# Rig Components.

Oil and gas production begins with a construction of a well or drilling operation. There are some methods of drilling, but rotary drilling is almost always used in industry. Making holes with a rotary rig requires not only qualified personnel, but a lot of equipment as well. In order to learn about the components it is convenient to divide them into four main systems: power, hoisting, rotating and circulating.

Practically every rig uses internal combustion engines as its prime power source, or its prime mover.

Every rig must have a hoisting system, which is made up of drawworks (hoist), a mast or a derrick, the crown block, the travelling block and a wire rope.

Masts and derricks have to be as strong as possible. On a deep well the string may weigh as much as 225000 kilograms (that's 225 tonnes). Manufacturers of derricks and masts usually rate their products in terms of vertical loads they can carry and the wind load they can withstand from the side. Derrick or mast capacities for vertical loads, vary from 100 up 700 tonnes. Most derricks and masts can withstand a wind load of 160 to 210 kilometres per hour.

## **Exercise**s

1) Remember words and expressions.
   1. oil and gas production - добыча нефти и газа
   2. well - скважина
   3. hole - скважина, отверстие
   4. rig - установка
   5. to require - требовать
   6. a lot of - много
   7. convenient - удобный
   8. to divide - делить
   9. main - главный
   10. power - мощность, энергия
   11. hoisting system - талевая система
   12. to rotate - вращать
   13. internal combustion engine - двигатель внутреннего горения
   14. source - источник
   15. mover - двигатель
   16. traveling block - передвижной блок
   17. wire rope - трос
   18. mast - мачта
   19. derrick - вышка
   20. string - колонна
   21. to rate – оценивать, классифицировать
   22. load - нагрузка
   23. to withstand - выдерживать

24. side - сторона
25. drawworks - лебедка
26. capacity – мощность, нагрузка

2) Read through the text quickly, aiming for a general grasp.

3) Find answers to the following questions.
1. What is the first step in oil and gas production?
2. What method of drilling is the most popular in oil and gas industry now ?
3. What must every rig have?
4. Why do masts and derricks have to be as strong as possible?
5. What do the figures 100 up to 700 tonnes mean?

4) Read and translate the text.

5) Complete the following statements.
1. Making holes with rotary rig requires not only qualified personnel, but … as well
2. Every rig uses internal combustion engines as its ... ,
3. Masts and derricks have to be … .
4. Drilling equipment is divided into four main systems: ... .
5. On a deep well the string may weigh ... .

6)Say in English:
Бурение, вышка, мачта, установка, двигатель, основной двигатель, трос, колонна, добыча, энергия, нагрузка.
Начинать, бурить, требовать, делить, узнавать, весить, оценивать, выдерживать, изменяться.

7) Translate into English using "there is...», "there are...».
1.Существует несколько способов бурения.
2. На каждой буровой есть талевый блок.
3. На нашей буровой есть новая установка.

8) Find equivalents in the text.
l. Мачты или вышки должны быть как можно прочнее.
2. Большинство буровых МОГУТ выдержат ветровую нагрузку
3. В глубокой скважине колонна может весить ... .
4.Каждая вышка должна иметь талевую систему.

9) Answer the questions:
1.Is drilling the first step in oil and gas production?
2. **How** many methods of drilling exist?
3. What systems are there in drilling equipment?
4. What is the prime power sourse in every rig?
5. What does hoisting system consist of?
6. Why do masts and derricks have to be as strong as possible?

7. How much may the string weigh?
8. Is it important to know everything about drilling equipment for future oil engineer?

10)Translate.

1. Добыча нефти и газа всегда начинается со строительства скважины.
2. Роторное бурение требует использования большого количества оборудования
3. Существуют 4 основные системы: энергетическая, талевая, вращательная и циркуляционная.
4.Талевая система состоит из лебедки, мачты или вышки, кронблока, талевого блока и троса.
5. Вес колонны составляет 225 тонн.
6. Вышка должна выдерживать вертикальную и ветровую нагрузку.