
KTH VETENSKAP OCH KONST

ROYAL INSTITUTE OF TECHNOLOGY

SVETS KOMMISSIONEN

SSAB

VOLVO

# 4:th Nordic conference on design and fabrication of welded products, 5-6/2

The Nordic conference on design and fabrication of welded structures is a seminar series that is arranged every two to three years and aim to present and report results from ongoing and finished research projects connected to the design and fabrication of welded products.

## *Background*

The fatigue properties in welded structures are in general controlled by other properties than materials data, i e the manufacturing processes have a dominating influence of the choice of material. High quality requirements on welded joints are seldom used which limit the introduction of more high strength steel and many welded components are 20 - 40 % heavier than what is possible. The Swedish Industry have partly failed to develop/introduce production methods to be able to use the high strength steel which has been available for more than 25 years. In the National Technology Platform for Lightweight Welded Structures, LOST (VINNOVA) several important industrial and academic results were developed. Some of the findings in LOST was used as the new weld quality system was refined for serial production in the FFI-project WIQ.

The aim for the VARILIGHT project, where the main part of presentations on this conference has its origin, is to perform a more general study related to design and manufacturing procedures for lightweight structures under fatigue load.

## *Purpose and goal*

The primary goal of VARILIGHT is to enable weight reduction of welded structures which are subjected to fatigue in order to reduce the environmental impact and improve productivity. This will be achieved by studying and mapping the sources of variation and determine possibilities to reduce them in manufacturing processes (welding and cutting), structure strength, and load estimation. A second goal is to develop operating competence for the Swedish welding industry and influence education.

## *Expected results and effects*

The expected results are: - Map of the sources of variation - Enable further introduction of more weight-to-strength efficient material without increasing the risk of failures (enable 20% weight reduction) - Predictive tool for incorporation of welding residual stresses and their relaxation rate in various spectrum loading - Recommendations and guidelines for manufacturing processes and design procedures with larger accuracy and reduced scatter.
This and findings from earlier projects and projects as LifeExt, HipFat and possible future projects are presented and discussed during these 2 days.

## *Registration*

www.svets.se/konferenser, click registration and fill in your data. We are expecting your registration before the 17th of January 2020

## *Costs*

| | |
|---|---|
| 1. Participant in connected projects or PhD-student: | 1200SEK |
| 2. Other participants: | 3000SEK |
| 3. Only day 1(Lunch, factory tour, presentations, Coffee): | 500SEK |

The registration fee 1 and 2 includes: Factory tour, 2x Lunch (day1 and 2), Dinner (day 1), coffee, conference participation and conference proceedings.

### *Hotelrooms*

Quality Hotel Galaxen, Jussi Björlings Väg 25, 0243-216000
Hotel Kupolen, Kupolen 111, 0243-68050
Best Western Gustaf Wasa Hotel, Tunagatan 1, 0243-217400

### *Venue*

Lunch Day 1: Domnarvsgården, http://www.domnarvsgarden.se/
Conference Day 1: Quality Hotel Galaxen Hotell och Konferens
Conference Day 2: Quality Hotel Galaxen Hotell och Konferens

### *Preliminary programme*

**Day 1** 5/2

| Start | End | | Who/Where |
|---|---|---|---|
| **12:00** | **12:45** | **Lunch** | Domnarvsgården |
| **13:00** | **15:15** | Roundtrip at SSAB, busses to and from Venues | Lars Blomqvist |
| **15:30** | **17:00** | Afternoon program | Quality Hotel Galaxen |
| 15:30 | 15:45 | Introduction | Anna Ericson Öberg |
| 15:50 | 16:15 | Round robin study | Zuheir Barsoum |
| 16:20 | 16:40 | Variation in production | Erik Åstrand |
| 16:45 | 17:30 | Mingle and Highlights together with a Posters show | |
| 19:00 | | **Dinner** | Quality Hotel Galaxen |

**Day 2** 6/2

| | | Konferens | |
|---|---|---|---|
| 8:30 | 9:00 | **Registration** | Quality Hotel Galaxen |
| 9:00 | 9:20 | Introduction to the 4:th Nordic conference | Zuheir |
| 9:25 | 9:45 | Summary of article in ”The International Journal of Advanced Manufacturing Technology” | Anna |
| 9:50 | 10:10 | Fracture mechanic analysis of box specimen | Mansoor Khursid |
| 10:15 | 10:45 | **Discussions and Coffee** | |
| 10:45 | 11:00 | Weld life calculations with different tools and calculations of stresses | Bertil Jonsson |
| 11:05 | 11:25 | Weldsimulations: computational methods for managing weld distortion and residual stresses | Jinchao Zhu |
| 11:30 | 11:50 | **Discussions** | |
| 11:50 | 12:10 | Master thesis and ongoing analysis of cut edge | Gustav Hultgren |
| 12:15 | 12:35 | Results from Master thesis (Evdoxia et al) | Peter Hammersberg |
| 12:40 | 13:30 | **Lunch** | |
| 13:30 | 13:50 | HIPFAT: conclusion of project findings | Rickard Aldén |
| 13:55 | 14:15 | LifeExt: conclusion of project findings | Joakim H och Martin E |
| 14:20 | 14:35 | **Discussions and Coffee** | |
| 14:35 | 14:55 | LCC introduction + case study box specimen + planned continuation | Mathilda Karlsson Hagnell |
| 15:00 | 15:20 | Probabilistic methods for weld depth prediction based on process parameters | Rami Mansour |
| 15:25 | 16:00 | Future, new projects and Closing remarks | Zuheir, Anna |