ST Robotics Collaborative Robot Safety for 2023

Safety First! ST Robotics New Safety Software for their R12 Collaborative Robots.

Robot and Frank

PRINCETON, NJ, USA, April 19, 2023 /EINPresswire.com/ -- ST Robotics Collaborative Robot Safety for 2023

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Collaborative Robotics
is where it is supposedly safe for a person to work with and in close proximity to a robot arm.
However this is illusionary.
Risks always should be assessed.

IMAGE 1 Robot and Frank

> We need to be honest about collaborative robot safety. There are too many discrepancies between the sales departments and the safety manuals."
>
> *ST Robotics CEO Serial inventor Dr. David Sands*

Whatever robot you have there is one law that can never be broken:
Newtons First Law
states an object will not change its motion unless a force acts on it. In the robot case the force is the reaction force from whatever the robot hits, be it solid or human.
For a collaborative robot as soon as an impact is detected the robot stops but it can not stop dead. The kinetic energy must be absorbed by the object being impacted even when that inertia is being arrested by the system controlling the robot.
When an ST robot hits a stationary object the motors come out of synchronism and the robot stops with an error on the screen. All further motion is canceled. However it still can't stop dead. No robot can.
Example impact forces compared

Model	Impact force

Leading brand cobot	1460N
R12	60N

How we measure impact forces

We make the assumption that the human arm is not able to be bumped out of the way but may be hypothetically jammed against a solid surface, for example between robot and bench.

So our approach was entirely empirical. You can see how we measured the impact force in the article on our website: https://strobotics.com/cobot.htm

ouch!

Energy recovery
ST has developed a software strategy as an optional extra safety feature. An ST robot won't just stop on impact but will back away in the exact opposite direction from the collision, partly meeting the PFL (power and force limiting) requirement of ISO 10218.
IMAGE 2 Ouch!

About ST Robotics
ST Robotics has been in business making robots for 30 years. Its R12 robot arm was the first truly industrial arm in such a small size. ST have taken a modular approach to options to keep costs to a minimum with options such as a small electric grippers, miniature 6 axis module and a unique miniature vacuum pickup. The famous R12 'firefly' is light, fast, accurate, easy to program and above all: low cost.

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