? Calculating how quick a pipeline will fill

thread378-320640

Pipeline Jobs   Pipeline Job   Jobs Pipeline   Pipeline

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shoehorn6 (Mechanical)   23 Apr 12 10:15

Hello,

I have a pipeline 1200mm long 33.40mm (DN25)
diameter. We are opening a valve which will release the water at a flow rate of
15l/s . I need to know how long it will take for the pipeline to fill up.

Can you please also give me a run through of
how you got the answer if its not too much hassle.

Many thanks
Shoe

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rutherford703 (Chemical)   23 Apr 12 10:57

You can find the volume
inside the piping. The volume is approximately 1l
You have a
water flowrate of 15l/s
Then, the time required to fill the
pipe=1/15s
What are trying to do with this calculation?

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cvg (Civil/Environmental)   23 Apr 12 11:40

sounds a bit simplistic,
the line will likely be full before the valve is fully open. the steady state
maximum flow rate may never be reached. there will be a variable flow rate as
the valve opens. it all depends on how fast you can open the valve and what the
flow rate is at partially open.

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zdas04 (Mechanical)   23 Apr 12 14:37

A 1.2 m pipeline sounds
like the kind of lame questions asked in text books. I'm guessing that this is
homework.

David

★ **BigInch** (Petroleum)   23 Apr 12 14:41

No. This is too lame
even for a textbook.

What would you be doing, if you
knew that you could not fail?

★ **1gibson** (Mechanical)   23 Apr 12 15:59

Faster than (insert units
here)

1) The blink of an eye
2) You can say "_____"
3) You can
perform some action, snap your fingers for example
4) (An
animal) under some sort of duress

In this case, I'd go with "faster than you can open the valve."

★ **MiketheEngineer** (Structural)   24 Apr 12 16:55

Volume divided by flow
rate = time.... DUH??

NEW! ★ **shoehorn6** (Mechanical)   25 Apr 12 12:08

You are such a lovely
helpful bunch.

Why don't you try
sticking your head up your a*s, see if it fits!

NEW! ★ **TenPenny** (Mechanical)   25 Apr 12 12:31

Rather a harsh response,
considering that the original question was posed by someone calling themselves a
mechanical engineer. I'm fairly certain the problem, as stated, is something
covered in high school, let alone an engineering course.

NEW! ★ **btrueblood** (Mechanical)   25 Apr 12 14:04

Mr. Shoehorn,

1. are you a student? (student posting is
expressly not allowed on this site)

1.a. are you an engineer? (non-engineering professionals are
similarly not allowed to post here. The phrasing of your question leads us to
believe that you don't understand simple math, and thus could not possibly have
passed an accredited course of study in the field of mechanical
engineering. Please give me a cogent reason explaining why that is not so, and
why I should waste my time replying further).

2. If 1a=no, 1b=yes, can you comment on the fact that you are
asking a question about a "pipeline" that is ridiculously short (1200 mm = 1200
millimeters = 1.2 m = about 3.5 feet of 1 inch pipe - that's a pipe, but not a
pipeline).

3. If you have given the
correct units, then cvg's post is quite correct - the flow rate you give is not
going to be reached within the opening time of some valves, and the fill time
for a steady flow rate is pretty close to the opening time of even a
fast-opening solenoid valve, and so the answer to your question becomes "it
depends on the opening transient of the valve". You will need to get/post a lot
more information about the valve, or more likely, go and conduct a test to get a
trustworth answer.

If you can't give us
cogent questions, we can't give you intelligent
answers.

★ Thank btrueblood and star this post!	Inappropriate post? If so, Red Flag it!	Check out the FAQ area for this forum!

NEW! **vpl** (Nuclear)   25 Apr 12 14:24

I have to admit that this
thread has been my "entertaining read for the week," though it would been more
humerous if Shoehorn had used an emoticon rather than somewhat lame
profanity.

Even Shoehorn deserved a
star for the "lovely helpful bunch."

Patricia Lougheed

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Eng-Tips.com Forum Policies**: Eng-Tips.com Forum Policies for tips on how to
make the best use of the Eng-Tips Forums.

	Inappropriate post? If so, Red Flag it!	Check out the FAQ area for this forum!

NEW! **MiketheEngineer** (Structural)   25 Apr 12 14:28

No - he doesn't

★ Thank MiketheEngineer and star this post!	Inappropriate post? If so, Red Flag it!	Check out the FAQ area for this forum!

NEW! **1gibson** (Mechanical)   25 Apr 12 14:39

Be honest - this thread
is about a beer bong, isn't it?

NEW! TheTick (Mechanical)   25 Apr 12 15:11

> ❝ **Quote (shoehorn):**
>
> Why don't you try sticking
> your head up your a*s, see if it fits!

We're
engineers. Before attempting any experiments, we must caluculate. We would
first need necessary information such as diameters and volumes of the orifices
and appendages.