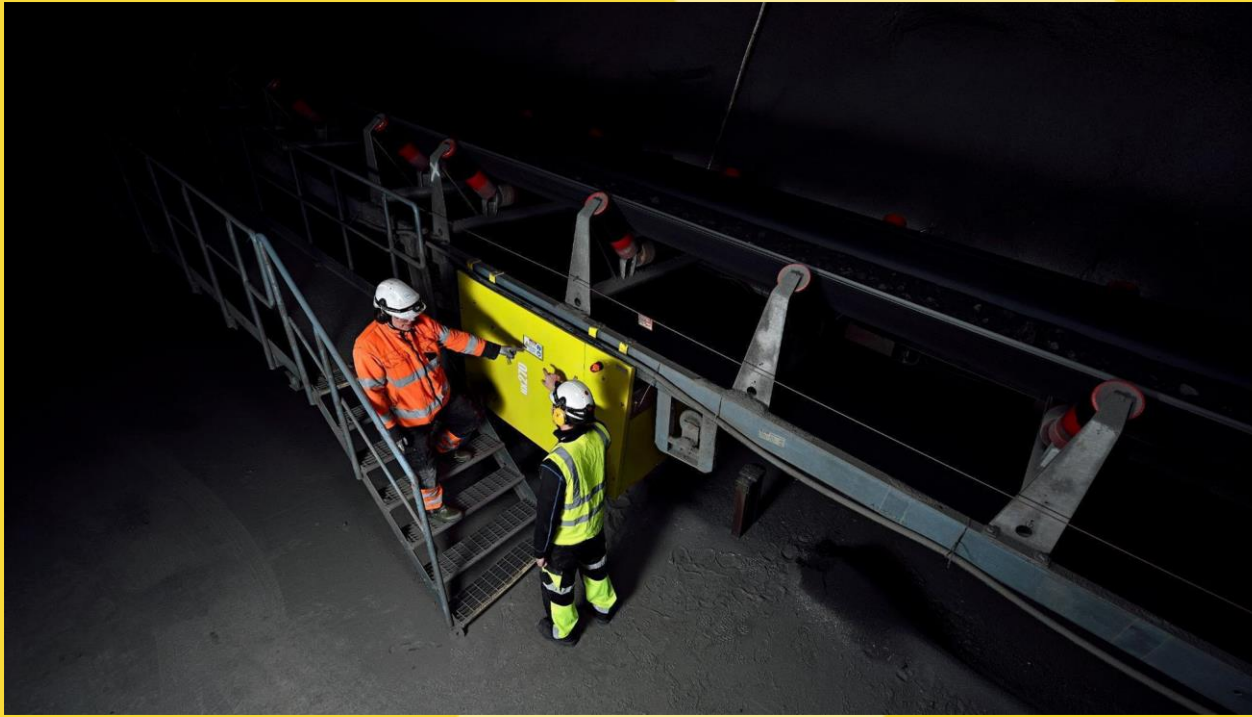
Nepean Conveyors Oy

Digitalization and New Technologies in Bulk Material Handling Solutions



29.09.2022

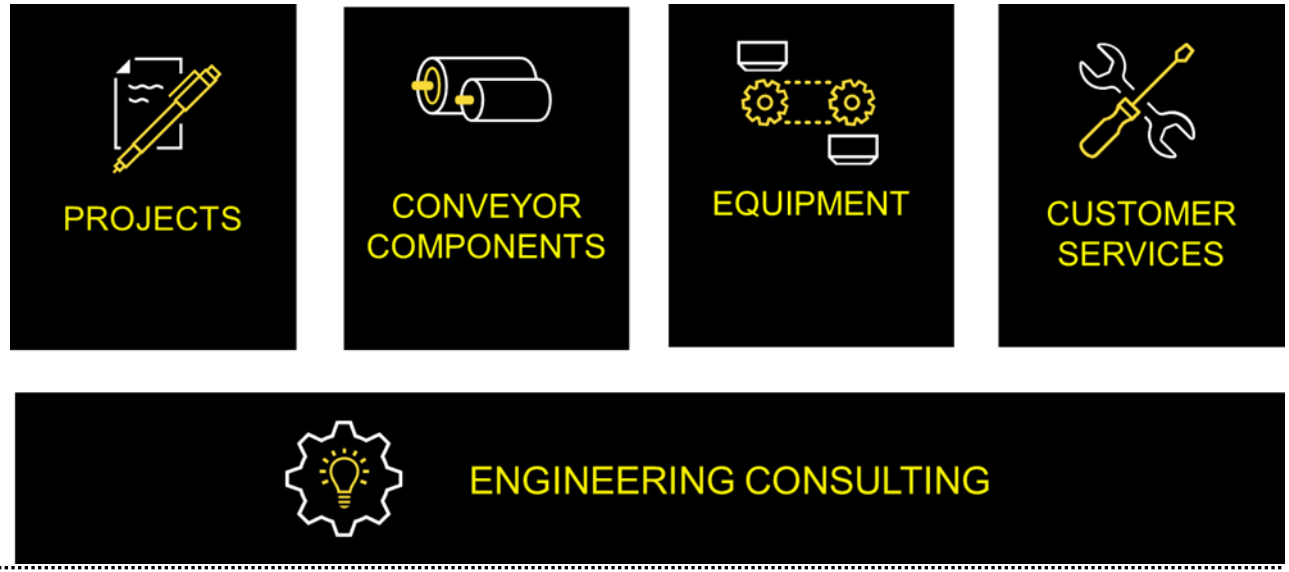
Pasi Hakkarainen

ROXON

NEPEAN Conveyors

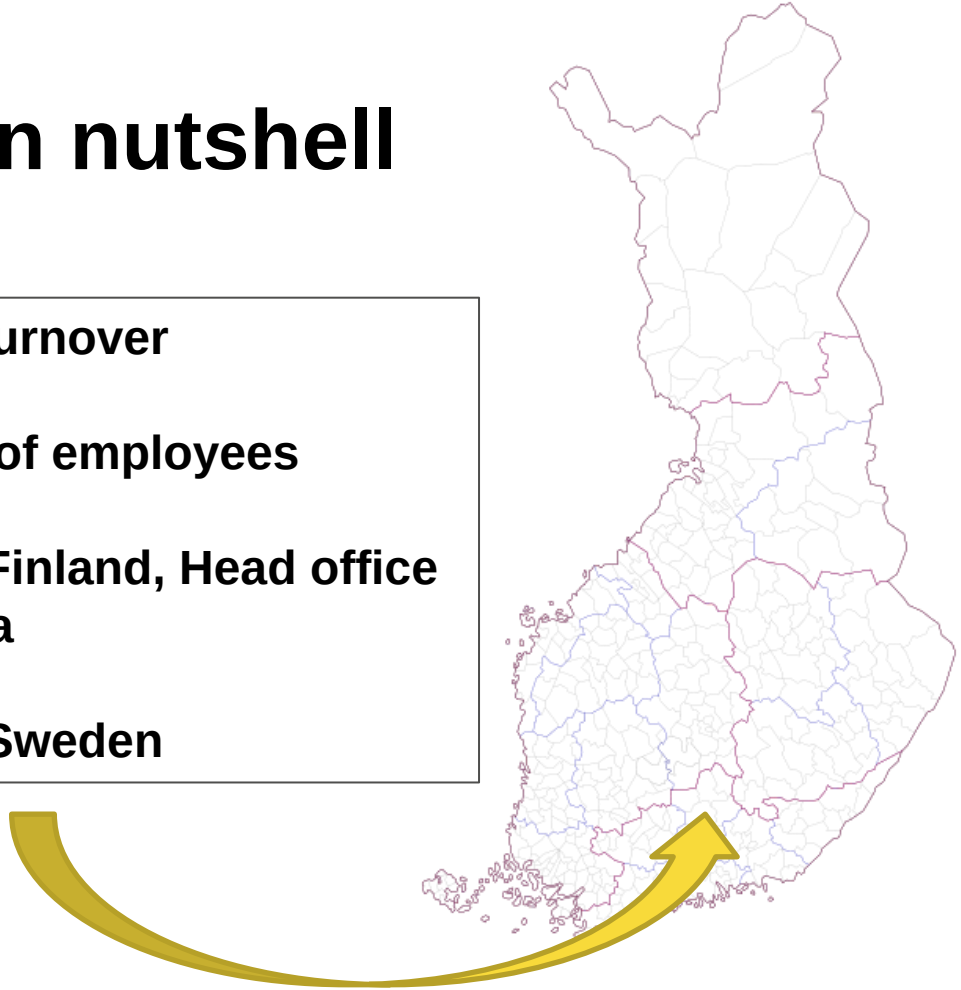
ROXON Ownership

- Part of Australian privately-owned NEPEAN Conveyors Pty Ltd since 2017
- NEPEAN CEO is Miles Fuller
- Local management



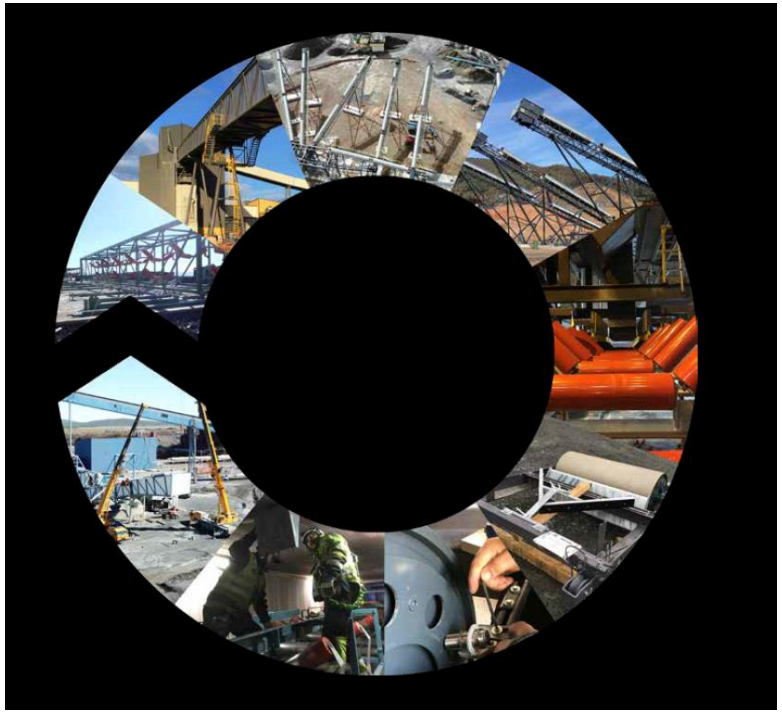
ROXON in nutshell

40 m€	Annual turnover
103	Number of employees
5	Sites in Finland, Head office in Hollola
2	Sites in Sweden

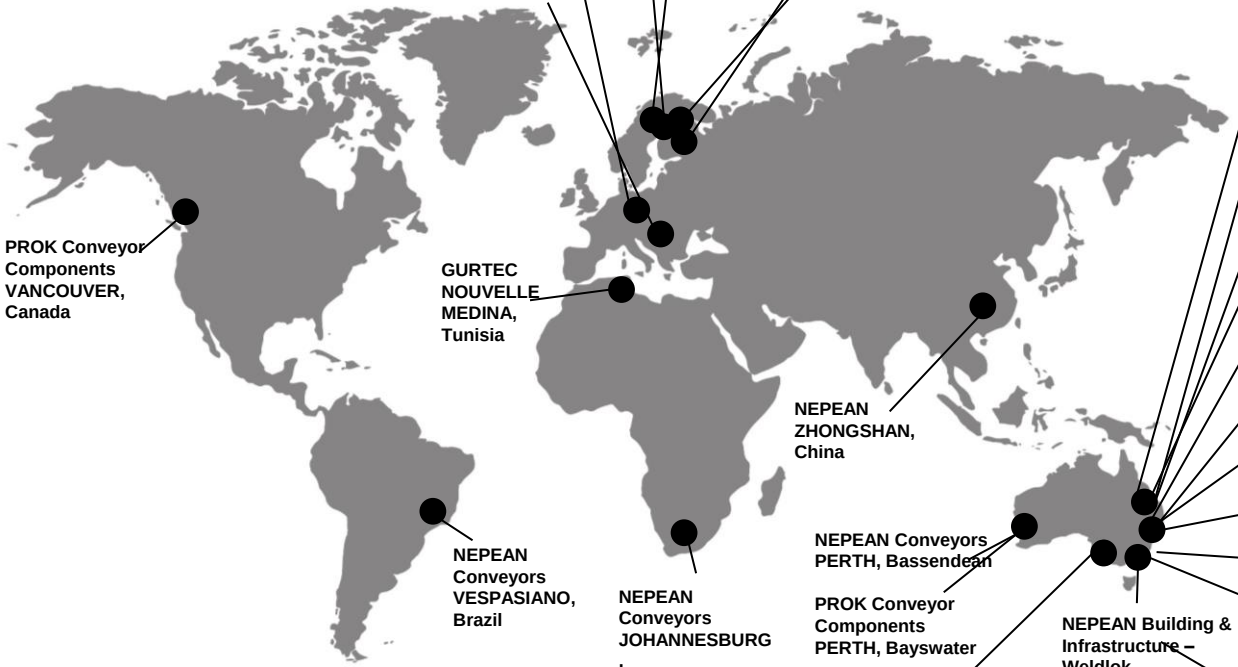


ROXON full lifecycle services

- ROXON and NEPEAN together are providing for conveyors:
- Can build conveyors fully using our own conveyor components
- 50 year experience for material handling
- Certified, professional and effective execution organization for securing safe and fully compliant delivery for any part of the globe
- Easy access for global conveyor component production close to you installations



NEPEAN locations:



GURTEC
SCHOPPENSTEDT,
Germany
Conv Conveyor
Systems GmbH
LINZ, Austria

ROXON
HAPARANDA, Sweden
GÄLLIVARE, Service

ROXON
HOLLOLA, Finland
KEMI, Service
KUOPIO, Service
LAPPEENRANTA,Service
PORI, Service

PROK Conveyor
Components
VANCOUVER,
Canada

GURTEC
NOUVELLE
MEDINA,
Tunisia

NEPEAN
ZHONGSHAN,
China

NEPEAN
Conveyors
VESPASIANO,
Brazil

NEPEAN
Conveyors
JOHANNESBURG
,
South Africa

NEPEAN Conveyors
PERTH, Bassendean

PROK Conveyor
Components
PERTH, Bayswater

NEPEAN Building &
Infrastructure –
Weldlok
DERRIMUT, VIC

NEPEAN Building &
Infrastructure –
Weldlok
Yagoona, NSW

NEPEAN Conveyors
SMEATON GRANGE,
NSW
HEAD OFFICE

NEPEAN Conveyors
MACKAY, QLD

PROK Conveyor Components
MACKAY, QLD
NEPEAN Power
NEPEAN Longwall
NEPEAN Transport – GSE

NEPEAN Engineering
NEPEAN Power
SPRINGHILL, QLD

NEPEAN Building &
Infrastructure – Weldlok
BANYO, QLD

NEPEAN Building &
Infrastructure – Galintel
COFFS HARBOUR, NSW

NEPEAN Power
PROK Conveyor Components
THORNTON, NSW

NEPEAN Gas
NEPEAN Longwall
Rutherford, NSW

NEPEAN Conveyors
GOSFORD, NSW

NEPEAN Conveyors
GULGONG, NSW

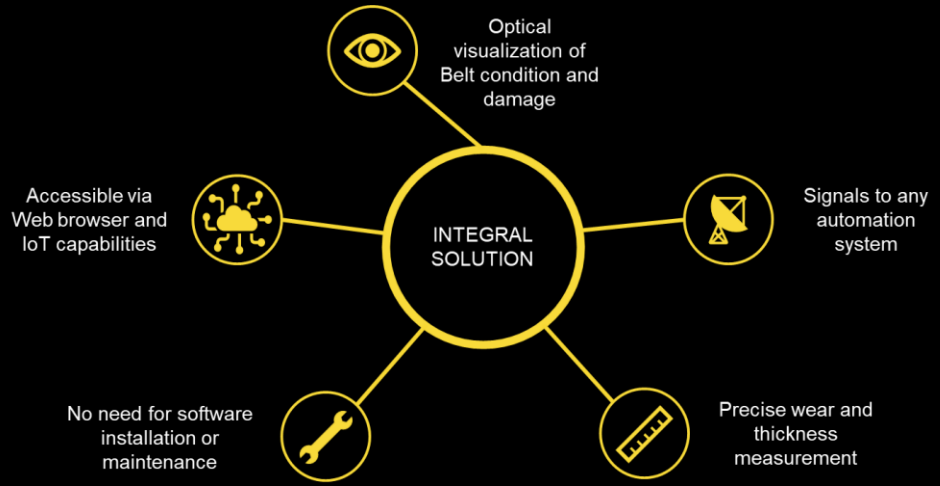
NEPEAN Conveyors
WOLLONGONG, NSW

NEPEAN Engineering &
Innovation
NEPEAN Transport – VIS
NEPEAN Transport – Light
Towers
NEPEAN Transport - GSE

ROXON

TOP 10 REASON TO USE DIGITALIZATION IN MATERIAL HANDLING SOLUTION

1. Visibility into operation process
2. Reliable and safe operations
3. Enabling Just-In-Time [JIT] manufacturing
4. Enhanced connectivity by removing silos
5. Avoid accidents and hazardous situations
6. Shorter lead times and faster deliveries
7. Real-time inventory management
8. Better cost management
9. Establish a customer-centric supply chain with demand forecasting
10. Leverage wearables for overall increased warehouse efficiency



ROXON

- ✓ Reliable and safe operations
- ✓ Avoid accidents and hazardous situations
- ✓ Better cost management

Avoid productions loss

+

Increase belt lifetime and reduce stocking

+

Cost savings with automation

Green values

ROXON HX270
ON-LINE BELT CONDITION MONITORING AND CONTOROL SYSTEM

User interface

Conveyor control

LOADING CHUTE

UNLOADING POINT

Reference tag

LAN

Belt repair station

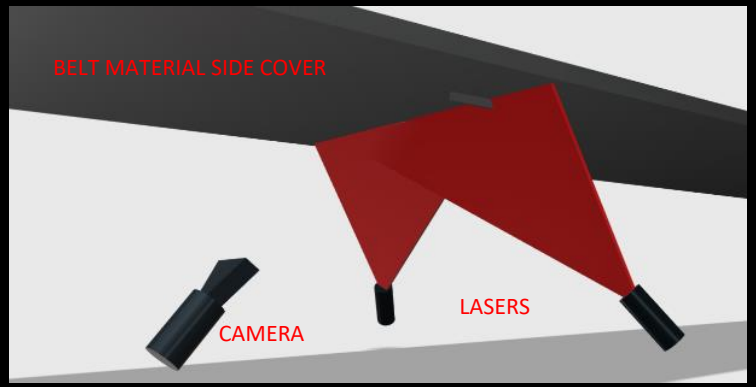
Belt movement measurement

Belt clean side cover monitoring device
- Rips, cuts, splice damages, tears, holes, etc.

Belt material side cover monitoring device
- Holes, tears, scratches, grooves, splice damages, etc.
- Belt wear (thickness) monitoring

ROXON HX270
HX270-1 MATERIAL SIDE COVER MONITORING DEVICE

- **On-line optical 3D scanning**
  - Lasers are creating a “reference line” on the belt surface.
  - Camera scans the laser profile from its images.
  - 3D surface profiles of the cover are calculated from the laser profiles with 500 Hz scanning rate.
  - Sequential 3D surface profiles are merged to a 3D image representing the 3D shape of the belt surface.
  - Shape deflections from 3D images are detected as belt damages automatically.



ROXON HX DIGITAL BELT CONDITION MONITORING SYSTEMS

A REAL DIGITAL SOLUTION FOR THE BELT CONDITION MONITORING

- Globally first fully automatic on-line and real-time HX270 belt condition monitoring system detecting all belt damages was launched in 2009.
- Over 12 years of experience of HX270 belt surface 3D scanning technology being the ultimate condition monitoring solution for long critical conveyors.
- New innovative compact HX170 belt surface 3D scanner released for condition monitoring of short conveyor belts.

BELT CONDITION MONITORING

- ROXON Belt condition monitoring devices are optical systems that are developed to harsh conditions.

ROXON HX270
MAIN TECHNICAL ADVANTAGES

- **Detect all belt damages**
  - Replaces the need for other rip detection/monitoring systems.
- **Suitable for all flat conveyor belts**
  - Mines, ports, steel mills, energy plants…
  - Textile and steel cord belts.
  - Belt manufacturer independent system.
- **On-line automatic 24/7 monitoring**
  - Automatic damage detection and damage drive to repair station.
  - Adapts automatically to new and used belts.
- **The most optimal reaction time**
  - Stops the belt in loading/unloading point CRITICAL damages.
  - Damages detected accurately enabling preventive maintenance.
- **Non-contact optical monitoring**
  - No loops, coils or modifications to the belt needed.

ROXON HX270
AVOID PRODUCTION/LOADING LOSS ENABLES FAST RETURN OF INVESTMENT

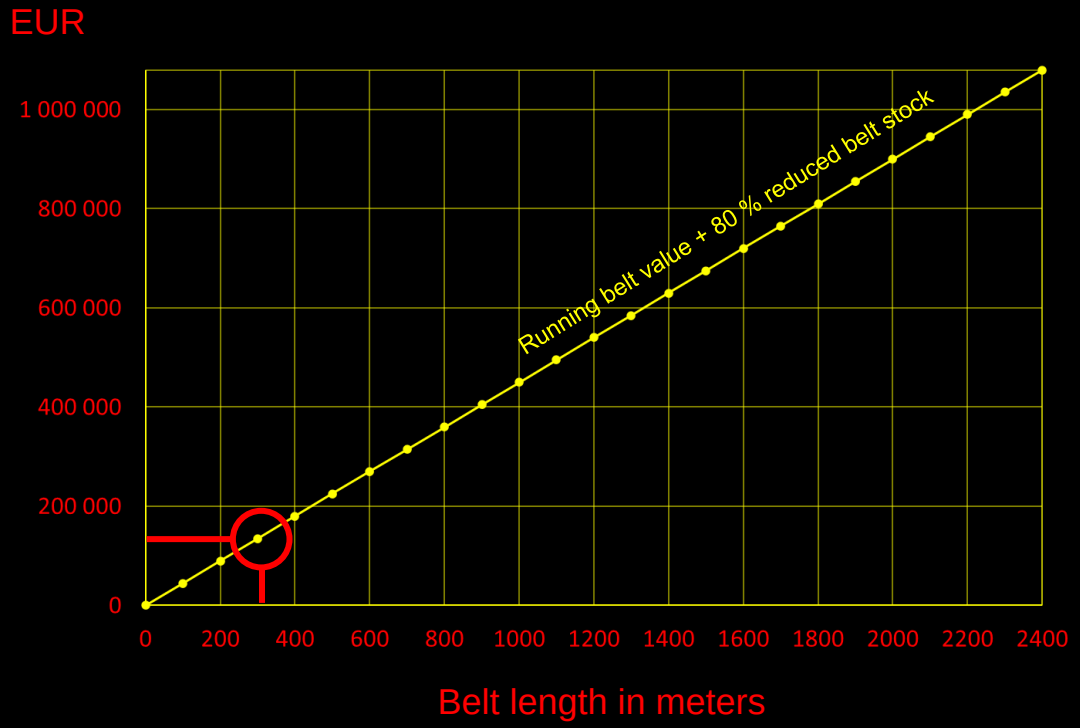
- **Example production facility**
  - Production loss 50 000 EUR/h (can be e.g. up to 150 000 EUR/h)
  - HX270 investment price 150 000 EUR

- **Return of investment equals 3 production loss hours**

- **Avoid damages to grow critical**
- **Stop the belt on critical damage incident**
- **Utilize planned maintenance stoppages**

ROXON HX270
RETURN OF INVESTMENT BY BELT VALUE

- **Example conveyor belt**
  - Belt price 250 EUR/m (+installation cost)
  - HX270 investment price 150 000 EUR
- **Stop the belt on critical damage incident enables**
  - Saving the running belt value + belt stock reduction by 80 %
- **Return of investment equals 340 m of belt length**



ROXON HX270

Customer	Conveyor / Belt	C-C length	Belt speed	Nbr. of Modules	Belt width	Capacity	Material
FQM Pyhäsalmi mine, Finland	HKU6 / EP800	300 m	1 m/s	2	1200 mm	800 t/h	Hard rock, copper ore after primary crushing
Talvivaara mine, Finland	OLC, ST2500	2150 m	3 m/s	2	1600 mm	4000 t/h	Hard rock, nickel ore after primary crushing
LKAB Malmberget, Sweden	TR020 UG, ST4500	1692 m	3 m/s	2	1600 mm	3000 t/h	Hard rock, iron ore “red-line”
LKAB Malmberget, Sweden	TR010 UG, ST1000	685 m	3 m/s	3	1600 mm	3000 t/h	Hard rock, iron ore “red-line”
LKAB Malmberget, Sweden	TR003 UG, ST2500	330 m	3 m/s	2	1600 mm	3000 t/h	Hard rock, iron ore “red-line”
Boliden Aitik, Sweden	BT2030 OLC, ST6000	3018 m	4.8 m/s	2	2000 mm	8000 t/h	Hard rock, copper ore after primary crushing
Boliden Aitik, Sweden	BT1490 OLC	695 m	4,4 m/s	2	2000 mm	8000 t/h	Hard rock, copper ore after primary crushing
Boliden Aitik, Sweden	BT1650 UG, EP	75 m	2,9 m/s	2	2200 mm	8000 t/h	Hard rock, copper ore after primary crushing
Boliden Tara, Ireland	UG, ST2500	304 m	2,1 m/s	2	1200 mm	1600 t/h	Hard rock, copper/zinc ore after primary crushing
JCS Kazzink, Kazakhstan	OLC	1280 m	2,0 m/s	1	1400 mm	1500 t/h	Hard rock
LKAB Narvik Port, Norway	TR010 UG, ST1250	620 m	2,9 m/s	3	2000 mm	9000 t/h	Iron ore pellet
LKAB Narvik Port, Norway	TR011, ST3150	632 m	2,9 m/s	2	2000 mm	9000 t/h	Iron ore pellet
Efemcukuru Gold mine, Turkey	CNV006 UG	428 m	1,5 m/s	1	900 mm	1000 t/h	Hard rock, gold ore after primary crushing
Outokumpu Kemi mine, Finland	HK2 UG, EP2000	450 m	2 m/s	2	1400 mm	2000 t/h	Hard rock, Chrome ore after primary crushing
Efemcukuru Gold mine, Turkey	CNV007 surface	150 m	1,5 m/s	1	800 mm	1000 t/h	Hard rock, gold ore after primary crushing
Kisladag Gold Mine, Turkey	OLC	2547 m	5 m/s	2	1216 mm	4000 t/h	Hard rock, gold ore
Pulp mill, Finland	Incline, surface, EP630	570 m		1	1400 mm		Wood chips for pulp boiler

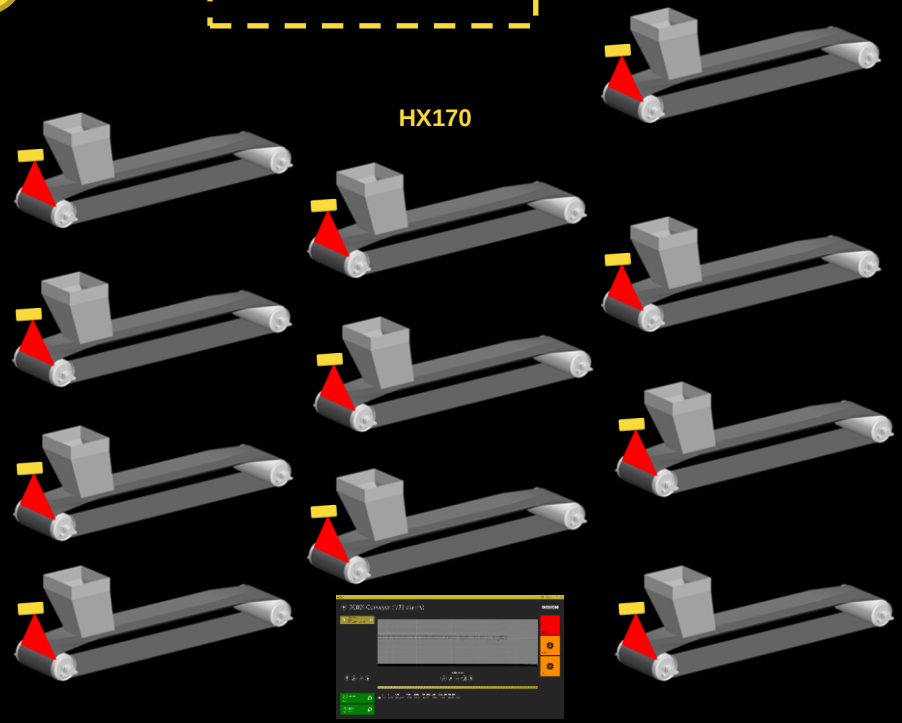
ROXON HX DIGITAL BELT CONDITION MONITORING SYSTEMS

A REAL DIGITAL SOLUTION AND THE INFO TARANSFER

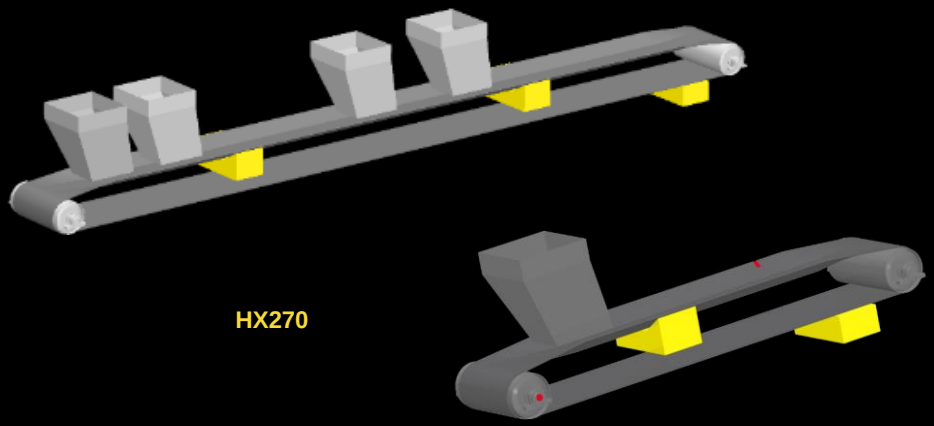
IoT CLOUD

- OPERATORS
- MAINTENANCE PLANNERS
- BELT SERVICE PROVIDERS
- BELT SUPPLIERS

HX170

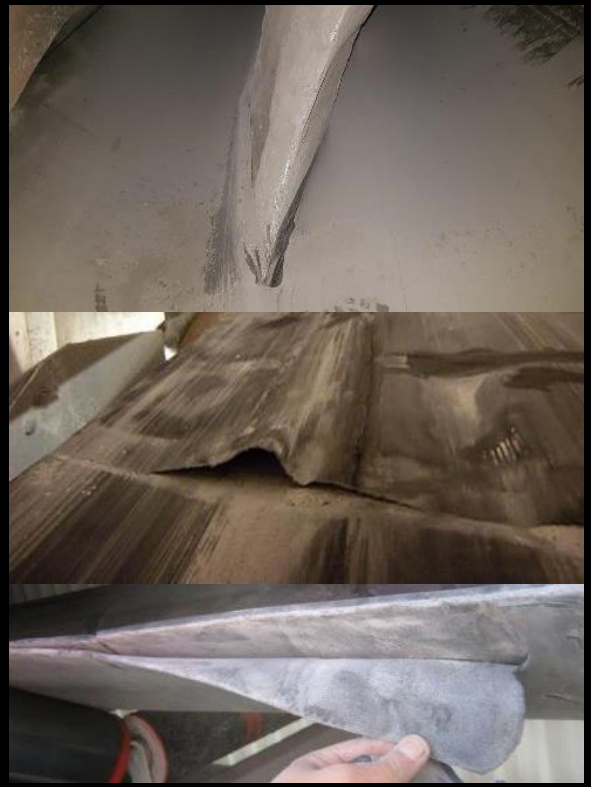


HX270



ROXON HX270
INVESTMENT BENEFITS

- **Avoid production loss**
  - Detect belt damages early enough to react.
  - Minimize downtime in hazardous belt damages.
- **Reduce costs**
  - Reduce belt stocking.
  - Increase belt life time.
  - No need for regular manual belt inspection work.
  - Less and more efficient repair work.
- **Improve safety**
  - Belt failure can be a serious safety risk.
  - Belt damage inspection and repair is planned and done in the pre-defined safe repair stations.
  - Minimal human exposure at conveyor areas.



Find out more from our web pages.

www.roxon.com

available soon

www.roxon.fi

NEPEAN
Conveyors