

ГУМАНІТАРНИЙ ФАКУЛЬТЕТ

Кафедра «Іноземні мови»

МЕТОДИЧНІ ВКАЗІВКИ

**з розвитку навичок читання та
комунікативної компетенції
для студентів 2 курсу спеціальності
*«Під'ємно-транспортні, будівельні та дорожні,
меліоративні машини і обладнання»***

Частина 2

(англійська мова)

Харків 2012

Методичні вказівки розглянуто та рекомендовано до друку на засіданні кафедри «Іноземні мови» 23 вересня 2010 р., протокол № 2.

Видання підготовлено відповідно до програми навчальної дисципліни і є складовою частиною навчально-методичного комплексу дисципліни „Англійська мова”.

Метою цих методичних вказівок є подальший розвиток навичок перекладу оригінальних та адаптованих текстів за спеціальністю, систематизація та розширення словникового запасу з теми “Під’йомно-транспортні, будівельні та дорожні, меліоративні машини і обладнання”

Кожний з шести розділів містить основний текст з системою лексичних вправ, які спрямовані на закріплення слів та словосполучень. Крім цього, відповідні вправи мають за мету виробити у студента навички ведення коротких бесід в рамках отриманої інформації.

Методичні вказівки розглянуто та рекомендовано до друку на засіданні кафедри “Іноземні мови” 23.09.2010, протокол №2

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МЕТОДИЧНІ ВКАЗІВКИ

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(англійська мова)

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**УКРАЇНСЬКА ДЕРЖАВНА АКАДЕМІЯ
ЗАЛІЗНИЧНОГО ТРАНСПОРТУ**

ГУМАНІТАРНИЙ ФАКУЛЬТЕТ

Кафедра “Іноземні мови”

МЕТОДИЧНІ ВКАЗІВКИ

**з розвитку навичок читання та комунікативної компетенції
для студентів 2 курсу спеціальності
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Частина 2

(англійська мова)

Харків, 2010

Методичні вказівки з розвитку навичок читання та комунікативної компетенції для студентів 2 курсу спеціальності Під'йомно-транспортні, будівельні та дорожні, меліоративні машини і обладнання Частина 2 (англ. мова).-Х: УкрДАЗТ, 2010

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Кожний з шести розділів містить основний текст з системою лексичних вправ, які спрямовані на закріплення слів та словосполучень. Крім цього, відповідні вправи мають за мету виробити у студента навички ведення коротких бесід в рамках отриманої інформації.

Методичні вказівки розглянуто та рекомендовано до друку на засіданні кафедри “Іноземні мови” 23.09.2010, протокол №2

Укладачі:
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Рецензент:
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Метою цих методичних вказівок є подальший розвиток навичок усного мовлення, систематизація та розширення словникового запасу з теми «Будівельні та дорожні машини»

Усі вправи розроблені на основі 6 текстів, які входять до методичних вказівок. Система граматичних та лексичних вправ має на меті закріплення та активізацію навчального матеріалу.

Лексичні вправи побудовані на мовному матеріалі, що взятий з текстів, це забезпечує необхідну повторюваність лексичних одиниць та моделей. У кожному уроці активізуються певні граматичні явища, конструкції, що характерні для стилю науково-технічних текстів, зокрема на засвоєння та повторення такого матеріалу:

- текст 1 – герундій, герундіальні конструкції;
- текст 2 – інфінітив, його функції, інфінітивний зворот;
- текст 3 – інфінітив, суб'єктний інфінітивний зворот;
- текст 4 – три типи умовних речень, умовний засіб;
- текст 5 – повторення: активний та пасивний стан.

UNIT 1

ELECTRIC TOWER CRANE

Words and word combinations to be remembered:

- to fit – обладнати
- brakes – гальма
- motion – рух
- switch – перемикач
- to luff – переміщувати вантаж у горизонтальній площині
- reverse direction – зворотний напрямок
- circuit breaker – роз'єднувач
- load indicator – показник навантаження
- reduction gear – редуктор, реакційна передача
- rail clamp – рейковий затискач
- to engage – зачеплювати, включати
- slewing pinion – зворотна шестірня
- to cause – примушувати

resistance – опір, протидія
to attach – приєднувати
attachment – пристосування
to maintain – обслуговувати, ремонтувати
to dump – розвантажувати
joist – балка, дошка
girder – балка, перекладина
fitting – обладнання
to handle – обробляти, перевозити
grapple – грейфер, крюк
grab – крюк, грейфер
skip – ківш

Text

All motions of the electric tower crane are electrically operated and controlled from the cabin. Four electric motors, one for each operation of crane, are fitted.

Electro-magnetic brakes are fitted to hoist, derrick and travel motions. The hoist is also fitted with a electromechanical brake operated by a solenoid. Mechanically operated limit switches are fitted to the luffing and hoisting motions. When the luff or hoist limit switches have been tripped, the limited motion, can, by means of the controller, be operated only in the reverse direction, until the limit switch has been cleared. Main circuit breaker trips may be fitted on the track to prevent the crane overrunning the rails.

An improved type of safe load indicator is fitted, giving visible and audible warning of an overload at any position of jib.

A 4-h.p. electric motor drives two bogies on one side of the crane. The reduction gearing gives a travel speed of 85 ft per minute. The driving bogies should be, preferably, on the inside of any curve of the track. Rail clamps are provided for parking in storm conditions.

The slewing pinion is driven by a 3-h.p. electric motor. This pinion engages in a circular rack. Brakes are not fitted to the slew motion, as abrupt braking causes the load to swing and sets up high stresses in the jib. However, due to the high reduction gear, the crane is brought gently to rest when the motor is in the «off» position. When

the crane is parked in a high wind, the jib will slew into the wind, reducing resistance.

The main hoist drum is driven by a 19-h.p. electric motor and is provided with both electro-magnetic and electro-mechanical brakes. Both brakes are automatically applied when the controller is in the «off» position. The hoist drum is driven through a 10:1 reduction box and a 2-speed reduction train. Normal speed of hoist about 50 feet per minute. Low gear can be used for lighter loads.

Incorporated with the luffing drum is a compensating drum to which is attached the anchor end of the hoist cable. By means of the compensating drum the load height is constantly maintained when the jib is luffed.

Working from round the perimeter, the crane can dump loads, at maximum radius, in the middle of a structure 115 ft. wide.

The height of the hook from the ground with the jib horizontal is 75 ft. 6in. and at minimum radius 128 ft. This crane is ideally suited, for confined sites, it can operate close to the sides of a building and has a turning radius of 11ft. 6in. on the inside track.

On the building site the crane is widely used. Amongst many of its normal loads can be lifted: cement, gravel, bricks, joists, girders, fittings of all kinds and site equipment. Many jobs now done manually or even with motorized equipment, can be handled safely and efficiently by this crane and the loads exactly where needed , with a resultant saving in manpower and time.

Grapples for bricks and concrete slabs, dumping grabs and skips for attachment to the crane enable a wide variety of building materials to be handled.

The electric tower crane is suited for many purposes where the need for height, reach, efficiency and the reduction of handling costs is of great importance.

Exercise 1

Answer the following questions:

- 1 How are all the motions of the electric tower crane operated and controlled?
- 2 What is fitted with an electro-mechanical brake operated by a solenoid?
- 3 How many bogies does a 4-h.p. electric motor drive?
- 4 What are rail clamps provided for?
- 5 What is the main hoist drum

driven by? 6 What gear can be used for lighter loads? 7 Where is the crane widely used? 8 What purposes is the electric tower crane suited for?

Exercise 2

Pick out the words in the text having the same roots with the words given below:

кран, електричний, оператор, контроль, кабіна, мотор, магніт, механічний, ліміт, дирекція, тип, ініціатор, позиція, редакція, автоматичний, нормальний, периметр, структура, горизонтальний, радіус, матеріал.

Exercise 3

Find in the right column English equivalents for the words and word combinations given in the left column.

1) підйомний рух	1) tower crane
2) будівельна ділянка	2) electric motor
3) зворотна шестерня	3) electro-mechanic brake
4) баштовий кран	4) hosting motion
5) рейковий затискувач	5) reduction gear
6) електромеханічне гальмо	6) rail clamp
7) електричний мотор (двигун)	7) slewing pinion
8) редукційна передача	8) hoist drum
9) висота вантажу	9) building site
10) барабан лебідки	10) load height

Exercise 4

State the dictionary forms of the following words:

Nouns: cranes, brakes, switches, bogies;

Verbs: has, cleared, gives, fitted, drives, designed.

Exercise 5

Arrange in pairs the synonyms:

to operate, to apply, to lift, to use, to hoist, to act, to mount, to fit.

Exercise 6

Pick out nouns, adjectives and adverbs according to their suffixes and translate them into Ukrainian:

motion, electric, efficiently, tower, operation, mechanically, controller, safety, direction, indicator, position, reduction, mechanical, importance, automatically, normal, anchor, motor, resistance, exactly.

Exercise 7

Give the nouns corresponding to the following verbs:

to indicate, to operate, to move, to reduce, to apply, to resist, to direct.

Exercise 8

Use the words given in brackets as attributes to the following words. Translate the word combinations into Ukrainian:

1) site, 2) drum, 3) crane, 4) motion, 5) bogie, 6) clamp, 7) rack, 8) box, 9) height, 10) direction.

(circular, hoist, slew, driving, building, reduction, rail, tower, load, reverse)

Exercise 9

Chose the right variant and read it:

1 a) A 4-h/p/ electric motor drives four bogies on one side of the crane. b) A 4-h/p/ electric motor drives two bogies on one side of the crane.

2 a) The reduction gearing gives a travel speed of 85 ft. per minute. b) The reduction gearing gives a travel speed of 85 ft. per hour.

3 a) Rail clamps are provided for parking in storm conditions. b) Rail clamps are provided for working in good weather conditions.

Exercise 10

Translate the following word combinations:

- 1) mechanically operated switches
- 2) main circuit breaker
- 3) safe load indicator
- 4) high reduction gear

- 5) driving bogies
- 6) rail clamps
- 7) slewing pinion
- 8) main hoist drum
- 9) load height
- 10) concrete slab

Exercise 11

Give the second and third forms of the following verbs:

to lay, to lead, to learn, to leave, to let, to lie, to light, to lose, to make, to mean.

Exercise 12

Put down the forms of the Indefinite and Perfect Gerund (Active and Passive):

to read, to ask, to listen, to show, to lead.

Exercise 13

State the functions of the Gerund and translate the sentences into Ukrainian:

1 The designer is interested in his machine being used for all kinds of building jobs. 2 Crane accessories include the clamshell bucket for handling bulk materials. 3 Planning supervising and coordinating the operations is very important factor in increasing efficiency. 4 The work entails digging a trench 1 ft. wide and 2 ft. 9 in. deep. 5 Tower cranes are used for assembling large-size prefabricated elements, in addition to hoisting and conveying.

Exercise 14

Find all the words with *-ing* and state the Gerund or Participle I:

1 Main circuit breaker trips may be fitted on the track to prevent the crane overrunning the rails. 2 When the crane is parked in high wind, the jib will slew into the wind, reducing resistance. 3 Rail clamps are provided for parking in storm conditions. 4 The energy of a body is its capacity for doing work. 5 Working from round the perimeter, the

crane can dump loads, at maximum radius, in the middle of a structure 115ft. wide. 6 Slewing the crane is driven by a 3-h.p. electric motor.

Exercise 15

Read the text, find the Gerund and translate it.

No book on atomic theory can be written without name of the Curies being referred to.

Marie and Pierre Curie knew that radium existed but they had to prove it because a chemist believes in the existence of a new substance after seeing it, touching it, weighing it and finding out its atomic weight. They began working at that problem in 1898. Their task was to obtain pure radium. The way of separating radium was a difficult one. They could separate radium by treating large amounts of pitchblende (ураніт).

In 1902 they succeeded in preparing a decigram of pure radium. Their having discovered radium gave them the possibility of discovering other radioactive substances.

UNIT 2

TOWER CRANE

Words and word combinations to be remembered:

self-propelled – самохідний
to swing – обертатися, розгойдуватися
drive – привод, передача
hoist – підйомник, лебідка
to design – призначати
latticed – заґратований
to hinge – навішувати
to fold – перегинатися
jib – стріла
turntable – поворотна платформа
brace – коловорот, дріль, опорка
to accommodate – містити, вміщувати
winch – лебідка

to equip – обладнувати
to provide – забезпечувати
undercarriage – шасі
ball slewing ring – поворотне кільце
bracket – кронштейн, консоль
to allow – дозволяти
runway curve – крива підкранової колії
to mount – монтувати
overload – перевантаження
to luff – переміщувати вантаж у горизонтальній площині
cut-out – вимикач
to erect – підіймати
to carry out – здійснювати

Text

The KB-60 self-propelled, full-swing tower crane-with a multi-motor electric drive is designed for mechanization of hoisting and transportation jobs in construction of large panel and large-block buildings of up to 5 stories in height.

The latticed rectangular section jib is hinged to the tower. For transportation of the crane the jib is folded. The latticed rectangular section tower of the crane is hinged to the turntable and is held in the working position with the help of braces resting on a two-legged support.

The turntable accommodates the load and jib winches, slewing mechanism and the ballast. The load winch is equipped with a braking generator which provides for minimum speeds of the load lowering.

The turntable is connected with the undercarriage through a double-row, ball slewing ring. The obliquely arranged brackets resting on the running bogies are hinged to the under-carriage. Such a construction allows the crane to travel on runway curves with a minimum radius of 6m. Two bogies located on one rail are equipped with two separate travel mechanisms. The crane is provided with a mounted cab accommodating the electrical control equipment and the crane operator's seat.

The crane is equipped with overload, load lifting height, jib luffing, travel and slewing cut-outs.

Erection and dismantling of the crane are carried out with the help of its own mechanisms and a 5-ton track-mounted crane.

The crane is transported in a folded condition on pneumatic wheels towed by a truck tractor.

Exercise 1

Answer the following questions:

1 What is the KB-60 self-propelled, full-swing tower crane designed for? 2 What is the latticed rectangular section jib hinged to? 3 How is it held in the working position? 4 What is the load winch equipped with? 5 How is the turntable connected with the under-carriage? 6 What is the crane provided with? 7 What cut-outs is the crane equipped with? 8 How are erection and dismantling of the crane carried out?

Exercise 2

Pick out the words in the text having the same roots with the words given below:

електричний, механізація, транспортування, конструкція, панель, блок, кран, позиція, механізм, баласт, генератор, мінімум контроль, оператор, кондиція, трактор, секція.

Exercise 3

Find in the right column English equivalents for the words and word combinations given in the left column.

1) лебідка стріли	1) mounted cab
2) баштовий кран	2) large-panel building
3) електрична передача	3) tower crane
4) крива підкранової колії	4) jib winch
5) рубильник підйому вантажу	5) runway curve
6) зворотний механізм	6) load lifting cut-out
7) вмонтована кабіна	7) electric drive
8) великопанельна будівля	8) transportation job
9) транспортувальна робота	9) latticed jib
10) штахетна стріла.	10) slewing mechanism

Exercise 4

Find in the text synonyms for the following words:

to lift, boom, to turn, gear, to secure, aid, to permit, to mount, to use.

Exercise 5

Choose the right variant and read it:

- 1 a) The latticed rectangular section jib is hinged to the turntable.
- b) The latticed rectangular section jib is hinged to the tower.
- 2 a) The turntable is connected with the undercarriage through a double-row, ball slewing ring.
- b) The turntable is connected with the undercarriage through a double-row, ball bearing.
- 3 a) Erection and dismantling of the crane are carried out with the help of a braking generator.
- b) Erection and dismantling of the crane are carried out with the help of own mechanisms and a 5-ton truck-mounted crane.

Exercise 6

State the dictionary forms of the following words:

Nouns – stories, braces, winches, bogies

Verbs – folded, designed, provides, accommodates.

Exercise 7

Finish the following sentences:

- 1 The latticed rectangular section jib is hinged to...
- 2 The turntable is connected with the undercarriage through...
- 3 The KB-60 self-propelled, full-swing tower crane with a multi-motor electric drive is designed for ...
- 4 Two bogies located on one rail are equipped with...

Exercise 8

Give the second and third forms of the following verbs:

to pay, to put, to ring, to rise, to run, to say, to see, to seek, to send, to set.

Exercise 9

Give the Passive Infinitive of the following verbs:

to see, to send to pay, to design, to equip.

Exercise 10

Find the Infinitive and state its function, translate into Ukrainian:

1 There are changes to be made in that design. 2 The engineer will make a report at the conference to be held in Kiev. 3 To release energy it is enough to bombard the nuclei with neutrons. 4 He liked to design the new types of road machines.

UNIT 3

CRANE WITH MOUNTED PILE DRIVING EQUIPMENT

Words and word combinations to be remembered:

to design – конструювати

to handle – виконувати

to hoist – піднімати

pile – паля

jib – стріла

undercarriage – екіпажна частина

running gear – ходова частина

bracket – кронштейн, консоль

bogie – візок вагона

to allow – дозволяти

jib winch – лебідка стріли

slewing mechanism – зворотний механізм

outrreach – виліт стріли крана

pile cap – наголовник палі

to mount – монтувати

brace – коловорот, дріль, упорка

wheeled carriage – колісний візок

truck tractor – вантажний трактор

Text

The MSTK-90 self-propelled, full-swing jib crane with a multi-motor drive is designed for handling the zero cycle jobs and may be used for erection of foundation blocks, wall panels and floor slabs and other hoisting and transportation operations, cleaning and filling of pits and trenches, driving of piles.

The crane consists of the following main units: undercarriage with the running gear, turntable with the counterweight and mechanisms, control cab and the jib with a prop.

Hinged to the undercarriage are four brackets resting on four running bogies two of which are driving.

Such an attachment of the brackets allows the crane to travel on the runway curves with a minimum radius.

The turntable accommodates the load and jib winches, slewing mechanism, overload, slewing and jib outreach automatic cut-outs, control cab and the electrical equipment.

Erection and dismantling of the crane is carried out with the help of own mechanisms.

The MSTK-90 crane is transported in a folded condition on a wheeled carriage towed by a truck tractor.

For transportation of the crane the jib is folded.

The crane is provided with mounted pile driving equipment intended for driving reinforced concrete piles.

The mounted equipment consists of a pile lead, telescopic brace, pile cap, diesel-driven hammer and electric winch.

Exercise 1

Answer the following questions:

1 What is the MSTK-90 self-propelled jib crane designed for? 2 What is it used for? 3 What main units does the crane consist of? 4 How many brackets hinged to the undercarriage are there? 5 What allows the crane to travel on the runway curves with a minimum radius? 6 How is the crane tubular jib held in a required position? 7 What provides for obtaining minimum speeds of the load lowering? 8 How are erection and dismantling of the crane carried out? 9 How is the MSTK-90 Crane transported? 10 What does the mounted equipment consist of?

Exercise 2

Pick out the words in the text having the same roots with the words given below:

гран, пропелер, мотор, цикл, блок, панель, транспорт, операція, механізм, контроль, мінімум, радіус, автоматичний, електричний, база, позиція, система, генератор, кондиція, трактор, секція, телескопічний.

Exercise 3

State the dictionary forms of the following words:

Nouns – trenches, piles, units, bogies, curves, winches, guys.

Verbs – used, consists, allows, built, carried, folded, exceeds.

Exercise 4

Find in the text synonyms for the following words:

to apply, work, to run, to base on, to permit, to receive, chief, to decrease, drive.

Exercise 5

Find in the text antonyms for the following words:

to dismount, dirty, maximum, to destroy, to increase.

Exercise 6

Find in the right column English equivalents for the words and word combinations given in the left column.

1) паля	1) self-propelled crane
2) самохідний кран	2) pile cap
3) візок	3) wheeled carriage
4) підйомний рух	4) hoisting motion
5) передача	5) bogie
6) ходова частина	6) pile
7) екіпажна частина	7) main units
8) лебідка стріли	8) undercarriage
9) основні компоненти	9) running gear
10) наголовник палі	10) jib winch

Exercise 7

Give the nouns corresponding to the following verbs:

to operate, to equip, to generate, to require, to found, to attach, to extend, to clean, to drive, to weigh, to deep, to handle.

Exercise 8

Use the words given in brackets as attributes to the following words, translate the word combinations:

1) crane, 2) carriage, 3) motion, 4) guys, 5) units, 6) outreach, 7) gear, 8) driving, 9) panels
(*wall, running, main, rope, hoisting, wheeled, truck, jib, pile*).

Exercise 9

Form verbs from the following nouns:

weight, foundation, attachment, depth, generator, requirement, operation, equipment, extension.

Exercise 10

Give the second and third forms of the following verbs:

to shake, to shoot, to show, to shut, to sink, to sit, to slide, to speak, to speed, to spend.

Exercise 11

Point out the Subjective-with-the-Infinitive Constructions in the following sentences. Translate them:

1 They are said to have built this railway line. 2 The scientist is likely to solve this problem. 3 The expedition was believed to have already returned. 4 Newton is known to formulate the laws of motion. 5 The Egyptians and the Romans are considered to be great builders. 6 Each atom appears to represent something similar to our solar system.

Exercise 12

State the Infinitive Construction. Translate the sentences:

1 The full-swing jib crane is known to be used for erection of foundation blocks, wall panels and other hoisting and transportation operations. 2 It makes me think of a new design of the crane. 3 They

saw erection and dismantling of the crane to be carried out with the help of own mechanisms. 4 Titov was reported to have flown 17 times round the Earth. 5 We know the crane to consist of the undercarriage with the running gear, the turntable with counter weight and mechanisms, the control and the jib.

Exercise 13

Change the following sentences using the Infinitive Constructions:

1 It is known that St.Petersburg is situated on 100 islands. 2 It seems that the strength of this beam is great. 3 It is considered that a new railway line has been finished. 4 We saw how they used this crane for hoisting and transportation operations. 5 It's known that the first Ukrainian tractors, turbines, the most complex machinery and instruments have been made by workers and scientists, engineers and technicians.

UNIT 4

SELF-PROPELLED PNEUMATIC TYPED CRANE

Words and word combinations to be remembered:

full-swing boom machine – машина з повним розворотом стріли крана

to design – призначати, конструювати

to load – навантажувати

to unload – розвантажувати

erection – установка, монтування

reinforced concrete – залізобетон

external source – зовнішнє джерело

to drive – надавати руху

a drive – привід, передача

dimension – розмір

performance – виконання

lifting capacity – підйомна потужність

to permit – дозволяти

outrigger – виносна стріла
steering wheel – штурвал, стернове колесо
switch – вимикач

Text

Model K-1001 crane is a mil-swing boom machine on tyred wheels with a diesel-electric multi-motor drive. The crane is designed for loading and unloading of piece cargo, as well as for erection of prefabricated reinforced concrete structures and metal structures. The crane may be energized both by its own diesel-generator plant or from an external source of power. All the crane mechanisms are driven by d.c. motors. When an external source of power is used, the generator is disconnected from the diesel and driven by an a.c. motor.

The comparatively small overall dimensions of the crane, the use of booms from 15 to 45m long and 20m long jibs, as well as smooth performance of crane operations combined with a high lifting capacity, high lifting heights and large servicing areas permit the employment of the above crane in civil engineering, on the building sites of large industrial constructions, as well as for installation of large-size equipment. All the operations of the crane may be combined.

The crane employs hydraulic outriggers.

The running gear of the crane is a three-axle chassis with two driving axles. The suspensions of the driving and steering wheels is of the arm type. The mechanisms are controlled with the aid of a push-pull button system through controllers.

The crane operator's cab is separated from the machine compartment. It features perfect visibility, as well as heating and ventilation. The crane is fitted with the following safety devices: hook, boom and jib hoisting limit switches and lifting capacity limiter.

Exercise 1

Answer the following questions:

1 What kind of machine is model K-1001 crane? 2 What is the crane designed for? 3 What may the crane be energized by? 4 What motors are all the crane mechanisms driven by? 5 What outriggers does the

crane employ? 6 How are the mechanisms controlled? 7 What is the crane operator's cab separated from? 8 What safety devices is the crane fitted with?

Exercise 2

Pick out the words in the text having the same roots with the words given below:

модель, машина, дизель, мотор, електричний, структура, метал, пневматичний, генератор, механізм, операція, ліфт, індустріальний, конструкція, комбайн, гідравліка, контроль, система, оператор.

Exercise 3

Find in the right column English equivalents for the words and word combinations given in the left column.

1) ведуча (головна) вісь	1) lifting capacity
2) гідравлічний аутригер	2) building site
3) металева структура	3) electric drive
4) пневматичний кран	4) steering wheel
5) бетонна структура	5) driving axle
6) будівельний майданчик	6) self-propelled crane
7) самохідний кран	7) pneumatic crane
8) електрична передача	8) metal structure
9) підйомна потужність	9) hydraulic outrigger
10) стернове колесо	10) concrete structure

Exercise 4

Pick out nouns, adjectives and adverbs; group them according to their suffixes and translate them:

electric, erection, employment, visibility, comparatively, capacity, motor, external, equipment greatly, safety, operation, industrial, operator, hydraulic.

Exercise 5

Arrange in pairs of antonyms:

loading, erect, connect, internal, dismount, external, unloading, small, disconnect, large.

Exercise 6

Arrange in pairs of synonyms:

aid, gear, erect, mechanism, boom, drive, jib, assistance, mount.

Exercise 7

Give the nouns corresponding to the following verbs:

to erect, to assist, to generate, to discount, to perform, to operate, to employ, to install, to construct, to equip.

Exercise 8

Use the words given in brackets as attributes to the following words; translate the word combinations:

1) wheel; 2) capacity; 3) axle; 4) outrigger; 5) equipment; 6) site; 7) crane; 8) dimensions; 9) source; 10) structure.
(*hydraulic, large-size, external, building, full-swing, driving, metal, lifting, steering, small*)

Exercise 9

Choose the right variant and read it:

- 1 a) All the crane mechanisms are driven by d.c. motors;
- b) All the crane mechanisms are driven by a. c. motors.
- 2 a) The crane may be energized only from an external source of power;
- b) The crane may be energized both by its own diesel-generator plant or from an external source of power.
- 3 a) All the operations of the crane may be combined;
- b) All the operations of the crane are not combined.

Exercise 10

Translate the following word combinations:

- 1) self-propelled tyred crane
- 2) diesel-electric multi-motor drive
- 3) prefabricated reinforced concrete structure
- 4) comparatively small overall dimensions
- 5) high lifting capacity
- 6) push-pull button system

Exercise 11

Give the second and third form of the following verbs:

to split, to spoil, to spread, to stand, to strike, to swing, to take, to tear, to teach, to tell

Exercise 12

Translate the following sentences:

1 If the worker's invention were realized, it would raise labour productivity at our plant. 2 Had these young engineers designed a new type of the crane, they would have succeeded in increasing its lifting capacity. 3 If the builders use the new methods of the work, they will finish their work in time.

Exercise 13

Change the following sentences using the Passive Voice:

1 D.c. motors drive all the crane mechanisms. 2 They combined all the operations of the crane. 3 We use the crane for loading and unloading.

Exercise 14

Put general and special questions:

1 The crane employs hydraulic outriggers. 2 All the crane mechanisms are driven by d.c. motors. 3 The crane is fitted with the safety devices. 4 They combined all the operations.

UNIT 5

MOBILE CRANE

Words and word combinations to be remembered:

heavy – duty mobile crane – потужний пересувний кран
lowering mechanism – механізм спуску
safe load indicator – індикатор допустимого навантаження
to hoist – піднімати
to derrick – змінювати кут нахилу стріли
to apply – застосовувати
supply – подача
layout – розміщення
fatigue – втома (технічна)
inherent – притаманний
lever – важіль

Text

The modern heavy-duty mobile crane is widely used on civil engineering sites.

A crane of this type is fully equipped with safety devices, which include positive power limiting and lowering mechanisms; safe load indicators and electro-mechanical brakes to hoist, derrick and slew motions are additional safety features on some modern types of mobile cranes. These are automatically applied should the supply of current be interrupted either by accident or intentionally. Simple layout of controls with finger-tip control levers and power assistance on some motions remove much of the fatigue inherent in the early types of mobile cranes.

In all modern mobile cranes, levers, foot pedals and switches are arranged in natural positions for rapid and easy operation. Up to three separate motions can be worked with complete safety by an experienced driver.

Exercise 1

Answer the following questions:

1 Where is the modern heavy-duty mobile crane widely used? 2 What is a crane of this type fully equipped with? 3 What are additional safety features on any modern types of the mobile crane?

Exercise 2

Pick out the words in the text having the same roots with the words given below:

тип, механізм, індикатор, кран, автоматичний, контроль, натуральний, позиція, сепаратор, операція, електромеханічний, моціон.

Exercise 3

Pick out nouns, adjectives and adverbs; group them according to their suffixes and translate them:

internationally, motion, additional, early, natural, widely, position, safety, mechanical, automatically, operation

Exercise 4

Arrange in pairs of synonyms:

to use, to interrupt, to help, to complete, to finish, to stop, to apply, to assist.

Exercise 5

State the dictionary forms of the following words:

Nouns – sites, devices, features, switches, bogies

Verbs – used, includes, arranged, handles

Exercise 6

Give the nouns corresponding to the following verbs:

to save, to indicate, to assist, to operate, to separate, to drive

Exercise 7

Use the words given in brackets as attributes to the following words; then translate the word combinations:

1) crane, 2) sites, 3) mechanism, 4) brake, 5) layout, 6) position, 7) features, 8) device, 9) indicator, 10) driver.

(safety, safe load, experienced, civil, engineering, electro-mechanical, heavy-duty, natural, limiting, additional, simple)

Exercise 8

Use the prepositions given in brackets where necessary:

1 A crane of this type is equipped ... safety devices. 2 There are some additional safety features ... some modern types ... mobile cranes. 3 Safety devices include ... positive power limiting and lowering mechanisms. 4 Up to these separate motions can be worked an experienced driver.

(on, with, by, of, at, in).

Exercise 9

Translate the following word combinations:

- 1) finger-top control lever
- 2) positive power limiting mechanisms
- 3) safe load indicator
- 4) additional safety features
- 5) modern mobile crane

Exercise 10

Give the second and third forms of the following verbs:

to think, to throw, to thrust, to understand, to win, to wind, to write.

Exercise 11

State the tense and voice in the following sentences:

1 The crane is widely used on civil engineering sites. 2 Up to three separate motions can be worked with complete safety by an experienced driver. 3 Safety devices include positive power limiting and lowering mechanisms. 4 The construction has been completed.

Exercise 12

Put general and special questions:

1 In all modern mobile cranes levers, foot pedals and switches are arranged in natural positions for rapid and easy operations. 2 An experienced driver makes up to three separate motions with complete safety. 3 They used the modern heavy-duty mobile crane on civil engineering sites. 4 Now they are designing a new type of the mobile crane.

UNIT 6

MOBILE CRANES

Words and word combinations to be remembered:

dragline – драглайн

adaptation – удосконалення

solely – тільки

conversion – переоснащення

steelwork erection – підняття сталевих конструкцій

to obtain – застосовувати

available – доступний

to expend – витратити

to encounter – траплятися

to equip – обладувати

type – тип

pneumatic tyres – пневматичні шини

restrictor ring – обмежувальний обід

crawler track – гусеничний хід

to steady – урівноважувати

to flange – обводити

outrigger – аутригер, бокові опори

a drive – привід, передача

clutch – зчеплення

sturdy – міцний

output – продуктивність
to couple – зв'язувати, сполучати
to adjust – регулювати, встановлювати
a throttle control – керування за допомогою дросельної заслінки

Text

Development of the present types of mobile crane has been along three lines. There are cranes developed from the dragline or excavator, adaptations from locomotive cranes, and the machine built solely as mobile crane. Machines such as the mechanical excavator are naturally designed for different usage conditions from the true erecting crane and, generally, conversions of these are not the best all-round cranes for steelwork erection.

A machine which is either an adaptation of the locomotive crane or has been specially designed as a mobile crane should preferably be obtained for erection work.

For almost any work within its reach and capacity the mobile crane will be found to be more than suited.

A mobile crane is available for use immediately on arrival at the site and, when its work is completed, no more than an hour or so is expended loading it on to the special carriers which transport it from site to site.

Most mobile cranes are available equipped with solid rubber tyres, or pneumatic tyres with restrictor rings, or crawler tracks. Restrictor rings are flanged circular plates bolted to the standard road wheels, so that under excessive loads they come into contact with the ground and relieve the tyres, thus steadying the crane. Pneumatic or solid rubber tyres can be a disadvantage when uneven or very soft ground is encountered, but a crane so equipped is very mobile and can travel from site to site under its own power. Outriggers should be used for heavy lifts.

The mobile crane on crawler tracks has all the advantages of the locomotive crane with the additional one that no track is required for operation. Crawler tracks make the crane very stable and suitable for use on poor ground. Mobile cranes cannot travel very fast and,

although this is not a disadvantage on the site, special transporters are needed to move them from site to site.

Two systems of powering these cranes are employed in general practice. The first and most common is the direct use of a single diesel engine with the drives for the various operations taken off through hand-and foot-operated clutches. The directness and simplicity of this method makes a sturdy machine that is easily maintained. The alternative method of operation is to employ a single diesel engine to drive an electric generator. This combination is designed so that the output of the generator varies at the same rate as the motor speed. Separate electric motors for the different crane motions can be coupled to the generator as required, and the speed at which the operation is affected is then governed by the engine speed, which in turn can be adjusted by a throttle control in the drivers cab. When the current is cut off from the motors, electromagnetic brakes are brought into operation.

Exercise 1

Answer the following questions:

1 What kinds of mobile cranes are there? 2 What are machines such as the mechanical excavator naturally designed for? 3 Where is a mobile crane available? 4 What are most cranes equipped with? 5 What should be used for heavy lifts? 6 What advantages has the mobile crane on crawler track? 7 How many systems of powering are these cranes employed in general practice? 8 When are electromagnetic brakes brought into operation?

Exercise 2

Pick out the words in the text having the same roots with the words given below:

екскаватор, локомотив, драглайн, адаптація, машина, натуральний, спеціальний, транспорт, пневматичний, болт, контакт, операція, система, практика, дизель, метод, генератор, мотор, електромагніт.

Exercise 3

Find in the right column English equivalents for the words and word combinations given in the left column.

1) пересувний кран	1) erecting crane
2) дросельний контроль	2) restrictor ring
3) швидкість двигуна	3) heavy load
4) залізничний кран	4) mobile crane
5) м'який ґрунт	5) throttle control
6) монтажні роботи	6) locomotive crane
7) тяжкий вантаж	7) pneumatic tyres
8) обмежувальний обід	8) soft ground
9) монтажний кран	9) erection work
10) пневматичні шини	10) engine speed

Exercise 4

Arrange in pairs of antonyms:

present, advantage, to unite, to load, input, to build, heavy, to unload, disadvantage, output, past, to separate, to erect, light, to destroy, to dismount.

Exercise 5

Arrange in pairs of synonyms:

to obtain, to erect, to handle, to hoist, to use, to operate, to drive, to vary, to control, to apply, to govern, to mount, to change, to transport, to run, to lift, to get, to act.

Exercise 6

Pick out nouns, adjectives and adverbs; group them according to their suffixes and translate them:

solely, excavation, electric, stable, adaptation, naturally, usage, condition, safely, erection, suitable, equipment, specially, capacity, immediately, special, advantage, requirement, combination, available, general, pneumatic, simplicity, operation, generator, magnetic.

Exercise 7

Give the nouns corresponding to the following verbs:

to generate, to require, to operate, to adapt, to excavate, to erect, to equip, to combine, to carry, to develop.

Exercise 8

Use the words given in brackets as attributes to the following words; Then translate the word combinations:

1) speed; 2) erection; 3) track; 4) ring; 5) crane; 6) carrier; 7) tyres; 8) load; 9) work; 10) control.

(locomotive, throttle, solid rubber, erection, special, excessive, steelwork, engine, crawler, restrictor)

Exercise 9

Choose the right variant and read it:

1 a) A mobile crane is available for use immediately on arrival at a site; b) A mobile crane is unfit for use immediately on arrival at a site.

2 a) Outriggers should be used for light lifts; b) Outriggers should be used for heavy lifts.

3 a) When the current is cut off from the motors, electro-magnetic brakes are brought into operation; b) When the current is cut in, electro-magnetic brakes are brought into operation.

Exercise 10

Translate the following word combinations:

- 1) erecting crane
- 2) mobile crane
- 3) tower crane
- 4) locomotive crane
- 5) crawler crane
- 6) throttle control
- 7) restrictor ring
- 8) erection work
- 9) engine speed
- 10) crawler track

Exercise 11

Put general and special questions:

1 The crane employs hydraulic outrigger. 2 They separated the crane operator's cab from the machine compartment. 3 For transportation of the crane the jib is folded. 4 A crane of this type has safety devices. 5 Low gear can be used for lighter loads. 6 The operator's cab possesses perfect visibility.

МЕТОДИЧНІ ВКАЗІВКИ

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Під'йомно-транспортні, будівельні та дорожні,
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