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# Request for Proposal

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AsahiKASEI

**RFP_2018_ 3863**

# Partner for Business Using Elastic Electrical Wire ” ROBODEN™”

**RESPONSE DUE DATE: November 26, 2018**

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## DESCRIPTION

NineSigma, representing Asahi Kasei Corp. (homepage: http://www.asahi-kasei.co.jp/asahi/en/ ), seeks a **business partner that makes use of “ROBODEN™”, the world’s first elastic electrical wire successfully developed by Asahi Kasei**.
This electrical wire was developed based on the idea that “an elastic electrical wire without slack will be needed in the future, for wiring in movable parts in industrial robots, humanoid robots, and wearable devices etc.” Asahi Kasei has issued this open request, wishing to solve customers’ wiring problems through joint development with the customer using this elastic electrical wire.
Asahi Kasei is willing to explore new potential markets including relatively small ones.

## CHARACTERISTICS OF “ROBODEN™”, AN ELASTIC ELECTRICAL WIRE

The “ROBODEN™” elastic electrical wire has the following characteristics:

- A structure whereby conductor wires are wound around the elastic body, as illustrated in Figure 1, makes it possible to stretch by approximately from 20% up to 100% compared to the original length.
- Efficient power and signal transmission is possible owing to copper wire with low electric resistance used as a conductor wire.
- The parallelly-wound structure of the conductor wire and usage of holding strings allows the following:
  - Good signal transmission (Figure 3)
  - Suppression of local deformation and realization of long life
- The wire can be customized according to the customer’s specific requirement.

For further details of the elastic electrical wire, please also see the reference below.
https://www.asahi-kasei.co.jp/fibers/en/roboden/summary/

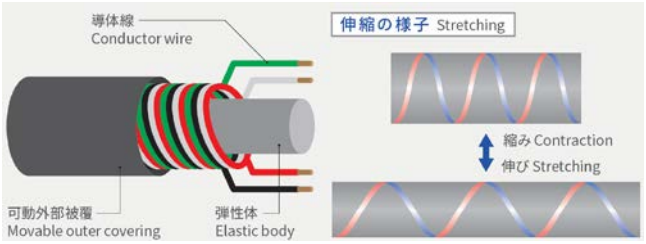


Figure 1. Structure of Roboden™

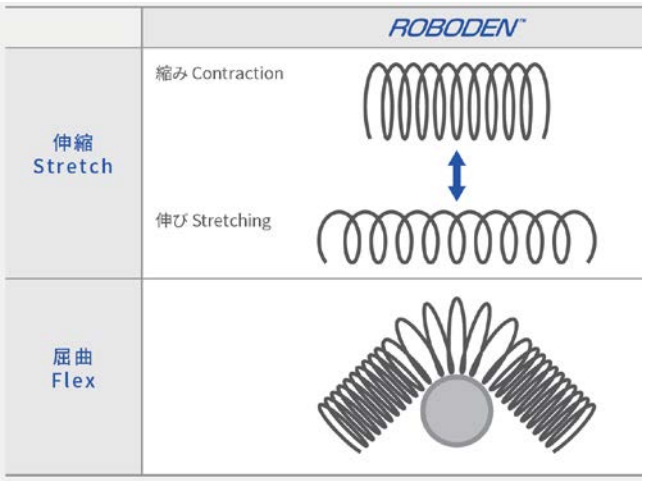


Figure 2. Characteristics of Roboden™

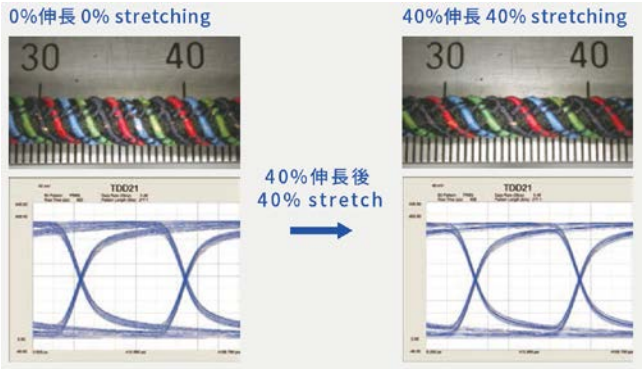


Figure 3. Signal transmission of pristine (left) and stretched (rights) Roboden™

## Anticipated Business Partner

Proposals from organizations that can establish a complementary, mutually beneficial, and cooperative relationship with Asahi Kasei are anticipated, e.g. potential joint development partners such as:

- Organizations with problems such as "wires becoming slack" and "disconnected wires" inside and outside a device such as products listed in Table 1
- Organizations seeking a conductor wire for usage in proximity to human bodies which can flexibly follow movements of the human body
- Other organizations with a technology related to electrical wires, such as connectors and sensors, and that will be able to solve the customer's wiring problems by making use of ROBODEN™

**Table 1: Examples of potential application of the elastic electrical wire**

| | Applications |
|---|---|
| **1** | Internal or external wiring in industrial robots |
| **2** | Power supply for powered exoskeletons |
| **3** | Wearable devices in which electric power are especially required, e.g. electrical muscle stimulation (EMS) |
| **4** | Communication and charging cables, such as USB cables and AC chargers<br>Or products using the above devices (external HDDs, chargers, batteries, etc.) |

## Response Procedure

**Step 1**:
Responses should include all the necessary items, using the template below, and be submitted via NineSights.

Please contact the Solution Provider Help Desk phd2@ninesigma.com for assistance about registration and proposal submission.

**Step 2**:
Once Asahi Kasei completes the first screening process, NineSigma will contact potential partner organizations for further processes.

**Step 3**:
Further collaboration details will be discussed directly with Asahi Kasei.

## Items to be Submitted

Please describe the following items to the extent no confidential information are included

- Anticipated specific applications
- The current wiring problems and the value of using ROBODEN™
- Specifications required for the elastic electrical wire
  - Acceptable maximum diameter and desired number of cores
  - Maximum electric current, maximum power voltage, and maximum operating frequency
  - Desired stretching ratio
  - Other requirements such as incombustibility, ambient temperature of usage

Note: If possible, please also include product information regarding existing cables.

- Questions about ROBODEN™ (if any)
- Desired time to initiate the project in the case that joint development with Asahi Kasei will be conducted
- Organization overview

## Notes on Response

Proposal shall have clear points and should not include confidential information. Supplemental files may be submitted in addition to the proposal.