

# Rüzgar Türbini Tedarik Kontratları ve Proje Yönetim Süreçleri

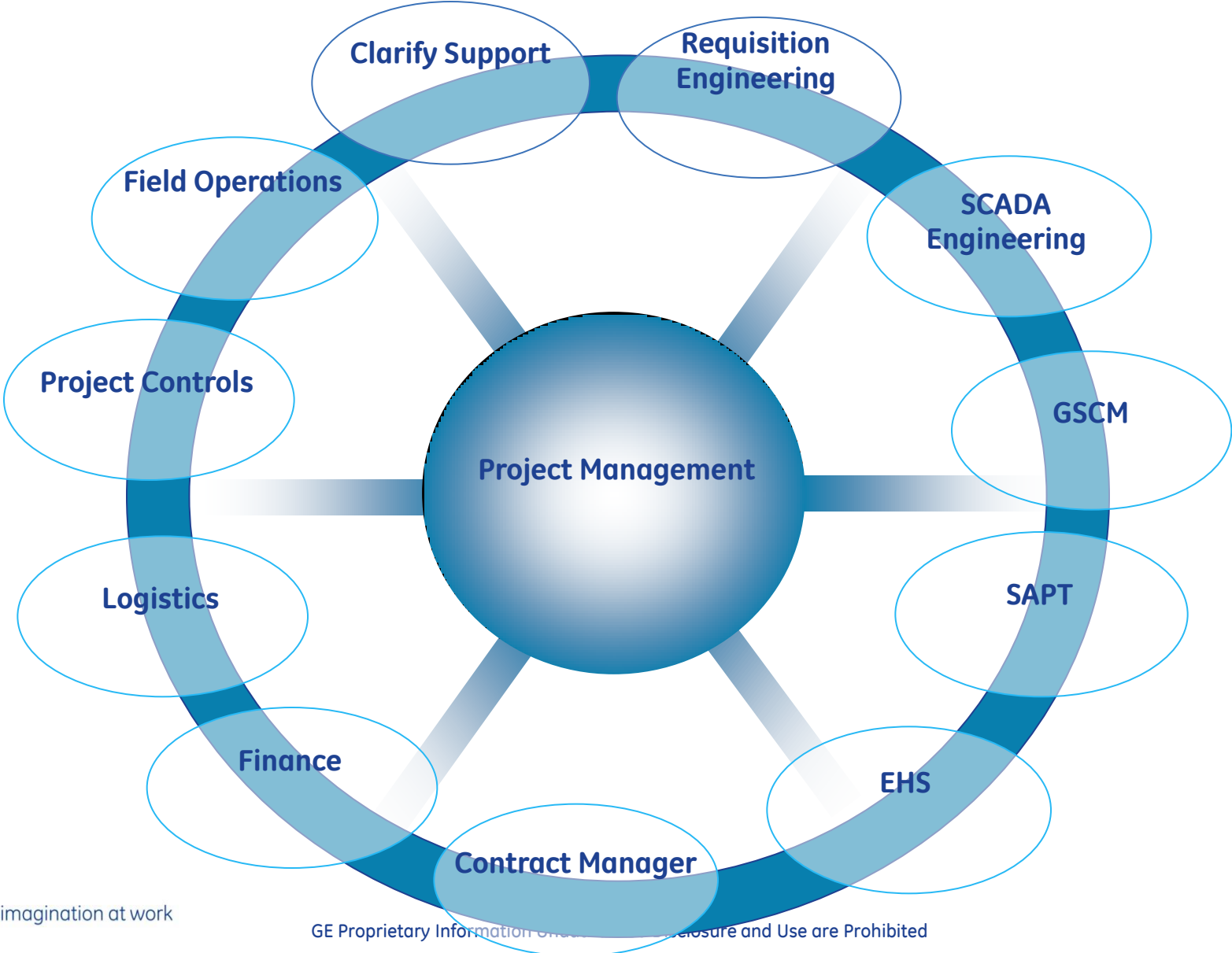


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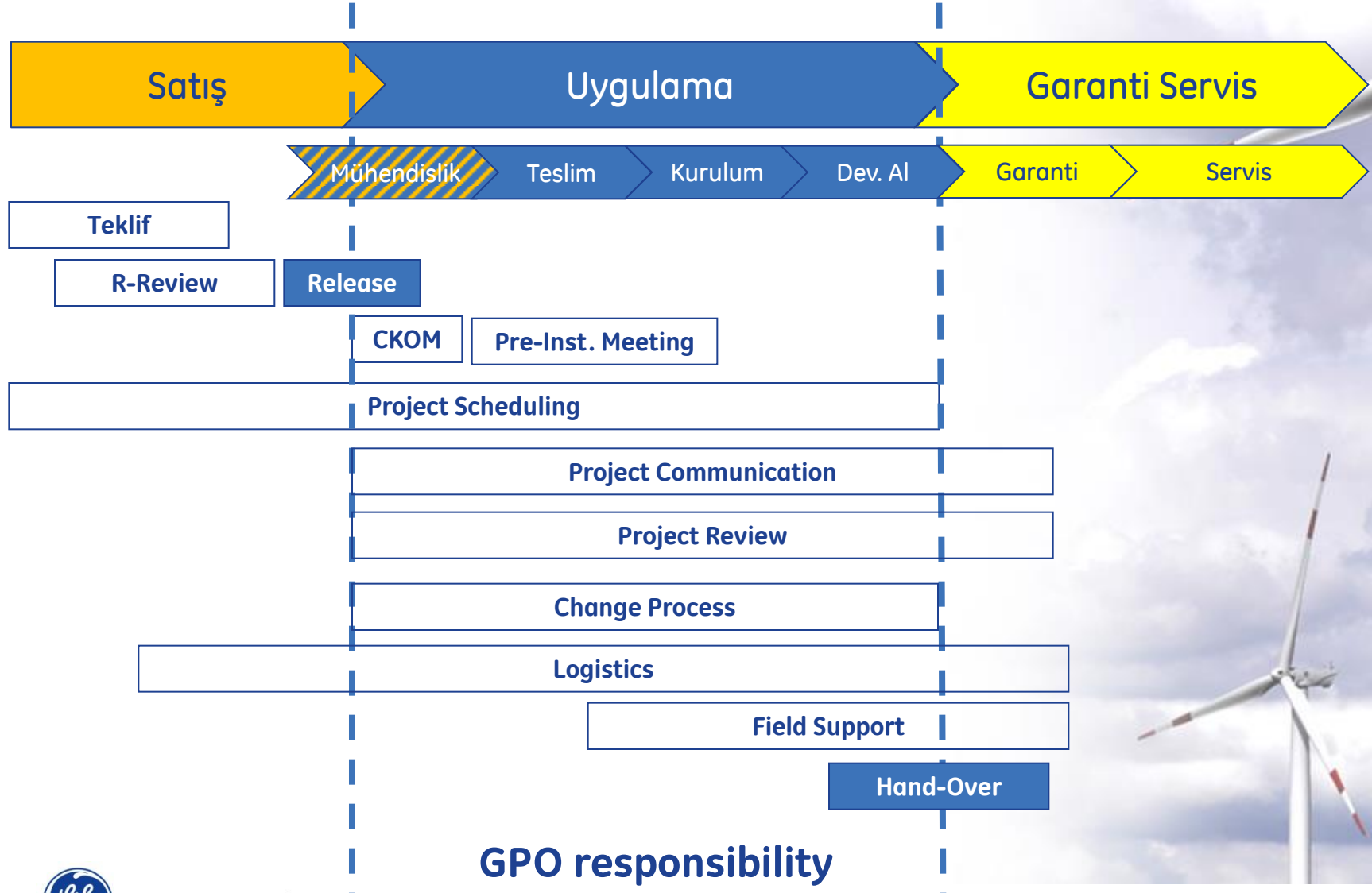
# İçerik

1. Tanışma
2. Proje Ekibi ve Proje Yaşam Dögüsü
3. Kontratlar
  - a) Kapsam
  - b) Sorumluluk Paylaşım Matrisi
4. İş Programı
  - a) Proje Takvimi
  - b) Alıcı ve Satıcı arasındaki arayüzler
5. Temel Kontrat Maddeleri
6. Proje Uygulama Süreçleri

# Proje Ekibi



# Rüzgar Projeleri Yaşam Döngüsü



**GPO responsibility**

# Kontratlar Kapsam



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# Kapsam

- Equipment Only: E
- Equipment and Logistics: EL
- Equipment & Commissioning: E&C
- Equipment Logistics Installation & Commissioning: ELI
- Foundation, Equipment, Installation & Commissioning
- EPC: Roads, Foundation, Equipment, BoP, Logistics, Installation & Commissioning

# Kontratlar Sorumluluk Paylaşım Matrisi

# Sorumluluk Paylaşım Matrisi

No.	Description	Responsibility	
		Buyer	Seller
<b>1</b>	<b>Site Preparation</b>		
1.1	Provide upon request project data as may be reasonably required by the Seller for the performance of its obligations.		
1.2	Provision of construction working area.		
1.3	Provision of a rotor assembly area.		
1.4	Provision of a site in-directs area.		
1.5	Provision of parking area at or near to Site.		
1.6	Design and construction of the Site infrastructure and Site layout.		
1.7	Site drainage for infrastructure works.		
1.8	Turbine Mechanical Loads Analysis ("MLA")		



No.	Description	Responsibility	
		Buyer	Seller
<b>2</b>	<b>Transportation</b>		
2.1	Conduct transportation access survey.		
2.2	Apply for and manage applicable transportation permits from relevant authorities.		
2.3	Transportation from Seller's production facilities to port of export (POE)		
2.4	Sea freight from POE to Port of Import (POI)		
2.5	Transportation from POI to Site		
2.6	Minor road modifications from port of import to Handover Point		
2.7	Major public road improvements required for Equipment transportation from the port of import to the Handover Point, such as road improvements and/or upgrades on public roads.		
2.8	Road modifications from Handover Point to Site		
2.9	Provide and maintain internal wind farm access roads and crane pads		
2.10	Provide stable access paths for Seller's teams to allow safely reaching the Units and foundations under all weather conditions.		

2.11	Towing vehicles in case of bad weather, Note: Slopes greater than 14% (8°) or more, require Seller's notification and approval.		
2.12	Coordination between individual transportation carriers.		
2.13	Provision of transport fixtures		
2.14	Reverse logistics for transportation fixtures		

No.	Description	Responsibility	
		Buyer	Seller
<b>3</b>	<b>Site Execution</b>		
3.1	Coordinate all activities at Site; assign a general Site representative/coordinator.		
3.2	Assign a Site/ Installation & Commissioning Manager		
3.3	Provide Site security at all times as deemed necessary by the Buyer.		
3.4	Provision of Site facilities during the erection and commissioning phases.		
3.5	Provide qualified personnel during the installation and commissioning phases of the Work to support Seller's activities.		
3.7	Provide the truck staging area and a lay-down / storage area as required by the Seller's technical specifications and secure it as deemed necessary by the Buyer.		
3.8	Confirmation (English language) of the ground pressure resistance of crane pads and roads according to the Technical Requirements.		
3.9	Appoint one or more coordinator(s) for safety and health matters covering the entire construction site.		
3.10	Prepare and implement an Operational Health and Safety plan for the execution of the Seller's Work.		

No.	Description	Responsibility	
		Buyer	Seller
<b>4</b>	<b>Foundation</b>		
4.1	Soil investigations as defined in the document Unit Foundation Design, included in Appendix B.8 (Technical Book), to be used for the foundation design at each Unit location.		
4.2	Foundation design based upon the foundation loads information, Foundation Interface, Tower Base Kit and anchor bolt system drawing, and other foundation technical information provided in Technical Requirements documents ("the Foundation Documents").		
4.3	Request confirmation of which revision of the Seller provided foundation loads tables and foundation interface drawing should be used in the Buyer's design of the foundations.		
4.4	Foundation Construction (including but not limited to excavation, clean layer, reinforcement bars, foundation interface building, pouring concrete, curing, backfilling, grouting).		
4.5	Pre-tensioning of anchor bolts		
4.6	Conduct foundation quality control and ensure foundation complies with applicable local requirements.		
4.7	Provide checklists, certificates of conformity and other information in English language required by Seller with respect to the foundations.		
4.8	Build and incorporate the complete Tower Base Kit(s) into the foundation as specified in the Technical Requirements.		



No.	Description	Responsibility	
		Buyer	Seller
<b>5</b>	<b>Grounding</b>		
5.1	Provide and install the ground bus bar in the Preassembled Power Module (PPM).		
5.2	Provide and install grounding leads/cables and grounding materials in the foundation and achieve the ground/earth resistance according to Seller's specification in the Foundation Documents.		
5.3	Connect and crimp the grounding leads/cables from the foundation to the ground bus bar on the PPM.		
5.4	Provide and connect the grounding leads/cables from the external MV transformer to the ground bus bar on the PPM.		
5.5	Provide and connect the grounding cables from the ground bus bar on the PPM to the equipment inside the tower.		

No.	Description	Responsibility	
		Buyer	Seller
<b>6</b>	<b>Tower Base Kits</b>		
6.1	Notify the Seller when the prerequisites to enable Tower Base Kit(s) delivery have been completed.		
6.2	Deliver Tower Base Kit(s) to the agreed Delivery Point.		
6.3	Unload and store Tower Base Kit(s). Provide cranes, slings, personnel, and tools necessary.		
6.4	Build and incorporate the complete Tower Base Kit(s) into the foundation as specified in the Technical Requirements.		

No.	Description	Responsibility	
		Buyer	Seller
<b>7</b>	<b>Communications Infrastructure</b>		
7.1	Provide the single line diagram of the WF, cable type information and cable length		
7.2	Complete the following data sheets <ul style="list-style-type: none"> <li>· "Remote connectivity spec sheet" for WindSCADA</li> <li>· "WindControl option requirements" for WindCONTROL</li> <li>· [if applicable] "Modbus register address" for the substation interface</li> </ul>		
7.3	Provide and Install: <ul style="list-style-type: none"> <li>· Power supply of the for WindSCADA and WindCONTROL Cabinets</li> </ul>		
7.4	Provide and Install Back-Up power supply for WindCONTROL		
7.5	Provide and Install a complete fibre optic network for the wind farm in compliance with the WindSCADA requirements established in the Technical Requirements documents.		
7.6	Provide and install LAN Cat.6 connection; <ul style="list-style-type: none"> <li>· WindSCADA rack to DSL Router</li> <li>· WindCONTROL cabinet to WindSCADA Rack</li> <li>· WindSCADA Network</li> </ul>		
7.7	Provide and Install CT's and VT's (POI) cable connection to WindCONTROL cabinet terminals.		
7.8	WindCONTROL Hardwired Signals, Substation RTU signals (analogue and digital)		
7.9	Provide appropriate indoor space and environment for the Seller's delivered cabinets		



7.10	Supply fiber optic pigtails to connect into each Unit and in the sub-station including termination.		
7.11	Delivery of Splice box/ Patch panel for the Fibre optic connectivity inside turbines, WindSCADA and WindCONTROL Rack.		
7.12	Provide a fibre optic loss report for all fibre optic cores of the Buyer provided FO-cables (Optical Time Domain Reflectometry "OTDR" measurement).		
7.13	Provide broadband site connectivity and information for Seller connection Sixty (60) days prior to first turbine commissioning.		
7.14	Ensure all cable runs and the termination of all connections of all types to the Equipment (Substation RTU signals, Modbus signals) as and when reasonably required by the Seller.		
7.15	Install and connect WindSCADA and WindCONTROL cabinets including grounding and electrical feeding.		



No.	Description	Responsibility	
		Buyer	Seller
<b>8</b>	<b>Electrical Infrastructure</b>		
8.3	Provide and install an appropriate Unit transformer according to Seller's specification including foundation, container, grounding, CTs and MV and LV switchgears. Provide and install all necessary power and control cable connections to each Unit.		
8.4	Closing/Operation of the MVSG and commissioning and energising of the MV transformer		

No.	Description	Responsibility	
		Buyer	Seller
<b>9</b>	<b>Installation and Commissioning Services</b>		
9.1	Arrange with the relevant utilities to provide continuous power and to continuously accept total power output generated by the Facility when requested by Seller.		
9.2	Provide special tools and equipment for erection, erection teams as required and supervision of erection		
9.3	Mechanical Completion of each Unit		
9.4	Commissioning of each Unit, to achieve Turbine Completion according to the Commissioning check-lists and Seller's specifications.		
9.5	Commissioning of the WindCONTROL and WindSCADA cabinets.		
9.6	Conduct Reliability Run for each Unit.		
9.7	Remote Connection of the Wind Farm		

No.	Description	Responsibility	
		Buyer	Seller
<b>10</b>	<b>Warranty Requirements</b>		
10.1	Maintain access to the Site and Site roads during the Warranty Period.		
10.2	Maintain proper records of operation and maintenance for the Facility during the Warranty Period		

# Proje Takvimi

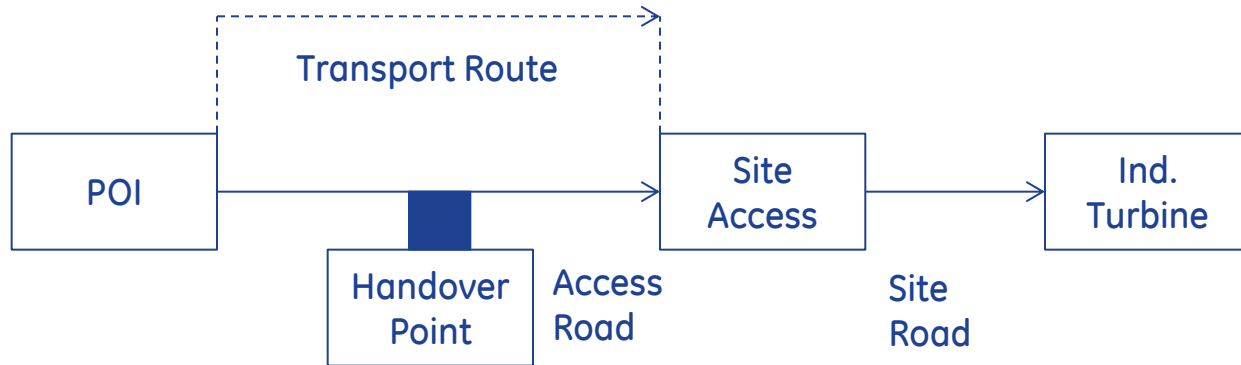
# Contract Review: Overall Project Schedule

Buyer Scope	2014	2015												2016																						
Seller Scope	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan					Feb				Mar					Apr				May				
Weeks														W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19				
Contract Signature	19 Dec																																			
NTP		15 Jan																																		
TBR Delivery		Cycle time for Manufacturing																4																		
Foundation & Crane Pad Ready																			Curing Period for concrete		1		1	1		1										
EQP RTS (EXW SALZ)		Cycle time for Manufacturing																4																		
Delivery to Site																																				
Installation																																				
Commissioning																																				
RR																																				
MENR + Facility Completion																																				
Contractual Facility Comp																																		4		



# Alıcı ve Satıcı arasındaki Arayüzler

# Arayüzler: Teslimat & Gümrük



## 2.4.5 Importation in Project Country

the Buyer as official importer of record for the Equipment or parts thereof that will be imported into the customs territory of the Project Country, whereby Buyer is responsible for payment of import VAT.

# Arayüzler: WTG vs.BOP

- Roads & Pads
  - Construct per spec
  - Maintain
- Foundations
- Grid, WindContro, SCADA
- Site Works -- Installation & Commissioning:
  - PIM
  - ARBR/CAR



# Arayüzler: Dökümantasyon ve Bakanlık Kabulu

## 3.2 Documentation

•Project documents,, technical documents including drawings, specifications, reports and project technical communications shall be issued in both **English and Turkish languages**, to the extent where the applicable Laws of the Project Country require that documents or signs are prepared in the language of the Project Country.

### Facility Completion (MENR Process)

- that all other Work ...has been completed other than the Punch List Items

For delays in achieving the **Facility Completion for reasons not attributable to the Seller**, the Seller shall be granted **schedule relief on a day-by-day** basis until the Buyer has signed the Facility Completion Certificate.

# Temel Kontrat Maddeleri

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## 4.1 Passage of Title

Project Country: Title shall pass when the Seller delivers such item to the **Site**.

A country other than Project Country, immediately prior to goods entering the territorial land, sea or overlying airspace of the Project Country.

European Union ("EU") for delivery within a country other than the Project Country: Title shall pass when such item departs from the territorial land, sea and overlying airspace of the sending country.

## 4.2 Risk of Loss

Until Batch Completion, The Seller shall ...shall bear the risk of loss. Before date of Batch Completion , any loss shall be repaired or replaced by the Seller. The Buyer shall assume the risk of loss for Turbine and after the date of Substantial Completion for all the Turbines.

# Temel Kontrat Maddeleri

## 5.2 Excusable Delays

...Seller shall be entitled to (a) **an extension of time** (b) **a price adjustment**, in an amount to be agreed between the parties...

the existence of any of the following wind conditions:

- **> 6 m/s** during rotor erection
- **> 10 m/s** tower and nacelle erection
- average wind speed **> 15 m/s** for performing work inside the Unit,
- average wind speed **> 20 m/s** for climbing inside of the Unit
- average wind speed **> 25 m/s** for performing work at site
- **reduced visibility** to less than the hub height
- Wind conditions not sufficient to carry out the start-up and commissioning
- **delays in the Buyer's Obligations** being complete
- **failure to provide the Seller with information and approvals** necessary
- **failure to make any payment** when due or to fulfil any payment conditions
- **failure to provide or maintain Payment Security**

where this Contract states that the Seller is entitled to an Excusable Delay

# Temel Kontrat Maddeleri

## Change Orders (9.3)

### Seller-Initiated Changes (See further details in 9.3.1)

- Seller shall submit to the Buyer a draft Change Order

### Buyer-Initiated Changes

- Buyer shall notify the Seller in writing.
- Within 28 days, the Seller shall advise the Buyer of the feasibility of the requested change, and shall submit to the Buyer a draft Change Order.

### Contents of Draft Change Order

- a technical description, a firm price adjustment, revised Project Milestone Dates, (...)

### Process for Concluding Change Order

The Buyer shall, within ten (10) days from the Date of Receipt of a draft Change Order, either approve or disapprove such draft Change Order in writing, or request additional time to consider the draft Change Order up to a maximum of fourteen (14) days. If the Buyer approves the Change Order, the Buyer and the Seller shall then sign the Change Order that shall operate as an amendment to Contract.

# Project Execution Overview: Field Operations

## Site Management

- Managing Site for GE activities overall
- single point of contact for customer and GE PM
- responsible for general EHS, compliance, reporting Status, progress

## Commissioning

- Managing turbine commissioning on Site
  - always self implemented with own crew
    - ensure Quality standards
    - Report any deviations
- responsible for Commissioning procedures, quality, documentation (JobSiteBook), Commissioning schedule, EHS, compliance during Commissioning,
- test run
- hand over
  - hand over to customer
  - hand over to GE Service team

## Installation

- Managing turbine Installations on Site
  - self implemented with own crew
  - Installation sub-contractor (with GE LEAD and Receiver
- Receiving
  - Receiving and documentation of all supplies to site
    - ensure Quality standards
    - report any deviations
    - order missing / damaged parts
    - organize repair crews etc.
- Responsible for Installation procedures, quality, documentation (JobSiteBook), Installation schedule, EHS, compliance during Installation, hand over

Thank You

