, they can take the work queue at their responsibility with the instructions and my guidance. The output has been approved by a member of the MRO OM team as well as the Manager, and it has been saved to the instruction database. The instruction was created using Figure 6 and is consistent with previous instructions from the team. The instructions must be consistent so that clarity and consistency are maintained. The importance of the instructions is apparent throughout the work. The responsibility of the work queue changes at a rapid rate and occasionally important details are forgotten. In my personal experience, I've discovered that instructions are required nearly every day at work.

The further development proposals presented in the report have been considered to be partially feasible within the company in the future. The most important development would be removing the partial delivery prohibition. It would allow for the immediate delivery of finished order lines, eliminating the need to wait for a shipping request.

Second area of improvement would be adding a Neles Saudi Plant filter to the Sales Portal. Filtering FtF orders saves time by eliminating the need to search for shipment requests among other Middle Eastern requests. This is essentially a job-saving modification that will make it easier to handle each shipping request. This change is necessary because, compared to other weekly departures, Neles Saudi Plant shipment orders cannot be filtered in the same way via M3. M3 filtering works differently and it would be very complex to modify the operation of the system so that the filtering is consistent with other work queues.

Archiving is also one area where the need for development has been identified. Archiving documents separately is time-consuming and at times very confusing. The development goal would be to have archived in the same software from which orders are booked, i.e., NTG. This would ensure that every necessary document is archived in the right place and clarify the process. With the change, the Saudi Plant could also retrieve the necessary documents from one place without having to request and wait for them separately, as sales also have the right to use NTG and retrieve order information from there. For this development idea to succeed, the NTG equivalent must drive change. Modifying the system is a long process, so if this thing is to succeed, it will take a long time to develop.

The ideal process of shipping is also presented visually in this report (Figure 9), which can be compared to the currently developed process (Figure 8). The potential future developments of the shipping processes will help to maintain the continuous development and improvement of the process, as never any process is complete. However, to be able to develop the process, it must be remembered that the identification of the need for development must come from more than one person, and if the process is to be developed, there will be an encouragement and positive support from the team as well.

### **4.3 Evaluation of the reliability and validity of studies**

This subsection deals with the reliability and validity of research results. Reliability is related to the implementation of the study and the permanence of the results so that the results would not be inconsistent in the repeat study. Validity shows that the right things have been studied in the study, which is related to the design of the study, and that the material has been evaluated correctly. The researcher decides what questions to ask, who to interview, and how to handle the material in a Validity indicates that the correct items were researched in the study, which is connected to the study's design, and that the material was appropriately appraised. The

researcher chooses which questions to ask, who to interview, and how to handle the information in a project-based study. (Kananen, 2017, chapter 11.2-11.3.)

Criteria for the reliability of qualitative research include, for example, confirmability, non-contradiction, and documentation. Configurability improves reliability by using different sources. The more evidence gathered in support of a claim, the more reasonable the interpretation becomes. Non-contradiction means that no matter how many sources or how the material is evaluated, the conclusion remains the same. The interpretation must ensure that the researcher reaches the same conclusion as the author of the material. Adequate documentation must be able to justify the made solutions. (Kananen, 2017, chapter 11.3.)

This thesis was made into a project-based development project. Two research methodologies, focus group interview, and observation, were used to obtain data and information for the thesis. The interview of MRO OM team members, discussions with the supervisor, and own observation have brought confirmation to the project, as the perspective on things has not stood out regardless of the interviewee or observation. The interview with the team members has revealed problems that have developed in the sending of FtF orders as well as possibly also in shipments in the rest of the Middle East in the future. This also confirms the study of non-contradiction, as, despite different sources, the interpretation of the process situation was the same. I also used various sources for the theoretical part to ensure the method of process development.

I was able to check the changes in process development and their influence on the process itself mainly having sufficient documentation. For the thesis, I created three distinct illustrations depicting the shipping process: the initial scenario, the present position, and the hypothetical future situation if the creation of new development ideas continues. In addition to this, I have provided the MRO OM team with a shipping instruction that can verify that the current process has been reviewed understandably and clearly. This document is accepted by the team manager and will be used in the orientation of other employees.

#### **4.4 Assessing own learning**

From the end of 2020, my studies were at the point that there was left training and thesis. I opted to work on my thesis at a leisurely pace since it is difficult to generate a text and reflect on my learning in the project if I am rushed and under pressure. The goal was to complete the end of 2021 and before that to return the thesis. I was

able to do my thesis for my current permanent job, Neles, for the MRO OM team. My supervisor offered a variety of topics from which to select the development of the Middle East export process. The topic of the project was tentatively agreed in the spring of 2021, after which I received a limited topic in April so that I could tell as broadly and accurately as possible about the limited topic and the final topic was the development of the shipping process for Neles Finland factory orders for Neles Saudi Plant.

Due to a hard schedule and family obligations, the project's start had been delayed, making it more difficult to engage in the process at the outset. I had originally specified the project completion of the thesis as mid-September in the written project agreement, but for those reasons, I had to request an extension. However, I learned and tried to schedule the start of the project so that I could return my thesis in the fall of 2021. The original weekly timetable was not maintained, but with the aid of the MRO OM team manager, permitting a weekly writing day was a huge help.

At the start of the project, I had six months of experience with shipping processes on a general level, but I got to know the Middle East export process, the documents required, and the stamps and signatures in the spring of 2021. As the project proceeded the focus was narrowed to FtF orders, I was able to forward those orders to my work queue, allowing me to familiarize myself with the scenario and identify any gaps or problem areas that needed to be addressed. I gathered as much information as possible through the daily work, as engaging in the project required practical experience and insight into the situation. I had informed participants about the interview a week in advance and ensured that participants had the opportunity to participate based on a general calendar from which I could see if anyone else had anything else scheduled for a particular time.

During the project, I collected the implemented steps and their effects for the thesis. When the weekly submission process was officially launched, I also got to write about how the process has started and what impact it has had. I think that writing the report after the project was a good choice, as I was also able to point out what still needs to be developed in the developed process and how it might affect the operation of the process.

Throughout the process, I worked for Neles in the MRO OM team, where I received support and information from colleagues who already had experience with the process. I interviewed four team members. During the interview, I learned about their viewpoint on the current process, what modifications had been done and their

impact, and what they saw as the perfect approach. I developed my own opinion on the situation in the process and the need for improvement based on the interview and my observations, which was fairly like the rest of the team employees. Based on all of this, I drew a flowchart depicting the current state of the shipping process, which is detailed in Chapter 3.

This project did not require a lot of resources. My project equipment was my work computer, which the most used programs were M3, GDC (Quickbase), and Microsoft Office Word, Outlook, and Teams. Throughout Haaga-Helia VDI I managed to provide process flowcharts via MS Visio. We worked from home due to COVID-19, therefore I had to interact with my co-workers and managers via computer. I also got a chance to work on my thesis once a week, but unfortunately due to the big workload at work I was unable to seize the opportunity in spring, but I got to use this opportunity from August.

Once a month, we had a Teams meeting with my supervisor to discuss the situation and how I could proceed. We also held a Teams meeting once a month, which was attended by the MRO OM team, the Saudi Plant manager, employees, and the Vice President of Supply Centers, where we discussed the status, improvements, and development proposals. Besides June 15 interview with colleagues, I also was able to ask questions via email or Teams if something was unclear.

Overall, I'm thrilled to be a part of a project and to be able to report on it, especially because I've never worked on a similar project before. At the same time, I was able to finish my internship and stay on track for graduation, even though staying on track was initially tough.

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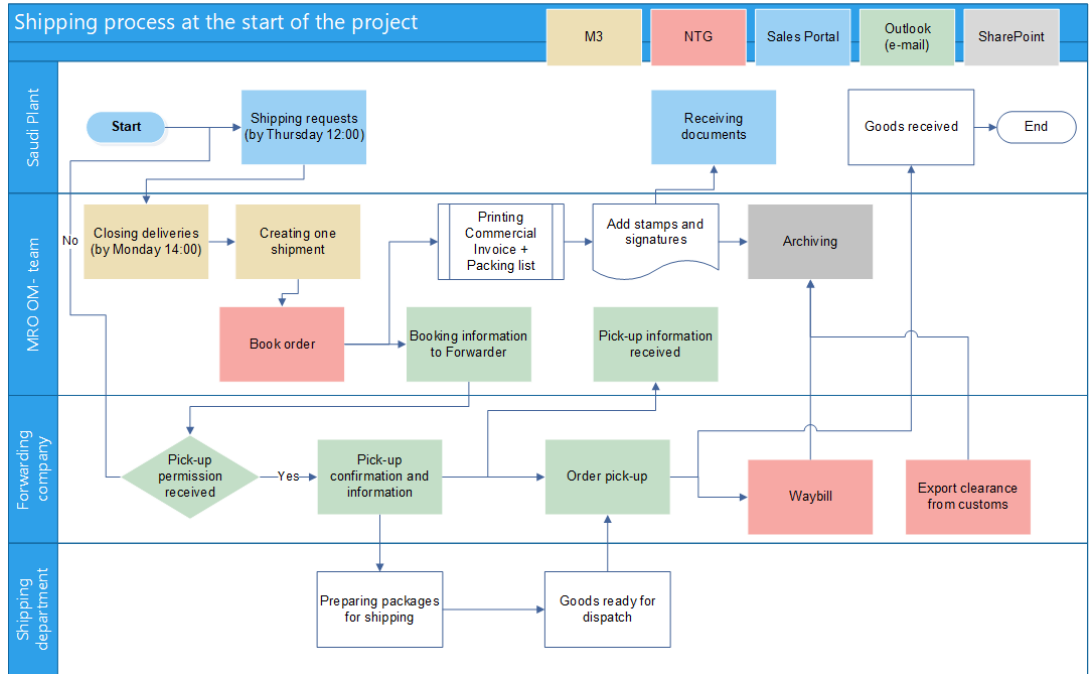
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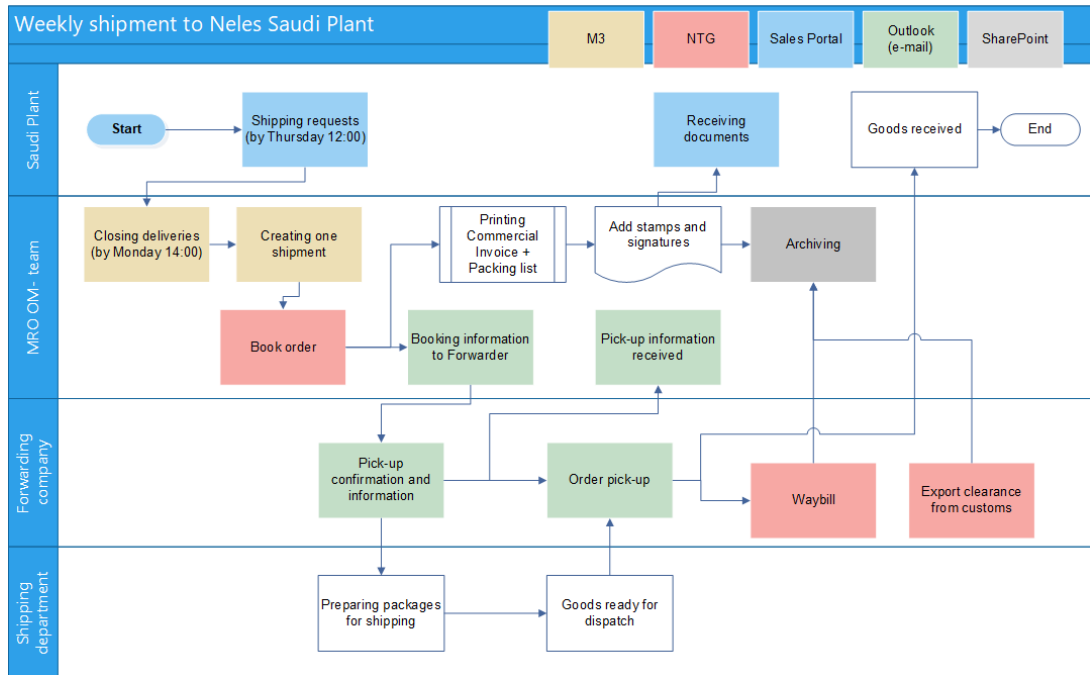
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## Appendices

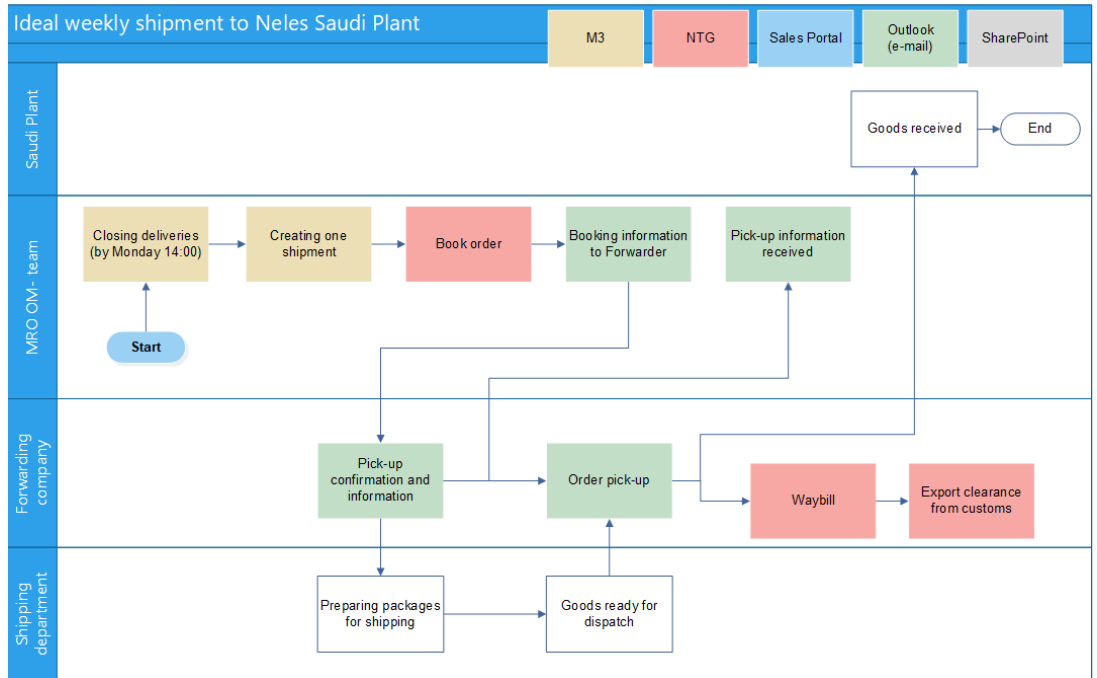
### Appendix 1. Original shipping process to Neles Saudi Plant



### Appendix 2. Weekly shipment for Neles Saudi Plant



### Appendix 3. Ideal weekly shipment process for Neles Saudi Plant



## Appendix 4. Neles Saudi Plant booking instructions for weekly shipments

### Neles Saudi Plant LLC Booking instructions for weekly shipments with K+N Air consolidated (AH0003/010)

DEADLINES:

**Monday** by 14.00 pm for Tuesday weekly shipment (14.00 pm)

**Where to get orders to be booked: Sales Portal, shipment requests**

**NOTE!** All packages under 200 kg will be booked to DHL Express!  
Over 200 kg according to instructions.

**Booking in OIS300 – delys via MWS410**

**go to Delivery toolbox:**

- combine delys in Delivery toolbox if they have same warehouse, same packing status and same address code
- **Change address code NELSA**
- delivery method **AH0003 / 010** (K+N Air)
- delivery term FCA Vantaa/ CPT Dammam
- Create shipment number **NOTE! Create own shipments for different delivery terms!**
- shipping date: next day
- add your own bookmark to the shipment
- MTG for planning st.23: **Yes**
- Consolidated? (0/1): tick the box

Forward agent	TEMP FORW	-
Transp equipmnt		
Responsible	VANVAHVEIR	
MTG for planning status 23	YES	
Consolidated? (0/1)	<input checked="" type="checkbox"/>	

Close delivery

Print packing list

**go to Delivery documents -> Generate Commercial invoice and print documents**

Delivery status	02-Alloc failed
Packing status	10-Not started

Dt gen	Prttd	Doc name	Pgm gen/pr	Pgm header	Pgm lines
		Package Label	MWS485		
		Pro forma invoi	MWS630		

Print Documents

**Generate Documents**

Doc header

**Add Original and Neles stamps to the packing lists and Commercial invoices + add digital signature to the documents.**

**Save printed Commercial invoices to the Desktop!**

### Printing loading lists and triggering in DRS100

When all orders are added to shipments, Open DRS100

- place of load: HELSINKI
- shipment numbers are added to the field -> Enter
- Print loading lists -> check from documents that all orders are included
- go to Related options from the shipment line, choose MTG Trigger TEI. Reply OK to the appearing (unnecessary) notification. Go to shipment line, choose again Related options -> MTG Trigger TEI -> OK.

Shipment	Dep dt	Route	Dep	Dmt	Depth	Pack grs w	Pack volum	Pkg	Dy	Dy	Los	All	His	Tracking refere
339608	200904	AH0019	1	A01	16:30	37		1	1	1	50	50		700

After triggering the following messages appear to your email:

From	Subject	Received*	Size
M3Metso@m...	Greetings from MEC	pe 4.9.2020 14.40	67 K

Waybill with TINR: 0001397065 and delivery number: 8311046 was sent to MTG. This TINR consists of 1 deliveries. Make sure

### Bookings in NTG

Open NTG, Plan & book. Open your own drafts.

Before booking the combined shipments, choose

- Origin Door to Destination Door
- Consignee – Neles Plant Saudi LLC
- K+N Air Consolidated
- Consignee pays
- Payer CAN: 1003885576 (if not working, change to Vantaa Outbound and inform K+N Air to change correct CAN reference)

SERVICE, LSP & PRICE

Ready for pickup

January 2021

Mo	Tu	We	Th	Fr	Sa	Su
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Delivery term

FCA Free Carrier

Vastaa

[Read more about Incoterms from IATA](#)

Transport scope

Origin Door to Destination Door  
Shipment will be delivered from pickup address to destination

Origin Door to Destination Port  
Shipment will be delivered from pickup address to destination port

Origin Port to Destination Door  
Shipment will be delivered from pickup port address to destination

Origin Port to Destination Port  
Shipment will be delivered from pickup port address to destination port

Booking succeeded = status Booked. Possible errors can be found from Plan and Book -> Errors list.

**Informing K+N Air and TOK Lähettämö about the booked shipments** (Monday by 14.00 pm for Tuesday's weekly shipment)

First combine all Commercial invoices and packing lists in your Desktop by using PDF Xchange editor. Name & save the combined invoices and packing lists for example: "375320\_documents"

Send Loading lists and combined shipment files to: [knfi.industrial-airexports@kuehne-nagel.com](mailto:knfi.industrial-airexports@kuehne-nagel.com) and for CC: [tok.lahettamo@neles.com](mailto:tok.lahettamo@neles.com).

Example:

**Subject:** K+N Air Neles Saudi Plant viikkolähtö ti 24.8 / Loading lists 375320/IV

Hei,

liitteenä loading list ja lähetyksen dokumentit Neles Saudi Plant viikkolähtöön. Buukkaus laitettu NTG:n kautta.

Noutoviitteemme: 375320

NTG viitteemme:

Lähetättehän noutorahtikirjan ja/tai CMR:n vähintään 24h ennen noutoa.

Vientiselvityksen viitteeksi pyydämme laittamaan 375320/IV

Ystävällisin Terveisin,

K+N Air will send pickup waybills before pickup, check that tok.lahettamo is as cc. If not, send waybills to TOK.

**Shipment Archive - save Commercial invoices**

Add shipment and documents to Shipment Archive.

K+N Air will do the export clearance.