

FINISHES TO METALS

TO ANSWER ALL THE QUESTIONS YOU WILL NEED TO DOWNLOAD THE 'FINISHES TO METALS AND MODIFYING SURFACE STRUCTURE' APP, FROM THE INTERACTIVE MOBILE APP SECTION OF www.technologystudent.com

LINK

http://www.technologystudent.com/mobapps/engineering_materials_finishes1.pdf

Once you have downloaded the App, you can use it to navigate the website. You may need to follow the links on each page of the App, to research / complete answers to all the questions.

**ARE YOU READY?
USE THE MOBILE App!!**

1

WHAT IS CORROSION?

Include references to Steel and Aluminium

2

LIST PROBLEMS ENGINEERS FACE, ASSOCIATED WITH CORROSION.

Include a reference to structures.

3

SEARCH THE INTERNET, FOR AN IMAGE THAT SHOWS THE PROBLEM CORROSION PRESENTS TO ENGINEERS.

In the next box, describe the image and the problems it presents.

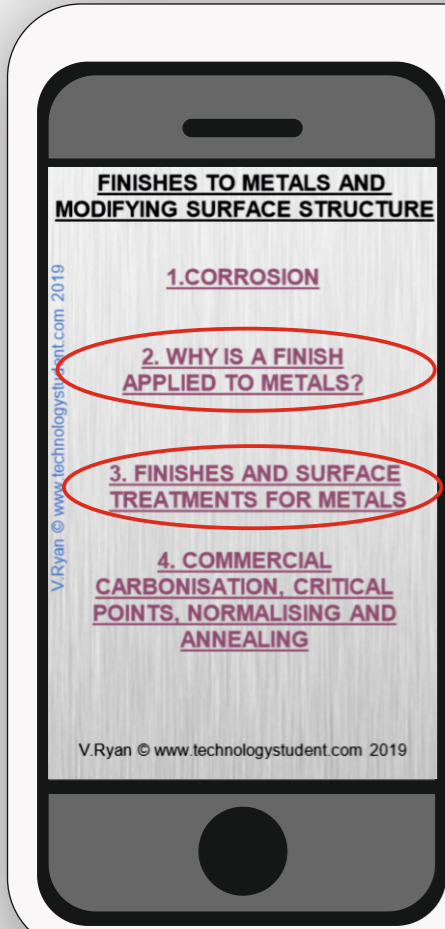


YOUR DESCRIPTION OF THE PROBLEMS PRESENTED TO ENGINEERS.

4

LIST A RANGE OF FINISHES THAT CAN PREVENT / REDUCE CORROSION OF METALS.

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1 LIST THREE REASONS WHY A FINISH IS APPLIED TO METALS?

2 LIST SIX WAYS METALS CAN BE PROTECTED, WITH A FINISH.

A _____

B _____

C _____

D _____

E _____

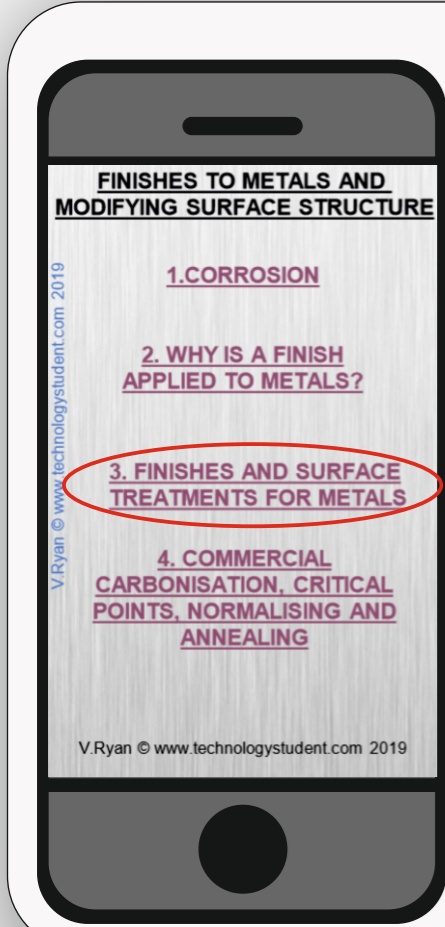
F _____

3 BELOW IS A DIAGRAM REPRESENTING ANODISING. Study the diagram and then answer the questions in the next two boxes.

WHAT ARE THE BEFITS OF ANODISING?

DESCRIBE THE ANODISING PROCESS.

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1

WHAT IS PLANISHING?

Support your answer with a sketch in the next box.



YOUR SKETCH - PLANISHING.

2

IN THE SPACE BELOW, PASTE FOUR IMAGES OF PLANISHED PRODUCTS / SURFACES.

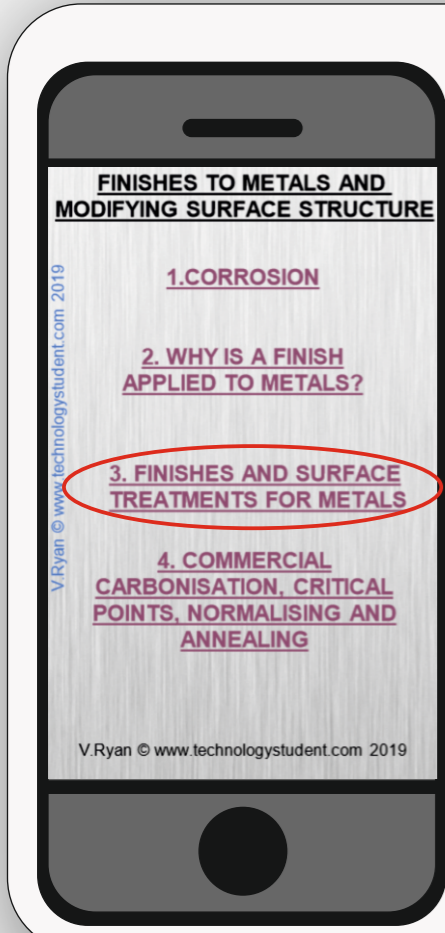
3

WHEN IS LACQUER NORMALLY APPLIED TO THE SURFACE OF A METAL?



DESCRIBE THE PROCESS OF APPLYING LACQUER TO A METAL.

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1

WHAT IS POWDER COATING?



LIST FOUR PRODUCTS THAT ARE SOMETIMES POWDER COATED.

A _____

B _____

C _____

D _____

2

IN THE SPACE BELOW, DRAW A DIAGRAM THAT REPRESENTS APPLYING A 'POWDER COATING'.

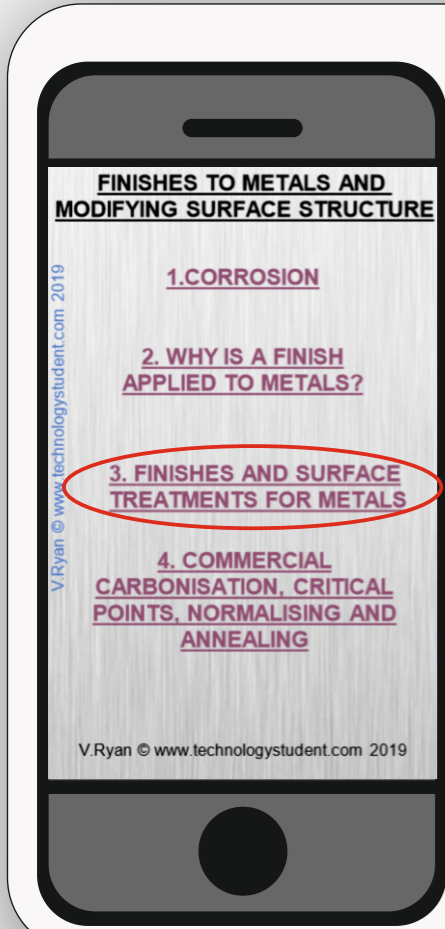
3

DESCRIBE TWO TECHNIQUES FOR SPRAYING METAL SURFACES WITH PAINT.

4

WHAT IS THE DIFFERENCE BETWEEN WATER BASED AND OIL / SOLVENT BASED PAINTS?

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1

WHAT IS A 'MACHINED' FINISH?

NAME THREE MACHINES THAT PRODUCE A 'MACHINED' FINISH.

2

DESCRIBE MACHINING THAT YOU HAVE CARRIED OUT.

3

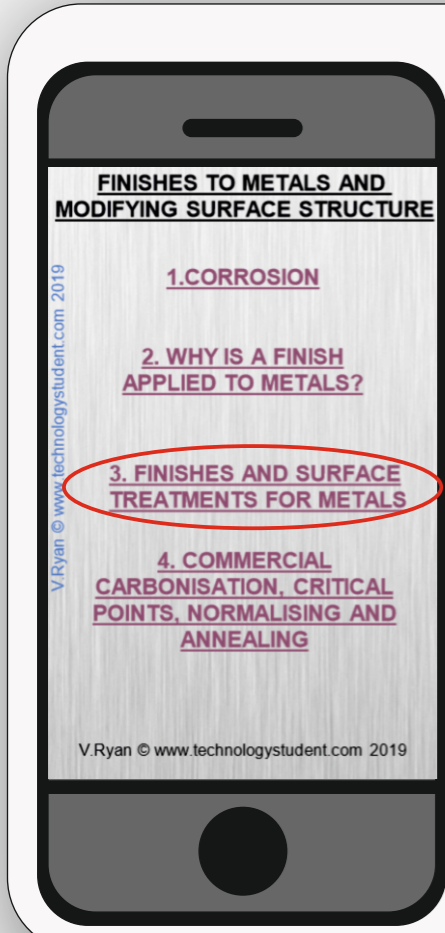
IN THE SPACE BELOW, PASTE IMAGES OF THREE DIFFERENT 'MACHINED FINISHES'. NAME THE MACHINE USED TO PRODUCE EACH FINISH.

MACHINE: _____

MACHINE: _____

MACHINE : _____

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1

WHAT IS HOT DIP GALVANISING?

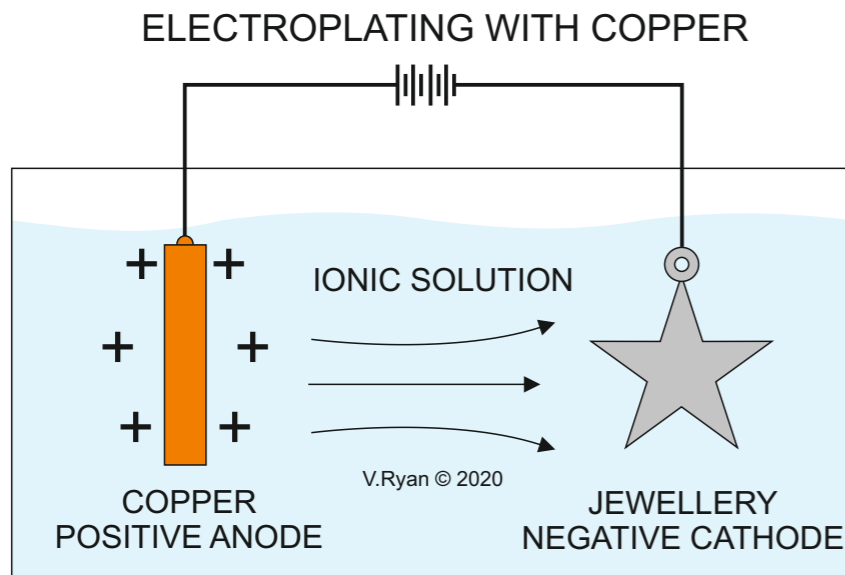
Support your answer with a sketch in the next box.



YOUR SKETCH - HOT DIP GALVANISING.

2

BELOW IS A DIAGRAM REPRESENTING ELECTROPLATING. Study the diagram and then answer the questions in the next two boxes.

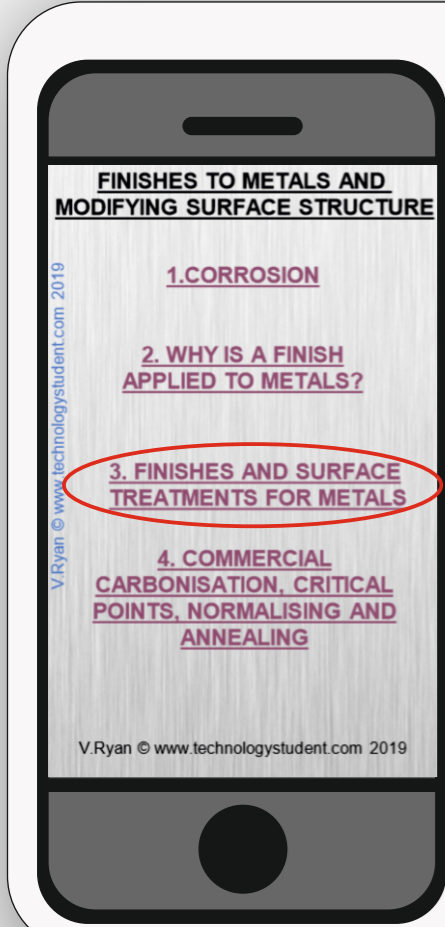


WHAT ARE THE BEFITS OF ELECTROPLATING?



DESCRIBE THE ELECTROPLATING PROCESS.

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1

WHAT IS ELECTRO-GALVANISING?

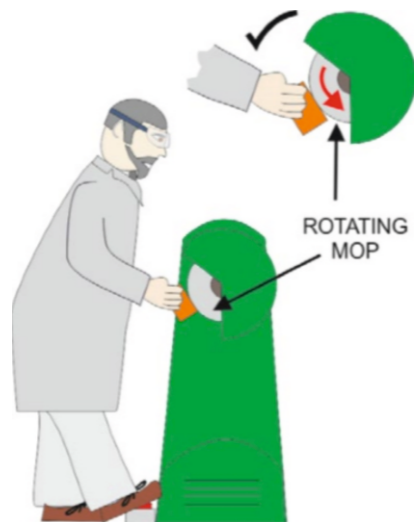
Support your answer with a sketch in the next box.



YOUR SKETCH - ELECTRO-GALVANISING.

2

A POLISHED FINISH IS OFTEN APPLIED TO METALS. DESCRIBE THE POLISHING PROCESS, SHOWN BELOW.



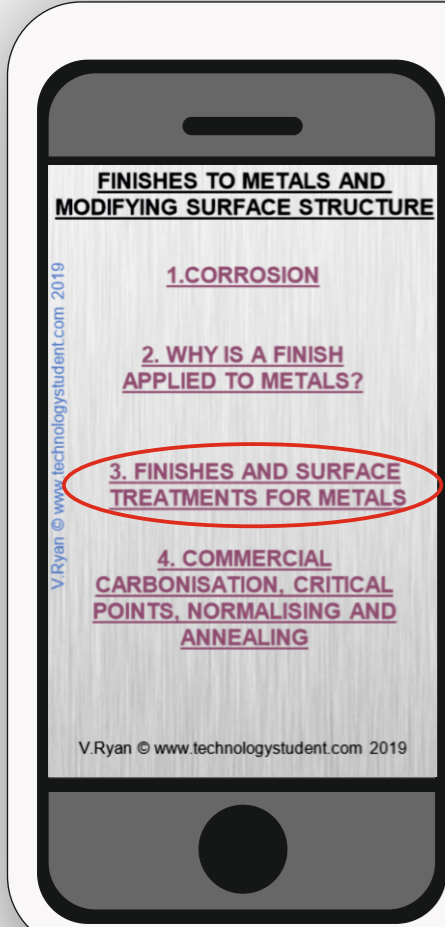
3

BELOW ARE ETCHED PRODUCTS



DESCRIBE ONE ETCHING PROCESS.

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1

BRIEFLY, WHAT IS CASE HARDENING?

WHAT IS THE BENEFIT OF CASE HARDENING?

2

SEARCH THE INTERNET FOR CASE HARDENED COMPONENTS / PRODUCTS. LIST FOUR BELOW:

A: _____

B: _____

C: _____

D: _____

3

DESCRIBE THE CASE HARDENING PROCESS.

Include a sketch(s) supporting your description.

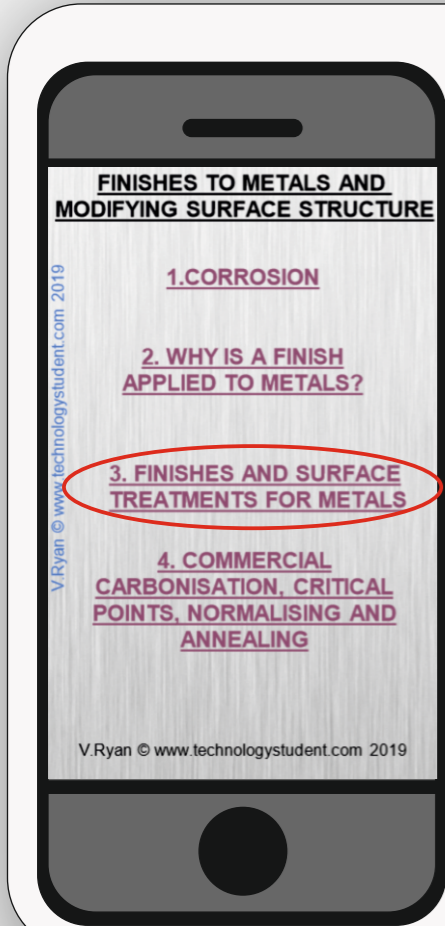
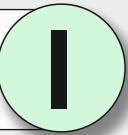


YOUR SKETCH(S) - CASE HARDENING.

4

WHAT IS 'ANNEALING' OF METALS?

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1

WHAT IS TRADITIONAL OIL BLACKING OF STEEL? DESCRIBE THE PROCESS.

Support your answer with a sketch in the next box.



YOUR SKETCH - TRADITIONAL OIL BLACKING.

2

DESCRIBE THE CHEMICAL BLACKING PROCESS.

Include a sketch(s) supporting your description.

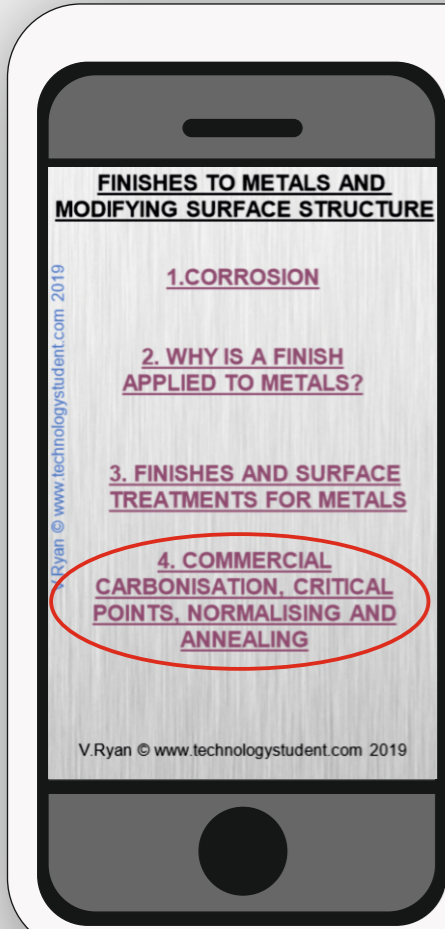


YOUR SKETCH(S) - CHEMICAL BLACKING.

3

PASTE IMAGES OF OIL BLACKED COMPONENTS, IN THE SPACE BELOW.

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1

WHY IS THE CARBON CONTENT OF STEEL IMPORTANT.

Include the example of a screwdriver blade in your answer. Add a sketch(s) in the next box.

ADD A SKETCH(S) TO SUPPORT YOUR WRITTEN ANSWER.



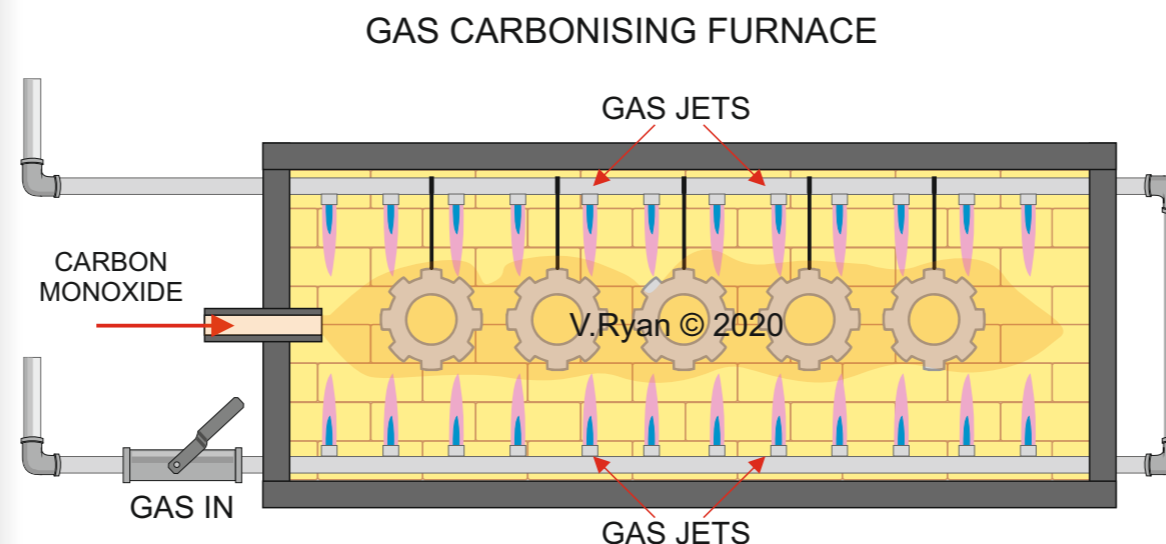
2

DESCRIBE THE INDUSTRIAL PROCESS CALLED 'GAS CARBONISING'.

You can make reference to the diagram in the next box.



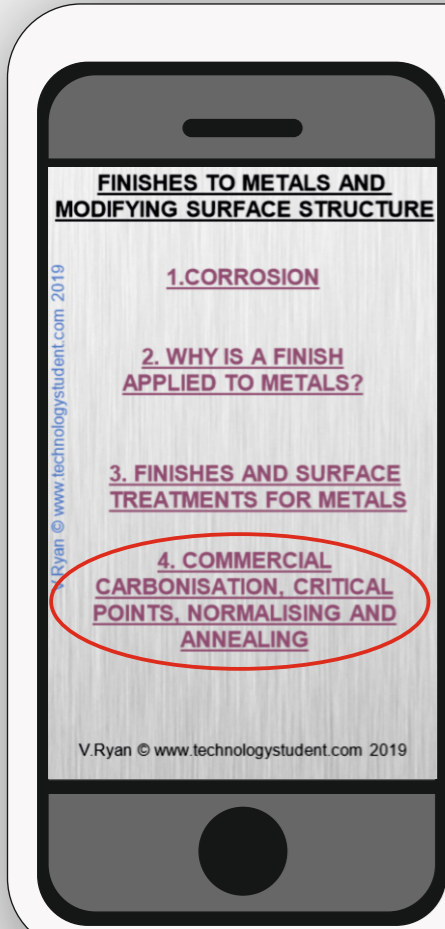
THE INDUSTRIAL / COMMERCIAL PROCESS 'GAS CARBONISING'.



3

WHAT IS MEANT BY THE CRITICAL POINT AND CRITICAL RANGE OF METALS?

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1

WHAT IS 'NORMALISING' OF STEEL?

Sketch the two stages of normalising, in the next box.



NORMALISING OF STEEL.

STAGE ONE

STAGE TWO

2

DESCRIBE THE COMMERCIAL ANNEALING PROCESS..

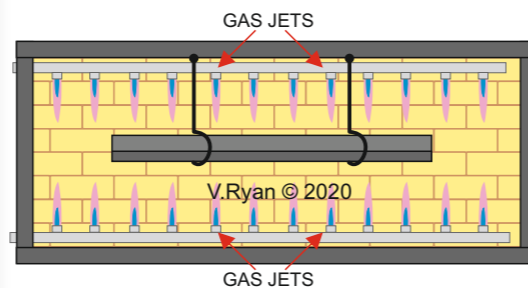
You can make reference to the diagram in the next box.



COMMERCIAL ANNEALING PROCESS.

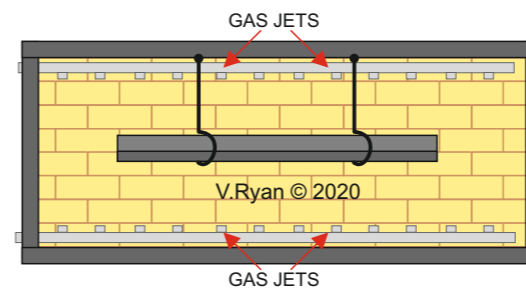
STAGE ONE

STEEL HEATED ABOVE UPPER CRITICAL POINT IN A FURNACE



STAGE TWO

STEEL COOLED IN THE FURNACE, WHEN THE GAS IS TURNED OFF



3

HOW DOES ANNEALING IN A SCHOOL WORKSHOP, DIFFER FROM THE COMMERCIAL PROCESS?

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