

Cost-effective automation

Research and innovation projects

A call for proposals within the Produktion2030 Strategic Innovation Programme

The Strategic Innovation Programme Produktion2030 is part of a joint effort by Vinnova, the Swedish Energy Agency, and Formas. The purpose of this initiative on strategic innovation is to create preconditions for industrial competitiveness and sustainable solutions to global societal challenges.

For more information about the programme, contact www.produktion2030.se



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Revision History

Date	Revision
171220	Numbering in Section 7.2.
180116	Impact goals in chapter 2

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1 Invitation summary

The Strategic Innovation Programme Produktion2030 hereby invites actors from industry, academia, and research institutes to its ninth call for proposals.

1.1 Research and innovation projects that will lead to cost-effective automation in Swedish manufacturing industry

Project proposals should clearly focus one or two of Produktion2030's six areas of strength, see Section 4.2.

The total budget for this call is SEK 35 million. A single project consortium can receive at most SEK 5 million in grants for a maximum time period of 32 months.

The impact goals for this call are:

- increased competitiveness in Swedish industry;
- increased use of automation in Swedish manufacturing industry, for technical processes and/or services;
- increased cost-effectiveness in Swedish manufacturing industry.

Three key criteria must all be fulfilled, for project proposals to be considered in this call:

1. The project proposal should clearly show how the project's solutions will enable real and substantial cost-efficiency for companies in Sweden, especially for small and medium-sized companies.
2. The project proposal shall clearly show close and complementary collaboration between industry, academia, and research institutes.
3. The project shall focus on broad and effective dissemination of results within and outside the project consortium, especially for small and medium-sized companies. At least 15 per cent of Vinnova's grant is to be used for innovative and effective dissemination efforts and communication of results. These activities are to be carried out within the project period.

The call for proposal's total budget is SEK 35 million. The maximum grant per project is SEK 5 million and the maximum level of funding per project is 50 per cent of the project's eligible costs. Other funding is to come from companies or other non-governmental actors.

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1.2 Areas of strengths and challenges for the Swedish manufacturing industry

Produktion2030's six areas of strength describe important challenges for Swedish industry (Fig. 1 and www.produktion2030.se). Digitisation and sustainability are two crosscutting challenges and goals for Produktion2030. This means that results from projects and efforts within Produktion2030 should lead to increased use of digital technologies and/or increased economic, social, and ecological sustainability.

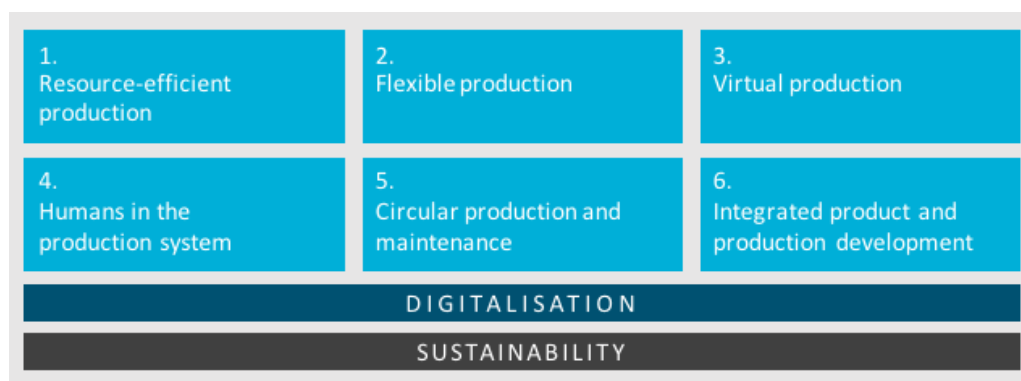


Fig. 1. Produktion2030 focuses on six areas of strength and two crosscutting challenges. Detailed information on Produktion2030, areas of strength and challenges is available at www.produktion2030.se.

The call is aimed at project consortia consisting of at least three companies, at least one higher education institution, and at least one research institute.

Schedule for this call for proposals:

The call opens	20 December 2017
Application deadline:	15 March 2018
Date of decision:	10 April 2018
Start of project, no later than	27 April 2018
End of project, no later than:	31 December 2020

Contact persons for background, purpose, and impact of the call:

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For questions about the assessment process, legal questions and other questions about the call, please contact:

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Administrative questions, please contact:

Bengt Larsson, Vinnova
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Contact regarding Vinnova's web-based Application Submission Service:

Vinnova IT Support
+46 (0)8-473 32 99
helpdesk@vinnova.se

Current information about the invitation to participate and a link to our web-based application submission service eServices Portal (Intressentportalen) can be found at www.vinnova.se under For Applicants > Calls for Proposals.

2 What does Produktion2030 want to achieve with this call?

Produktion2030 wants to contribute to improved efficiency in industrial production through increased use of automation technology.

The impact goals for this call are to:

- increase the competitiveness of the Swedish manufacturing industry;
- increase the use of automation by the Swedish manufacturing industry both for technical processes and services;
- increase cost-effectiveness in the Swedish manufacturing industry;

Three key criteria must all be fulfilled, for project proposals to be considered in this call:

1. The project proposal should clearly show how the project's solutions will enable real and substantial cost-efficiency for companies in Sweden, especially for small and medium-sized companies.
2. The project proposal shall clearly show close and complementary collaboration between industry, academia, and research institutes.
3. The project shall focus on broad and effective dissemination of results within and outside the project consortium, especially for small and medium-sized companies. At least 15 per cent of Vinnova's grant is to be used for innovative and effective dissemination efforts and communication of results. These activities are to be carried out within the project period.

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3 Who is this call for proposals intended for?

The call is aimed at project consortia consisting of at least three companies, at least one higher education institution, and at least one research institute. Close and complementary collaboration between industry, academia and research institutes is a key criterion in assessing project proposals. A balance between the efforts of all project partners is important. The project consortium is to promote gender equality between men and women.

4 What do we fund?

4.1 The call's main challenge

Increased dissemination and broad utilisation of automation technology is a prerequisite for a general increase in the automation level of Swedish industry.

In this call, cost-effective automation refers to the following:

- 1) automation of technical factors in different production processes, and
- 2) automation of engineering or office work aimed at production.

Investments in increased automation are often hampered by (i) high investment costs and (ii) the need to integrate new technical solutions with pre-existing equipment (also called “brownfield installations”). This is particularly true for small and medium-sized companies. Increasing the cost-effectiveness of such automation solutions is a major challenge

4.2 Project type

Project applications within this call are to be for research and innovation projects. The projects should create solutions for cost-effective automation. Since cost-effective automation is particularly important for small and medium-sized enterprises, approved projects should make specific efforts to disseminate project results. At least 15 per cent of Vinnova's grant should be used for innovative ways of disseminating project results to this target group.

Projects should focus on problems and challenges within one or two of Produktion2030's six areas of strength. The areas of strength are described below.

4.2.1 Area of strength 1 – Resource-efficient production

Resource-efficient production is a prerequisite for manufacturing in a country like Sweden with high wages, quality levels and material costs. Resources such as materials, people, energy, capital and time must be used efficiently for production to be competitive. Research and innovation within resource-efficient production requires a holistic approach and affects all life-cycle phases for products and production systems.

4.2.2 Area of strength 2 – Flexible production

Flexibility is a prerequisite for customised, individualised products and one-off-a-kind production. Flexible production can handle volume changes, variations, new materials, and new combinations of materials. It requires innovative manufacturing methods, automation solutions and knowledge. Automation, digitalisation and advanced simulation models create flexibility through integration of systems to achieve decentralised control and monitoring of production processes.

4.2.3 Area of strength 3 – Virtual production

Virtual tools and digitised models are essential for developing the next generation of complex products and production systems. In tomorrow's factories, many production resources and machinery are connected to the internet. Data collection, analysis, and the communication and management of large amounts of data enable the creation of a virtual clone of production systems. This virtual factory allows companies to make the right decisions by optimising complex data and developing smart production strategies.

4.2.4 Area of strength 4 – Humans in the production system

Although the future of industry is digital, humans still have a vital role to play. The complexity of production requires that competent individuals collaborate with advanced, automated production systems, robots, and manufacturing processes. People must manage production processes and systems in virtual and global networks. Digitalisation, sensors, and large amounts of data create new demands for personal safety, advanced communication, interfaces, and allocation of tasks between humans and technical systems. Advanced technical solutions enable development of workstations, working methods, ergonomics, and access to information regardless of language.

4.2.5 Area of strength 5 – Circular production systems and maintenance

Circular systems for products and production systems are made possible through, for example, technologies for remanufacturing, thus radically extending the life of products and production systems. Products can be reused and remanufactured for several cycles through smart maintenance and new combinations of materials and components. Production systems can also be used and reused for long periods through smart maintenance and analysis of large amounts of operation data (big data). The transition to a circular economy and production requires a new design approach at the product and production level that enables services such as "production capacity as a service".

4.2.6 Area of strength 6 – Integrated product and production development

Products must create value for all actors in a supply chain. Products and production systems need to be developed in parallel and to be integrated simultaneously, to create speed and flexibility in the market. Integration requires

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digital product models and tools as well as information from each previous step of the development process. Integrated product and production development can improve competitiveness using large amounts of collected data, new material models, and advanced product and process models.

5 How much funding do we award?

The total budget for this call is SEK 35 million. The maximum grant for a project is SEK 5 million and Vinnova's contribution cannot exceed 50 per cent of eligible costs.

Our funding is in the form of grants. Grants to organisations that conduct commercial activities are covered by rules governing state aid.¹ These rules govern such things as types of costs and what percentage may be covered by grants. The document "Guide till Vinnovas villkor om stödberättigande kostnader" (in Swedish only) explains which costs are considered eligible.²

Grants to higher education institutions or research institutes may be funded up to 100 per cent. Individual industrial project partners can receive up to 20 per cent of Vinnova's total grant per company.

6 Requirements for assessing applications

We will only assess applications that meet the following formal requirements:

- The project may not have commenced prior to the application's submission.
- The project consortium is to consist of *at least three companies, at least one participant from academia and at least one participant from the research institute sector.*
- The project partners must be legal entities.
- The application is to specify that the project will start no later than 27 April 2018.
- The application is to specify that the project will end no later than 31 December 2020.
- The application is to be completed according to the instructions in Section 9.
- The project summary is to be e-mailed to the programme office for Produktion2030's at: cecilia.warrol@teknikforetagen.se.
- Vinnova's contribution can total at most 50 per cent of eligible costs for the

¹ Read more about state aid on our website: <https://www.vinnova.se/sok-finansiering/regler-for-finansiering/statligt-stod>. You will also find our general terms and conditions for grants and a guide to terms and conditions for eligible costs: <https://www.vinnova.se/sok-finansiering/regler-for-finansiering/allmanna-villkor/>

² See <https://www.vinnova.se/globalassets/dokument/guide-till-vinnovas-villkor-om-stodberattigande-kostnader-2016-04-11.pdf>.

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project.

- The project's budget is to specify the project's implementation costs and costs for dissemination the results.
- The submitted project budget should only include eligible costs. Eligible costs are listed in the document "Guide till Vinnovas villkor om stödberättigande kostnader" (in Swedish only).³ Ineligible project costs are to be specified in the project description since they may impact the assessment.
- At least 15 per cent of Vinnova's grant is to be used for dissemination of results. Dissemination efforts are to be specified and described in the project description.

If the formal requirements are not met, the application will be rejected with an explanation of which formal requirements were not met. Once the application period has ended, additions can only be made upon request from Vinnova.

7 Assessing submitted applications

7.1 What do we assess?

Each application will be assessed in competition with other submitted applications. Assessments will be conducted on the electronic applications submitted to Vinnova's eServices Portal. Applications are evaluated by a specially appointed panel of independent Swedish and international experts.

The application and decision-making processes are as follows:

1. Applications are submitted via Vinnova's eServices Portal.
2. The project summary is to be e-mailed to the programme office for Produktion2030 at cecilia.warrol@teknikforetagen.se.
3. Applications that meet the formal requirements will be assessed based on the below assessment criteria by experts specially appointed by Vinnova. These experts will recommend which projects should be awarded grants and which should be rejected.
4. Vinnova makes the final decision on which projects will funded.
5. Decisions will be sent to applicants, and the programme office for the strategic innovation programme will be informed of the decision.

7.2 How do we assess the applications?

A project in this call for proposals is to have a clear focus on *one or two of the six areas of strength*, which is to be specified in the project application. The project is to also have a clear aim to increase utilisation of digitalisation in the manufacturing industry.

³ See <https://www.vinnova.se/globalassets/dokument/guide-till-vinnovas-villkor-om-stodberattigande-kostnader-2016-04-11.pdf>.

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Applications for research and development projects are assessed based on three main criteria:

1. Potential
2. Actors
3. Feasibility

		Criterion	Description	<input checked="" type="checkbox"/>
1 Potential	1.1	<u>Impact goals</u>	How well does the project contribute to the call's and Produktion2030's impact goals?	<input type="checkbox"/>
	1.2	<u>State-of-the-art</u>	How much do the expected project results exceed scientific and industrial state-of-the-art in the field?	<input type="checkbox"/>
	1.3	<u>Industrial need</u>	How well does the application describe Swedish industry's need for cost-effective automation, especially for small and medium-sized companies?	<input type="checkbox"/>
	1.4	<u>Dissemination</u>	How well does the application describe the investment of at least 15 per cent of Vinnova's grant in creating new forms of high quality dissemination of results?	<input type="checkbox"/>
2. Actors	2.1	<u>Who</u> (consortium)	How well do the project goals match the collected <u>expertise</u> , the programme office, the stated roles and resource needs?	<input type="checkbox"/>
	2.2	<u>Collaboration</u>	How well is it shown that the project will achieve <u>close and dedicated collaboration</u> between industry, academia and research institutes?	<input type="checkbox"/>
	2.3	<u>Gender equality</u>	How well does the application satisfy gender equality needs regarding the distribution of power and influence between women and men?	<input type="checkbox"/>
	2.4	<u>Small and medium-sized companies</u>	How well are small and medium-sized companies involved in the project?	<input type="checkbox"/>
3 Feasibility	3.1	<u>How</u>	How realistic are the project's timetables and activity plans?	<input type="checkbox"/>
	3.2	<u>Risk management</u>	How well are <u>risks</u> identified and how well are risk management activities described?	<input type="checkbox"/>
	3.3	<u>Utilisation and dissemination of results</u>	How well does the application describe <u>utilisation</u> and wide-spread <u>dissemination</u> of project results outside the project consortium?	<input type="checkbox"/>

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8 Decisions and terms

8.1 About our decisions

Applications meeting the formal requirements and accepted for assessment receive a decision with a shorter description of how the application was assessed based on the three criteria Potential, Actors and Feasibility.

Vinnova makes the final decisions on which projects will be funded, with consideration given to the assessors' recommendation, and informs the applicants of the decisions. Decisions by Vinnova to accept or reject an application are final and cannot be appealed.

Decisions specify how much of the grant each party in the project is awarded. The grant is awarded in accordance with Vinnova's Regulation on State Aid for Research and Development and Innovation (SFS 2015:208). If grants have been awarded incorrectly or are more than allowable amount, the recipient may be liable for repayment.

8.2 Terms and conditions for awarded grants

Vinnova's general terms and conditions for grants 2018⁴ apply to approved grants. The terms and conditions include rules on project agreements, conditions for payments, follow-up, reporting and utilisation of results.

Because the call for proposals is being issued within the framework of the Produktion2030 Strategic Innovation Programme, the following special terms and conditions apply:

1. The project is to be represented by at least one project participant at conferences and other activities arranged within the Produktion2030 Strategic Innovation Programme.
2. When providing information about the project and at each public presentation of project results, it is to be indicated that the work was conducted with support from the Produktion2030 Strategic Innovation Programme, a joint project of Vinnova, Formas and the Swedish Energy Agency. Public presentations here include publication, regardless of medium, and oral presentations.
3. Research institutes within the RISE group may, when they participate in their non-commercial operations, include indirect costs according to the full cost principle that they apply and that is approved by Vinnova.

⁴ You can read relevant terms and conditions on our website: <https://www.vinnova.se/sok-finansiering/regler-for-finansiering/allmanna-villkor/>

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4. The coordinator is to provide information on the project summary, project manager and constellation of actors for publication at www.kunskapsformedlingen.se. Instructions and templates for this will be provided together with the decision.
5. The project's budget is to specify the project's implementation costs and costs for dissemination of the results. At least 15 per cent of Vinnova's grant is to be used for innovative and effective dissemination activities and communication of results. These activities are to be carried out within the project period.

Additional special terms and conditions may be added for specific projects.

9 How to apply

To apply for a grant, fill in a web-based application form on our eService Portal (Intressentportalen) at portal.vinnova.se, which is available at our website. You can upload any necessary attachments⁵ in PDF format.

- Project description
- Project summary (public)
- CV annex.

The project description is to be no longer than ten A4 pages (in portrait orientation), single column, 12-point font and black text. References to information on websites or similar sources will not be evaluated in determining whether to fund the project.

The project summary (at most two pages) should be able to be published freely and, thus, may not contain any confidential or in other way sensitive information. When submitting the application to Vinnova, the annex "Project summary" is to also be sent by e-mail to the Produktion2030 programme office at: cecilia.warrol@teknikforetagen.se.

The CV annex is to contain relevant CVs for the project manager and all key members of the project team. Each CV is to be no longer than one A4 page, written in 12-point font.

PLEASE NOTE: The application will be assessed by an international group of experts. As such, we strongly recommend to write the application in English.

Once the application period has ended, additions can only be made upon request from Vinnova.

⁵ You can find templates for annexes on our website: <https://www.vinnova.se/e/strategiska-innovationsprogrammet-for-produktion-2030/produktion2030-utlysning-nr-7/>

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10 Who can read the application?

Applications submitted to Vinnova will be public documents. However, we do not release information about an individual's business and operating circumstances, inventions and research results if it can be assumed that the individual will suffer financial loss if the information is made public.

PLEASE NOTE:

The documents sent to the programme office for the Produktion2030 Strategic Innovation Programme are not covered by Vinnova's confidentiality rules.